An aspect report by HM Inspectors on behalf of the Scottish Funding Council

**Sustainability and Scotland's Colleges
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leasachadh foghlam na h-Alba

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Introduction

This report evaluates how effectively Scotland's colleges have embraced and taken forward sustainability in the context of the Scottish Government's commitment to improve Scotland's natural and built environment and the sustainable use and enjoyment of it. *Greener Scotland* is one of the five strategic objectives that form part of the Government's National Performance Framework, which sets out the high level targets, outcomes and indicators applicable across the public sector in Scotland[1]. Sustainable development is one of five strategic themes in the Scottish Funding Council's (SFC's) Corporate Plan 2009-12[2], which contribute to the achievement of the National Performance Outcomes. The plan highlights the Council's role in supporting research into renewable energy and the skills needed to support the renewable energy industry. It also confirms the Council's commitment to improving Scotland's natural and built environment and the sustainable use of resources through capital investment in buildings and through its policies and strategies for learning.

The report aims to promote good practice in sustainable development and includes recommendations for improvement. Its scope and the themes investigated are informed by *Learning For Our Future: Scotland's First Action Plan for the UN Decade of Education for Sustainable Development, 2004-2014* [3]. The plan describes the actions being taken by the Scottish Government to support learning for a more sustainable planet. In paragraph 52, the plan identifies six key challenges for Further and Higher Education in Scotland:

'*We want to see a Scotland where:*

- *our universities and colleges play a key role in developing knowledge and understanding of sustainable development;*
- *estates developments embody the principles of sustainable development and encourage learners and staff to act sustainably;*
- *education for sustainable development is integrated into curricula;*
- *the whole experience offered to learners contributes to the development of their sustainability literacy and citizenship skills, attitudes and behaviours;*

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[1] http://www.scotland.gov.uk/About/scotperforms

[2] http://ww7.global3digital.com/exreport/pdfs/viewer.jsp?ref=4&page=1&zoom=std&view=list&layout=double

[3] http://www.scotland.gov.uk/Resource/Doc/137705/0034170.pdf

- *universities and colleges have access to the highest quality materials, advice and support to enable them to embed education for sustainable development into their courses and the wider learner experience; and*
- *the value of sustainability skills is understood and articulated by institutions, learners and employers.'*

Evaluations derive primarily from fieldwork in ten colleges involving professional discussions with managers, teaching and support staff, and engagement with learners and student association representatives. The report also draws on evidence from HMIE reviews of all 43 colleges in Scotland over the period January 2005 to June 2008 and *Scotland's Colleges Sustainable Development Education Survey, January 2009* [4]. It also includes evidence from HMIE annual engagement events in colleges over the period October 2008 to March 2009. Engagement with key organisations and groups informed the preparation of the report. These included Scotland's Colleges Sustainable Development Education Steering Group, the Sustainable Development Education Policy Network, Scottish Qualifications Authority (SQA), and the Environmental Association of Universities and Colleges (EAUC).

The report highlights examples of ways colleges have addressed sustainability. It describes good practice in named colleges to demonstrate approaches that could be adopted by other colleges. Several examples stand out as being sector-leading and innovative. These examples are described in Appendix 3 and are cross-referenced to relevant themes in the report. Where examples derive from published reports of HMIE reviews of colleges over the period 2005-08, these are referenced. All other examples derive from the visits to ten colleges as part of the fieldwork and the annual engagement visits to colleges by HMIE over the period October 2008 to March 2009.

Methodology

The survey of sustainable development education (SDE) in Scotland's colleges completed during the summer of 2008 provided a key reference base for the fieldwork undertaken for this report. The SDE survey was part of the SFC-funded national project managed by Scotland's Colleges (formerly the Scottish Further Education Unit) to develop approaches to embed sustainable development within the curriculum of Scotland's colleges. It identified colleges that had made progress in sustainable development education and examples of good practice. HM Inspectors used evidence from this survey to help select colleges for fieldwork visits.

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[4] http://www.sfeu.ac.uk/sustainable_development

Elmwood College golf course achieved ISO 14001 for its environmental programme

The report draws on evidence from reviews of the 43 colleges over the period January 2005 to June 2008. Evidence was also gained from annual engagement visits to colleges. Inspectors visited ten colleges to explore issues relating to sustainability. These colleges are identified in Appendix 1. The ten colleges are not presented as being fully representative of the sector as a whole regarding progress in sustainable development. However, they include colleges where the SDE survey found evidence of developments and practice that may be worthy of dissemination across the sector. The sample includes colleges with a track record in sustainable development, several with new estate developments, and a partner college in the UHI Millennium Institute. Collectively, the colleges provide education and training in all the principal curriculum areas supported by SFC in the college sector.

