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From: Joanne Turner [jturner@concretecentre.com]
Sent: 25 January 2008 17:22
To: Housing Consultation 2007
Subject: FW: Scottish Government consultation: Firm Foundations: The Future of Housing in Scotland

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Please see response from the Concrete centre attached to this e-mail.

joanne

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To: 'becky.smith@scotland.gsi.gov.uk'
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From: Joanne Turner
Sent: 25 January 2008 17:17
To: 'becky.smith@scotland.gsi.gov.uk'
Cc: Guy Thompson; Tom de Saulles; Paul Slater; David Collins; Carl S. Sutcliffe
Subject: Scottish Government consultation: Firm Foundations: The Future of Housing in Scotland

Please see attached The Concrete Centre's response to the above consultation.

We are happy for this to be made public.

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Our Ref: JLT/mb
25 January 2008

Becky Smith
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**Response of The Concrete Centre to the consultation "Firm Foundations:
The Future of Housing"**

1. Thank you for the opportunity to respond to this consultation. We believe that the construction industry has a number of key challenges to meet to ensure that buildings for future generations are well designed and properly constructed and make the most use of building materials in the most sustainable way.
2. We believe that concrete, as a sustainable building material of choice, has significant potential to contribute to sustainable buildings in future. It has particular attributes, such as high thermal mass, durability and fire resistance, which make it particularly suitable for housing. There is a significant body of evidence that we would like to draw your attention to, which demonstrates these properties.
3. We would be very willing to participate, together with our members and partner organizations, in the debate about how best to meet the Scottish Government's housing supply objectives over the coming months. The UK Concrete Platform was set up last year to take forward the sector's sustainable development ethos. It has a Sustainability Task Group, including key representatives of the industry and its representative bodies. This Group is currently developing a Sustainability Strategy together with external consultants, which will include a Responsible Sourcing of Materials scheme. We look forward to

sharing the results of this work with the Scottish Government and other external stakeholders both as it develops, and when we launch the completed Strategy in autumn 2008.

Introduction

4. The Concrete Centre is the central market development organisation of the £5 billion UK Concrete Sector. It promotes design and construction methods, training, research and the performance of concrete in practice. It works closely with other cement and concrete bodies in the UK. More information is available from www.concretecentre.com.
5. Concrete is one of the most versatile and widely used construction materials throughout the world. Significant progress has been made in the UK to reduce the CO₂ emissions associated with its manufacture and the resources used in the supply chain.
6. Concrete has an overall embodied environmental footprint, as a building material, comparable with other structural options. It also offers sustainable benefits that make it the material of choice for designers, such as:
 - Durability - increasing the life span of a building and infrastructure
 - Adaptability - buildings can be reused for changing needs
 - Fire Resistance - concrete does not burn
 - Acoustic Performance
 - Security - resists unwanted entry
 - Thermal Mass - reduces whole life CO₂ emissions
 - Resilience to flooding
 - Permeable block paving, which has a role to play in SuDS solutions for managing surface water run-off and flood attenuation
 - Local sourcing - almost entirely UK based
 - Remediation Properties - helps support the reuse of brownfield sites.

The UK concrete industry is working together to develop a sustainable concrete strategy which be launched in 2008. More information is available from www.sustainableconcrete.org.uk

7. The concrete industry encourages Government to develop policies and practices that support whole life thinking in relation to construction products. This means considering how these products are manufactured and used in an integrated manner -not approaching these two aspects in isolation. This will be important as new sustainable construction targets and techniques come on stream.

8. We very much welcome this opportunity to comment and fully support the need for a more sustainable construction market. It is vital that sustainable construction covers the whole life from building material production, construction, maintenance, refurbishment and recycling at end of life. Sustainable construction includes environmental aspects, where tools such as the Green Guide can play a useful role, and it is vital to consider the social and economic issues too.

