1 Foreword

As co-Chairs of the Green Construction Board, we are delighted to introduce its first annual report. This sets out the progress the Board has made on a broad range of issues. It outlines what has been achieved and what our future priorities are.

The Green Construction Board is a key collaboration between Government and industry and we are extremely grateful for the support we have received from industry and across Government over the past twelve months. None of the progress set out in this report would have been possible without the dedication of the 150 plus people who participate in the Board and its seven working groups.

This support is a powerful sign that very many people in the industry share our belief in the potential for green construction to catalyse growth and act as a real stimulus for industry competitiveness and innovation.

Indeed, the UK continues to prosper in this sector and is now home to the world’s sixth largest low carbon market. Last year growth of 4.7% took the total value of the UK low carbon market to over £120 billion, with exports up 3.9% to £11.8 billion.

It is essential that UK construction harnesses its competitive advantage, and makes the most of the genuine opportunities in this growing sector. This is precisely the guiding ethos of the Green Construction Board – to ensure a sustained high level dialogue on the issues that really matter.

We hope we share a commitment with you to make the most of the potential offered by the transition to a greener economy. If we do not work hard on that now, the opportunity will quickly be lost.

Michael Fallon          Mike Putnam
Minister of State for Business and Enterprise   President and CEO, Skanska UK
2 Executive Summary

The Green Construction Board was established in October 2011 to provide strategic leadership to the sector on this agenda as well as own and monitor the implementation of the actions in the Low Carbon Construction Action Plan. It draws together Government and industry to discuss the business opportunities (both domestically and internationally) which will be created by the transition to more sustainable economy – and how best to take advantage of them.

This report provides a brief update of the Board’s work, in particular what its Working Groups have achieved over the past year. It also sets out our plans for the next 12 months.

The subject area is vast and it is important that the Board has a clear focus.

This focus will be provided by the Low Carbon Routemap for the Built Environment. This work, which will be completed in the Spring of next year, will set out the key interventions and gaps along the timeline to the 2050 target of reducing our national carbon emissions by 80% (based on 1990 levels). It is the point at which all the Board’s work comes together.

In support of the Routemap, the Board is tackling a number of key issues, including:

1. Demonstrating that reduced carbon delivers reduced capital and operational costs.

The Board is developing an interactive tool which will illustrate, through a series of case studies, how it is possible to improve resource efficiency, and reduce both embodied and operational carbon while at the same time lowering capital expenditure and running costs. This work will focus initially on the infrastructure sector.

2. Overcoming the complexity which surrounds low carbon and sustainable construction

Initial scoping exercises will start soon which will look at delivery support mechanisms for the domestic refurbishment sector and on how best to approach the gap between designed and actual energy performance.

3. Turning the challenge of green construction into business opportunities

The Board is developing a map of the real estate life cycle showing critical intervention points, analysing the efficacy of existing policy interventions and developing market data on the response to minimum energy performance standards.
4. Understanding emerging capacity and knowledge issues

A scoping exercise will start soon to map the education and training challenge in terms of the required capability and scale. It will also seek to establish the effectiveness of current knowledge structures.

5. Measuring progress

Building on the work of the Strategic Forum for Construction in support of the Strategy for Sustainable Construction, progress is continuing in the areas of carbon, water, waste, materials and biodiversity. As part of this work, the Board is working to provide clear guidance on the measurement of whole life carbon.

The full report sets out the direction of the Board in each of its key areas of focus, provides an update on progress and sets out what we will be doing next. For further information or a copy of the full report, refer to the Green Construction Board online platform: www.greenconstructionboard.org
3 What is the Green Construction Board?

“What is the Green Construction Board? Leadership is needed in the construction sector to deliver the business opportunities presented by the green agenda – industry and government collaboration has to be at the heart of making this a success.”

James Wates CBE, Deputy Chairman, Wates Group

The Green Construction Board was established in October 2011 as a consultative forum for Government and the UK design, construction, property and infrastructure industry. It was established to ensure a sustained high level conversation and to develop and implement a long-term strategic framework for the promotion of innovation and sustainable growth in this sector. In the shorter term, its key priority is to provide improved focus, direction and clarity to the business and growth opportunities which are being created by the shift to a green economy.

The purpose of the Green Construction Board is to:

- Provide co-ordinated leadership across Government and industry on the issues contained in the Low Carbon Construction Action Plan;
- Monitor the delivery of that action plan and, through its development, ensure it remains relevant and appropriate;
- Act as a sounding board for government departments for new or challenging green construction issues to facilitate effective policy making and better informed commercial decisions;
- Advise on the implementation of policies related to green construction, identifying sector specific implications and consequences; and
- Promote UK achievements in the field of green construction and provide a strong public voice on its wider value to the economy, to society and to the environment.