During the fieldwork visits, inspectors held meetings with senior managers to investigate the strategic approaches that colleges were taking in sustainability

and the embedding of education for sustainable development within the curriculum and college quality frameworks. Inspectors interviewed teaching and non-teaching staff to explore their awareness of sustainability issues and how they were embedding sustainability within the curriculum. They interviewed learners and representatives of student associations to determine their views on sustainability and discuss any learner-driven initiatives. Inspectors also explored college-nominated examples of good practice and viewed sustainable features in the college estates.

Inspectors visited the ten colleges over the period March to May 2009. In advance of the visits, they issued a list of themes to be investigated and these are shown in Appendix 2. Each college compiled a comprehensive evidence base to demonstrate the progress it had made in addressing the six key themes and the various prompts. Inspectors used this evidence to inform the discussions during the visit and their evaluations of progress.

2 | Summary of findings

Strengths

- Overall, Scotland's colleges have responded well to the Scottish Government's *Greener Scotland* strategic objective. Almost all colleges have embedded sustainability within their strategic plan aims and objectives and the majority have clear policies and strategies to address sustainability in most aspects of their operation.

- There is good leadership for sustainability in colleges. In most colleges a senior manager has overall responsibility for sustainability, or it is shared by two senior managers, with one having responsibility for curricular issues and one for estates.

- Overall, staff and learners have a good general awareness of sustainability issues. More than a few colleges have used the web successfully to raise staff and learner awareness of sustainability issues.

- In all colleges, sustainability issues are promoted within learning experiences in more than a few subject areas.

- In all colleges there are good examples of learners contributing to sustainable development. These include student associations championing *Fairtrade* products, voluntary work in communities, recycling materials and products including mobile phones, carbon offsetting, and community garden schemes.

- In all colleges, sustainability is a key priority in the management of college estates. Estate developments embody the principles of sustainable development. A majority of colleges have developed systems to monitor and improve their environmental performance. More than a few colleges have or are pursuing accredited Environmental Management Systems (EMS).

- In more than few vocational areas, there is evidence that employers are expecting college learners to be aware of sustainability issues and have appropriate skill sets. There are a few good examples of colleges working with the community to address sustainability issues.

Areas for development

- The systematic embedding of sustainability within the design of programmes in all curriculum areas.

- The integration of sustainability within learning and teaching processes across all curriculum areas.

- The inclusion of sustainability skills within college strategies to develop learners' essential skills.

- Learner awareness of campus sustainability features.

- Staff development in sustainability including the induction of new staff.

Aberdeen College's Clinterty Centre where a 6m wide grass margin round an arable crop benefits a number of UK and Local Biodiversity Action Plan species

3 | Sustainability in context

Sustainability and sustainable development

For some 40 years there has been increasing awareness of environmental issues and that global economic development trends are not sustainable. The *Kyoto Protocol* and the *European Union Burden Sharing Agreement* commits the UK to a 12.5% reduction in greenhouse gas emissions by 2012, against 1990 levels. The Scottish Climate Change Bill introduces targets to reduce Scotland's greenhouse gas emissions by 80% by 2050. Set against this context, Scotland's colleges have important responsibilities as providers of education and training to prepare learners to contribute to sustainable economic growth. Colleges also have responsibilities as consumers of resources to minimise their impact on the wider environment.

Definitions of sustainable development are numerous and diverse. However, the most commonly quoted definition of sustainable development is contained within *Our Common Future (1987*) The Report of the World Commission on Environment and Development (Brundtland Commission)[5] is as follows:

> *'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'*

The United Nations Economic Commission for Europe Annual Report for 2004-05[6] identifies the Brundtland Commission's concept of sustainable development as having shaped the international agenda and the international community's attitude towards economic, social and environmental development. The definition identifies environment, society, and economy as three key pillars or components of sustainability. McKeown (2002)[7] illustrates succinctly the intertwined nature of these components. *'Sustainable development has three components: environment, society, and economy. If you consider the three to be overlapping circles of the same size, the area of overlap in the centre is human well-being. As the environment, society, and economy become more aligned, the area of overlap increases, and so does human well-being.'*

Sustainable development education

The SDE Network is the Scottish network for organisations and individuals involved in sustainable development education[8].