Resources

9. We believe we need to put sustainability and sustainable construction in the context of UK plc's sustainability in the round. Using scarce materials such as timber as core materials for construction is not making the best use of natural resources. Use of timber should be restricted to paper and as a building material for finishing, and then only where there is no acceptable substitute. Similar issues, although less acute, exist in relation to iron ore availability.
10. There are currently no significant constraints on the use of raw aggregate for cement and concrete manufacture in the UK, with thousands years' worth of aggregate still available for use. However, there is growing pressure on producers and consumers to move towards a more sustainable resourcing of construction aggregates by reducing the consumption of primary aggregates through switching to recycled or secondary material. Clearly this is a beneficial development but we would not want to see the use of recycled aggregate driven to an extent where it becomes counter-productive. If the use of recycled material increases beyond the capacity of the waste industry to supply it, there is a danger that material will be transported long distances in a manner which is not sustainable.
11. It is important that the use of recycled and secondary aggregates and other materials is promoted as part of a holistic approach to sustainable development. A 'tick-box' approach which requires companies to use a target percentage of recycled aggregate, for example, may not be conducive to the adoption of sustainable solutions overall.
12. Currently, recycling targets seem to be applied to all raw construction materials in the same way, irrespective of the virgin material being used. In practice the need to protect virgin sources will depend on:
 - The scarcity or otherwise of the material in question:
 - The relative costs of abstraction and the availability of local sources of both virgin and recycled material.Unless those issues are correctly identified and dealt with, we are concerned that less sustainable solutions will be adopted in the long term e.g. aggregate being transported long distances, inferior grade

aggregate being used for concrete production with higher quantities of cement and so on.

Comments on Housing Supply Objectives

13. The Concrete Centre fully supports the objectives of the consultation in increasing housing supply but wishes to stress the need for a consistent national approach to building materials, to include the Code for Scottish Housing Quality Standard and the zero carbon agenda. Future developments need to be co-ordinated and clearly signposted well in advance if design and production of new building materials and product solutions are to be developed and made available in sufficient volumes from UK suppliers.
14. To embed sustainability as a factor in the choices made by housebuilders, suppliers, and house-buyers it is essential that sustainable construction initiatives, such as mandatory rating against the Code for Sustainable Homes should be extended to all new buildings, and in time, to the existing building stock as well, when it is refurbished:
 - Giving clear guidance to local planning authorities, specifiers, product manufacturers and builders
 - Assisting the Government in achieving its carbon reduction targets
 - Delivering sustainable homes that are designed to reduce CO₂ emissions as well as being adaptable to climate change impacts and providing a valuable legacy for future generations
 - Creating the economies of scale required to drive down the cost of new technologies

Low carbon buildings

13. All new buildings need to be low and eventually zero carbon if UK CO₂ emissions are to be significantly reduced. Therefore all new buildings constructed between now and 2050, which by then is likely to represent 30% of the housing stock, should contribute towards the Government's target reduction of 60% CO₂ emissions based on 1990 levels.
14. The UK concrete industry has, we believe, a vital role to play as concrete is the second most commonly used material in buildings, after water. It has significant capacity for sustainable growth and concrete is, almost exclusively, a UK produced product using local materials, suppliers, manufacturers and it supports local communities. The industry is subject to the UK's strict environmental and social legislation and has fully embraced the challenge of sustainable development. This industry is a key part of the UK and local economies and does not export

environmental and social burdens to other countries which may have less stringent controls or improvement targets, such as CO₂ emissions.

The benefits of thermal mass

15. The Concrete Industry strongly believes that heavyweight buildings that use materials such as concrete will minimise CO₂ emissions and are readily adaptable to temperature changes associated with climate change, due to their inherent thermal mass. The application of heavyweight construction materials in passive heating and cooling design regimes will lower the energy demand required from dwellings. Thermal mass is inherent in materials such as concrete which does not add to the build cost but can reduce energy demand during operation reducing the amount of renewable energy technology that has to be installed.
16. This mass absorbs internal heat gains during summer, reducing peak temperatures and releasing the heat by ventilation during cooler periods - typically at night - as a consequence less energy is needed for air-conditioning, saving CO₂ emissions. Thermal mass also helps cut winter energy requirements through a technique known as passive solar design. This uses a combination of solar gain and thermal mass to reduce demand on the boiler and save up to 11% in heating fuel for a conventional house design¹ and 40% for fully optimised designs².
17. The potential to capture the value of thermal mass can apply to all types of buildings; lightweight (e.g. timber frame), medium or heavyweight (e.g. traditional masonry). However, a masonry block wall has up to six times more inherent thermal mass than a lightweight framed wall. The use of thermal energy is currently not adequately supported in UK Building Regulations. This is likely to lead to excessive overheating or increased demand for air conditioning systems from around 2020 in houses built to current standards (based on the UK Climate Impacts Programme's Climate Scenarios).

Permeable concrete and SuDS

18. Another area where concrete has an important role to play is in the development of permeable concrete block pavements for SuDS solutions. An increasing proportion of streetscapes and landscaping around new housing developments utilizes these materials to good effect. It has benefits as an infiltration device in its own right, and also a part of larger SuDS solutions, in terms of both:
 - a) managing surface water run-off; and

¹ Thermal Mass for Housing, The Concrete Centre, 2006.