The Board represents a close co-operation between Government and senior figures from the construction, infrastructure and property industries. This is embodied through the co-Chairs – Mike Putnam, Chief Executive and President of Skanska UK, and the Rt Hon Michael Fallon MP, Minister of State for Business and Enterprise. A full list of Board members can be found at Annex 1.

“Clearly the direction of travel within the industry is towards sustainability. It’s telling that forward thinking companies for example recognise the added value sustainable buildings bring, and put it into practice in their own office procurement and facilities management.”

Lord De Mauley, Parliamentary Under-Secretary at the Department for Environment, Food and Rural Affairs
4 What is the Green Construction Board Doing?

The industry stands on the threshold of five great opportunities:

- To carry out a huge programme of work stretching out over at least the next 40 years
- To make use of that workload to reform the structure and practice of the industry
- To export the products and knowledge of a modernised industry
- To play its part in readying society and the economy for a resource efficient future
- To excite future generations of new recruits

The Board’s work is guided by two key documents. The final report of the Low Carbon Construction Innovation and Growth Team and the Low Carbon Construction Action Plan (LCCAP).

To date, a key area of focus has been on ensuring the delivery of the Low Carbon Construction Action Plan. Of its 162 actions, 84 have been completed and a further 73 are in progress. For many of these actions, the role of the Board is one of monitoring rather than actual delivery. This is as it should be, there are many actors and initiatives dedicated to pursuing the low-carbon growth agenda across the sector, and the Board’s role is to track the progress being made and to identify any significant gaps that need to be addressed.

Additionally the Board is looking more widely to further develop and deliver the overarching themes of the Low Carbon Construction Action Plan and the Low Carbon Construction Innovation and Growth Team report.

These themes are:

- Leadership and co-operation across the private and public sectors to demonstrate the benefits and opportunities of sustainable construction;
- The need for greater clarity in a complex landscape, enabling the industry to better understand the opportunities available to it;
- The need to ensure we have the right framework of incentives and interventions in place to enable the market to flourish, allied with the right level of skills and innovation in place to support market growth.

The Board has also extended its scope beyond carbon and it considers a wider range of sustainability and environmental issues with resource efficiency at their heart. Further detail of the work carried out to date along with an outline of the on-going activity and action plans for the next twelve months is provided in later sections of this report.
5 How does the Board go about its Work?

“No one would pretend that markets for construction are easy at the moment. However, what unites the Green Construction Board is our belief that the future of this industry lies in improved environmental performance and when the markets turn, we want UK businesses to be well placed to take full advantage of that.”

Mark Oliver, Managing Director, H+H UK Ltd

The Low Carbon Construction Innovation and Growth Team adopted a sector focussed approach and created Working Groups looking at infrastructure, non-domestic buildings, housing and major projects, recognising the fundamental impact of markets and business models on how the challenge of low carbon construction might best be approached. It also acknowledged the differences between new build and retrofit and the challenges and differences of ownership and tenancy.

The Low Carbon Construction Action Plan focused on a number of specific themes identified by the Innovation and Growth Team. These were: strong leadership across both the public and private sectors and unprecedented co-operation between them; public sector best practice; overcoming complexity; incentivisation, affordability and funding; capacity and skills; research, innovation and information; and international opportunities.

The Green Construction Board seeks to combine these two approaches and has set up a number of Working Groups to consider the issues which have, and will continue, to arise. Two Working Groups have a sector focus – infrastructure and buildings – and a third group is looking at the valuation process for different market sectors and the potential to stimulate demand. These groups are, and will continue to tackle particular issues in those market sectors which the Board has agreed are priorities.

In parallel, there are three Working Groups looking at key cross cutting themes which apply generically across the industry recognising however, that each market sector will have its own particular challenges and solutions. These are Knowledge & Skills, Greening the Industry and Promotion.
Central to the Green Construction Board’s work is the development of the Low Carbon Routemap. The IGT report was clear that:

“There needs to be a series of plans, which will cascade from national to local to individual business and customer level, and do so by sector. This needs to cut through complexity to establish the basis upon which the industry and its own customers can make their plans and invest, set within a long term, stable framework.”

Under the umbrella of the over-arching Low Carbon Routemap, the Green Construction Board will develop, iterate and ensure the delivery of a series of actions which seek to ensure the industry secures the full benefit of the transition to a green economy and the delivery of the 2050 Climate Change Act obligation.

Consideration of the emerging Routemap and LCCAP has identified four areas for priority action.

These are:
  o The need for a greater focus on infrastructure;
  o The need to properly understand and address the ‘performance gap’ between intended and actual in-use performance of new and existing buildings;
  o The need to effectively brigade and marshal knowledge around the treatment of existing buildings;
  o The need to properly understand the nature of demand for green construction, property and infrastructure and identify what more might be done to increase it.

