Low carbon skills requirements for the regeneration and built environment professional services sector in Wales

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For the Centre for Regeneration Excellence Wales (CREW) and Construction Skills Wales

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A. Foreword

1. This research project is funded through the Centre for Regeneration Excellence Wales (CREW) and Construction Skills Wales (CSW). The Department of Children, Education, Lifelong Learning and Skills (DCELLS) currently provides funding to CREW to support its delivery of skills priorities associated with its Business Plan. This research report is part funded through this funding route, in conjunction with CSW.

2. Centre for Regeneration Excellence Wales.

2.1 CREW was established in November 2009, following the approval a proposal by a Welsh Assembly Government Task and Finish Group in October 2008. The Centre performs a number of roles; strategic, in terms of operating throughout Wales; coordination and facilitation, in terms of ensuring effective collaborative and partnership working within and between sectors; commissioning, in terms of developing a body of expertise and a sound evidence base; policy, in terms of independently influencing the sustainable regeneration policy agenda in Wales; and delivery, in terms of filling gaps in provision and undertaking relevant research and development.

2.2 The prescribed functions of the Centre in relation to the Welsh sustainable regeneration agenda are: training, education and skills development; the establishment of a national base for comprehensive and rigorous research; the facilitation of exchange of experience and excellence in Welsh and international practice; and the provision of a base for effective and genuine partnership.

3. Construction Skills Wales and Sector Skills Councils

3.1 Sector Skills Councils (SSCs) are independent, employer-led, UK-wide organisations designed to build a skills system that is driven by employer demand. They all work towards the following four key goals:
- Reduced skills gaps and shortages
- Improved productivity, business and public service performance
- Increased opportunities to boost the skills and productivity of everyone in the sector’s workforce
- Improved learning supply through National Occupational Standards, apprenticeships, and further and higher education.

3.2 SSCs have built strong working relationships with the UK Government and the devolved administrations, training providers, bodies which fund training and other important skills stakeholders. They have played a leading role on a range of skills issues, including:
- Working with employers to identify future skills needs
- Developing skills and training solutions
- Setting occupational standards
- Influencing and shaping the future development of qualifications
3.3 Construction Skills Wales (CSW) is the Sector Skills Council and Industry Training Board for the construction industry in Wales, working with industry, for industry to deliver a safe, professional and fully qualified construction workforce. It works with construction companies to help them improve skills, increase their competitive edge and respond to the many challenges employers face – from the low carbon agenda, through to reducing costs on-site and recruiting the best and brightest talent for their sector.

3.4 CSW have also been party to the development of a Built Environment cluster of partner SSCs (Asset Skills, Summit Skills and Energy & Utility Skills), which in Wales have been serviced by the Welsh Built Environment Forum.

3.5 Although it is noted that the Welsh Assembly Government is now the Welsh Government where reference is made to publications by the previous Government the term ‘Assembly’ is still used.

B. Introduction

1.1 Both the Centre for Regeneration Excellence in Wales (CREW) and Construction Skills Wales, through its Professional Services Sector Group, consider that there is an urgent need to clarify both the key low carbon skills gaps that currently exist in the professional services sector in Wales; and future drivers that may further influence such gaps. The focus is on those professionals working in sustainable regeneration, construction and the built environment, and the deficiency in the low carbon skill sets will need to be addressed for both existing and future practitioners.

1.2 Before commencing the research project, consideration has been given to the skill set(s) that will be covered. The concept of “green skills” is extremely broad, and relates to all activities within the green economy sector. This could include those dealing with all aspects of environmental improvement, protection and management, embracing, for example, ‘green’ tourism, National Park / AONB management etc. It was considered that this agenda was far too broad in respect of the professional services serving the regeneration, construction and built environment sectors in Wales.

1.3 For the purposes of this project, therefore, the focus of the research is on ‘low carbon skills’. These comprise the skills and knowledge that support the planning, design and construction of new buildings and the refurbishment, redevelopment, management, use and ultimately disposal of existing buildings, which have the lowest possible carbon dioxide emissions taking account of relevant constraints and regulatory requirements. These also comprise the planning, design and provision of essential building infrastructure.
to achieve the lowest possible carbon dioxide emissions, taking account of relevant constraints and regulatory requirements. In particular, the latter will include the energy and transport sectors.

1.4 The broad outline of the work to be undertaken is as follows:

i. A review of competencies required to deliver the low carbon agenda in Wales and a review of the current level of such competencies within the professional services sector. This work will complement work being undertaken by Sector Skills Councils to review the National Occupational Standards to better embrace low carbon skills and also the Functional Mapping being undertaken by the Built Environment Skills Alliance (BESA). It will also aim to inform the work of the Welsh School of Architecture’s Built Environment Sustainability Training (BEST) project in regard to the professional services sector; and relate to the work of the Low Carbon Research Institute, which has also been established with the WSA.

ii. Clarify the existing provision of generic low carbon skills training in Wales, embracing accredited, non-accredited and Continuing Professional Development provision, for professional services practitioners. This will need to embrace training provided by the public and private sectors (including FE and HE); and the professional institutions. Much of this information is already available in existing reports or accessible databases. Taking account of the functional mapping work being undertaken by BESA, this work will also consider the level to which low carbon skills are embedded within entry-level qualifications into the professions, particularly those at degree level.

iii. Clarify the demand for training in this skills set for professional services employers in the private, public and ‘third’ sectors. This will need to embrace the expressed needs of large institutions / companies, SMEs, consultancies and the third sector, in particular social enterprises.

iv. Identify specific areas of training needs / demand within the broad scope of this generic skills set. In this context it will be necessary to identify the scale and nature of the need and demand (especially the need for different levels of accreditation). Consideration would also be given to the need for SSC accreditation.

v. Identify potential training deliverers and means of delivery (e.g. direct tuition / mentoring; e-learning etc.). A combination of deliverers and means of delivery may be required.

vi. Develop in partnership with selected providers a draft pilot generic low carbon skills training project capable of delivery commencing before the end of 2011. The focus should be on those low carbon skills for which there is a clear deficiency and also a clear demand. This will be aligned with SSC and national frameworks.
vii. It is important that this research project complements the Low Carbon Skills for the Built Environment in Wales initiative, currently being taken forward by the Built Environment Sector Skills Council’s Group (BE SSC), which is focused on trade and technical levels of competence. The work will also take account of the Functional Mapping work being undertaken by BESA and will seek to complement the BEST project. By achieving a high level of complementarity, the establishment of a “pathway” of skills development from basic to professional, as envisaged in section 5 ‘Broadening & Deepening the Skills Base’ of WAG’s Economic Renewal document, can be achieved for low carbon / green skills. The project will also seek to complement the work undertaken in England by the Department for Business Innovation and Skills and the Department of Energy and Climate Change in their recent research ‘Meeting the Low Carbon Skills Challenge’.

1.5 In very broad terms, the work programme to be undertaken comprises:

i. Phase 1:
   • Ensuring complementarity with other research based activities in Wales that are focused on the low carbon / green skills agenda.
   • Desk based review of relevant research undertaken in Wales and the UK to date.
   • Review of relevant courses and training available to Welsh professional services sector practitioners.
   • Interaction with practitioners, employers and training providers within, or serving, the sector: Contact will be made with existing networks, and information will be collected through interviews, forum meetings and / or an on-line questionnaire survey.
   • The preparation of a report presenting findings from the research; and setting out a draft training framework for pilot delivery.

   Phase 1 is funded by RSCW & CSW and should be completed by the end of financial year 2010/2011 and published early in 2011/12.

ii. Phase 2:
   • The management and co-ordination of the delivery of pilot training to address skills gaps identified and in accordance with the agreed framework.
   • Evaluation of pilot training.
   • Submission of the final training framework.

   It is proposed that Phase 2 be completed by the end of the calendar year 2011, once funding has been confirmed.

   Phases 1 & 2 are commissioned through the joint clients (CREW & CSW). Phase 3, below, will have to be commissioned separately.

iii. Phase 3: Roll out of training framework, from the beginning of 2012.
C. Interaction with research / project support based activities in Wales

1. Low Carbon Skills for the Built Environment in Wales: A Sector Skills Priority Fund Project

i. This project is promoted by four of the Sector Skills Councils (SSCs) in Wales (Asset Skills; Construction Skills; Energy & Utility Skills; and Summit Skills). The project has established a funding package for pilot training, capacity building and skills development, which will support the stimulation and growth of a low carbon built environment workforce in Wales.

ii. The Sector Priorities Fund Pilot Programme will target support to employed individuals, over the age of 16, with associated training delivery providing progression from Level 1 upwards to Levels 2 and/or 3 and Level 4, where training is of a technical or craft nature. Such training delivery will preclude any support for Management and Leadership orientated provision or Basic Skills.

iii. Before the end of 2011, it is proposed that the project will deliver pilot accredited training across Wales in a range of craft and technical disciplines, supported by the ‘Training the Trainers’ programme for college tutors, assessors and Work Based Learning providers in Wales.

iv. The project builds on the low carbon cluster work conducted by the sector Skills Councils for the UK Commission for Employment and Skills (UKCES), to provide the evidence base to enable the Welsh Assembly Government to prioritise funding within the Sector Priorities fund towards supporting the low carbon agenda.

v. Meetings with the Co-ordinator for this project, Richard Bayliss, Future Skills Unit Project Manager (Wales), Construction Skills, has established a basis for providing an interface between the skills levels and associated pilot training programmes proposed, and the low carbon training and qualification needs of the professional services sector in Wales. Indeed, there appear to be points of transition and progression from the Levels 3 and 4 accommodated within this project to Foundation degree levels relating to the professional services sector. These interfaces will be explored.

vi. Within the context of the ‘Low Carbon Skills for the Built Environment in Wales’ project, a series of ‘Learning Projects’ will be incorporated, each of which will adopt a specific theme focused on future skills needs. Two ‘Learning Projects’ are proposed for:

- The elucidation of skills and productivity issues associated with the delivery of social housing retrofit as part of the ARBED housing retrofit project in Wales; and
- New build skills interfaces between traditional construction, modern methods and offsite.
• Both of these ‘Learning Projects’ have potential for incorporating an examination of the professional service sector low carbon skills that are needed to facilitate the implementation and realisation of these activities.

An initial project meeting held in relation to the ARBED ‘Learning Project’ was held in March 2011, and over and above training relating to basic & traditional low carbon construction skills, the need for specific training for the professional services sector was identified as a priority.

2. The Built Environment Sustainability Training (BEST) Project

i. The Welsh School of Architecture is leading the BEST Project, which is derived from a series of successful collaborative training projects funded through the Knowledge Exploitation Fund (KEF) by WEFO. KEF was previously established under the Objective 1 E.S.F. Structural Fund programme, elements of which have now been taken forward by the Welsh Assembly Government as part of the Academia for Business (A4B) programme. The project has been prepared to respond directly to the current, continuing and expanding need for new skills in the built environment and energy sectors in Wales. It is one of the stated objectives of the project managers to work with existing and emerging projects to fill gaps in relevant training and education provision. Initial discussions with the project confirm their willingness to work collaboratively with the CREW / ConstructionSkills research project. The Business Plan for BEST is currently being considered by WEFO for current programme ESF support, and therefore details of the project proposals may be subject to change.

ii. The BEST Project aims to:

• To develop and deliver a strategic framework for education and training in the built environment in Wales supporting the ambition of the Welsh Assembly Government to move towards a Sustainable and Zero Carbon Built Environment.

• The project will develop, pilot and deliver a framework and resources to ensure the development of a thorough, coordinated and professional training and education programme to support industry, academia and entrepreneurs to develop a first class low carbon economy in Wales.

• This project will ensure knowledge transfer of academic innovation to Welsh SMEs, entrepreneurs and existing business.
iii. More than fifty individual stakeholders have provided written support for the project, representing seventeen employer / employer representative organisations (including Sector Skills Councils); four National Networks; six Higher Education Institutions; and thirteen Further Education & Private Training Providers.

iv. It is anticipated that the Project Programme will commence in January 2011, with the roll out of training programmes during the early part of 2012. Programme completion is anticipated during late 2015.

v. There is clearly an opportunity to link the work programme of the professional services research project with the timescale of the delivery of training initiatives associated with the best project, and these will be explored over up until the end on 2011.

3. The Low Carbon Research Institute (LCRI)
   i. The Low Carbon Research Institute has been established to unite and promote the diverse range of energy research in Wales, UK in order to deliver a low carbon future.
The LCRI aims to support the whole energy sector, UK and globally, in developing low carbon generation, storage, distribution and end use technologies.

ii. The LCRI comprises staff from Welsh School of Architecture (lead body) & the Cardiff School of Engineering, Cardiff university; the Sustainable Environment Research Centre, University of Glamorgan; the School of Engineering, University of Swansea; the School of Chemistry, University of Bangor; the Centre for Solar Energy Research, Glyndwr University; and the Institute of Biological, Environmental & Rural Sciences, Aberystwyth University. This group of partners is not considered exclusive and actively seeks to extend its membership through collaborative research programmes with other high quality research groups.

iii. Over £5.1 million has been received from the Higher Education Funding Council for Wales (HEFCW) under the Reconfiguration and Collaboration Fund to develop the LCRI for 5 years from April 2008. This funding is to establish a multi-centre, multi-disciplinary research collaboration, which is:

- Recognised internationally as a research institute promoting excellence in research and contributing to the future direction of energy research and strategic thinking;
- Recognised by, and interacts with, other international centres of excellence;
- A regional partner to UK government energy research initiatives such as the UK Energy Research Centre;
- To provide independent authoritative advice to the Government in respect of its energy policy and related issues;
- To encourage and guide interdisciplinary collaborative research, development and technology transfer via integrated programmes of work;
- To contribute to the national and international economy through the application of low carbon research in industry, government, and at an individual level;
- To develop partnerships among University researchers and end users in industry and government;
- To develop capacity and facilities around the existing areas of low carbon and energy expertise in Wales whilst expanding research activities into other energy related areas.

iv. The Low Carbon Research Institute (LCRI) has also secured £34M, over the next three years, from the Welsh European Funding Office (WEFO). Part of the European Research Development Fund (ERDF’s) Convergence and Regional Competitiveness and Employment programmes, the cash injection will enable Wales and Welsh Universities, through the LCRI and its industry partners, to lead the way in the development of new research to cut carbon emissions. The funding will provide a strategic, coordinated approach for interdisciplinary industrial energy research in Wales; and provide a research base for the energy sector industries to help them
deliver government targets for reducing carbon dioxide emissions and enable these industries to compete on an international stage.

v. In terms of research activities, the LCRI is carrying out research, education and training around four main themes of low carbon:

- Theme 1: Low Carbon energy generation, storage and distribution, embracing four research priorities (photovoltaics; hydrogen energy systems; marine energy; and bio-energy);
- Theme 2: Carbon reduction and energy efficiency (embracing two research priorities (low / zero carbon built environment; and large-scale power generation);
- Theme 3: Energy Graduate School;
- Theme 4: Dissemination and Partnerships with industry, research and government.

vi. The LCRI is involved in delivering a range of events and exhibitions. In November 2010 it held a “Challenges of the Low Carbon Revolution” Conference. The programme covered the Built Environment, Large Scale Power Generation, Photovoltaics, Hydrogen, Marine energy and Bio-energy.

vii. A meeting with the Chair of the LCRI Steering Committee, Professor Phil Jones, has confirmed a willingness to work with the professional services research project, particularly in respect of an exchange of information; and in terms of feeding into the related ‘Delivering Low Carbon Buildings Cymru’ Project outlined below.


i. This project is supported through the Welsh Assembly Government’s Academic Expertise for Business (A4B) initiative, which is a six-year £70m EU Structural Fund programme of support aimed at unlocking the commercial potential of Wales’ Higher and Further Education Institutions.

ii. The aim of the DLCB Cymru Project is to equip the Welsh construction industry with the best research based knowledge and skills on designing, costing and delivering low / zero carbon buildings; and achieve government targets for reductions in CO2 emissions. This includes Welsh Assembly Government (WAG) aspirations for ‘low carbon’ new build from 2011; and CO2 reductions in existing buildings to help meet the overall target of 3% CO2 reductions per annum from 2011 in those areas of Welsh Government competence. The wider research base will also address the wider aspects of sustainability relating to material use, waste arisings, water use and socio-economic factors.

iii. Through this project, the Centre for Research in the Built Environment (CRiBE) aims to disseminate its research based knowledge on low carbon building designs to the Welsh construction industry through a variety of knowledge transfer methods
including outreach events, strategic consultations, preparing case studies and detailed best practice examples. Project deliverables include: reports, guidance notes, concept designs, case studies, best practice guides, information papers and podcasts. The material produced will be made available to industry through a variety of existing dissemination routes, including the newly developed WAG sustainable building portal. These activities will consider new buildings, existing buildings and the wider urban scale perspective.

iv. The Project aims are to:

- Review and application of advanced computer modelling: Through this project we will review all of the existing building modelling techniques and evaluate their application and routes for industry to access this technology in light of changing industry needs.