² Rough Guide to Sustainability, Edwards B, 2nd Edition, RIBA Enterprises, 2005

- b) attenuating stormwater flows;
- c) improving local water quality.

Improving flood resilience will become increasingly important as part of adaptation to climate change. In addition, as new housing is built in parts of the country where the infrastructure is already under strain, it will be important to manage surface water drainage in the most sustainable, and holistic, way possible. In addition, the use of permeable will improve the local water quality that is discharged from the pavement into the ground or sub-grade, or into the next part of the SuDS management train (balancing pond or stormwater pipe).

19. To optimise the use of this technology the Government needs to ensure that passive technologies are fully recognised and accounted for in building standards and assessment methodologies. In this respect, the UK lags behind the rest of Europe and is not in the spirit of the Energy Performance in Buildings Directive (EPBD), which state that passive heating and cooling techniques should be accounted for when calculating building energy use.

Resistance to vermin and insect damage

20. In addition, concrete is also resistant to damage caused by vermin such as mice and rats. Similarly, it has a role to play in resistance to termite attack, which, although not a pressing issue in the UK at the moment may well become so with the increase in temperature predicted under climate change scenarios. The Formosan termite, although a non-native species, has caused considerable damage to timber framed buildings in the USA, Canada and parts of Europe³. Two small timber framed buildings have been affected in the UK and BRE are continuing to monitor those sites. The usual solution to termite infestation is to impregnate the timber with insecticide compounds but these are becoming less prevalent because of concerns about environmental and human health.

Use of basements as part of sustainable housing development

21. The Concrete Centre as part of incorporating sustainable performance standards recommend the increased use of basements to increase density, efficiency and dwelling size, whilst respecting planning constraints of height and to help the creation of successful urban design solutions. Due to the absence of Government policy, guidance or advice regarding basements the response to planning applications can vary quite dramatically across the country, particularly in greenbelt locations

³ <http://www.bfafh.de/inst4/43/ppt/5termite.pdf>

where visual impact can be an issue. The current planning system does not fully recognise their existence or the potential they offer. Basements do not benefit from Permitted Development Rights and in the most sensitive locations many planning policies actively discourage them. The government are therefore urged to give serious consideration to bring the development of basements within the remit of Permitted Development which would have limited administrative implications and release the potential that they can offer in the sustainability agenda.

22. We are very grateful for the opportunity to respond to the consultation, and look forward to seeing the outcome in due course.

Yours sincerely

JOANNE TURNER
Sustainability Manager
The Concrete Centre



The Concrete Centre™

Response of The Concrete Centre to Firm Foundations: The Future of Housing in Scotland

January 2008

Introduction

The Concrete Centre is the central market development organisation of the £5 billion UK Concrete Sector. It promotes design and construction methods, training, research and the performance of concrete in practice. It works closely with other Cement and Concrete bodies in the UK. More information is available from www.concretecentre.com

Concrete is one of the most versatile and prolific construction materials used throughout the world. Significant progress has been made in the UK to reduce its allocated CO₂ emissions and the impact of resource use in the supply chain. This has led to an overall environmental footprint, as a building material, which makes it comparable with other structural options. UK concrete industry is working together to develop a sustainable concrete strategy which was launched in 2008. More information is available from www.sustainableconcrete.org.uk

We very much welcome this opportunity to comment and would like to stress the need for a more sustainable built environment, covering building material production, construction, maintenance, refurbishment and recycling at end of life. Sustainable construction includes environmental aspects, where the environmental profiles on building materials ~~Green Guide~~ can play a useful role, but the social and economic issues also have to be considered. Clearly there is a need for an increased housing supply, more choice and sustainable communities but we believe the quality of housing and its ability to adapt to climate change is as important as increasing supply and choice of tenure.

Comments on Sustainable Design Policies

The Concrete Centre has fully supported the development and progress of the Code for Sustainable Homes and promotes the ~~but recognises the~~ need for a consistent ~~national~~ approach to the Code and the Zero Carbon Agenda. Any agenda needs to be co-ordinated and signposted well in advance if design and production of new solutions is to meet from UK suppliers.