The following sections of this report set out the Green Construction Board’s work in more detail.
6 The Low Carbon Construction Action Plan

The Low Carbon Construction Action Plan records actions against 8 key themes drawn from the Innovation and Growth Team Report. Of its 162 actions, 84 have been completed and a further 73 are in progress, which marks good progress. A further 5 actions have not yet been started but are part of the continuing work monitored by the Green Construction Board.

Below is a summary of the delivery of those actions against the specific themes:

a) Leadership & Co-operation

13 (60%) actions have been completed.

A number of key steps have been taken. These are designed to more clearly set the overall context in which the low carbon agenda is progressed. They include setting the 4th Carbon Budget in law and the publication of The Carbon Plan: Delivering our Low Carbon Future by DECC.

Important tasks, such as the publication of an updated set of sustainable construction targets for the industry which build on those published in the joint industry-Government Sustainable Construction Strategy will be addressed by the Green Construction Board (refer to ‘Chapter 8 - Measuring Progress’).

b) Public Best Practice

10 actions (53%) have been completed.

The Government Construction Board for procurement has been created and continues to drive good practice. Pipelines for infrastructure and publicly funded construction work have been published and great progress has been made in delivering the Building Information Modelling strategy.

Work looking at refreshing the environmental standards which apply to Government construction is due to start shortly and the Green Construction Board will be providing support to the review of the Government Buying Standards, working alongside Defra.
c) Overcoming Complexity

5 actions (36%) have been completed.

The European Standard for embodied impacts including carbon has been published as has the Government’s approach to Zero Carbon Homes – though there is still work on-going on the Allowable Solutions component of the definition. The creation of an existing homes / buildings “hub” is under consideration.

d) Affordability & Funding

12 actions (43%) have been completed.

The legislation to enable the Green Deal is in place and the Publicly Available Specification for the installation of energy efficiency measures into existing buildings (PAS 2030) has been published.

e) Incentivisation

21 actions (53%) have been completed.

The Green Investment Bank has been established and the Microgeneration Strategy has been published by DECC and Regulations have been laid for a new Renewable Heat Incentive scheme.
f) Capacity and Skills

9 actions (32%) have been completed.

Most of the completed actions concern the range of competences and capabilities required to deliver the Green Deal.

g) Research and Innovation

11 actions (65%) have been completed.

One of the most significant actions under this heading was the set-up of the Building Performance Evaluation programme by the Technology Strategy Board. The programme has received 428 applications over a two year period, of which 59 domestic and 50 non-domestic in-depth studies have been funded and most are now underway.

h) International Opportunities

3 actions (50%) have been completed.

The completed actions relate to the London 2012 Games and the launch of the learning legacy. Work continues on using the Olympics to showcase UK expertise overseas.

For more information, refer to the Green Construction Board on-line platform for a regularly updated ‘Action Tracker’ which monitors progress against each of the actions: www.greenconstructionboard.org
7 Low Carbon Routemap for the Built Environment

The way the built environment is planned, constructed, managed and refurbished has a major role to play in the UK achieving its target of 80% reduction in greenhouse gas emissions by 2050.

This will be challenging, requiring the right decisions at the right times, and planned decisive actions across all related industry sectors and areas of government. Yet it will also offer many areas of opportunity – for green economic growth, innovation, export, and new skills.

Having a clear Routemap is critical to provide the framework and enable progress to be communicated.

What is the Green Construction Board doing?

The Green Construction Board has commissioned a project to develop a comprehensive Routemap, with the following objectives:

- To provide the Green Construction Board and its stakeholders with a structured and logical Routemap by which to view the timeline to 2050 of key interventions, and associated contributions in carbon reduction.
- To provide a better understanding of the opportunities and risks as well as the potential gaps in information, policy and approaches on carbon reduction and abatement.
- To identify any gaps in the approach to carbon reduction taken by the Green Construction Board and Low Carbon Construction Action Plan, and incorporate relevant solutions.
- To improve visibility and coordination of the activities of the Green Construction Board Working Groups.
- To give confidence and assurance to stakeholders of commitment to, progress towards, and the deliverability of, a low carbon built environment and its contribution to the UK greenhouse gas reduction target.

Delivery of the Routemap is being managed by WRAP, on behalf of the Green Construction Board, with Arup providing technical development.
What progress has been made?

Development of the Routemap started in August 2012 with completion due in March 2013. It has so far proceeded through a number of key stages including:

- Defining the scope of the ‘built environment’.
- Establishing a 1990 emissions baseline to enable definition of a 2050 target for the built environment and the carbon reduction trajectory required to achieve this.
- Defining a decarbonisation scenario to 2050 that is consistent with estimates developed by DECC.
- Establishing a robust underlying model of carbon emissions, emissions reductions and trajectories, for buildings and infrastructure sub-sectors and for capital and operational carbon.
- Estimating the carbon reduction impact of current and planned interventions in the short to medium term, including key actions of the Low Carbon Construction Action Plan.