- Analysis of innovative design solutions: In relation to new buildings, CRiBE will develop with industry a range of concept design solutions for different new build types to inform early design decisions, where most information is needed.

- Investigation into the costing of low carbon buildings designs: The project will work with the construction industry, in particular architects and quantity surveyors, to investigate cost implications of low carbon design solutions and to provide guidelines on how the costing methodology could be best undertaken.

- To assess the in-use performance of low carbon buildings: The project will utilise CRiBE’s experience in monitoring and evaluating the performance of buildings in-use and will undertake work with organisations to assess the in-use performance of their buildings.

- Forward look: The project will raise industry awareness of current horizon areas and longer term future areas that will need to be considered as the field develops and provide ‘early warnings’ to industry and government.

- Disseminate knowledge: The outputs from all of the above work packages will be promoted and made available to contribute to the development of a research led construction industry in Wales. This will include how research can both inform policy and also its application in practice.

**Skills development & dissemination of information**

The DLCB Cymru project delivers skills development through workshop events; and disseminates information through on line podcasts.

i. Workshop programmes

Two Workshop programmes have been held in 2010. The workshop held in the autumn was aimed at working with industry in Wales to help implement WAG policy to reduce carbon dioxide emissions associated with the built environment. These Workshops
have dealt with the Performance and Cost of Zero Carbon Buildings; Environmental Assessment Methods; the devolution of Building Regulations to Wales; and Learning from low carbon building pilot projects.

Initial discussions indicate that there could be scope for collaboration in respect of developing workshop events relevant to the professional services sector practitioners active in sustainable regeneration, construction and the built environment in Wales. Clearly the focus of any workshops would have to relate to low carbon building design.

ii. Podcast presentations

These podcasts, accessed on www.lowcarbocymru.org/case_studies.html, covering a wide range of topics, including Building Compliance; Energy Plus / Low Carbon Built Environment; and a series showing how the project partners are working with industry to develop new components for low carbon buildings.

There is a clear opportunity for the professional services sector research project to create a positive and pro-active link with the DLCB Cymru project, both through future Workshop programmes (perhaps seeking CPD accreditation from professional institutions); and through publicising access to the on line podcast resource. Further discussion is required with the DCLB Cymru project manager during the next two months.

It should be noted that, within the University of Cardiff, there is a strong inter-relationship between the functions of the Low Carbon Research Institute (primarily a base for energy research in Wales); the BEST Project (primarily a base for the development of coordinated and professional training and education programme to support business to develop a first class low carbon economy in Wales); and the Delivering Low Carbon Buildings Cymru Project (primarily focused on the dissemination of its research based knowledge on low carbon building to the Welsh business through a variety of knowledge transfer methods).

5. Heads of the Valleys – Green Skills

i. Within the Heads of the Valleys (Strategic) Regeneration Area, a Green Skills Priorities Working Group has been established, which is seeking to interface the current provision of training by Higher and Further Education providers with the skills needs of employers. Following on from this initial exercise, it is intended to identify skills gaps and the opportunities for developing curriculum in line with regional funding and investment. In addition, future curriculum will also need to anticipate and respond to both current and future job roles.

ii. Four Sub-Groups have been established to look at specific ‘Green Skills’ themes, which are:
• Sustainable Build, which includes sustainable construction and logistics, environmental mitigation, soil and land use, traffic modelling, sustainable design, buildings and regulations, timber engineering, water management, waste conservation and management, low carbon materials, energy audit and EPC.

• Energy Management, which includes renewable energy generation such as solar PV, hydro-electric, wind power, tidal power, micro-generation schemes, biomass, waste to energy, ground source heat pumps, feed-in tariffs, smart metering, Green ICT, carbon capture and storage, energy advice.

• Sustainable Refurbish which has emphasis on retrofit of housing stock and buildings, energy efficiency and insulation measures, cavity wall technologies, heating and boiler systems, energy audit and EPC, fuel poverty schemes, equipment re-use and recycling.

• Green Economy and Professional Skills, which includes green investment and infrastructure, regeneration and economic renewal, support skills and their development, environmental certification, transformational consultancy, green accounting and regulation and other green jobs.

i. Following initial discussions, there appears to be potential in interfacing the work of the HoV Green Skills Priorities Working Group with that of the CREW / ConstructionSkills Wales research, especially within the sub Group area of the Green Economy and Professional Skills.

ii. Working within the context of the Heads of the Valleys, Business in the Community have undertaken a significant amount of work with the business sector in relation to the ‘green skills’ agenda. Much of this has fed into the work of the HoV Green Skills Priorities Group. Liaison with the Skills Priorities Group has been maintained during the preparation of this report, and the potential for developing low carbon skills in relation to the regeneration and built environment professional services sector serving the Heads of the Valleys area is very strong.

6. Leadership and Management Skills Wales

6.1 Introduction

Following preparatory consultation with the Department of Children, Education, Lifelong Learning & Skills (DCELLS), a strong desire was expressed by the Department to cover the generic skills issue of “leadership and management skills” within the context of assessing low carbon skills provision in regeneration and the built environment sectors in Wales.

Leadership & Management Wales (LMW) is a Welsh Assembly Government (WAG) sponsored project is a key initiative in this respect, which aims to improve and enhance leadership and management skills in Wales. LMW undertakes a diverse range of initiatives to promote the theories, methods, and practices associated with the development of managers and leaders.
These initiatives aim to aid businesses meet the challenges they face by continuing and increasing their competitiveness, and, in turn, profitability.

LMW is an integral aspect of the £37m Enhancing Leadership & Management Skills (ELMS) programme that has been funded by the European Social Fund and is managed by the Welsh Assembly Government.

The Enhancing Leadership and Management Skills programme (ELMS) is led by the DCELLS. It is an agenda of related projects contributing towards strategic Leadership and Management improvements in the Welsh economy. The project will work with over 40,000 people and assist around 15,000 enterprises to develop motivated and highly skilled individuals, who can support a prosperous and competitive knowledge economy. The ELMS programme covers the following:

i. The Centre of Excellence for Leadership and Management in Wales

The Centre has the objective of driving up demand for leadership and management skills, particularly in small and medium businesses, delivering enhanced information and signposting services to business and co-ordinating analysis of the need for Leadership and Management from organisations such as Sector Skills Councils.

ii. The Leadership and Management Workshops Programme

The Leadership and Management workshops are a series of open access workshops delivered across Wales by a network of providers. The workshops focus on a range of aspects of management including leadership skills and managing change. The Workshops can be attended by an employer or manager at any level, who are based in Wales. The increased level of funding secured for the workshops will substantially increase the number of people who will benefit from leadership and management skills development. The cost of the workshops are subsidised at 70% for Small to Medium Sized Enterprises (SME) organisations and at 50% for none SMEs.

iii. Workforce Development Programme Discretionary Funding

Discretionary funding support for leadership and management training is a key aspect of the Workforce Development Programme. The aim is to develop businesses by subsidising leadership and management skills training, which has been identified as necessary by a Human Resource Development adviser.

Companies may now also access funding for Leadership and Management directly, provided that the training leads to a Management qualification and/ or the training provider is accredited by a recognised body like the Chartered Management Institute.

iv. Sector Leadership Fund (Leadership and Management Development)

The part of the programme will provide funding to Sector Skills councils to deliver sector specific solutions where a specific need is identified.
v. Management Diagnostic Programme

This will provide a facility to businesses to be able to diagnose the Leadership and Management issues of their organisation.

vi. Mentoring and Coaching Skills Training

A pilot programme to train mentors and coaches will provide an opportunity for individuals to gain skills and achieve a relevant qualification.

6.2 Programme Targets

Between 2009 & 2014 it is anticipated the programme will support 43,080 participants and 16,183 Employers from across Wales by October 2010, the Programme was delivering against these targets as outlined below:

<table>
<thead>
<tr>
<th>Targets</th>
<th>Convergence (West Wales and the Valleys)</th>
<th>Regional Competitiveness &amp; Employment (East Wales)</th>
<th>Progress to October 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total participants</td>
<td>24,605</td>
<td>18,475</td>
<td>992</td>
</tr>
<tr>
<td>Enterprises Supported</td>
<td>9,273</td>
<td>6,910</td>
<td>248</td>
</tr>
</tbody>
</table>

7. Liaison with low carbon related networks in Wales

Throughout the preparation of this report, liaison has been maintained with some of the key Welsh ‘low carbon’ related networks. This includes the Welsh Low / Zero Carbon Hub, the Welsh Existing Homes Alliance, Regeneration Skills Collective Wales, the Welsh Built Environment Forum, Community Housing Cymru’s Strategic Management Group and the BRE / EST National Refurbishment Centre Working Group.

Whilst discussions have taken place over the full range of low carbon skills sets, including those relating to basic construction skills and behavioural change, the focus on the wide range of low carbon skills relating to the regeneration and built environment professional services sector has become a dominant theme, in terms of skills capacities and the need to keep up with accelerating technological changes. This has been particularly highlighted in relation to both ARBED 1 and the proposed ARBED 2 housing retrofit programmes, which constitute one of the largest and most complicated of its kind in Europe.
D. Desk based review of relevant policy statements & research.

1. Background reports

1.1 Two particular reports provide the basis for taking forward a proposal that will seek to address a particular generic skills need in Wales relating to professional services in the public, private and third sectors. These are:

   i. Professional & Cross professional skills in sustainable regeneration in Wales research report by Miller Research Ltd. for RSCW and Construction Skills (2008)


1.2 These reports identified that the generic skills set embracing the low carbon / ‘green’ / sustainability / ‘climate change’ agenda are already deficient in Wales and indeed across the UK. This is against a background of an increasing need in the professional services sector for these skills in the future, driven by mainly by public policy and regulatory requirements. In this context, the immediate priority within this skills set is that relating to the zero / low carbon agenda, broadly relating to the policy aspiration of the previous Welsh Assembly Government to achieve a 3% reduction per annum in carbon emissions from 2011 in those areas of devolved competence (Welsh Assembly Government “One Wales” statement).

2. UK Government Policy / Strategy

2.1 Introduction

   i. Many of the policy documents and research reports in the UK relate to the previous Labour Government administration, prior to May 2010. However the research information prepared up to this date is relevant to the current circumstances relating to the current low carbon agenda in different parts of the UK, including Wales.

   ii. The new Conservative / Liberal Democrat Coalition Government are still in the process of developing policy in relation to Climate Change and the low carbon agenda, and doubtless new policy priorities will be emerging at the UK level as this report is being prepared and published.

   iii. The current UK Government’s position in relation to the low carbon agenda is best reflected through the budget Statement by the Chancellor of the Exchequer on the 23rd of March 2011, which included the following key reference points:

      • **Green Deal** will be introduced to reduce energy bills from 2012. The Government is establishing a framework to enable private firms to offer consumers energy efficiency improvements to their homes, community spaces and businesses at no upfront cost, and recoup payments through a charge in instalments on their
energy bill. At the heart of these proposals is the “Green Deal Plan”, an innovative mechanism, which allows consumers to pay back through their energy bills. The Green Deal differs from existing lending, as it is not a conventional loan, since the bill payer is not liable for the full capital cost of the measures, only the charges due when they are the bill payer.

- The introduction of a carbon price floor for the power sector.
- A new “Green Investment Bank” will start operating next year and have access to £3bn of funds. The Chancellor has confirmed that it will not have powers to borrow or raise money until 2015, and it will not be able to issue financial instruments, such as ISAs and bonds. The £1bn initial government funding for the bank is less than environmentalists called for, and it is not yet clear what sorts of project the bank will be allowed to invest in. Many of the finer details of how the bank will operate will not be finalised until the early summer of this year.
- Climate change levy discount on electricity for those signing up to climate change agreements will rise from 65% to 80% from April 2013.

2.2 Low Carbon Construction: Innovation & Growth Team, HM Government – Spring 2010

i. Whilst this report relates specifically to the construction industry, the definition of the sector is extremely wide, ranging for example from the earliest conceptual thinking of world class designers through to the smallest item of maintenance and repair. It therefore accepts that there are a wide range of professional skills that are relevant to the construction and built environment sectors, especially in relation to the low carbon reduction and sustainability agenda.

ii. The focus of the report is very much on the capacity of business in the UK to respond to the challenges of the necessary transition to a low carbon economy over the next 40 years. Emphasis is given to the new ways of working and the acquisition of continually increasing knowledge and skills that will be required to provide a competitive advantage both domestically and internationally. The report refers to domestic and none domestic building stock (both existing and new); and to the infrastructure necessary to support built development. One major fear expressed in the report is that very few businesses in the UK have an accurate appreciation of the sheer scale of the challenge and undertaking required over both the short term (the next 5 years) and the longer term (up to 2050).

iii. In terms of skills sets, the report refers to:
- Leadership skills, particularly at central government and local authority levels.
- A wider business and understanding of the complexity and demands flowing from the ‘low carbon’ agenda.
- The development of a wide range of new skills within the business sector, from conceptual thinking to operation & use, in all layers of the supply chain.
2.3 Meeting the Low Carbon Skills Challenge (Departments for BIS and for Energy & Climate Change (UK) Consultation document March 2010 prior to General Election)

i. Although this consultation document was prepared and issued before the last UK General Election, it provides useful information on the issues and challenges in equipping people with the skills to take advantage of opportunities in a low carbon and resource efficient economy in the UK. It builds on a number of previous Strategies and Plans produced by the UK government, including the UK Low Carbon Transition Plan, the Skills for Higher Growth Report, the Higher Ambitions Report and the Low Carbon Industrial Strategy. There is a particular emphasis on STEM skills (science, technology, engineering and mathematics); and a focus on delivering the skills that employers need.

ii. The consultation document sought views on the priorities, challenges and gaps identified; on how businesses can best be incentivised and encouraged to respond so that they have the skills they need at all levels; and on how the education and skills system can respond so that it is strongly focused on the needs articulated by businesses.

iii. Three key sectors, power, transport and construction/built environment, are highlighted as facing specific skills needs. In addition, five key challenges for employers, the skills system and Government are identified:

• Delivering significantly higher volumes of generic STEM skills at all levels;
• Developing and delivering rapidly the specialist skills solutions that will be needed for emerging sectors and technologies;
• Getting more young people and adults interested in low carbon careers, skills and qualifications;
• Stimulating employer demand for and investment in low carbon skills;
• Replicating good practice rapidly in each of the above, within and between emerging sectors.

iv. The report recognises that many of the skills needed to make the transition to a low carbon economy will not be new. For example, it has already been established that STEM skills are needed at all levels, in key energy and advanced manufacturing sectors and more widely across the economy, to lower carbon emissions and make better use of all resources. However, it is also recognised that there are sectors in which completely new skills are needed, some in new combinations, and for which new qualifications will need to be developed. The report suggests that the skills system needs to be able to respond rapidly and flexibly to these demands. This includes action being taken at local, regional and national levels, not just by schools, colleges and universities, but by industry-led skills partners and most importantly by individuals and by businesses.
v. The report initially looks at the three key sectors. A major cross-sector effort is required to meet escalating demand for skills in the power industry, with a need to recruit apprentices and graduates in large numbers, particularly those with STEM skills. Action has already been taken to establish the National Skills Academies for Nuclear and for Power, and industry bodies are also working together to develop new qualifications such as the Wind Turbine Service Technician Apprenticeship. These initiatives reflect a clearly identified need for technician level skills.

vi. In relation to buildings and construction, strong demands exist for skills to adapt existing housing stock, for renewable building methods and for the construction of zero carbon homes. It is anticipated that the required skills will be mainly at graduate level to develop, manufacture and implement new technologies, and to enhance existing practical construction skills for installing new adaptation and mitigation technologies. Within the UK, the skills system had already started to address this issue, for example through updating National Occupational Standards. The major challenge is to identify precisely skills needs in this emerging and diverse sector.

vii. Decarbonising the transport sector is a key part of the UK Low Carbon Transition Plan. Transition to ultra low carbon vehicles and the development of new fuel efficient aircraft will require the manufacturing and maintenance workforces to adapt their skill sets to the demands of changing technology. STEM graduates will again be in high demand.

viii. Beyond the three key sectors, the consultation report reviews the skills needed to decarbonise the entire manufacturing and process industry supply chains and make the most efficient use of resources. It is considered that a wide range of cross-cutting skills will be needed, many of which will combine traditional professional disciplines with emerging industrial applications, such as composites. STEM qualifications will again be pivotal, as will specialist skills. There is a need to understand these skill set needs better, especially where people need to be equipped with a different combination of skills, rather than specific new skills.

ix. Additional issues identified in the consultation report are:

- The need for both young people and existing employees to be aware of and take an interest in the career opportunities emerging from the low carbon transition, and provide clear pathways into those careers.
- Businesses will need people with the technical and managerial skills to develop and exploit both existing and new markets, if they are to succeed in the low carbon economy. This will require far better coordinated action between business, training providers (especially Universities) and government.
- In some areas a major cross-sector effort will be needed to develop new or updated qualifications and the capacity to deliver them. The skills system will need to focus strongly on being able to meet this potential demand, particularly as much of the higher-level skills delivery will need to take place at work.
x. Overall, the report identifies the following key issues, which seem to resonate with the low carbon skills needs of the professional services sector:

- **Building Adaptive Capacity**: whilst more research is needed on this skill set, schools, Universities, professional bodies and government will need to respond positively. In some areas, such as planning, a step change will be needed in the number of employees with the skills & knowledge to deal with adaptation;

- **Generic skill sets** (project management; sustainable procurement; lifecycle analysis; monitoring & measuring skills; carbon accounting; performance reporting; environmental management systems; risk management) that cross professional “boundaries”. This is in addition to the more ‘conventional’ generic skill sets, such as leadership, financial management, communication skills etc.;

- **Up-skilling & CPD for existing employees**;

- **New practical & vocational qualifications for the new process based work**.

xi. The construction industry in the UK is identified within the report as being “characterised by an historic lack of investment in skills, which is exacerbated by its fragmented nature and reliance on subcontractors”. The report gives emphasis of the need for a rapid response by employers and the skills system, to provide the right training to new entrants to the construction market and to up-skill the existing workforce. This will apply right across the building supply chain from developers and designers, funders and mortgage providers, through site managers, tradespeople, compliance and enforcement bodies, facilities managers, to end users (including use and maintenance of homes or workplaces and appliances within them). New construction techniques may also lead to an increase in offsite manufacture with onsite assembly and a different set of skills to support that, including a new approach to on-site project management.

There is a need to embed an understanding of strategies and options to adapt to climate change at all levels. Employers will increasingly look for new recruits to have relevant skills and to be aware of what ‘low carbon’ means in a real site situation.

xii. Planning is fundamental to delivering a sustainable built environment where low carbon lifestyles can be the norm. It is central to the delivery of new homes and supports business and communities build a low carbon future and prepare for the impacts of climate change. Research, which looked at the implementation of national planning policy on climate change, highlighted the importance of having in place the right skills and experience in the planners who are expected to deliver it. Government has recently announced a package worth £9.75 million to build skills and capacity across the range of local authority responsibilities needed to tackle climate change. This will help build the skills and knowledge planners need, including in planning for increased renewable energy supply and encouraging local communities to take positive action on climate change. This package will also fund the Royal Town Planning Institute (RTPI) development of a virtual learning environment for
continuing professional development with a focus on climate change. All of the work on building capacity will complement RTPI’s commitment to review and change its education and lifelong learning requirements to ensure that all its members have the knowledge and skills to respond effectively to climate change.

xiii. The Government recognises the importance of having sufficient skills in local government to handle all forms of planning applications. That is why it continues to put in place initiatives to build local authority capacity. These have included: the Post Graduate Planning Bursary Scheme; the provision of Planning Delivery Grant/ Housing Planning and Delivery Grant; and the funding the Homes and Communities Agency’s Skills and Knowledge Directorate, Advisory Team for Large Applications and the Planning Advisory Service. The Government will also provide support to planners and other local authority staff engaged in climate change activities, to help increase their skills and knowledge. In terms of local authority building control, a consultation on proposed changes to Part L (energy efficiency) of the Building Regulations included a strategy for training and dissemination to be delivered in the run up to the changes planned for October 201042. Government aims to deliver similar awareness programmes to support future amendments.

xiv. Key areas for local authority leadership on sustainable construction, to ensure the right levels of knowledge and skills are in place, could include:

- In their roles as planning authorities and building control bodies;
- Early adoption of higher standards or development of exemplars in the design and use of their own (new or existing) buildings;
- Influencing the development of higher standards or exemplar buildings by other public sector partners in their area;
- Planning for and facilitating links into community energy networks.

xv. In relation to the ‘decarbonising’ buildings and construction, which is the most relevant part of the consultation document in relation to the built environment and regeneration sectors, there is a focus on the issues of:

A. Zero Carbon new buildings, particularly housing
B. The retrofit of the existing housing stock
C. Eco-towns

Issues A and B are high on the low carbon agenda in both Wales and England; but issue C is only applicable to England. The consultation report confirms that ‘the transition to low carbon and resource efficient buildings, and subsequently zero carbon buildings, will create new and evolving demands for skills and knowledge. This is particularly evident in relation to STEM skills to develop, manufacture, implement and install new adaptation and mitigation technologies.’ In terms of trade & professional competences, the National Occupational Standards (NOS) are considered particularly relevant to the sector and developing NOS that set out the competences
required by each trade or profession is a key role for Sector Skills Councils. The SSCs are also involved, with awarding bodies, in developing new vocational qualifications on the Qualifications and Credit Framework to fill identified gaps. The Built Environment Skills Alliance is an alliance of the SSCs covering built environment industries. They are working to update the NOS relating to industry trades and professions. The new standards will help ensure that further and higher education courses in built environment subjects cover low carbon knowledge and skills. In addition, practical skills and more theoretical modules in renewable building are part of the modernisation of the construction NVQ system by ConstructionSkills, to lead the way for a credit point system applicable across the UK and Europe.

xvi. However, emphasis is given to the probable need for skills providers themselves to adapt and respond, so that they are equipped to advise and develop courses that meet the needs of industry and individuals for the future.

xvii. In relation to both the low / zero carbon buildings and the retrofit agenda, which are focused on housing, the consultation report identifies the Zero Carbon Hub in England as the dedicated delivery body. Reference is made to the role of the Hub in providing a ‘route map’ for the future direction of the house building industry and the skills implications this will present. Clearly circumstances have changed since the last UK General Election, particularly in respect of the impending demise of, or at best the reduced level of responsibility afforded to, the Zero Carbon Hub in England. However, the report also identifies the appropriate Sector Skills Councils as performing an important role in the delivery of a wide range of skills & training programmes linked to zero carbon homes and the retrofitting of existing housing. The focus is very much on a very wide range of new and existing trade skills; and on the quality of the skills of those advising householders on options for delivery.

2.4 Low Carbon Industrial Strategy Department for BIS - July 2009

i. The UK Low Carbon Industrial Strategy recognizes the need to ensure that UK businesses and workers in all sectors are equipped to maximise the economic opportunities and minimise the costs of the transition, and to face the challenges and opportunities that adapting to climate change brings. This will be achieved by both catering to growing British and global markets for low carbon goods and services; and also by using energy and other resources more efficiently to reduce costs. One part of being equipped is to have a skilled workforce.

ii. The Strategy sets out both the scale of these potential opportunities and a programme of government action for assisting British based firms in seizing them. At the heart of this strategy are three basic principles for a positive environment for low carbon and resource efficient business:

• A long-term strategic approach from the UK Government that sets stable frameworks for businesses and consumers;
• A pragmatic approach to the role of both markets and Government in making the transition to the new economy quickly and effectively;
• Recognition that the UK Government has a responsibility to support British-based companies and people to compete for the new markets.

iii. Many low carbon and resource efficient technologies are new, and a full suite of qualifications for these has yet to be fully developed. Collective action is needed quickly on both the supply and demand sides to develop these qualifications, and the occupational standards underpinning them. New skill sets will be needed for cross cutting applications, including multi-disciplinary skills for professionals. There is a particular need to step up the provision and quality of generic management skills, including in sustainable procurement, lifecycle analysis, monitoring and measuring skills, carbon accounting, performance reporting, environmental management systems and risk management. The need for an increasing supply of high-level skills, and especially a strong platform of people with generic STEM skills, is a recurring theme. Within the context of this established need, the availability of high quality Continuing Professional Development programmes is identified as a key mechanism for the delivery of skills development in the Low Carbon sector.

3. Welsh Assembly Government Policy / Strategy (under its areas of devolved competence)

3.1 Introduction

i. The Welsh Assembly Government (WAG) has produced a wide range of policy and strategy statements in relation to the low carbon and green skills agenda during its third term (May 2007 – May 2011). Whilst many of these reports have been examined as a prelude to the production of this report, not all contain specific reference to the low carbon skills requirements of the regeneration & built environment professional services sector in Wales. Therefore this report will focus on those reports where specific reference has (or should have been!) made low carbon skills, whether directly or indirectly.

ii. During the last twelve months, the WAG has announced a series of skills investment programmes, generally supported by E.U. funding focussing mainly on the Convergence Programme areas of West Wales and the Valleys, to address a range of skills deficiencies and targeting support to businesses. Three current examples are:
• A new **Skills Growth Programme**, which is intended to build on the success of the ProAct programme. It is aimed at companies that can demonstrate the potential for economic growth and job creation. The total value of the programme is £15 million.
• The **Sector Priorities Fund Pilot Programme** (SPFPP), which is aimed at ensuring
that post-16 training is more responsive to, and aligned with, the needs of employers. New and flexible ways of delivering training for new and emerging sectors will be tested in pilot projects, with funding from SPFPP and contributions from employers, totalling £7 million. It is intended that this programme will identify skills gaps in new technologies and niche sectors that have high growth potential and address those gaps that need to be filled. The results of the pilot programme will inform the recommendations for the 2011 SPF to ensure that the Assembly’s investment in adult skills will target the specific needs of strategic sectors. One use of the SPFPP is referred to in Phase 1(a) of this report.

- Increased funding from WAG & the European Social Fund (ESF) for Enhanced Leadership and Management Skills (ELMS), which is referred to in the Phase 1(a) section of this report. A total budget of £65 million is allocated to this fund.

iii. It is essential that potential sources of funding for training and skills development for the regeneration & built environment professional services sector are continually monitored, in order that the opportunity for funding support are maximised.

iv. It is also important to note that a new Welsh Government term commenced on 5th May 2011, and therefore Government priorities may subject to change as a result of the specific decisions taken by the incoming Government.

### 3.2 Climate Change Strategy for Wales - Welsh Assembly Government October 2010

**Appendix 1** provides a Summary Version of the Climate Change Strategy for Wales.

i. The Welsh Assembly Government has produced a full Climate Change Strategy, with accompanying Delivery Plans on Emission Reduction and Adaptation. These set out how the Assembly intend to limit greenhouse gas emissions and adjust to changes in the climate. The Assembly accept that the achievement of their aims will depend on individuals, communities, the third sector, business, government and the public sector making an active and meaningful contribution.

The Assembly’s approach to managing climate change is based on that established in their Sustainable Development Scheme, One Wales: One Planet.

ii. The Strategy recognises that there is a need to ensure the Assembly’s ‘approach to … skills helps Wales to gain maximum benefit from climate change related business and research’. The innovation and skills agenda is primarily seen as being delivered through the Assembly’s “Economic Renewal Programme” (see 6 below).

There is also a recognition of the need for ‘a comprehensive approach to behaviour change’ associated with meeting the challenges of climate change and realising the aspirations of achieving reductions in carbon emissions.

The Climate Change Strategy sets exactly out how the Welsh Assembly Government intends to limit greenhouse gas emissions and adjust to climate change. In this respect, the focus is on physical and behavioural actions. However the key to
achieving these actions is an accelerated programme of training & education to deliver these actions, as the timescale for delivery is extremely challenging.

3.3 Framework for Regeneration Areas – Welsh Assembly Government, October 2010

i. This Framework ‘is designed to provide clarity on the future of the Regeneration Area approach, within the context of wider Government action. It marks a step change in inclusive, joint delivery to ensure investment in Regeneration Areas is effective, avoids duplication and adds value’.

ii. The Framework focuses on an assessment of the Assembly Governments policy and implementation programmes associated with the seven Regeneration Areas established in Wales and looks forward to improve the approach to the Regeneration Areas in the future. This builds on the three very broad outcomes that the Assembly want to see achieved within each area. These include “Moving towards low carbon communities”.

iii. There is no specific reference to the skills, generic or otherwise, that are required to deliver an ambitious and commendable programme of integrated regeneration in Wales. Therefore low carbon skills in relation to regeneration and the built environment are not identified as an issue. Reference to the ARBED housing retrofit programme and other housing led regeneration initiatives refers to local training and skills, but this seems to relate to the more basic (yet essential) construction skills.

With the establishment of the National Regeneration Panel in March 2011 ‘as a key part of the implementation of the Framework’, it is suggested that low carbon skills for the regeneration & built environment professional services sector will be given priority consideration by the Panel.