To embed sustainability as a factor in the choices made by housebuilders, suppliers, and house-buyers it is essential that sustainable construction initiatives, such as the Code for Sustainable Homes should be mandated for all buildings:

- Giving clear guidance to local planning authorities, specifiers, product manufacturers and builders

- Assisting the Government in achieving its carbon reduction targets
- Delivering sustainable homes that are designed to reduce CO₂ emissions as well as being adaptable to climate change impacts and providing a valuable legacy for future generations
- Creating the economies of scale required to drive down the cost of new technologies

All new buildings need to be low and eventually zero carbon if UK CO₂ emissions are to be significantly reduced. This requires the more stringent energy efficiency/building performance standards that are outlined in the Code for Sustainable Homes. All new buildings constructed between now and 2050, which by then is likely to represent 30% of the housing stock, should contribute towards the Government's target reduction of 60% CO₂ emissions based on 1990 levels.

The Concrete Industry supports the development of well designed and built housing which addresses space standards, materials selection, efficient delivery and cost effective solutions all within the sustainability agenda. This incorporates the use of good building products that will either have a long life span or construction that supports future reuse or recycling. It also includes a quality external environment and urban landscape, appropriate amenity space and a sustainable infrastructure. The longevity of structures constructed in concrete and the savings that they can offer over the life of the structure should be recognised and taken into account in any LCA based methodology, rather than the 60 year "study period" considered by the BRE Green Guide.

Concrete can meet the best value criteria, as well as providing inherent robustness, fire resistance acoustics/sound attenuation and resistance to rot and insects. In line with the sustainability agenda the inherent properties of concrete provide construction methods that can mitigate the current and future impact of flooding, storm resistance and temperature changes linked to climate change. The increased use of flood plains for new housing requires material selection to take account of cost effective flood resilience measures. To this end the Concrete Centre supports the recommendations contained in "Improving the flood performance of new buildings - Flood resilience construction"

Sustainable Urban Drainage Systems (SUDS) provide a more sustainable option to runoff management helping to minimize development run off and potential flooding or water pollution risk downstream. They can also provide direct improvements to amenity and biodiversity. Permeable concrete paving allows rainwater to drain through the paved surface in a controlled way into the ground before being released into sewers or water courses. SUDS can also allow the capture of water for re-use for non-potable purposes such as garden watering and toilet flushing.

The Concrete Industry has significant capacity for sustainable growth and concrete is, almost exclusively, a UK produced product using local materials, suppliers, manufacturers and supporting local communities. This industry is subject to the UK's strict environmental and social legislation and has fully embraced the challenge of sustainable development. This industry is a key part of the UK and local economies and does not export environmental and social burdens to other countries which may have less stringent controls or improvement targets, such as CO₂ emissions.

The Concrete Industry strongly believes that heavyweight buildings that use materials such as concrete will minimise CO₂ emissions and are readily adaptable to temperature changes associated with climate change, due to their inherent thermal mass. The application of heavyweight construction materials in passive heating and cooling design regimes will lower the energy demand required from dwellings. Thermal mass is inherent in materials such as concrete which does not add to the build cost but can reduce energy demand during operation reducing the amount of renewable energy technology that has to be installed.

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To optimise the use of this technology the Government needs to ensure that passive technologies are fully recognised and accounted for in the Building Regulations, the Code for Sustainable Homes and the Standard Assessment Procedure (SAP) rating methodology. In this respect, ~~the UK~~ building regulations and codes lag behind the rest of Europe and are ~~are~~ not in the spirit of the Energy Performance in Buildings Directive (EPBD), which state that passive heating and cooling techniques should be accounted for when calculating building energy use.

The Concrete Centre as part of incorporating sustainable performance standards recommend the increased use of basements to increase density, efficiency and dwelling size, whilst respecting planning constraints of height and help the creation of successful urban design solutions. Due to the absence of government policy, guidance or advice regarding basements the response to planning applications can vary quite dramatically across the country, particularly in Greenbelt locations where visual impact can be an issue. The current planning systems do not fully recognise their existence or the potential they offer. Basements do not benefit from Permitted Development Rights and in the most sensitive locations many planning policies actively discourage them. The government are therefore urged to give serious consideration to bring the development of basements within the remit of Permitted Development which would have limited administrative implications and release the potential that they can offer in the sustainability agenda.

¹ Thermal Mass for Housing, The Concrete Centre, 2006.

² Rough Guide to Sustainability, Edwards B, 2nd Edition, RIBA Enterprises, 2005

With the drive to maximise the use of brownfield sites, the concrete industry supports sustainable options such as stabilisation and solidification for potentially contaminated sites. This efficient, well tried and tested process renders contaminants immobile and can virtually eliminate the potential environmental problems.

SUBMISSION TO [...]

~~We set out below our views on the issues raised in this consultation:-~~