For the medium to long-term, the Routemap will identify:

- Different technical solutions and their ability to reduce carbon emissions;
- Actions that can address barriers and challenges, and ensure high uptake and penetration of technical solutions;
- Actions to ensure there is adequate capacity in the industry in terms of knowledge, skills, supply chain, etc. to effectively respond to these needs; and
- Quantifiable actions and solutions, estimating their emissions reductions potential and impact on the trajectory to 2050.

Throughout the process, all Green Construction Board Working Groups have been closely engaged along with key external stakeholders across industry and government. This is essential to the success of the Routemap and its adoption by industry.

Early findings

UK greenhouse gas (carbon equivalent) emissions within the control and influence of the built environment sectors were approximately 230 million tonnes in 1990, and have reduced overall by approximately 13% to 200 million tonnes in 2010 (Figure 1). To achieve the target by 2050, emissions from the built environment will need to decrease to 46 million tonnes, or an additional 77% from 2010 levels.

The most significant source of operational carbon emissions is domestic heating (Figure 2). This could be addressed through a combination of two approaches:

- Decarbonisation of the grid, with a shift in heating to electric; and
- A reduction in demand for heating through major fabric improvements to the housing stock.
The potential to reduce emissions in the built environment is highly dependent on the pace of decarbonisation of the grid.

Within buildings, the major drivers for emissions reductions are domestic and non-domestic retrofit, as the level of new build is low and governed by Building Regulations. The potential to achieve emissions reductions is affected by a number of issues including:

- Technical and commercial constraints
- Education and awareness,
- Delivery and finance mechanisms
- The performance gap between design and reality
- Behavioural aspects, and
- Issues of perception.

Within infrastructure, operational emissions for water, waste and street lighting are expected to remain stable or decline slightly. Major planned infrastructure development will result in increases in capital carbon emissions, indicating that this may be an area to target with new interventions to develop carbon reduction, e.g. through innovation in materials, design and construction processes.

What will we be doing next?

Activity will initially concentrate on completing the Routemap by Spring 2013, with the focus moving from the data model to development of a visual user interface which will allow the user to interact with the model and run different scenarios.

The Routemap will display information about the interventions (including qualitative interventions as well as the quantitative ones considered in the data model) such as their timing and duration, relationships and interdependencies, owner, sector segments affected, and contribution to the carbon reduction trajectory. A significant challenge will be to permit both high level observation and detailed interrogation, suitable for a broad range of stakeholders.

Following delivery of the Routemap, the Green Construction Board will be:

- Using the Routemap to inform ongoing and future strategy;
- Promoting it to external stakeholders to ensure coordination with individual sector strategies; and
- Considering options for the ongoing maintenance and future updating of the Routemap to ensure it remains the central framework for action on carbon reduction in the built environment.
Figure 1  Annual total UK emissions from the built environment (MtCO2e)

Figure 2  Total carbon use, domestic and non-domestic sectors 2010 (MtCO2e)

Figure 3  Total carbon use in non-domestic sectors 2010 (MtCO2e)
8 Demonstrating Reduced Carbon = Reduced Cost

One of the most important issues is demonstrating the economics of low carbon sustainable construction, delivering benefits not costs.

What is the Green Construction Board doing?

The Low Carbon Construction Action Plan recognised that a key issue holding back the greater take up of low carbon construction was the perception that it always comes at a higher price.

The Infrastructure Working Group has been working to demonstrate that if you reduce carbon in infrastructure construction, you also reduce cost and drive other benefits too. The group aims to share the valuable experience of a number of UK infrastructure organisations operating in both the public and private arena who have practical experience of delivering low carbon designs.

What progress has been made?

The group is developing an interactive tool (see over page for the static version) which will illustrate, through a framework and series of case studies, how it is possible to simultaneously deliver:

- A contribution to climate change mitigation;
- Reduced use of resources;
- Lower embodied carbon and capital cost;
- Lower operational carbon and running costs; and
- Increased UK competitive advantage.

The tool also identifies the key stakeholders in the infrastructure arena and sets out a series of concepts and enablers under the key themes of:

- Goals, Aspirations and Leadership
- Communication and Buy-in
- Baseline Targets and Measurement
- Asset Standards and Innovation
- Commercial Solutions
- Process Governance

The group has developed over 20 case studies that form part of the tool and bring to life the concepts and enablers required in delivering low carbon designs. This tool will allow people to interrogate the case studies which will underpin the tool and quickly get to those issues which are of most interest / relevance to them. The tool will shortly be published on the Green Construction Board online platform.

What will we be doing next?