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[5] http://www.un-documents.net/ocf-02.htm

[6] http://unece.org/oes/nutshell/2004-2005/focus_sustainable_development.htm

[7] Education for sustainable development toolkit, Rosalyn McKeown, Portland State University, 2002 (page 9) http://www.esdtoolkit.org/

[8] http://www.sdenetwork.org

The SDE Network members are 'committed to enabling people to acquire the knowledge, skills and attitudes needed to build a fair, just and equitable society that is living within the environmental limits of our planet'. In 2007, the SDE Network synthesised the many definitions of sustainable development education in use both nationally and internationally into one that had resonance with the Scottish sustainable development and education communities. Over 20 definitions from international organisations, governments and education organisations were gathered and collated for this activity. The proposed definition was circulated within the Scottish sustainable development and education communities during 2008 and refined in light of comments and feedback received.

> *'Sustainable Development Education is the process of acquiring the knowledge, skills and attitudes needed to build local and global societies that are just, equitable and living within the environmental limits of our planet, both now and in the future.*
>
> *A sustainable society is one that at local and global level is fair, equitable and living within the environmental limits of our planet both now and in the future. 'Sustainable development' is the term given to the process of developing global society to move from where it is now to a state of sustainability.'* [9]

The definition of SDE aligns well with the Brundtland definition of sustainable development shown on page 7 and reflects the three key components of sustainability: environment, society and economy. It is the definition of sustainable development education used in the SDE survey.

Key knowledge, skills and attitudes in sustainable development education

The SDE Network members highlight that undertaking sustainable development and achieving sustainability requires the development of new knowledge, skills and attitudes. They provide the following very helpful definitions of the key knowledge, skills and attitudes in sustainable development education:

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[9] http://www.sdenetwork.org/index.php?option=com_content&task=view&id=38&Itemid=47

'Key knowledge in Sustainable Development Education (SDE)

The key knowledge and understanding that sustainability requires and that SDE seeks to cultivate is focused around six principles that were created to encapsulate the 27 principles agreed at the UN Environment and Development Conference held in Rio de Janeiro in 1992:

- *the interdependent nature of our society and life on our planet;*
- *the limited carrying capacity of our planet;*
- *the value of biological, social and cultural diversity in maintaining the wellbeing of our planet and our society;*
- *the essential role of rights and responsibilities in a sustainable society;*
- *the essential role of equity and justice in a sustainable society; and*
- *the presence of uncertainty and the need for precaution in making decisions about our planet and our society.*

Key skills in Sustainable Development Education

The key skills that sustainability requires and SDE seeks to cultivate are:

- *the skills to understand the relationships between different issues, appreciate how they are connected and, as a result, make decisions and solve problems in a joined-up way;*
- *the skills to enable groups to make collective decisions and work cooperatively together even though all members of the group may not hold the same views and power may not be distributed evenly among the group; and*
- *the skills to think critically about problems, issues and situations to enable individuals and groups to move beyond thinking about how can we make the systems and products we have less unsustainable, to thinking about the kind of systems and products we need to achieve sustainability.*

Key attitudes in Sustainable Development Education

The key attitudes that sustainability requires and SDE seeks to cultivate are:

- *the confidence to take action and the confidence that these actions will make a positive difference;*
- *the appreciation that we are all part of society and that our individual behaviours must be balanced by our responsibilities as members of that society;*
- *the attitude that humanity is part of the natural world, that we depend on it for our wellbeing and that we must respect its limits and live in harmony with it;*
- *an attitude of respect for the biological, social and cultural differences and diversity that are a fundamental part of our world; and*
- *An attitude for caring for your self, for other people, for other living things and for our planet.'* [10]

These definitions of the key knowledge, skills and attitudes in sustainable development education are used widely in post-school education. They are used in the SDE survey and feature in the support notes to the SQA Higher National Unit *Teaching in Further Education: Sustainable Development Education*. The definitions are included in the Learning and Skills Council publication *Embedding Sustainable Development in the Curriculum*[11], which aims to support staff who wish to introduce SDE in their teaching.