3.4 Economic Renewal: A New Direction. Welsh Assembly Government July 2010

Relevant extracts from this Framework statement form Appendix 3 to this report.

i. Reference to the regeneration & built environment professional services sector within the Framework statement are somewhat indirect. Certainly the section on “Broadening and deepening the skills base” confirms that ‘to fulfil the collective potential, we need employers in the private and the public services who are committed to using knowledge and skills to the maximum effect’. The Assembly’s existing skills and training strategies are designed to maximize the potential of the existing and future workforces in Wales. It is suggested that there is a greater emphasis on meeting employer and learner needs and aligning resources with national priorities; and it is anticipated that the significant changes to the way learning is planned, designed, delivered and supported in Wales will reap much greater economic and social benefit as a result. In addition the Assembly’s approach has been designed to be flexible enough to allow the establishment of major skills initiatives such as ReAct, ProAct, their successor programme Skills Growth Wales,
and Pathways to Apprenticeships, which forms the backbone of the response to recession.

ii. Within the Framework Statement, six sectors are identified for the Department of the Economy and Transport to focus its support on work where, with better targeted intervention, Wales can gain competitive advantage and benefit from growing markets. These include the Energy and Environment and the Financial and Professional Services sectors. However the connection between the two sectors in terms of skills and training requirements does not appear to have been made, and there is some concern that the definition of the professional services sector makes no reference to regeneration or the built environment. Yet there is no doubt that these areas of activity in the professional services sector possess good prospects for growth even in the current economic circumstances; and are valued as providing relatively highly skilled and well paid jobs.

However certain professional skill sectors are recognised as being critical to the delivery of economic renewal in Wales, with planning and associated professional skills being identified. These are the very same skill sets that are identified as being critical in the delivery of the low carbon agenda in Wales in other policy documents and training research reports.

There is concern that the Economic Renewal Statement does not fully recognise the critical importance of the professional services sector in Wales, outside a rather narrow definition of the sector. A low carbon economy based on the sound principles of sustainable development is going to be of major importance to the future of Wales, and a commitment to low carbon skills training could create the highly skilled, well-paid jobs within the professional services sector.


Appendix 2 is the WAG Cabinet report 15 November 2010.

i. The Action Plan to deliver the For our Future agenda for higher education in Wales is made up of actions led by the Welsh Assembly Government (WAG) and actions led by the Higher Education Funding Council for Wales (HEFCW). Governance of the delivery of all For our Future actions is the responsibility of a Project Board with membership drawn from across WAG and from HEFCW and chaired by the Director, Skills, Higher Education and Lifelong Learning Group in DCELLS.

ii. HEFCW have placed delivery of For our Future as the central purpose of their Corporate Strategy 2010-13; their contribution to the delivery of For our Future is therefore integrated within their corporate strategy. That strategy has been considered and supported by HEFCW’s board.
iii. The Action Plan sets out a set of objectives to be achieved in the lifetime of the Corporate Strategy (i.e. by 2012-13):

- Development of a national system of higher education in Wales, with universities and further education colleges working together in an integrated fashion;
- More coherently planned and organised provision in each region of Wales, for the benefit of local learners and employers;
- Research performance at international standards of excellence, organised within and between institutions in ways that are sustainable, and strongly linked to users and other beneficiaries;
- Substantially fewer institutions;
- A clear understanding of how each institution contributes to the system as a whole, individually and through collaboration, regionally, nationally and internationally;
- All institutions being financially sustainable into the medium term future.

iv. HEFCW have responded positively to these objectives and are proceeding towards the realisation of these objectives through a detailed operational plan for 2010-11, which sets out the timescales by which it will move work forward. On the basis of this plan, by the end of 2010-11, milestones reached by HEFCW will include:

- Progress with restructuring the HE funding mechanism towards a stronger emphasis on strategic outcomes.
- A renewed widening access strategy.
- Action to expand availability of and improved access to Foundation Degrees in Wales. It is generally recognised that these have the potential to offer both an entry point both for technical level and to full professional qualifications. The major problem would appear to be a lack of employer engagement.
- Establishment of a regional planning and delivery framework with regional strategies ready for implementation, backed by ring-fenced funding, from 2011/12.
- Readiness of the Coleg Ffederal to come into operation in 2011/12.
- New funding arrangements for research for launch in 2011/12, aimed at strengthening focus on national research priorities, and driving collaboration.

v. It is accepted that there are a number of risks that HEFCW will need to manage in taking this action forward.

vi. The actions led by WAG are of two types. First, there are specific actions being led by DCELLS. Second, there is action to ensure there is alignment between For our Future actions and those delivering strategies and policies across the WAG portfolios, such as the Economic Renewal Programme and in areas with important links to higher education such as health and regeneration.
vii. The role of DCELLS is crucial in respect of:

- Providing overarching governance of the strategy to ensure implementation meets Ministerial requirements;

- Leading on key aspects of the strategy which are not the responsibility of HEFCW, such as:
  - The review of HE Governance
  - Changes to the national student bursary framework
  - Legislative changes (e.g. Foundation Degree Awarding Powers for FE Colleges)

- Building cross-departmental Assembly Government engagement with *For our Future*, to achieve alignment of the wide range of Assembly Government responsibilities, which influence or are influenced by higher education in Wales. In the pursuance of the above, a Project Board has been established, chaired by the Director of the Skills, Higher Education & Lifelong Learning Group within DCELLS, with membership drawn from HEFCW & across Ministerial department portfolio. An early objective of the Board will be to ensure that engagement is secured with stakeholders and providers, in order to embed a clear understanding and buy-in to the direction of higher education policy and strategy in Wales. Such action commenced during the development of *For our Future*, through the convening of an external reference group, comprising a wide range of stakeholders and providers. Officials intend to maintain regular communication with key bodies and to underpin this with “higher education summits”, probably once a year, to give an opportunity to maintain the strategy’s profile and reinforce priorities.

- The Action Plan proposals were reported to the WAG Cabinet on the 15 November 2010 and the recommendations were endorsed and approved.

The reference to the need to align the Higher Education Action Plan actions to those delivering strategies & policies across the WAG portfolio, such as the Economic Renewal Programme and in areas with important links to higher education, such as health and regeneration are to be welcomed. In addition, the Project Board proposals for engagement with external stakeholders creates an opportunity for the regeneration / built environment professional services sector to raise the critical issue of low carbon skills capacities and the need for training provision in the public, private and third sectors.

3.6 A Low Carbon Revolution - The Welsh Assembly Government Energy Policy Statement

March 2010

i. This Statement recognises the great challenge facing Wales in moving towards a low carbon economy, which will be dependent to a great extent on achieving sufficient supplies of low carbon energy; and a more efficient use of existing energy resources. The potential for some £50 billion of investments in large renewables and other low carbon electricity projects over the next 10-15 years is alluded to, over and above investments into domestic energy efficiency, community scale renewables and the
alleviation of fuel poverty in Wales.

ii. In terms of meeting the Assembly’s ambition of for a low carbon energy solution for Wales, the following actions are identified:

- Maximising energy savings & efficiencies;
- The production of low carbon energy on a large scale (marine; onshore wind; hydro-power & geothermal; bio-energy / waste etc.);
- A movement towards low carbon energy production via renewables, both on a centralised and localised basis;
- Ensuring that the transition to low carbon embraces economic (business development, R & D, jobs and skills) and social (tackling deprivation, engaging with communities and securing well-being) benefits.

iii. The only significant reference to the issue of low carbon skills is the stated intention to ‘provide focused vehicles, as in the British Gas Academy, for associated business and skills developments’. This Centre has since been established in Tredegar and has made a significant contribution towards the provision of basic skills training, focused on the Heads of the Valleys area.

4. Welsh policy scrutiny

4.1 Carbon Reduction in Wales - Inquiry and report by the Sustainability Committee of the National Assembly for Wales, October 2010

i. The Sustainability Committee was appointed by the National Assembly for Wales to consider and report on issues affecting Climate Change, Energy, Rural Affairs and Agriculture, Environment and Planning. It was established in 2007 as one of the Assembly’s Scrutiny Committees. A series of five topic based reports have previously been prepared by the Committee, dealing with Residential / Housing; Transport; Industry & Public Bodies; Energy Production; and Land Use. This Final Inquiry Report draws together the headline recommendations of the previous reports and highlights a number of cross cutting themes, which must be acted on if the necessary reductions in carbon emissions are to be achieved in Wales. Particular emphasis is given to the need to ensure that Wales becomes an exemplar of a prosperous, low carbon country.

ii. The Committee make eleven strategic ‘headline recommendations’ in relation to Carbon Reduction Measures; the Planning System; Behavioural Change; Information & Advice; and Joined-Up Working. None of the ‘headline recommendations’ specifically refer to issues of skills and training at any level. However, some of the identified benefits of achieving Carbon Reduction Measures are increased employment through the creation of jobs in the ‘green economy’ manufacturing and installing carbon reduction technology; increased inward investment to Wales.
as it becomes a leading manufacturer and installer of carbon reduction technology; and increased reputation of Wales’s academic and technology capacity as a leader in research and development of green technologies which would lead to increased income. All of these benefits have implications for the Welsh professional services within the built environment and regeneration sectors. In relation to Joined-Up Working, the cross Ministerial portfolio and WAG departmental coordination of carbon reduction policy and practice would assist the professional services sector to deliver low carbon aspirations and targets more effectively in Wales.

iii. Common themes relating to the strategic ‘headline recommendations’ are more explicit to the issues of skills and training. Planning, and in particular, the land use planning system, is identified by many of its users both as barrier to delivering carbon reduction aspirations and targets in Wales; whilst at the same time being seen as key to effective delivery by professional institutions (e.g. RICS Wales) and practitioners (RTPI / Planning Officers Society of Wales). Some of the issues raised in this respect are the perceived lack of leadership skills within the Welsh Assembly Government and Welsh Local Authorities to ensure that the planning system realizes its full potential. It also appeared that there is a need for a better understanding of the challenges that the low carbon agenda brings to the local development plan and planning decision processes at the local level. Whilst the report refers to the Assembly Government’s funding of RTPI Cymru to facilitate climate change training for officers in local planning authorities from 2009 onwards, no specific reference is made to training and skills programmes for other built environment / regeneration professions. Whist the Sustainability Committee has recommended that the Assembly Government work with the Construction Industry Training board (CITB) and the appropriate Sector Skills Councils in the development and promotion of training, advice and support in a broader context, the Assembly’s response appears to rely solely on the Welsh Low / Zero Carbon Hub to address this issue.

iv. The Welsh Assembly Government has since responded to the Sustainability Committee’s report on its Inquiry into Carbon Reduction in Wales. This comprehensive response, confirmed the following in relation to the recommendation of the Inquiry that an evaluation of the skills is required in relation to the development of the workforce necessary for the successful development of a low carbon economy: Accepted in principle and to be implemented through the Green Jobs Strategy.

Given the acceptance of one of the main recommendations of the Inquiry (as outlined above), it is essential that the evidence base provided by this report is considered within the context of the Green Jobs Strategy, and any other related low carbon skills policy initiative undertaken by the new Welsh Government. In addition, low carbon skills requirements identified in the Inquiry for specific professions (e.g. planners, surveyors etc.) should be addressed with some urgency after the Election.

4.2 Generating Jobs in the Green Economy – Inquiry & report by the Enterprise and Learning
Committee of the National Assembly for Wales, July 2010

i. The Enterprise and Learning Committee is appointed by the National Assembly for Wales to consider and report on issues affecting the areas of economic development, transport and education, lifelong learning and skills. In particular, the Committee may examine the expenditure, administration and policies of the Welsh Government and associated public bodies. It was established in 2007 as one of the Assembly’s Scrutiny Committees.

ii. The report contains twenty-eight recommendations (R), four of which refer to or relate specifically to training and skills:

- **R8**: Beginning with the social housing sector, the Welsh Assembly Government should work with partners to secure funding and develop local area-based programmes across the whole of the country for refurbishing existing properties for energy-efficiency, not only for the resulting social and environmental benefits but for generating local skilled employment and supporting Welsh companies that manufacture the energy saving products. The Energy Saving Trust’s evidence argued that investing in skills and experience now will stand Welsh businesses in good stead when it comes to delivering the future retrofit programmes, e.g. carrying out “whole house assessments” of energy performance.

- **R9**: Integral to an expansion in home energy efficiency programmes should be proper accreditation for energy conservation technology and installers; provision for independent assessment to ensure adherence to agreed installation standards; and for customers to have a clear communication channel for any queries or complaints.

- **R18**: Welsh Ministers set more challenging targets to drive green procurement through the public sector in Wales, including job creation targets, up-skilling the workforce, and encouragement for and engagement with Welsh businesses, especially SMEs, to provide green products and services for the public sector.

- **R25**: Welsh Assembly Government departments work together with the Sector Skills Councils, further education institutions and commercial and social enterprises on a programme for identifying the kinds of skills that are needed in the green and the low carbon economy of the future, with a focus on local skills needs. We further recommend that the opportunity of European Structural Funds should be explored to help finance this initiative. In the context of this recommendation, Construction Skills Wales’s written evidence stated “all jobs will need to be green jobs in the future and the transitional programme needs to be road-mapped for each sector. This supports the view that green jobs are not new jobs and many of the jobs…already exist or are slight modifications of existing jobs. Therefore re-skilling will be required for existing occupations.”

iii. Other relevant low carbon skills issues raised at the Inquiry were:

- In conjunction with the Sector Skills Councils, DCELLS was identifying the
practical skills that will help to create a pool of “renewables champions” within the learning marketplace who will promote best practice in reducing energy consumption among domestic consumers and small businesses; and was helping embed new occupational standards around energy advice and the installation of domestic micro-generation systems.

- **Construction Skills Wales (CSW)** submitted that because modern construction practices and the potential for green jobs were creating a demand for new skills and knowledge requirements, it had set up a specialist Future Skills Unit to help the construction industry respond to the changing demands being placed on it to achieve social, environmental and commercial sustainability. However, the organisation raised concerns regarding the quality of training in relation to the construction sector, suggesting that because of the Welsh Assembly Government’s historical lack of engagement with skills providers and work-based learning organisations, coupled with the focus of the Welsh economy on particular sections of the built environment “the necessary capacity and skills required for training in relation to the construction sector and the built environment... is currently patchy and not up to the standard that CSW would like to see.” Furthermore, CSW argued that it has been “unable to engage appropriately with the relevant Ministers or civil servants” because the Sector Skills Councils are “pigeon-holed” as education providers under the remit of the Department for Children, Education, Lifelong Learning and Skills and not joined up with the Department for Economy and Transport and the Department for Environment, Sustainability and Housing. “There is a lot of training that does not create sustainable jobs over the long term. For example, we are creating bricklayers, but perhaps bricklayers will not be needed in those numbers in two or three years’ time.”

- The **Institution of Civil Engineers Wales (ICEW)** submitted two significant comments in relation to low carbon professional skills. Firstly, in relation to waste management and recycling, the achievement of WAG’s low carbon aspirations is reflected in a ‘zero waste’ target by 2050. ICEW commented that ‘we need to be innovative. We need to maximise the use of power and energy from waste supplies, but where can we put them? It is a clear challenge’, that will need a higher levels of professional skill. Secondly, ICEW confirmed that there were hundreds of engineering students in Welsh universities but they were facing the prospect of no jobs when they graduated. This is perhaps another sign that Wales is not educating and training young people in the professions and skills of a greener economy?

- The **British Wind Energy Association** expressed “increasing worry” about the skills gap for the industry, not just in Wales, but across the UK. It identified planning, technical skills and project development as the main areas of concern, but made the point that many of the skills, such as turbine maintenance, are transferable.

- **Wales Environment Link** argued that working towards zero waste was therefore
an “enormous opportunity” to develop more skills and increase employment in Wales. Confirmation was given about the lack of higher level and management skills within the recycling industry, but how the industry was now working with the Sector Skills Councils and Waste Management Industry Training and Advisory Board to drive training programmes forward.

- **Other examples of good practice** were identified, such as British Gas in the Heads of the Valleys; and some F.E. institutions such as Deeside College, which has committed to work with learners, employers, staff and the wider community to embed the principles of sustainability into all courses and aspects of college life, including offering skills training across a broad range of curriculum areas to support the green economy for the future. Also highlighted was Llandrillo College in North Wales, which has excellent micro-generation training facilities.