The group is appointing an experienced secondee to support in delivering a ‘Low Carbon Infrastructure Report‘ by the summer of 2013. The report will build on the interactive tool and replicate the success of the Infrastructure-UK cost review.
9 Overcoming Complexity

The issue of complexity comes up time and time again when discussing sustainability in general and the carbon reduction programme in particular. This is due to the large number of stakeholders, across the building lifecycle and supply chain, and the large number of different supply and demand-side drivers that have to be engaged.

What is the Green Construction Board doing?

Maximising operational efficiency - Tackling the ‘performance gap’

There has been a lot of work on energy efficiency standards. Much less work has been done on how buildings operate in practice, whether energy efficient systems and controls operate (and are used by their occupants) as intended, and whether the buildings deliver the energy efficiency performance that is claimed. Indeed, there is evidence that they do not.

The challenge is to shift focus to the actual (measured) performance of buildings in operation. Firstly, to look at actual measured energy use of buildings in operation based on regular reporting of energy performance and second, to take account of these results in future building design and construction.

Low carbon existing homes

There are a number of government initiatives to stimulate the refurbishment market for energy efficiency in the domestic sector including: the Green Deal; Feed-in Tariffs (FITs); Renewable Heat Incentive (RHI); Carbon Emissions Reduction Target (CERT); Energy Company Obligation (ECO); Part L of the Building Regulations and the potential for minimum energy standards for the private rental sector from 2018. There is also a significant and growing industry focused on the opportunity of improving the energy efficiency of tens of millions of existing homes. However, it is perceived that we are lacking a clear over-arching strategy to provide a compelling policy and regulatory trajectory, clear targets, practical support, incentives and guidance to create the conditions in which an efficient refurbishment sector can flourish.

There is a role to be played at the interface of government policy and industry practice, to provide these missing elements, and develop integration and collaboration, to enable a wide-scale take up of domestic refurbishment. This will contribute to achieving a significant reduction in energy demand and the UK carbon reduction targets, and will create new construction sector activity lead to new UK jobs and economic growth. Additionally, there is a large export
potential for UK design, engineering and construction companies as other countries also face such a refurbishment challenge.

Taking this work forward will achieve the following outcomes:

- Understanding the nature and extent of the “performance gap” and the case for action.
- Assessing what specific actions might help address this issue.
- Understanding of the current landscape and practices that could be learnt from in the process.
- A deeper understanding of whether a co-ordination and delivery support mechanism for the refurbishment sector is required and whether it could facilitate the necessary collaboration to remove outstanding barriers to delivery.

**What progress has been made?**

An initial scoping exercise is underway to clearly understand if a delivery support mechanism for the refurbishment sector is required and also a scoping study is about to commence on understanding how best to understand and tackle the ‘performance gap’, in non-domestic buildings.

**What will we be doing next?**

The findings of the two scoping studies will be released in Spring 2013 with confirmed next steps. These two initiatives have the potential to help unlock the complexity of implementing actions to improve energy efficiency across the UK’s buildings stock, which is paramount to the delivery of the UK’s carbon targets and growth opportunities.

In early 2013, the Board will review progress across the buildings sector more widely to determine what other interventions may be necessary or desirable to complement existing activity and catalyse faster progress towards low-carbon growth.
10 Measuring Progress

If we are to make real progress on carbon and resource efficiency, we need to be able to measure the progress we are making. The means of achieving purposeful progress on carbon and resource efficiency is conditional on the development of methodologies and tools which can be adopted across the industry and targets which have broad support.

What is the Green Construction Board doing?

The work of the joint industry-Government Strategy for Sustainable Construction has significantly informed the work of the Green Construction Board. The Green Construction Board has also adopted the work under the Sustainable Construction Task Group (SCTG) of the Strategic Forum for Construction and the work in delivering the Strategy targets and objectives; relating to:

- Carbon
- Water
- Waste
- Materials
- Biodiversity

The established targets to 2012 aim to achieve the following outcomes:

- Carbon: 15% reduction in carbon emissions from construction processes and associated transport compared to 2008
- Water: Reducing water usage on construction sites by 20% by 2012 compared to 2008
- Waste: Halving construction, demolition & excavation (CD&E) waste to landfill by 50% compared to a 2008 baseline
- Responsible Sourcing: 25% of products used in construction projects to be from schemes recognised for responsible sourcing
- Biodiversity: All construction projects over £1 million to have biodiversity surveys undertaken and actions plans prepared

Two further work streams have been developed:

- Measurement: To provide clear guidance on the measurement of whole life carbon (i.e. the measurement systems for assessing carbon at each stage of the construction process from manufacture through the construction process, in operation and at end of life) and the tools for utilising this information
Accreditation Scheme: To understand the need for developing an Accreditation Scheme looking at the capability to deliver environmental management outcomes

What progress has been made?

Carbon

Two strands of work are being looked at in-depth:
- Reduction of carbon emissions on construction sites
- Embodied carbon - Improving the understanding of the term, its measurement and improving access to available datasets.