Sustainable development education in the college curriculum

The report *Embedding sustainability into the curriculum of Scotland's universities and colleges* by John Forster Associates for SFC (2006)[12] established a sustainable literacy baseline by identifying the extent to which sustainable development was incorporated into the curriculum of colleges and Higher Education Institutions (HEIs) in Scotland.

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[10] http://www.sdenetwork.org/index.php?option=com_content&task=view&id=38&Itemid=47

[11] http://www.eauc.org.uk/sorted/embedding_sustainable_development_in_the_curric

[12] http://www.sfc.ac.uk/nmsruntime/saveasdialog.aspx?filename=jfa_final_report_sustainability.pdf

Forster (2006) refers to the working definition of sustainable literacy provided by the former Department for Education and Skills (DfES) National Curriculum Handbook, which is to:

> *'…develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, locally and globally that will improve the quality of life now without damaging the planet for the future.'*

The SDE survey commented on the progress made by colleges against the baseline established by the Forster report. The survey provides a helpful summary of Forster's principal findings, as follows.

- *There is little documented commitment to sustainability within colleges and universities at a strategic level.*
- *Many institutions seem in principle to be willing to adopt a more sustainable direction, but, demonstrate little willingness to make it a priority, particularly in universities.*
- *There are some institutions that have genuinely embraced sustainability and built it into their culture.*
- *Where sustainability is fully embraced, colleges and universities have established relationships with and involve employers, the community and learners and the approach they take is linked to the management of its estate and its curriculum.*
- *There are many examples of teaching that embed sustainability.*
- *Much of the provision seems to depend largely on the enthusiasm and knowledge of individual members of staff rather than institutional commitment.*

John Wheatley College's Easterhouse Campus where a wind turbine (also shown on page 4 of this report), some 15m high, provides a clear visual statement to the local community of the college's commitment to saving energy and sustainable technologies.

4 | Policy, strategy and leadership for sustainability

Strategic plan aims, objectives and targets

The SDE survey reported that sustainable development education was specifically referenced in the strategic plans of 91% of participating colleges, in the mission statements of 9% of colleges and in the learning and teaching strategies of 27% of colleges. These findings summarise very well the position in the colleges visited by inspectors. Almost all have embedded sustainability within their strategic plan aims and objectives. A few colleges have promoted sustainability for many years and these issues underpin the ethos of the colleges. For example, Elmwood College has a long-standing commitment to sustainability and its 2008 annual environment report is the 13th it has produced and demonstrates this commitment clearly. In the few colleges where sustainability did not feature in key strategic aims and themes, there was reference to sustainability within the estates sections of the strategic plan.

Most colleges addressed sustainability in a balanced way in their strategic plans, both considering the impact of the college on the environment and highlighting the duty to promote sustainability within the learning experience.

> *Aberdeen College devotes one entire section of its strategic plan to environmental sustainability. The plan makes reference to the Scottish Government's initiatives for a 'Greener Scotland'. It acknowledges that the college has a responsibility to promote and develop environmental sustainability and that its activities will have an impact on the environment. The plan refers to its 'dual role' in relation to sustainability through* 'reducing its own impact on the environment by reducing its emissions and waste as well as ensuring that learners have the knowledge, skills and attitudes ... to contribute effectively to an environmentally sustainable future.' *In the strategic objective concerning the development of its estate, it defines a number of key actions relating to sustainability. These include to measure the carbon footprint, reduce its CO_2 emissions and investigate opportunities for carbon offsetting.*

The extent to which colleges have addressed sustainability is demonstrated in their support for the University and Colleges Climate Commitment for Scotland (UCCCfS)[13]. This represents a public commitment from colleges and universities to allocate time and resources to implementing measures that will reduced their greenhouse gas emissions and carbon footprints.

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[13] http://www.eauc.org.uk/scotlands_principals_climate_commitment

The Environmental Association of Universities and Colleges (EAUC) leads and promotes the UCCCfS framework and summarises the commitment as:

'Signatories are committed to producing and publishing a five-year climate change action plan by February 2010. Plans will include measurable targets and timescales to achieve a significant reduction in emissions for all business operations and activities, including:

- *energy consumption and source;*
- *waste reduction, recycling and responsible disposal;*
- *sustainable estate development;*
- *sustainable travel planning; and*
- *responsible procurement of goods and services.'*

Signatories are expected to incorporate work on climate change into their established improvement processes and are required to publish annual results on progress detailing outcomes achieved and further actions required. This represents a significant commitment for colleges and one which requires careful consideration by signatories before entering into the agreement. As at April 2009, 26 of Scotland's 43 colleges were signatories and the EAUC expects almost all colleges to have signed the agreement by the end of 2009.