- **The City & Guilds Centre for Skills Development** identified three areas of need for the green skills agenda – generic work skills (e.g. accounting, IT, management, leadership, communication and marketing skills); technical skills, where workers shift to greener technologies or practices; and life skills, for workers to adapt to new technologies and understand their impact on the environment. The first of these areas - generic work skills - was considered the most important, but also most lacking, in the economy at the moment.

- Another positive contribution was made by Rockwool Ltd., when it suggested that ARBED provided an incentive for retraining – for example, it would take two to three days to train already skilled builders in “wet” trades such as plastering, and the company was considering introducing an insulation training centre at its plant in Bridgend. It also suggested that ARBED should offer opportunities for social landlords to require contractors to provide training and apprenticeships.

This Inquiry clearly identified that there are basic / vocational, technical and higher level professional low carbon skills that all need to be developed urgently, if Wales is to deliver successfully against Welsh Government green / low carbon economy policy targets and aspirations. There is still a massive opportunity for Wales to take a leading position in this sector, but effective delivery is dependent on building and sustaining skills capacity in the professional services sector.

### 4.3 Low Carbon Wales: Regional Priorities for Action (Sustainable Development Commission) November 2009

i. This report serves two functions: Firstly, it sets out the process through which the Welsh Assembly Government’s Wales Spatial Plan can serve as a vehicle for transition to a low carbon country; and secondly, it provides background information and suggestions to enable each region to select carbon reduction priorities for action.

ii. The overwhelming focus of the report is on how Wales might meet the carbon reduction objectives set by the Welsh Government, UK Government and the
European Union for the period up to 2050. The report deals with the policy framework within Wales that have been established to meet the low carbon objectives; and the actions and priorities that will need to be taken at the regional level to meet the policy framework.

iii. The processes associated with the preparation of Area Delivery Frameworks and their implementation identifies that the ‘bringing together of business and academia will enable the identification and coordination of the skills, training research and development needed for transition to a low carbon future’. It is anticipated that ‘representation from all levels of education is essential to ensure that the attitudes and skills needed for this transition are fostered through our educational system’.

iv. In relation to the skills agenda, there are two significant statements within the report:

• The need for ‘A skills base, which enables transition to low carbon developed through the education and training systems, prioritising key sectors such as sustainable construction and micro-generation’;

• ‘Organisations must be able to access the relevant skills base and knowledge to make informed decisions and implement low carbon measures. It will be essential to be innovative and realise that, for many innovations, more information will be required. It is therefore important... to analyse in partnership with the DCELLS and others, the skills, training and technology needs to enable them to meet the objectives set out in low carbon strategies & plans’.

v. It was not the intention of this SDC report to focus on skills & training, although it does recognise that this is an essential component for the delivery of low carbon reductions in the future. Clearly the challenges and scale of technological and behavioural change that are necessary to meet low carbon reduction objectives outlined in the report will require major investment in the up-skilling of existing practitioners, the training of new practitioners; and continuing professional development in order to keep pace with rapidly changing technology.

4.4 The Economic Contribution of Higher Education in Wales – National Assembly for Wales Enterprise and Learning Committee. October 2009

i. This report looks at the economic contribution of the HE sector in Wales, and concludes that opportunities for HE institutions and businesses to connect are not being fully utilised; and that a ‘culture’ change is required to create a ‘hotbed atmosphere’ of knowledge exchange.

ii. Recommendations and key findings within the report include:

• Welsh Government should promote opportunities offered by the Knowledge Transfer Partnerships and the Academic Expertise for Business (A4B) scheme in order to increase awareness of potential links with academic institutions.

• Schemes such as the Graduate Opportunities programme (GO Wales) should be further expanded.
• Education, economic development & regeneration should not be placed in silos.

Although sustainable development and the low carbon economy is not referred to in this report, the first recommendation above has been utilised by some academic institutions to bridge the gap between academic research and business practice. The ‘Delivering Low Carbon Buildings Cymru Project’, referred to in the Phase 1a section of this report, is one such example.

Conclusions (desk based review – Wales documents)

There is a very strong policy base in Wales in relation to low carbon reduction, the impetus to establish a more vibrant ‘low carbon economy’, the creation of more ‘green jobs’, and an aspiration for greater ‘joined up’ action both within the public sector; and between the public, private and third sectors.

There is a strong research base associated with the low carbon agenda in Wales, as evidenced by the establishment of the Low Carbon Research Institute (embracing a number of HE institutions in Wales); and a number of research based initiatives in the FE & HE sectors, mainly funded by a combination of domestic and European Union funding programmes.

A number of projects have been established in Wales, benefiting from a range of public and private funding sources that seek to address some of the key sectors associated with the need to achieve low carbon reductions. Prime examples include investments in existing housing retrofit (ARBED); and in various forms of renewable energy.

There appears to be an acceptance that more focused training and education is required within Wales in relation to parts of the ‘low carbon economy’ sector, although evidence suggests that this is targeted more towards the more basic manual and lower technical skills, rather than the higher technical and professional skills.

The professional services sector is recognised as being of importance to Wales, in terms of the provision of higher skilled and higher income employment. However the link between this part of the employment sector and the low carbon agenda has been relatively weak in Wales, especially in relation to regeneration and the built environment professions. In some respects, the evidence base for this critical link has not been adequately established. However, the delivery of actions to address the low carbon agenda in Wales is beginning to reveal that skills deficiencies in regeneration and built environment professional services in the public, private and third sectors, is one factor that is hindering the establishment of a successful and competitive low carbon economy in Wales.

5. Research and academic / project activity (UK)

5.1 Much of the research activity in Wales is focused in those research institutions and projects referred to in Section 2 of this report (Phase 1: Interaction with other research / support based activities in Wales). Therefore the research reports below relate to a wider UK low carbon agenda. Nevertheless the findings of these reports have relevance
Appendix 4 provides an Executive Summary to the report.

i. This UK wide review looks at the implications of the increasing demands likely to be placed on the household efficiency industries (heating, insulation & glazing, micro-generation, energy efficiency advice and home energy assessment) as a result of a number of drivers, including carbon budgets and legislation, energy security and government policy and strategy. This will generate a need for new and improved skills, both for new participants in the sector; and for existing practitioners. One particular challenge identified in meeting this demand will be the need to shift from single installation of home energy efficiency improvements to integrated installation of multiple measures.

ii. The main purpose of the report is to identify opportunities for improving the effectiveness of housing energy efficiency (HEE) skills delivery to the industry. Of particular importance was the requirement to understand and establish the skills and knowledge needs and gaps of the HEE industries so that the most effective actions can be developed to move the industry forward.

iii. The focus of the report is very much on the company / business sector. Therefore the approach taken was to establish the current mechanisms for, and levels of, skills and knowledge provision and skills funding to the industry; establish the current and future skills and knowledge requirements as well as gaps in skills and knowledge provision; and identify existing examples of best practice/exemplar skills and knowledge delivery schemes/initiatives (including those incorporating employer-led demand).

iv. The main conclusions of the report, in relation to skills gaps, are that:
   • Within the context of an increasing demand for HEE skills, the focus of need is at level 3-installer level.
   • Current and anticipated skills gaps occur in new, specific skills; in relation to enhancing existing skills in the existing workforce; and cross sector skills gaps throughout the industry.
   • There is a clear need to improve competencies within what might broadly be categorised as the ‘trades’ activities. Most of these appear to be linked with new technologies, as they apply to heating, insulation, and glazing. In relation to home energy advice, in addition to a more comprehensive practical knowledge of technologies and of certification standards for installation of energy efficiency technologies, a higher-level qualification for management of low carbon retrofits will be needed.
   • For micro-generation a number of requirements are identified. These include
linking training to the Qualifications and Credit Framework; management and planning skills; wider installer knowledge (on issues such as interrelationship of technologies, insulation and funding); flexible and ‘top-up’ training; system design and sizing skills. In terms of delivery capacity, the priority is up-skilling the required numbers of installers generally to meet anticipated demand.

- The cross sectoral skills needs, which are closely related to the generic and higher technical and professional skill sets, include communication skills; wider HEE technology awareness; knowledge of quality standards and certification; management and leadership skills; skills for management of whole-house retrofits; access to clear career and training information; access to flexible training for those already in work.

v. Other key conclusions identified from the report focus on the need for:

- Training delivery capacity to meet anticipated increases in demand;
- A ‘whole house’ energy saving approach to be adopted in terms of future skills & knowledge, which will require a greater focus on multi-skilling;
- Greater clarity with regards to the range of qualifications and certification schemes that exist;
- Greater clarity and more consistent standards in relation to the role of certification. These process needs to be simplified with minimum standards established, which are linked to qualification requirements.

vi. A number of barriers are identified, which will need to be overcome, in meeting the skills challenge in the HEE sector; and strategic options are offered to improve the effectiveness of skills delivery within the HEE industrial sector. These options relate to the knowledge of skills requirements and qualifications development; skills demand modelling in relation to the HEE industry as a whole; the need to provide capacity-building skills delivery at higher volumes; a wider knowledge and advice provision capacity needs to be established; a “Whole House Approach” needs to be developed; there needs to be greater awareness of and access to skills, training and career information; the level of competency of installers and HEE advisors needs to be captured and demonstrated.

vii. The final option relates to career planning and Continued Professional Development. With the likelihood of skills requirements and occupational needs within the HEE industries undergoing significant changes in the future, there is a risk that these transitions will mean some skill sets are superseded, potentially resulting in unemployment for sector workers affected. To prevent this, and to maximise the use of people who already possess HEE skill sets, it is recommended that work be undertaken to plan and clarify career paths and progression routes, and requirements for top-up training / CPD through the HEE industry. It is within this context that the development of a ‘passport for skills’ process is recommended, which can readily demonstrate the level of attainment and competence of HEE
installers or companies delivering HEE solutions to householders.

5.3 Low Carbon Cluster: A Sector Skills Assessment Report - December 2009

i. This report was prepared by the Sector Skills Councils Alliance to inform the National Skills Audit, and published by the UK Commission for Employment and Skills.

ii. It has been recognised that the transition to a low carbon economy is unprecedented and rapid. Much of the detail about the exact types of skill required to develop this new economy, and the demand for these skills, has been difficult to clarify. But some things are apparent: Many of the skills needed are not new, although some may need to be combined in new ways; and some specialist skills will be new. In some areas a major cross-sector effort will be needed to develop new or updated qualifications and the capacity to deliver them.

iii. The SSCA report identified a need for professional and technical skills in a wide range of sectors. Higher-level STEM skills will be in particular demand, and there will be competition between sectors for specialist skills. Many low carbon industries are faced with an ageing workforce, with large numbers due to retire over the next 10 – 15 years in some sectors. A key issue will be how the growth in demand for skilled people in all sectors, by attracting young entrants and re-skilling existing employees, will be handled.

5.4 Skills for a Low Carbon & Resource Efficient Economy (LCREE): A Review of Evidence

This major report, with support documentation was prepared by Pro EnviRo Ltd. for DEFRA. Appendix 5 provides an edited summary of this report.

i. The intention of this research was to undertake a wide-ranging, high-level review of the current and relevant evidence relating to the skills implications of the transition to a low carbon and resource efficient economy (LCREE). It is the first attempt to bring together the current research and stakeholder views on skills for a low carbon and resource efficient economy. The specific objectives were:

- To develop an overview of both the generic and specific skills requirements for a LCREE;
- To develop of a wide range of stakeholders understanding and awareness, as well as the demand for, generic and specific skills requirements for a LCREE; and
- To identify gaps in evidence and recommend priority areas for future research which will move the LCREE agenda forward.

ii. It should be noted that the LCREE skill sets covered in this study are wider that those covered in the current research project for the regeneration & built environment professional services sector in Wales. The extent of the LCREE skills is shown in the attached appendix 5, and can be compared with the skill sets shown in the
Questionnaire Survey conducted as part of this ‘Low carbon skills requirements for the regeneration and built environment professional services sector in Wales’ research study.

iii. In general, the LCREE study found the overall evidence base on LCREE skills to be weak, without any in-depth insights into specific skill requirements. The evidence found was focused around issues such as sustainable development, low carbon and general environmental issues, with little research looking at resource efficiency related issues as a whole.

iv. A range of both generic (cross-sector) and sector specific skills were identified as priorities for a successful transition to a LCREE. A high-level LCREE ‘skills checklist’ has been produced as a first attempt to articulate these skills sets (see Appendix 5). A lot of the identified skills are not new skills (such as Science, Technology, Engineering and Mathematics skills) but are skills that already exist whose availability needs to be increased or which need to be applied in new situations or adapted with further training to a LCREE context. There is a need to identify these transferable skills and mechanisms for their transfer.

v. Whilst there was evidence of a latent demand for LCREE skills, it is not being articulated by many employers. As a result the current “demand led” skills delivery framework is ill equipped to anticipate and respond. Until there is a better understanding of current and future LCREE skills deficits by employers at a cross sector level, a demand led skills delivery system will not be adequately responsive to needs.

vi. In these circumstances it seems unlikely that current levels of skills training capacity will be sufficient to meet demands in the event of increased conversion of latent potential demand to actual demand, though further evidence based work and forecasting are recommended to quantify this. A high proportion of the 2020 workforce are already in work and many stakeholders felt that the current skills delivery infrastructure is not well suited to reaching and upskilling those already in the workforce.

vii. The skills delivery system and funding up to the date of the publication of the report had focused on lower level skills. This does not maximise support of the LCREE agenda as the key LCREE skills have been cited as mainly being level 3 and above, (i.e. the higher technical and professional levels).

viii. Skills brokerage provision regarding LCREE was found to be poor, especially in the context of business advice services. In addition, some stakeholders considered that low levels of awareness and leadership are leading to a short-termist approach from policy and decision makers within government, the public sector, the skills provision sector and businesses. Organisations find it difficult to plan ahead because they do not know what the future policy drivers will be.
ix. There is a lack of integration of LCREE skills into training programmes undertaken by all sectors, especially for and by the business sector. At the time of the report, limited progress had been made in integrating LCREE skills into qualifications and National Occupational Standards.

x. A series of key recommendations for further evidence-based work were made, including:

- The quantification of potential demand, including assessment of a range of methods for stimulating LCREE demand.
- The identification of sector specific LCREE skills training requirements and how these will be delivered.
- The development of employer and employee perception in relation to the understanding of, and the need for, skills training.
- Case studies, performance and benchmarking – examples of good performance and best practice, as well as the benefits this has brought, need to be collated and disseminated to promote uptake of LCREE skills and behaviour amongst organisations.
- Further investigation is required of the relationship between behaviour change and LCREE skills that will encourage a change in organisational attitudes.
- The identification of training delivery methods fit for a range of up-skilling purposes.
- Obtain a greater understanding of where the key skill demands will be in relation to future technologies.
- Development of leadership framework for LCREE as there are a range of leadership and management skills and behaviours that must be embedded in all organisations.
- There is a need to define of sector specific requirements in relation to LCREE design skills.

xi. Other key recommendations included

- A much greater & efficient integration across the whole of the skills delivery system, especially in relation to key providers.
- LCREE skills being incorporated into majority, if not all, the Sector Skill Agreements facilitating creation of sector based National Occupational Standards, which would accelerate delivery of sectoral skills in LCREE.
- The development of methodologies for awareness raising at the employer level.
- The development of optimum methods of generic skills delivery, especially in terms of making training accessible & convenient to employers & employees.
- The utilisation of a range of public sector opportunities to drive forward the demand for LCREE (e.g. re-writes of procurement codes).
5.5. RIBA Skills for Low Carbon Buildings

i. The RIBA has undertaken research to identify the range of low carbon skills and competencies that architects should consider encompassing both technical and commercial skills. The core focus in this document is on design skills, but it is recognised that low carbon skills extend beyond design; they should be embedded within communications, procurement and project management activities to ensure that the quality of the low carbon design is reflected in the building that results.