Water

Our stewardship of water resources is increasingly important, as both water scarcity and flooding become more frequent.

Two strands of work are being carried out:
- Improving efficiency of water usage on construction sites
- Embodied water - improving the understanding of the term, its measurement and availability of datasets.

Waste

Reducing waste and improving resource efficiency are very important for reducing carbon emissions in construction, as well as having their own drivers of the Waste Framework Directive and the increasing unavailability and cost of landfill. The European Commission has also highlighted resource efficiency as one of the Flagship Initiatives of its Europe 2020 Strategy and the EU Resource Efficiency Roadmap was published in Autumn 2011.

Several strands of work are being undertaken in detail:
- Reducing by half Construction, Demolition & Excavation (CD&E) waste to landfill.
- Material sector resource efficiency action plans. These represent responsibility within industry and provide a focal point for industry collaboration throughout the supply chain. Plans exist for plasterboard, windows, flooring, joinery, insulation, ceilings, with other materials sectors beginning to adopt the process. Plans are being taken forward through Sustainability Partnerships, supported where necessary by WRAP.
- Work with demolition contractors.

Materials

Several strands of work are being pursued:
- The Material sector resource efficiency action plans mentioned above under ‘Waste’.
• Embodied impacts of construction products - Improving the understanding of the impact of the manufacture of construction products from raw material extraction through manufacture and use through to end of life disposal. Highlighting the emerging European standards for assessing the embodied impacts of construction products (CEN/TC 350).

• Responsible sourcing – adoption of standards in the industry.

Biodiversity

Biodiversity remains an important issue with an increasing array of advice and guidance becoming available. Although a greater understanding exists on what needs to be done to conserve and improve biodiversity (through advice and guidance); more work is needed on how best to ensure implementation on construction sites.

Measurement:

A subgroup has been set up consisting of leading experts in the whole life cycle approach to carbon measurement, with the following aims:

• To reduce confusion in the use of the language for describing the measurement of carbon at the different stages of the construction life cycle; clarity and consistency is required.

• To advise on the appropriate measurement methodologies to be used to measure carbon at the different stages of the construction life cycle.

• To assist the industry and government in identifying “What Good Looks Like”.

As a first step in their work, it was agreed a ‘lexicon’ was required of the different terms relating to ‘low carbon’. This would provide clarity, and hopefully consistency, and reduce confusion across the industry and government in the use of the language to describe the measurement of carbon at the different stages of the construction life cycle. This work is being taken forward and it will be released in Spring 2013.

Accreditation Scheme:

A survey has been developed and sent to industry groups for feedback. The results are currently being reviewed.

What will we be doing next?

The Sustainable Construction Strategy targets were focused on 2012, but the work streams and projects that have emerged and are on-going have already started to look beyond 2012. This work including the establishment of new targets beyond 2013 will be a key activity of the Green Construction Board and the new targets will be announced next year.
11 Market Levers & Incentivisation

What will turn the challenge of green construction into business opportunity is the confidence that there will be a market for those goods and services.

“The market is absolutely key to driving change in this sector for both domestic and commercial buildings; we are working to link the policy makers more closely with the valuation community to ensure the right incentives are in place as well as deepen the understanding of the valuation process and business benefits of sustainability across government and industry.”

Bill Hughes, Managing Director, Legal and General Property

What is the Green Construction Board doing?

The Green Construction Board is focusing on what drives demand for green buildings and hence their value. Separate work streams have been established to look at value and demand in the domestic and non-domestic sectors.

Each are working to develop:

- A clearer understanding amongst policy makers of how valuation processes work within the market and what are the key drivers of property value.
- A clearer understanding what drives and influences demand at the different stages of the property lifecycle.

A better understanding of these processes would allow more effective targeting of incentives and penalties. One of the key challenges of any collaboration between sectors is the development of a clear understanding of the workings of each and the maintenance of that understanding through the inevitable staff changes that occur over time.

The Green Construction Board has developed:

- A workstream on valuation:

The workstream on valuation is working with policy officials to develop a resource that will enable any policy official working on environmental policies destined to impact on the property markets to understand how value and demand works within those markets and thus design policy more effectively. A series of papers have been drafted setting out the key functions of the
valuer and valuation process. A workshop has been held with policy officials to raise their awareness of the issues, gauge their requirements and gain their feedback as to the most effective format for such a resource.

- A work stream on demand:

Value is of course dependent upon demand. The demand workstream is therefore investigating what drives and influences demand for property with a view to identifying the points at which specific interventions would work to generate demand for more sustainable over less sustainable buildings.

This will support the development of recommendations for policies that work with the market to generate demand for more sustainable buildings. It is this demand from an engaged, and largely private sector market, that will provide the catalyst for economic growth in the sector. Stronger private sector demand is key and relies upon policies that tap into private sector business drivers.