Sustainable development policies and strategies

Most colleges visited had clear policies and strategies to address sustainability in key aspects of their operation. Most of these policies and strategies adopted a broad view of sustainability that addressed the three components of sustainability - environment, society, and economy.

Langside College's environmental policy embraces all the themes of sustainability. The policy adopts a 4C approach to embedding environmental sustainability across the college recognising that the environmental sustainability agenda has significant implications for the curriculum, campus, community and culture of the college. The college strives to engage learners at all levels with sustainability concepts and issues. It aims to address sustainability criteria within programme approval, design, marketing and review processes. The college commits to campus practices that contribute to the achievement of cultural, economic, environmental and social sustainability. It aims to play a leading role in advancing sustainability in the south east of Glasgow and in sharing and disseminating its experience locally and nationally. It plans to

integrate sustainability within all policies and strategies as these are developed or updated.

However, a few colleges' policies and strategies focused on environmental issues in relation to estates and did not address curriculum issues.

Leadership of sustainability within colleges

The SDE survey explored the ways colleges had taken forward sustainable development education. It identified the role of a sustainability champion in each college as being integral to success in raising the awareness of SDE among staff and learners. Leadership for sustainability was good in all the colleges visited by inspectors. A senior manager usually had overall responsibility for sustainability, or this responsibility was shared by two senior managers, one having responsibility for curricular issues and the other for estates. In most colleges, committed and enthusiastic managers had championed sustainability, often working with a sustainable development group or advisory committee. They had informed the development of policies and strategies in sustainability, helped develop staff awareness of sustainability issues and ensured that college plans were implemented.

Ayr College has signalled the importance of sustainability through the appointment of a manager to champion initiatives in sustainability. The college has made good progress in furthering the sustainability agenda through the manager's enthusiasm and commitment. Initiatives under her leadership have included the promotion of sustainability across the college through the creation of a cross-college group called ECO Warriors, which includes learners and both teaching and support staff. The group makes suggestions to the college of ways that it can become more sustainable through energy savings and through the promotion of special events such as a green travel day. (This initiative is short-listed for EAUC's Green Gown awards 2009 which are open to all colleges and universities in the UK.) Staff across the college are aware of the significance of sustainability to the college, both in the way it operates as an organisation and in its recognition of the importance of embedding sustainability into the curriculum. The college has a comprehensive sustainability policy that addresses its commitments in environmental, economic and social aspects.

The importance of leadership of sustainability issues is highlighted in the Building Research Establishment's functional performance review of John Wheatley College East End Campus[14]. Sustainable development characteristics are a key feature of the campus, which achieved a Building Research Establishment Environmental Assessment Method (BREEAM) excellent rating at the design stage (an explanation of the term BREEAM appears on page 35).

'The East End campus has clearly benefited from an informed, dedicated client who has worked closely with the design team and end users, to drive forward the sustainability agenda, from conception to design to construction and now to operation of the building, bringing together a number of exciting, innovative features and successfully linking these with highly efficient, low carbon energy systems. This has undoubtedly been a successful project and could be viewed as an example of good practice for other facilities looking to replicate similar projects.'

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[14] Building Research Establishment's functional performance review of the new John Wheatley College East End Campus, 2008.

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Staff awareness of sustainability

In all colleges visited, both teaching and support staff displayed a good awareness of sustainability issues and their significance to both the college and the wider community. Generally, they were aware of the Scottish Government's *Greener Scotland* strategic objective and of the importance of sustainability to the lives of people living and working in Scotland. Most staff were committed to promoting sustainability in their engagement with learners. There is no national survey data available on the attitudes of staff in Scotland's colleges towards sustainability issues. However, data does exist for the Scottish public generally. The Scottish Environmental Attitudes and Behaviours Survey (SEABS) 2008[15] commissioned by the Scottish Government involved face-to-face interviews with more than 3000 people in Scotland (aged 16+). The report shows that the Scottish public is beginning to engage with the environmental issues, and to participate in relatively 'easy' green behaviours such as recycling and reusing. The report identifies the challenge of moving forward to be to increase levels of engagement further among all sections of the public and specifically to persuade people of the need to make more significant lifestyles changes if environmental problems are to be tackled.