ii. The skills are split out into four categories as follows:

*Client skills:*
- Knowledge of climate change
- Communicating the importance of low carbon design
- Negotiations with clients and authorities

*Design skills:*
- Regulations and standards
- Thermal characteristics
- Building services and renewable energy systems
- Low carbon design
- Energy Assessments

*Procurement skills:*
- Carbon impacts of design and construction
- Capital and in-use costs
- Funding mechanisms
- Economics of low carbon technologies

*Construction skills:*
- Commissioning
- Ensuring delivery of low carbon design
- Metering and Monitoring

iii. These are then further defined into the following skills, knowledge and competency areas

- Knowledge of current and forthcoming planning and building regulations about low carbon design and refurbishment
- Knowledge of non-statutory energy and environmental standards, and the ability to identify, evaluate and select appropriate low carbon standards and strategies related to low carbon design and refurbishment
• Knowledge of the thermal implications of building form, and of how thermal performance can be improved
• Knowledge of new and renewable energy systems for use in buildings, and the ability to compare and evaluate systems
• The application of integrated low carbon design principles (embracing building form and fabric, building services, and new and renewable energy systems) to new buildings and refurbishment projects
• Knowledge of energy performance simulation techniques, and the ability to apply them to designs for new buildings and refurbishment of existing buildings
• Knowledge of energy performance simulation techniques, and the ability to apply them to designs for new buildings and refurbishment of existing buildings
• Knowledge and application of energy and environmental assessment procedures for new buildings
• Knowledge of the thermal characteristics of building fabric, and of how performance can be improved
• Knowledge of building services systems and of their key characteristics that contribute to low carbon performance
• Knowledge of post-construction testing and commissioning of buildings and the ability to educate building users and managers
• Ability to undertake surveys and assessments of existing buildings and produce energy ratings and environmental assessments
• Commercial and management skills, knowledge and competencies

In 2010, the RIBA’s Royal Society of Architects in Wales piloted an Environmental Professional Development training module in partnership with the Building Research Establishment Wales (BRE). In May 2011, the RIBA confirmed their intention to ‘mainstream’ in the UK, through the RSAW & BRE. The focus is likely to be on low carbon design and sustainability, and that it will be awarded a level of accreditation by the RIBA. It would also appear that this course will be directed exclusively at qualified architects. The potential for this type of training to be extended to a wider cross professional base needs to be explored.

5.6 Skills and Knowledge for Sustainable Communities Project – Skills Development for Built Environment Professionals: Sarah Sayce, Kingston University

i. Academic and policy reports have demonstrated that public participation in spatial planning is key to achieving sustainable developments and the Egan Review (2004) identified a range of generic skills, behaviours and knowledge required.

ii. This research explored the extent to which learning opportunities to develop the skills and attributes for positive stakeholder engagement are available to built environment professionals.
iii. The findings included the need to prioritise the needs of the commissioning client over those of the wider community and describing communication skills in terms of ‘presenting to’ rather than ‘engaging with’ stakeholders. This suggests that there remains a tension between the model of the professional as a receptive facilitator and the traditional model of an incisive and decisive specialist. Subject Benchmarks and professional body requirements define and ensure testing of a range of skills, but the emphasis placed on any one skill varies from profession to profession.

iv. Some concern is expressed in the report in terms of how professional specialisms within University courses can reinforce ‘silos’ of knowledge and attitudes and lay open the possibility of inconsistent interpretation of standards. For graduates to be ready to engage with practice confidently, they need to be empowered through the way in which their programmes are delivered. In connection with this, simulation and situated learning are important mechanisms for delivery. Learning embedded in activity and a ‘real’ context is more likely to develop both self-awareness and skills development.

v. At the point of professional qualification, a common practice of peer-professional assessment is noted. This provides an opportunity to test skills in practice but, it opens the possibility of encouraging a culture of perpetuating existing practice. Beyond the point of initial qualification, although CPD is required by all bodies, there is no specific requirement for skills development. It is therefore possible for practitioners to remain at the same skills level indefinitely beyond qualification. The research could not, empirically, support or deny whether this is the case.

vi. The research concludes that a clear distinction should be made between those skills that can be taught and assessed; and ‘soft’ skills and personal attributes, which are tacit and are best acquired through situated learning. Related to this, the research found evidence of innovative practice across the professions and at all levels of pre and post qualification education. However, support is essential to stimulate significantly more actions and to increase the number of situated learning opportunities in the delivery of professional education curricula. Higher Education Institutions (HEIs) would need to provide appropriate, flexible physical learning environments. Professional bodies could encourage inter-professional and stakeholder engagement by facilitating collaborative learning partnerships with HEIs, practitioners and local authorities. The latter recommendation supports the conclusions of the Leitch Review (2006) which emphasised the need for greater employer (and individual) responsibility for developing ‘world class’ skills.

vii. The report stresses the need for partnership working to develop and improve both generic and specific skills required to facilitate successful community stakeholder participation within the spatial planning process, particularly focusing on the personal attributes necessary to allow genuine engagement to flourish.

viii. This research confirms a disparity of views as to the general skill levels among
practitioners. Whilst there are reported deficiencies within the practitioners, nearly half the survey considered that their profession – rather than individuals - possessed appropriate skills. The research also pointed to a developing distinction between skills which can be taught and assessed and ‘soft’ skills and personal attributes which, whilst they can be fostered through teaching and learning strategies do not lend themselves to formal training and/or assessment.

ix. This reinforces the need for education and practitioner mentors to encourage self-awareness and self-development alongside technical skills training. The empowerment agenda requires a range of adapted and new skills. Facilitation, listening and effective dialogue skills, combined with the ability to work with people to develop a vision - rather than impose one - is critical. It was recognised that many engagements involve complex material and the ability to explain simply without patronising is crucial. Thus the research also indicates a shift from the professional as leader, to professional as facilitator, able to learn from and respond to others, both from within the team and beyond. Leadership skills remain important, but are not in themselves sufficient. Skills developed for professional and inter-professional situations, such as conflict resolution, need to be reframed when applied to community engagement. However, as long as the total advisory team is appropriately skilled, it is not necessary for each member to have full command across the skills; instead mutual support and respect with appreciation for each others skills, is key.

5.7 Motivating and Supporting Skills, Knowledge and Learning for Sustainable Communities: Professor Terry Marsden, Cardiff University

This was a UK wide report although undertaken by Cardiff University.

i. The report acknowledges the importance of local circumstance because of the complex linkages, which exist between sustainable communities and the everyday lives of people in place. Here, these factors are characterised as involving the right combinations of time, people and place.

ii. The skills and knowledge debate needs to be much more closely related to both the process of creating sustainable communities, and the everyday lives of people in place. The development of skills and knowledge for sustainable communities has to happen at a local level. Furthermore, the process of learning is highly significant. Skills and knowledge cannot simply be imported from elsewhere through formal education channels alone. The transfer of skills and knowledge is dependent upon ‘learning by doing’ and ‘learning by seeing’.

iii. As in the previous report the research considers a ‘situated learning’ approach recognises the importance of individual learners and the social context in which learning took place. A ‘sense of place’ is also significant in the creation of sustainable communities. Place making is already a key notion in the sustainable communities skills policy agenda. However, place is not a fixed, stable, single location, but the sum
of its social relations – it is different things for different people. In determining how best to support skills and knowledge for sustainable communities, simultaneous acknowledgement must always be given to the specific social, environmental and economic conditions of each local community. In order to do this we need to move beyond ‘one size fits all’ policy approaches, which are based on either the attainment of universal skills sets.

5.8 Skills for Sustainability – What does it really mean for the professional, South Bank University - 2006

i. Although this relates to research undertaken in 2006 it is still felt to raise important issues in relation to low carbon skills for professionals today.

ii. The research found that the environmental skills professionals said they needed fell into three categories: Knowledge related, skills related and attitude related. It was suggested that the term ‘skills’ was too narrow for the answers given and suggested the term ‘capabilities’. It was recognized that as degree programmes are not able to provide all the knowledge and skills needed, and especially as there is a need to keep up to date, professionals had stated there was a need for continuous sustainable development training. A constant request was for training in adopting holistic approaches to the problems. There were also references to the need for cross professional dialogue and it was suggested that cross professional workshops provided such opportunities.

iii. The following is an edited summary of the discussion, listing some of the main discussion points and recommendations:

iv. General observations

- The term “Professional capabilities” would be a better than “skills” because it covers knowledge, skills and motivation.
- Professional institutions are at different stages of developing responses to sustainable development issues. They are also developing different processes to address the issues. Diversity is to be valued.
- Umbrella bodies have a role to play in bringing professional groups together to work jointly on what is a multi-disciplinary issue.
- The key principles of sustainable development need to be understood before the professional development provision can be planned.
- Sustainable development needs to be considered at the outset of a project rather than as an add-on.
- We can learn from what professionals are doing in other countries, e.g. Denmark, Netherlands, and Cuba.
- All CPD to include an element of sustainability.
- What is an acceptable balance between professional bodies acting as leaders and
following the wishes of their members?

v. Some important capabilities of professionals: (NB These are not intended to be comprehensive).
   • The ability to engage customers in discussion about sustainable development with the aim of gaining a higher profile for sustainability in project plans.
   • The ability to communicate good science appropriately and effectively to other professionals and the public alike. Professionals need to get the public on the side of science. Good communication could overcome some of the scepticism of science.
   • The ability to view their professional activities in a holistic way and apply systems thinking skills when finding solutions to specific problems.
   • The motivation and ability to set a good example.
   • Recognition of the need and the ability to take account of ethical considerations when offering solutions even though these may not be ‘scientific’.
   • The ability to make decisions based on incomplete information.
   • The ability to integrate learning with working.

vi. Summary of recommendations for the professional bodies

These statements and recommendations are provided within a context that there is strong support amongst the professional bodies for improving their competencies in sustainable development. Many are already strongly engaged in developing policies and practices that will raise their competency and the competency of their members to address sustainability. All are keen to learn from each other and the workshop provided an opportunity for them to do this.

Governance
   • Professional bodies to be leaders and strong advocates for sustainability. However, they need to find appropriate ways of doing this. A culture change within the profession and their clients may be needed.
   • Professional bodies adopt an appropriate style of leadership. Success is more likely if it is inclusive, participative and demonstrative. Prescriptive leadership is not always welcomed and therefore accepted.
   • Professional bodies set a good example through their governance and their management procedures.
   • Professional bodies develop flexibility of governance to be able to respond to a future that is unknown. Solutions of the past may not provide the solutions for the future.

Policy
   • Professional bodies make sustainable development a priority.
• Professional bodies ensure sustainable development is in all policy areas.
• Professional bodies adopt policies to attract younger members?
• Professional bodies consider setting minimum professional competency standards in sustainable development.
• Professional bodies expand communication with members on the subject.
• Professional bodies collectively challenge government when their efforts to apply sustainable development principles are obstructed by inappropriate government policies and regulations. For example the VAT issues relating to new-build and refurbished construction projects.
• Professional bodies make more explicitly their vision of a sustainable profession and sustainable professional.

Practice
• Professional bodies are already active in many aspects of sustainable development. Developing a sustainable development framework could be used to review what their institution is doing and what still needs to be done.
• Professional bodies develop and promote guidance on how to integrate sustainable development principles into professional practice. (Are there new skills to be learned, or is it a matter of using existing skills in the context of achieving sustainability?)
• Professional bodies collect and publicise realistic case studies and show what has been learned from them.
• Professional bodies develop codes of practice and/or standards relating to sustainable practice.
• Professional bodies take a stronger lead on CPD for sustainability.
• Professional bodies engage further with the legal professions so that sustainable development can be brought into legal contracts.

Cross professional actions
• The umbrella bodies provide a leadership role in inter-professional dialogue on sustainability and sustainable development, for example by supporting cross professional networks.
• Professional bodies challenge prevailing orthodoxy and provide a strategic vision.
• Professional bodies work together more frequently and in more ways.
• Professional bodies promote and support cross professional actions, e.g. strategy development, dialogue, agreeing principles, learning.
• Professional bodies identify the demand for sustainable development solutions amongst the users of their professional services.
vii. Next steps

- Professional bodies give more emphasis to the social issues. Environment is the aspect of sustainable development that is most commonly emphasised. Corporate Social Responsibility is a term used by many companies to describe their approach to environmental and social issues.
- Professional bodies develop a model of leadership for sustainable development.
- Professional bodies encourage and support the development of skills for systems thinking.
- Professional bodies facilitate cultural changes that favour working towards sustainability.
- Professional bodies promote the learning of communication skills so that professionals can communicate with stakeholders more effectively.

viii. In conclusion the research recognised that each professional body had its associated bodies of technical knowledge and skills, but that many of the sustainable development skills were in fact relevant to all professions.

ix. Changes to mindsets and behaviours within the professional institutions are still needed. There is a need to engage more communities and stakeholders in professional plans for sustainable development in the communities where their members operate. The research calls on the need to “Inform, Influence, Innovate, Inspire and Involve and to avoid prescription”.

5.9 London Energy Partnership - Skills for a Low Carbon London

i. Although a London based project this work is important in that it sets out a series of training modules for universities to use in their undergraduate teachings and to offer as Continuing Personal Development (CPD) to local authorities planning departments for their current staff. The Centre for Sustainable Energy (CSE) was commissioned by the London Energy Partnership to produce the learning resource. The course content covers low and zero-energy design and renewable energy for planners alongside the policy landscape necessary to implement these measures.

ii. The project was specifically aimed to ensure planning staff working for London Boroughs are as up-to-date and as confident as possible in their engagement with developers. This will ensure that low carbon developments across the capital become a reality. The resource currently reflects and embeds planning policy and development issues specific to London but can be tailored to suit the needs of Wales and indeed other UK regions.

iii. The modules were developed in conjunction with the Universities of Westminster and Kingston, South Bank University and University College London (these being the four institutions that offer RTPI accredited degree and postgraduate courses in planning) and the RTPI and the TCPA themselves.
iv. The project included:

- Development of full materials at degree-level (suitable for undergraduate and postgraduate courses)
- Development of a CPD course made up of approximately six half-day sessions (at the discretion of the trainer)
- Training of both CPD trainers and university lecturers to enable them to deliver the technical elements of the courses with confidence
- Stakeholder consultation at all stages of the work

5.10 Sustainability skills matrix (see matrix in appendix 6)

i. The Sustainability Skills Matrix for the Built Environment is a high level framework that charts the key functional players and the sustainability issues relevant to making their practices more sustainable. Against these, the matrix identifies what each function needs to be able to do, and their level of involvement in those particular actions. The matrix was designed for use by all the main functions working in the built environment - from investors and clients to contractors, suppliers, end users and demolition. It can be used to influence the shape and content of training provision, assist companies in identifying their own skills and to assess your own skills, knowledge and attitudes.

ii. CIC has incorporated the functions identified in the Matrix into the Occupational Standards for Professional, Managerial and Technical Occupations in the Built Environment.