In doing so, it has the following outcomes in mind:

- Establishing key stakeholder relationships and functions that influence decision-making through the property lifecycle.
- Identifying the most effective drivers of demand for more sustainable property from those stakeholders.
- Identifying the intervention points through the property lifecycle where those demand drivers can be most effectively applied.

What progress has been made?

- Valuation - The Group has developed papers on the valuation processes for domestic and non-domestic buildings to bring greater clarity of understanding to this area specifically for policy-makers. To this end it has held a workshop with officials from DECC, DCLG, BIS, Cabinet Office and Defra.
- Demand - The group is considering the perspective of lenders on the issues surrounding sustainability and environmental credentials of both domestic and non-domestic property. It has prepared and is refining a discussion paper on the refurbishment incentives and mechanisms for the domestic and non-domestic property sectors.

What will we be doing next?

- Developing a map of the real estate life cycle showing the critical decision points, stakeholders and existing policies, revealing the most effective policy intervention points.
- Analysing existing policy interventions to identify which forms of policy are most effective in engaging the domestic sector. A similar project is
being carried out for the non-domestic real estate sector to assess the efficacy of energy and carbon incentives and penalties.

- Providing important data on the potential market response to minimum energy performance standards for commercial property.
12 Capacity & Skills

Making the most of the opportunities of green construction requires significant change in construction practices. All areas will be affected, from the design and planning of new buildings and infrastructure to materials, products and processes through the whole life of the built asset. New practices and technologies require the development of new capacity and skills.

“Effective collaboration across the industry and collaboration between the industry and Government is the key to the Board’s success. Nowhere is this more apparent than in the use of knowledge and performance data to inform both business decisions and policy direction.”

Lynne Sullivan OBE, RIBA, Partner, sustainableBYdesign LLP

What is the Green Construction Board doing?

The Green Construction Board is developing:

- A strategy to ensure that people are equipped with the knowledge and skills to procure, design, construct, manage and maintain buildings in a sustainable way; and
- A knowledge capture and dissemination process.

In doing so, it has the following outcomes in mind:

- To achieve a common, whole industry understanding of the scale of the knowledge and skills challenge.
- To provide the education and training sectors with a clear understanding of the learning and training gap to be filled.
- To provide standard protocols and definitions/metrics/themes for data collection.
- To ensure knowledge from building and infrastructure projects is routinely developed and disseminated to help facilitate a culture where feedback on performance is routine and the lessons are taken into account in future building design.
What progress has been made?

Knowledge, capacity and skills is a cross-cutting theme, reaching into every aspect of the work of the Green Construction Board. Work so far has concentrated on the identification of a number of priority issues. The areas where we need to do more are:

- the knowledge, skills and behaviours that individuals should demonstrate are not fully defined and the scale of the education and training challenge is not fully understood;
- the need for a common language that defines a sustainable built environment;
- there is a lack of robust metrics for green construction;
- there needs to be a clear and commonly used performance feedback loop or set of protocols to learn from what has been built;
- knowledge and learning provision is disparate and it can be unclear where to go for advice;
- large sections of the construction industry are outside formal or informal learning networks;
- there is a lack of consistency in the quality of new training provision and insufficient people to deliver the required training; and
- a review of data protection issues is required to improve data collection opportunities for knowledge generation.

What will we be doing next?

Having identified the broad nature of the challenge, the Green Construction Board will focus on the following priority actions over the coming months.

- Mapping the scope of the education and training challenge in terms of required capability, scale, establishing the effectiveness of current structures and preparing recommendations to address findings.
- Developing and documenting a common language including a glossary of terms, performance metrics and data collection protocols.
- Developing recommendations to improve the learning from knowledge capture and dissemination across the sector.

The diagram overleaf illustrates work in progress and provides a starting point to discussion regarding data provision and knowledge acquisition. It will be further developed by the Knowledge & Skills Working Group, in collaboration with key parties to capture current initiatives in this space.
13 Communication, Commitment & Engagement

The transition to a low carbon resource efficient economy is a global environmental and economic imperative. It represents a huge economic opportunity for the UK internationally.

What is the Green Construction Board doing?

- Developing simple and clear case studies that capture our key messages;
- Promoting UK excellence in green construction overseas;
- Setting up a ‘Project Focus’ to track ongoing projects that demonstrate the case for green construction; and
- Supporting the Prime Minister's Better Public Buildings Award to ensure that we recognise excellence and learn lessons from exemplar projects.

This will achieve the following outcomes:

- Gaining industry-wide buy in for the green agenda, particularly focusing on SMEs;
- Capturing best practice so that key lessons are learned;
- Ensuring excellence is recognised both within and outside the industry, and both within and outside the UK;
- Raising awareness of green construction's potential to act as an agent for growth and innovation.

What progress has been made?