Colleges have used a range of strategies to raise the awareness of staff about sustainability issues. Sustainability and environmental committees with membership drawn from staff across the college have played an important role in moving the sustainability agenda forward. The majority of these committees included student members. In a few colleges the committees were composed almost entirely of volunteers and these were usually people with personal interests in sustainability. Committee remits varied, but usually included providing advice on the development, implementation and review of college policies on sustainability. Committees helped to inform college staff development programmes and often reviewed external developments in sustainability and considered implications for colleges. Examples of college initiatives driven by such committees included awareness raising days for staff, bike to work schemes, fair trade, efficient procurement, minimising waste, energy saving, biodiversity, recycling, and car sharing schemes.

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[15] http://www.scotland.gov.uk/Publications/2009/03/09083930/0

Ayr College green travel day

Participation in college-wide staff development events and continuing professional development activities have contributed to staff awareness of sustainability issues. In most colleges visited, the activities of college estate management teams to reduce carbon footprints provide clear signals to staff of sustainability issues.

Staff development in sustainability

All colleges provided opportunities for staff to undertake continuing professional development activities in sustainability related to their specialist area. For example, construction and engineering staff had attended training events in micro-renewable technologies. However, only half of the colleges provided college-wide staff development events focused on sustainability issues. Such events often took the form of an environmental and sustainability awareness day for both staff and learners. Colleges used these events to launch green initiatives and with support from external speakers to provide national perspectives in sustainability.

A few of the colleges visited have successfully used staff with the necessary skills and experience to provide in-house training sessions. Scotland's Colleges' environmental consultant is a member of staff at Elmwood College and has successfully raised awareness of sustainability issues across that college. Perth College as a partner college in the UHI Millennium Institute established a Centre for Mountain Studies in 2000. The centre's director holds the United Nations Educational, Scientific and Cultural Organization (UNESCO) chair in sustainable mountain development. A seminar programme given by research students of the institute contributes to the greater awareness of sustainability issues among its staff and students.

A few colleges visited used ICT resources to provide staff with advice and guidance on sustainability issues.

> *Ayr College and Aberdeen College use well designed websites to provide staff with easily accessible resources for sustainability. The Ayr College Eco website on the college's intranet is a repository of information about sustainability. It includes a discussion forum, notice of college events on sustainability and college achievements. The Eco website is well designed and easy to navigate. It provides an excellent resource for the development of sustainability across the college. Aberdeen College's environmental and sustainability web pages provide up-to-date information about environmental and sustainability issues at the college. The pages are available on Abnet, the college's intranet. The pages provide easily accessible links, general information and advice on environmental and sustainability issues.*

More than a few colleges visited included consideration of sustainability issues within the induction programmes for new staff. Colleges accredited or working to ISO 14001 included induction sessions on environmental management systems as part of the induction for new staff. One college provided staff with comprehensive induction information on the sustainability features of their new campus. However, the majority of colleges have not developed sufficiently in this area.

Sustainability within arrangements for self-evaluation and internal review

Almost all the colleges have adopted the HMIE 2008 quality framework[16] as the basis for their self-evaluation and internal review processes. The framework addresses sustainability explicitly in four key areas.

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[16] External quality arrangements for Scotland's colleges, HMIE, September 2008
http://www.hmie.gov.uk/Publications.aspx

Quality indicator *2.2 Relevance of programmes and services to learner needs*;
Quality indicator *5.4 Context and planning for learning and teaching*;
Quality indicator *8.2 Management and use of resources and learning environments*; and
Quality indicator *9.1 Educational aims, objectives and targets*.

Sustainability is also a relevant issue in other quality indicators such as *1.3 Fulfilment of statutory duties* and *2.3 Progress, attainment and wider achievement*.

Colleges responded well to the inclusion of citizenship in the HMIE 2004 quality framework[17], with citizenship themes featuring in programme team self-evaluation reports. Overall, colleges are at an early stage of implementing the 2008 quality arrangements. However, there were a few examples of sustainability issues being addressed in programme team self-evaluation reports. For example, the curriculum team self-evaluation report for a Support for Learning class at John Wheatley College recorded the successful introduction of the Access 3 unit *Monitoring and Maintaining an Environmental Area*, but noted that the learners needed more time in the college's sensory garden to complete their learning tasks. The team subsequently acquired funds to enhance the variety of plants in the sensory garden (see below).