Conclusions (UK policy & research)

i. There is a wider and more in depth evidence base in relation to low carbon skills in the UK as a whole, compared with Wales. This translates into a more focused assessment of low carbon skills for the regeneration and built environment professions in the public, private and third sectors.

ii. This UK related evidence base is a useful guide for assessing the situation in Wales, but it is essential that the specific low carbon policy and delivery circumstances in Wales are fully reflected in the evidence base presented to the Welsh Assembly Government and its partners.

iii. In terms of the UK position in relation to low carbon skills, it must also be accepted that many of the policy and research reports referred to were instigated and / or aimed at the previous UK government and not the current UK Coalition government. Therefore greater clarity in relation to the current UK government’s response to the low carbon skills agenda is probably required.
E. Survey analysis

1. Background to the professional services sector in Wales

As reported in the Construction Skills ‘Professional Services Sector Research Report’ there are approximately 10,000 members of professional bodies within the construction sector in Wales.

The professional services sector in Wales is enormously diverse as indicated by the range of professionals included within it. The sector perhaps tends to be dominated by the larger players, the Royal Institution of Chartered Surveyors with approximately 4000 members (albeit that only 1600 technically fall within the ConstructionSkills footprint) and the Institute of Civil Engineers with approximately 3000 members. The Chartered Institute of Building is also well represented in Wales with around 1500 members as is the Royal Town Planning Institute with around 1000 members in Wales. Research undertaken with professional bodies indicates that others have less than 1000 members in Wales although it should be noted that between them the Institute of Highways and Transportation and the Institute of Highways Incorporated Engineers have around 1000 members.

ConstructionSkills Network Labour Market Intelligence 2009-2013, however, indicates that, in fact, the numbers of professionals employed in Wales is double that of the memberships of the professional bodies at around 18,700. However, this includes a figure of 5060 for ‘other construction professionals and technical staff’ such as mechanical, electrical and chemical engineers and some engineering technicians. However, even taking this into account it does appear to indicate that there are many professionals who are not actually members of professional bodies. This could be as many as 6,000 in Wales. The number of professionals cited by the ConstructionSkills Network represents approximately 16% of the total employment within the construction sector in Wales.

2. Methodology

In order to ensure a wide range of opinion and a representative sample of the regeneration and built environment professional sector in Wales it was decided to use a questionnaire approach. The questionnaire was designed in consultation with practitioners, in particular the Regeneration Skills Collective Wales Practitioners’ Group and with the clients, ConstructionSkills Wales and the Centre for Regeneration Excellence in Wales. It was agreed that an online survey would ensure accessibility and ease of use although hard copies were also available on request. SurveyMonkey software was used for the questionnaire. A copy of the questionnaire is included in appendix 1.

Potential respondents were targeted via key professional body representatives and due note was taken of Data Protection Act issues. All questionnaire requests were sent out by professional bodies to their members in Wales and the survey was also featured in a number of e newsletters.
The following professional bodies were approached:

- Association of Building Engineers
- Association of Project Safety
- Association for Project Management
- Chartered Institute of Architectural Technologists
- Chartered Institute of Building
- Chartered Institute of Building and Services Engineers
- Chartered Institute of Housing
- Chartered Institute of Wastes Management
- Chartered Institute of Water and Environmental Management
- Construction Industry Computing Association
- Institute of Environmental Management and Assessment
- Institute of Highways Incorporated Engineers
- Institution of Civil Engineers
- Institution of Civil Engineering Surveyors
- Institution of Highways and Transportation
- Institution of Structural Engineers
- Landscape Institute
- Royal Institution of Chartered Surveyors
- Royal Society of Architects in Wales
- Royal Town Planning Institute
- Society for the Environment

Other organisations contacted with involvement in the professional sector included:

- Association of Consultant Architects
- Association for Consultancy & Engineering
- British Property Federation
- Chartered Institute of Architectural Technologists
- Chartered Institute of Marketing Construction Industry Group
- Constructing Excellence
- Consortium of Local Authorities in Wales
- Home Builders Federation
- Local Authority Building Control (LABC)
- Women in Property
3. Profile of respondents

222 responses were received to the questionnaire. Not all respondents answered every question but percentages given in this report relate to the number answering the question.

Figure 2 below shows the distribution of responses by declared professional body membership.

*Figure 2 – Respondents’ membership of professional bodies*

Members of professional bodies are widely spread throughout Wales and Figure 3 below shows the distribution of respondents between the regions.
Figure 3 – Geographic distribution of respondents

Within which area of Wales are you based?

<table>
<thead>
<tr>
<th>Area</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>North West</td>
<td>23.0% (51)</td>
<td></td>
</tr>
<tr>
<td>North East</td>
<td>51.4% (114)</td>
<td></td>
</tr>
<tr>
<td>South East</td>
<td>12.2% (27)</td>
<td></td>
</tr>
<tr>
<td>South West</td>
<td>11.3% (25)</td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td>7.7% (17)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3 shows a good representation of the geographic spread of professionals in Wales with predominance in the South East (51.4%).

Respondents were given the opportunity to reply as either an individual or on behalf of their employing organisation. 54.5% responded as individuals and 45.5 on behalf of their organisation. This, therefore, shows a significantly increased response rate than the number of 222 would imply since 101 people responded on behalf of organisations, thereby giving a much broader view than the individual replies.
Respondents were also asked to indicate which sector their organisation was in and responses are indicated in Figure 4 below.

**Figure 4 – Organisational sectors represented**

![Pie chart showing sector distribution]

Again, it is felt that is a fair representation of the spread of professionals in Wales between sectors with a strong dependence on the public sector although almost balanced by the private sector. Sectors included in other were:

- Professional body
- Charitable
- Education
- Housing Association
- Local Authority
- Private company representing Local Authority Building Control
- Public private partnership
- RSL – MUTUAL
How many Employees are there in your organisation in Wales? (please select)

- 0-5: 23.0% (51)
- 6-20: 12.6% (28)
- 21-100: 14.9% (33)
- 101-250: 8.1% (18)
- 250+: 41.4% (92)
Respondents were also asked to identify the technical sector within which their organisation operates. The responses are summarised in Figure 6 below.

_Figure 6 – Technical sectors represented_

There was a strong emphasis on regeneration practitioners with approximately 54% indicating their employer was involved in this area of work. 30% of respondents worked for organisations involved in design.

The types of sector identified in ‘other’ included:

- Advocate of Sustainable Production and Consumption
- BREEAM and Code for Sustainable Homes assessor
- Building Control
- Training and education
- Cost management
4. Skills

This section focuses on the responses regarding low carbon skills now and in the future. Respondents were asked by how much they felt their organisation’s skills requirements would change as the result of operating in a low carbon economy. The responses are summarised in Figure 7 below.

*Figure 7 – Changes in skills requirements as a result of operating in a low carbon economy*

**By how much do you think your /or your organisation’s skills requirements will change as a result of operating in a Low Carbon Economy?**

- Not at all: 55.3% (120)
- Minor change (e.g. better use of existing training programmes): 31.3% (68)
- Significant change (e.g. seeking new and wider training provision): 6.0% (13)
- Extensive & major change (e.g. complete reappraisal of training needs): 7.4% (16)
This demonstrates significant changes in skills requirements with 61.3% stating that skills requirements for their organisation will significantly or extensively change and 92.6% stating there would be changes.

5. Importance of low carbon skills

Respondents were then asked to rate specific, low carbon skills from 0 to 5 with 0 being no importance to 5 the most important.

The low carbon skills given were those shown on the x axis of the chart in Figure 8.

Figure 8 below indicates the percentage of respondents who rated skills as either 3, 4 or 5 (i.e. fairly important to very important).

**Figure 8 - Importance of low carbon skills**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client skills</td>
<td>85%</td>
</tr>
<tr>
<td>Design skills</td>
<td>89%</td>
</tr>
<tr>
<td>Waste skills</td>
<td>73%</td>
</tr>
<tr>
<td>Energy skills</td>
<td>87%</td>
</tr>
<tr>
<td>Construction skills</td>
<td>78%</td>
</tr>
<tr>
<td>Building management skills</td>
<td>66%</td>
</tr>
<tr>
<td>Transport Infrastructure skills</td>
<td>60%</td>
</tr>
<tr>
<td>Procurement skills</td>
<td>71%</td>
</tr>
<tr>
<td>Financial skills</td>
<td>62%</td>
</tr>
<tr>
<td>Leadership and management skills</td>
<td>83%</td>
</tr>
<tr>
<td>Town and Country Planning skills</td>
<td>74%</td>
</tr>
<tr>
<td>Community skills</td>
<td>80%</td>
</tr>
<tr>
<td>Landscape and environmental skills</td>
<td>68%</td>
</tr>
</tbody>
</table>

Interestingly these are relatively similarly rated demonstrating that the range of skills are of comparable importance one to another. The most cited as important (rating 3, 4 or 5) were design skills, then energy skills, client skills and then leadership and management. The highest number of respondents rating a skill as 5, i.e. very important was for design skills (29.4%), then leadership and management (23.3%), Town and Country planning (21.5%) and construction (21.5%).
The results were then analysed by sector. The results for the private and public sector respondents are shown in Figures 9 and 10 below respectively.

**Figure 9 – Importance of low carbon skills in the private sector**

![Graph showing the importance of low carbon skills in the private sector.]

**Figure 10 – Importance of low carbon skills in the public sector**

![Graph showing the importance of low carbon skills in the public sector.]

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Percentage who found skill important

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Percentage who found skill important
As shown above client and design skills were considered important by a greater proportion of professionals in the private sector than in the public but generally the profiles of the relativity of the importance of skills were similar in each sector.

Respondents were then asked which specific skills they feel should be included within the broad skills sets they had identified as important (i.e. those they had rated 3, 4 or 5). The following figures identify the specific key skills for each set of low carbon skills set out in Figure 8 above.

**Figure 11 – Client Skills**

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:
**Figure 12 Design Skills**

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- **Low carbon design**: 84.9% (124)
- **Green manufacturing**: 22.6% (30)
- **Materials specification**: 61.0% (89)
- **Life cycle assessment / costing**: 83.5% (96)
- **Low carbon services (including renewable energy services and Sustainability)**: 67.1% (98)

**Figure 13 – Waste Skills**

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- **Waste measurement and monitoring**: 41.2% (56)
- **Waste management systems**: 49.2% (59)
- **Waste minimisation**: 75.5% (87)
- **Waste technologies**: 38.2% (47)
- **Waste to energy**: 49.0% (54)
Figure 14 – Energy Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

<table>
<thead>
<tr>
<th>Skill Set</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable energy technologies</td>
<td>49.3% (71)</td>
</tr>
<tr>
<td>Energy Management Systems</td>
<td>45.8% (68)</td>
</tr>
<tr>
<td>Energy measurement and monitoring</td>
<td>39.6% (67)</td>
</tr>
<tr>
<td>Energy cost</td>
<td>46.5% (67)</td>
</tr>
<tr>
<td>Carbon trading</td>
<td>25.7% (37)</td>
</tr>
<tr>
<td>Renewable energy technologies</td>
<td>79.9% (115)</td>
</tr>
<tr>
<td>Non-renewable energy technologies</td>
<td>30.6% (44)</td>
</tr>
<tr>
<td>Energy assessment</td>
<td>50.7% (79)</td>
</tr>
</tbody>
</table>

Figure 15 – Construction Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

<table>
<thead>
<tr>
<th>Skill Set</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery of low carbon design</td>
<td>89.1% (114)</td>
</tr>
<tr>
<td>On site carbon management</td>
<td>43.9% (55)</td>
</tr>
<tr>
<td>Monitoring and measuring construction related carbon emissions</td>
<td>42.2% (54)</td>
</tr>
</tbody>
</table>
Figure 16 – Building Management Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Building Energy Management: 66.7% (74)
- Integration of Renewable Energy: 66.7% (74)
- Energy Efficient Occupation: 60.4% (67)
- Green leasing: 15.3% (17)
- Value low carbon buildings: 36.6% (34)
- Facilities Management: 44.1% (49)

Figure 17 – Transport Infrastructure Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Carbon management: 64.4% (65)
- Transport management: 37.6% (38)
- Planning and design of low carbon transport infrastructure: 64.4% (65)
Figure 18 – Procurement Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Sourcing: 60.8% (73)
- Procurement and Selection: 75.8% (91)
- Materials Use and Impact Qualification: 51.7% (62)
- Management Systems: 28.3% (34)
- Impact and Use Minimisation: 35.8% (43)

Figure 19 – Financial Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Investment Models: 48.8% (49)
- New / Alternative Financial Models: 56.9% (60)
- Qualification of Climate Change Impacts: 31.4% (32)
- Principles of Low Carbon and Resource Efficient Economies: 58.8% (60)
- Tools of Low Carbon and Resource Efficient Economies: 45.1% (46)
- Valuation: 22.5% (23)
Figure 20 – Leadership and Management Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Impact Assessment
- Business Planning
- Awareness Raising
- Opportunities Management
- Risk Management
- Project Management
- Programme Management
- Motivating Others
- Managing change
- Engagement and sharing with other stakeholders
- Strategic and process thinking

Figure 21 – Town and Country Planning and Policy Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Built Environment Master Planning and Implementation
- Strategy Development
- Strategy Implementation
- Development Management
- Local planning policy
- Building Regulations
Figure 22 – Community Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Facilitating behavioural change: 62.2% (84)
- Community facilitation: 58.5% (79)
- Local partnership working: 47.8% (101)
- Engaging key personnel: 47.4% (64)

Figure 23 – Landscape and Environment Skills

If you have scored this as a 3, 4 or 5 please select which of the following you / your organisation feel should be included in this skill set for your area of practice:

- Assessing Protecting and Enhancing Biodiversity: 83.8% (93)
- Micro-Climate Creation and Enhancement: 55.9% (62)
- Carbon Sequestration: 32.4% (36)
Other skills areas suggested included:

- Awareness of building systems which help deliver low carbon design
- Quality of Life issues and people’s recreation and leisure use and how it relates to a low carbon existence
- Creative thinking
- Eco footprinting
- Harnessing urban and rural Green Infrastructure Changing Code for sustainable homes and BREEAM to understand the need for site planning and design to really understand site context, use of landscape design principles and site features to enhance micro-climate, insulate from the elements = energy and carbon reduction
- Local knowledge
- Understanding what low carbon is
- Underpinning knowledge about sustainable development in its widest sense
- Appreciation of social factors
- Assessing local available resource

There were no significant differences between the different areas of Wales. Clearly the responses did vary depending upon the sector within which the individual or organisation operated and/or their professional affiliation. Further analysis can be provided on this but, of course, numbers become quite small for each grouping.

The above skills sets offer a useful summary of specific skills needs for each skill set.

Respondents were then asked whether they felt that they (or their organisation if they were answering on behalf of an employer) had the skills they had identified as important. 52.3% felt that they had and 47.7% that they had not so an almost equal rating. Those that answered that they (or their organisation) did not have these skills identified difficulties in keeping up with changes and the lack of available CPD and training opportunities as key reasons for this. The profile of responses varied depending upon the sector within which the organisation operated. 58.5% of respondents within the public sector felt that their organisation had the necessary skills whereas only 43% of those in the private sector felt that they had. In the third sector 55% of respondents felt their organisation had the necessary skills whereas in the community sector all respondents felt these skills needs were met.
6. Low carbon skills in the future

Respondents were then asked which skills they felt would become more important in the next five years. Figure 24 summarises the results.

*Figure 24 – Low carbon skills in the future*

There is a marked difference in the profile of skills identified for the future when compared with current skills. Design skills have significantly lessened in importance but transport infrastructure skills shows a significant increase in importance. Energy skills also show a lower relative importance when compared with other skills groups.
Figure 25 below shows the factors that respondents felt are currently driving demand for low carbon skills in their organisation.