The Green Construction Board’s programme of communication and engagement targets all sections of the industry and encapsulates the Board’s various work strands. Progress has been made in the following areas:

- Produced case studies for infrastructure projects, demonstrating that reducing embodied carbon can go hand in hand with cost reduction;
- Identified seven projects that will be used as ‘exemplar projects’ in a ‘Project Focus’ exercise initiated to help show the values of the Board;
three infrastructure and four building projects – the Green Construction Board will seek to form a supportive relationship with these projects to facilitate learning and best practice;

Engaged with the organisers of the British Construction Industry Awards (the Prime Minister's Better Public Building Award) to ensure excellence in green construction is properly recognised and that the green achievements of those projects are more widely communicated;

Worked with UK Trade and Investment to facilitate Green Construction Board representation at events in Hungary and Poland promoting UK capability;

In engaging with SMEs which requires an approach that recognises the different pressures they face.

What will we be doing next?

Key vehicles for promoting green construction have now been identified. The next twelve months will see the Green Construction Board further develop its promotional tools and continue working closely with a number of partners. In particular, it will:

Widening the scope of case studies to include a wider range of buildings;

Drive forward the ‘Project Focus’ exercise to disseminate the knowledge gained from successful projects and provide expert assistance if required;

Use the Prime Minister's Award judging process to generate further high quality case studies;

Facilitate further Green Construction Board representation at overseas events, with an event in Portugal already confirmed;

Continue SME engagement; and

Ensure successful Green Construction Board presence at key upcoming events, including Ecobuild 2013 and the Government Construction Summit in July 2013.
Annex 1  Green Construction Board Members

Board Members:

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<tr>
<th>Industry representatives:</th>
<th>Government representatives:</th>
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<tbody>
<tr>
<td>• Mike Putnam, Skanska (Co-chair)</td>
<td>• Rt. Hon Michael Fallon MP, Minister of State for Business &amp; Enterprise, BIS (Co-chair)</td>
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<tr>
<td>• Bill Bolsover CBE, Aggregate Industries</td>
<td>• Paul Morrell / Peter Hansford Government Chief Construction Adviser BIS</td>
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<td>• Robert Care, Arup Group</td>
<td>• Peter Schofield, DCLG</td>
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<td>• Mark Clare, Barratt Developments</td>
<td>• Geoffrey Spence, HMT – IUK</td>
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<td>• Andrew Gould, Jones Lang LaSalle</td>
<td>• Neil Thornton, DEFRA</td>
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<td>• Chris Hopkins, Ploughcroft Building Services</td>
<td>• Paul Hollinshead - Department of Energy and Climate Change</td>
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<td>• Bill Hughes, Legal &amp; General Property</td>
<td>• Juliet Mountford, Cabinet Office</td>
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<td>• Peter Maskell, Philips Electronics UK</td>
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<td>• Mark Oliver, H+H UK Limited</td>
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<td>• Sunand Prasad, Penoyre &amp; Prasad LP</td>
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<td>• James Wates, Wates</td>
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<td>• Steve Wignall - Crown House Technology</td>
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Workstreams:

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<tr>
<th>Workstream</th>
<th>Board Sponsor</th>
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<tr>
<td>1 Routemap</td>
<td>Paul Morrell</td>
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<td>2 Buildings</td>
<td>Sunand Prasad</td>
<td>Paul King, UK-Green Building Council</td>
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<td>Phil Wynn-Owen</td>
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<td>3 Infrastructure</td>
<td>Chris Newsome</td>
<td>Chris Newsome, Anglian Water</td>
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<td>4 Knowledge &amp;</td>
<td>Lynne Sullivan</td>
<td>Robert Lambe, Willmott Dixon</td>
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<td>5 Greening the</td>
<td>Bill Bolsover</td>
<td>Robert Pearce, M&amp;S</td>
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<td>Industry</td>
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|   | Valuation & Demand | Bill Hughes  
Andrew Gould | Louise Ellison, Quintain |
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<td>7</td>
<td>Promotion</td>
<td>James Wates</td>
<td>Colin Courtney</td>
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|   | Secretariat       | Tony Mulcahy (BIS)  
Janet Kidner (Lend Lease)  
Graham Watts & Andrew Link - CIC | |

During the course of the year, membership of the Green Construction Board has changed and there have been a number of replacements. We would like to thank our original co-Chairs, Dan Labbad and Mark Prisk for their efforts in establishing the Board and its ambitious programme of work, and John Moore (Balfour Beatty), Paul Morrell (formerly the Government Chief Construction Adviser), Phil Wynn-Owen (DECC) and William Jordan (Cabinet Office – Efficiency and Reform Group) for their valuable support and wise counsel. Furthermore, we would like to thank George Martin (Coventry University) who was the original Chair of the Knowledge & Skills Working Group and also to the 2050 Group for their on-going collaboration.
To find out more about the work of the Green Construction Board, please visit www.greenconstructionboard.org