**Figure 25 - Factors currently driving demand for low carbon skills**

Which factors are currently driving demand for Low Carbon skills in your organisation? (please rate in terms of importance where 0 = not important and 5 = very important)

Clearly the overriding factor driving demand is felt to be legislation and regulation with planning requirements also felt to be a key driver. Other factors felt to be important although not as important as these are organisational policy and cost savings. It is interesting to note that client or customer requirements are not felt to be a key driver and it is, therefore, clear that the low carbon economy is currently skill being driven by regulation rather than client requirements.
Figure 26 below shows the factors that respondents feel will drive demand for low carbon skills in the future.

**Figure 26 – Factors that will drive demand for low carbon skills in the future**

Which factors do you expect to drive demand for Low Carbon skills in the future? (please rate in terms of importance where 0 = not important and 5 = very important)

It is interesting to note that legislation and regulation extends in importance when respondents are asked to look ahead with planning requirements a little less and client/customer requirements becoming a more important driver.
7. Skills gaps in other organisations and client groups

Figure 27 below shows respondents view of the skills gaps within the organisations or individuals with whom they work.

Figure 27 – Skills gaps in other organisations and client groups

We would also like to know about the low carbon skills expertise and capacities of other individuals and organisations with whom you work.
For example this could include public or private sector clients or public sector regulators etc. From the list of skill sets below, please indicate those skill sets where you consider gaps exist with other individuals / organisations.

It is interesting that again design skills features very highly with energy skills also being identified as a key skills gap.

This question was also analysed by the sector within which respondents worked and the results are summarised in Figure 28 below.

**Figure 28 – Skills gaps by sector**

We would also like to know about the low carbon skills expertise and capacities of other individuals and organisations with whom you work. For example this could include public or private sector clients or public sector regulators etc. From the list of skill sets below, please indicate those skill sets where you consider gaps exist with other individuals / organisations.
8. Development of low carbon skills and delivery of training

64.4% of respondents felt that their organisation is actively integrating or mainstreaming low carbon skills into its day to day operation. However, the profile of responses varied depending upon the sector within which their organisation operates as shown in Figure 29 below.

*Figure 29 – Are organisations mainstreaming low carbon skills into their day to day operation (by sector)*

It is interesting to note that a greater percentage of public sector professionals felt that their organisation was not mainstreaming low carbon skills than those in the private sector.
Figure 30 below shows the ratings respondents gave to the current delivery of training and education relating to low carbon skill in Wales.

Figure 30 – Rating of current delivery of low carbon training and education in Wales

As shown 55.3% of respondents felt that current provision is poor or not fully available with only 9.1% feeling current provision is good or excellent. The overall profile of ratings of provision in the different regions of Wales did not significantly differ.
Respondents were asked to identify the mode of training delivery they would favour for the development of low carbon skills. Figure 31 below summarises the responses.

*Figure 31 – Favoured mode of training or skills delivery*

Respondents were able to identify more than one mode in their response. It is interesting to note the high proportion favouring face to face or workshop delivery. Only around a quarter of respondents chose online, distance or blended learning as their chosen mode of delivery. The profile of responses was very similar in all regions of Wales. Surprisingly respondents from more rural areas had still selected face to face type training over online or distance learning notwithstanding that this may involve significant travel time. Responses from those responding on behalf of employers also favoured face to face style or workshop delivery.
9. Current supply of low carbon skills and training

Appendix 7 provides a review of the current provision of formal construction and built environment focused low carbon education in Wales. In addition to these formal programmes professional bodies, Constructing Excellence in Wales and other providers offer a range of CPD opportunities. The latter tend, however, to be relatively ad hoc and reactive and do not offer a structured progressive programme of professional studies for those already with experience within the construction, built environment or regeneration sectors. The majority of these courses have not been mapped to relevant professional bodies’ competency requirements and lack professional accreditation.

Note should also be made of the work that Asset Skills are currently undertaking in providing a pilot programme for energy advice training in Wales. The programme is commissioned by the Welsh Assembly Government, through the Sector Priorities Fund (supported through the European Union), to develop a training pathway in Home Energy Advice. Once qualified, learners may be in a position to provide Home Energy Advice within government schemes such as ARBED and Fuel Poverty, and build towards the skills required in the emerging Green Deal. This is yet to be confirmed, however, by the Welsh Government and DECC. The introduction of the Green Deal and ARBED Phase 2 introduce significant opportunities for energy advice by the professional sector and have a further influence on the future skills needs for these professionals.

There are currently 75 partially funded places available on the Asset Skills pilot with 25 learners in each of the North, South East and South West regions.

Candidates will receive training in the ABBE level 3 Energy Advice (Home) certificate with additional learning in the ARBED and Fuel Poverty schemes. The learning will be delivered through a mix of classroom and online platforms.

10. Other questionnaire feedback

The following table provides a list of additional comments given by respondents to the questionnaire:

- A lot of rhetoric about skills delivery but the reality is that it has not been fully embraced at practitioner level
- Although there are plenty of courses advertised in Wales to take part in, it is not always practical. We are a small business with only 5 members of staff. With our workload and statutory holidays, it is difficult for staff to be away from the office furthering their training although we do recognise it is important. The training opportunities in North Wales are limited with most courses being in South Wales which involves extra time and costs travelling.
- Case Studies should be used to demonstrate the difficulties of currently achieving low carbon buildings - there are enough examples now locally and project teams
should be encouraged to openly discuss the design, construction and financial pressures of achieving the scheme.

- Design ‘conservatism’ means innovations are hard to introduce through the procurement process. Hard to win in competition with other firms when procurers do not have the technical skills to make choices.
- For me, as an architect specialising in renovating old buildings for charitable organisations, cost is the main consideration - until products are affordable it is very difficult for me to specify when budgets are so constrained.
- I think that most of the skills exist within the local authority. The biggest barrier at the moment would appear to bringing all of these together.
- The knowledge base of the general public is extremely limited regarding low energy buildings and is mainly driven by the media or sold to them by contractors who are looking for a quick fix. The majority of buildings in Wales that will be around in the next 20 years have already been built and therefore these are the building that we should be targeting for low carbon, energy reduction. The insulation quilt and cavity wall insulation quick fix is fine for a many medium age buildings but we should be using our skills to address the rest.
- The skills gaps are well acknowledged in Wales - the trick will be filling these at a cost that is not prohibitive.
- To capitalise on future energy related developments, Anglesey County Council have developed the Energy Island Programme (EIP). The Energy Island Vision is to create a world renowned centre of excellence for the production, demonstration and servicing of low carbon energy. To do this, significant development in low carbon skills is required (both by the IACC and by the public/businesses/developers etc.) to ensure that this vision comes to fruition. With the development of a new nuclear power station, the potential for a 4.2GW offshore Wind farm and the potential new 299MW biomass plat (and others) the skills required on the Island to capitalise on future opportunities is vast. Anglesey currently has the lowest GVA in the UK at 55.1% of the UK average. Low carbon developments is seen as the way to buck this trend by becoming a leader in low carbon - which we require an abundant of new skills to do so.

11. Summary of key findings

The survey research has identified a number of key issues regarding low carbon skills for the built environment and regeneration professional services sector in Wales. These are summarised below.

- There are and will continue to be significant changes in skills requirements in the sector
- The most important low carbon skills in order of priority were identified as:
  - Design skills
  - Energy skills
It should, however, be noted that all of the skills listed in the research were considered as important by more than 60% of the respondents.

- In terms of these priority skills areas the priority skills required under each area were identified as:
  - Design – low carbon design
  - Energy – renewable energy technologies
  - Client – commercial implications of a low carbon economy
  - Leadership and management – project management and awareness raising
  - Community – local partnership working

- In the future design skills lessen in importance but transport infrastructure skills show a significant increase in importance. Energy skills also show a lower relative importance when compared with other skills groups.

- Around half of respondents felt that their organisation did not have the skills they had identified as important. This was largely due to difficulties in keeping up with changes and the lack of available CPD and training opportunities.

- The overriding factor driving demand for low carbon skills is legislation and regulation with planning requirements also a key driver.

- Over half of respondents felt that current provision of low carbon skills training is poor or not fully available.

- There is a strong preference to face to face or workshop delivery for the development of low carbon skills. This was very similar in all regions of Wales.

12. Conclusions and recommendations from the survey

This survey research has clearly demonstrated the significant scale of the challenge facing the professional sector in Wales as regards meeting the skills needs in delivering a low carbon economy. There are new key areas of skills and competencies developing that are becoming increasingly important and there is also a rapidly changing legislative and regulatory structure that makes keeping continuously up to date ever more important. Professionals feel that it is this legislation and regulation that is the key factor driving demand for low carbon skills now and in the future. This is likely to become exacerbated with the introduction of new initiatives and policies, the introduction of Phase 2 of the ARBED project and its associated requirements for energy surveys, the planned changes to Energy Performance Certificates in terms of commercial property in particular and bringing these more into line with Display Energy Certificates and the changes to the process of assessment by changes to the RdSAP requirements.
The development of low carbon skills is further challenged by the finding that professionals do not feel that current provision is sufficient and fit for purpose. There is clearly an urgent need for additional training facility in Wales to meet demand. The overriding requirement is that this is delivered by traditional face to face or workshop means with a much lower number of professionals facing distance or online learning. Blended learning was also not strongly favoured.

The results of the questionnaire give an excellent indication of the types of training that is required and further work should be undertaken to develop a pilot programme to address these issues.

When the provision of formal educational courses is considered in the context of the low carbon skills identified in this research there is a clear mismatch. Courses tend to be too wide and to be focused towards new entrants to the sector who intend to focus on sustainability as their initial area of work. These courses tend to lack specific relevance to professional bodies’ pathways to membership and to operate in isolation of professional accreditation. In addition, there are limited opportunities for professionals already operating in the professional sector to follow a structured programme of study that will allow them to develop the low carbon skills they require.

It would appear from this research that a structured Continuing Professional Development programme is needed for professionals either already operating in the construction, built environment or regeneration sector or who hold relevant professional qualifications in the sector to develop their low carbon skills and knowledge. Such a programme could offer CPD hours for all relevant professional bodies and focus on the skills needs for specific programmes such as ARBED 2 as well as developing more generic low carbon competencies. The competencies can be developed from the research identified in the above report. Any programme should be offered by traditional face-to-face methods albeit that this could be supported by online material.

F. Conclusions and Recommendations of the Phase 1 Report

1. Summary of conclusions

There is a very strong policy base in Wales in relation to low carbon reduction, the impetus to establish a more vibrant ‘low carbon economy’, the creation of more ‘green jobs’, and an aspiration for greater ‘joined up’ action both within the public sector; and between the public, private and third sectors. There is also a strong research base associated with the low carbon agenda in Wales, as evidenced by the establishment of the Low Carbon Research Institute (embracing a number of HE institutions in Wales); and a number of research based initiatives in the FE & HE sectors, mainly funded by a combination of domestic and European Union funding programmes.

A number of projects have been established in Wales, benefiting from a range of public and
private funding sources that seek to address some of the key sectors associated with the need to achieve low carbon reductions. Prime examples include investments in existing housing retrofit (ARBED); and in various forms of renewable energy.

There appears to be an acceptance that more focused training and education is required within Wales in relation to parts of the ‘low carbon economy’ sector, although evidence suggests that this is targeted more towards the more basic manual and lower technical skills, rather than the higher technical and professional skills.

The professional services sector is recognised as being of importance to Wales, in terms of the provision of higher skilled and higher income employment. However the link between this part of the employment sector and the low carbon agenda has been relatively weak in Wales, especially in relation to regeneration and the built environment professions. In some respects, the evidence base for this critical link has not been adequately established. However, the delivery of actions to address the low carbon agenda in Wales is beginning to reveal that skills deficiencies in regeneration and built environment professional services in the public, private and third sectors, is hindering the establishment of a successful and competitive low carbon economy in Wales.

In terms of UK policy and research there is a wider and more in depth evidence base compared with Wales. This translates into a more focused assessment of low carbon skills for the regeneration and built environment professions in the public, private and third sectors. This UK related evidence base is a useful guide for assessing the situation in Wales, but it is essential that the specific low carbon policy and delivery circumstances in Wales are fully reflected in the evidence base presented to the Welsh Government and its partners. In terms of the UK position in relation to low carbon skills, it must also be accepted that many of the policy and research reports referred to were instigated and / or aimed at the previous UK government and not the current UK Coalition government. Therefore greater clarity in relation to the current UK government’s response to the low carbon skills agenda is probably required.

The survey research has clearly demonstrated the significant scale of the challenge facing the professional sector in Wales as regards meeting the skills needs in delivering a low carbon economy. There are new key areas of skills and competencies developing that are becoming increasingly important and there is also a rapidly changing legislative and regulatory structure that makes keeping continuously up to date ever more important. Professionals feel that it is this legislation and regulation that is the key factor driving demand for low carbon skills now and in the future. This is likely to become exacerbated with the introduction of new initiatives and policies, the introduction of Phase 2 of the ARBED project and its associated requirements for energy surveys and other planned standards and regulation.

The development of low carbon skills is further challenged by the finding that professionals do not feel that current provision is sufficient and fit for purpose. There is clearly an urgent need for additional training facility in Wales to meet demand. The overriding requirement is that this is delivered by traditional face to face or workshop means.
It would appear from this research that a training framework is needed for professionals either already operating in the construction, built environment or regeneration sector or who hold relevant professional qualifications in the sector to develop their low carbon skills and knowledge. Such a programme could offer CPD hours for all relevant professional bodies and focus on the skills needs for specific programmes such as ARBED 2 as well as developing more generic low carbon competencies. The competencies can be developed from the research identified in the above report. Any programme should be offered by traditional face to face methods albeit that this could be supported by online material. It will be important that a gap analysis of current training provision is undertaken prior to the development of the framework in order to ensure that use is made of existing provision and material.

Two additional key issues have arisen as result of targeted consultation of the final draft Phase 1 report with representatives of the CIC / CSW Professional Services Sector Employers Group; and the Regeneration Skills Collective Practitioners Group. These are that:

i. It should be recognised that it is the low carbon regulatory requirements are driving the agenda and NOT client requirements or business benefits. In these circumstances, government needs to address this critical issue, if their aspirations are to be fully realised in a relatively short period of time.

ii. This Phase 1 report should not result in a duplication of what already exists in terms of training provision and associated initiatives. Rather that it should build upon what is already is being successfully delivered and seek to extend provision to professional services practitioners in all parts of Wales.
A summary of the responses received as part of the final consultation with employers and practitioners form Appendix 8 to this report.

2. Recommendations

The following table provides a summary of recommendations for action following this research.

<table>
<thead>
<tr>
<th>Action</th>
<th>Priority</th>
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<tbody>
<tr>
<td>To undertake a detailed gap analysis of current training and CPD provision against the skills needs identified in the research</td>
<td>High</td>
</tr>
<tr>
<td>To review the skills needs for delivery of new initiatives such as ARBED 2 and the Green Deal to feed into gap analysis</td>
<td>High</td>
</tr>
<tr>
<td>To review the leadership and management skills requirements to consider how these fit into existing programmes</td>
<td>High</td>
</tr>
<tr>
<td>To develop a training framework to address the skills needs of this research to include existing material/provision and to address training gaps identified in the gap analysis</td>
<td>High</td>
</tr>
<tr>
<td>To work with FE and HE Institutions, and the professional institutions, to ensure that plans for future delivery embrace skills identified in this research</td>
<td>Medium</td>
</tr>
<tr>
<td>To partner with providers (including FE and HE Institutions and training providers) to pilot the training framework</td>
<td>High</td>
</tr>
<tr>
<td>To deliver the training framework and monitor the outcomes</td>
<td>High</td>
</tr>
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