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[17] Standards and Quality in Scottish Further Education, Quality Framework, SFC/HMIE, May 2004
http://www.hmie.gov.uk/StaticDocs/inspection/sfefc_framework.doc

5 | Sustainable development education

Introduction

The SDE survey concluded that colleges have made significant progress in addressing sustainability:

> *'The survey responses strongly suggest that progress has been made since Forster's baseline findings in 2006. Sustainable Development Education is now firmly on the agenda of Scotland's colleges and activity in this area has increased: the responses further suggest that activity will continue to increase as the value of SDE is better understood and more widely embedded across every aspect of college life … most colleges were delivering elements of SDE at some level within the curriculum. A number of colleges can also be identified as 'champions' of the sustainable development agenda and have assigned responsibility for SDE at senior management team level and have started to build the capacity to deliver across the whole institution/curriculum. At present there is no single appropriate curriculum response but many colleges have found the presence of Sustainable Development Champions, whether appointed or voluntary, helpful in moving the agenda forward.'*

The SDE survey reported that most colleges addressed sustainable development to some extent with only a very few colleges reporting no or limited coverage of sustainable development. However, only a minority of colleges had evaluated the extent to which sustainable development was addressed within their curriculum. Inspectors investigated the extent to which sustainable development was addressed within the curriculum in the colleges visited and pages 22 to 30 present the findings.

Sustainable development education links with core skills and skills for citizenship

Forster (2008)[18] explored the ways in which core skills could be related to the development of *sustainable literacy*. The report considered whether sustainability was an additional core skill or whether the skills of sustainable literacy were equivalent to core skills. It also explored whether the teaching of core skills could be used to develop knowledge and understanding of sustainability. Forster concluded that *sustainable literacy* skills were more complex and not equivalent to core skills. Forster did find that some of Scotland's colleges were making links to sustainability in the teaching of the

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[18] *Embedding sustainability into the curriculum of Scotland's universities and colleges* by John Forster Associates for SFC
http://www.sfc.ac.uk/reports_publications/reports_publications.aspx

core skills of *numeracy* and *problem solving.* Forster found little support for sustainability being regarded as a sixth core skill because the core skills agenda was already well understood and accepted within the college sector, and partly because of the 'belief that sustainability should be contextualised to its subject matter rather than being generic'.

More than a few colleges had identified sustainability skills within their strategies for developing essential skills. However, these strategies did not unpack the knowledge, skills and attitudes for sustainability to any significant extent as outlined on pages 9 and 10. It was left for staff to develop these aspects in the context of the college's overall sustainability strategy. However, one exception to this was John Wheatley College where a guidance note to staff on citizenship education encompassed issues relating to sustainability in a comprehensive way.

> *John Wheatley College promotes citizenship as all encompassing, cross curricular and a tool to develop learners' knowledge and understanding, interpersonal and communication skills, and values and attitudes. Sustainability is fully embedded within the college's citizenship curriculum. It includes knowledge and understanding in relation to diversity, sustainable development, social justice, globalisation and interdependence. Interpersonal and communication skills focus on critical thinking, cooperation and conflict resolution, debate, respect for other people and ability to challenge injustice and inequalities. Values and attitudes address self-esteem and personal identity, diversity and equality, environment and sustainability, empathy and equality and social justice.*

Planning for sustainable development education in the college curriculum

Most of the colleges visited had clear policies and strategies on sustainability (page 14), but only a minority highlighted sustainable development within their programme delivery guidelines and their strategies for developing a broad range of skills. Only a minority of colleges had carried out a systematic audit of the extent to which sustainable development education was addressed in programmes delivered. These findings correspond with those of the SDE survey.

Aberdeen College provided a good example of how colleges can address sustainable development education within the curriculum.

Aberdeen College's Soft Skills strategy emphasises the importance of developing a broad range of skills in learners through combinations of learning experiences set in the daily life of the college, discrete areas of the curriculum, cross-curricular experiences and activities involving links with local, national and international partners. One of the four skills sets identified is environmental and economic sustainability skills. The college describes these as 'the cluster of skills, understanding and attitudes that enables an individual to make informed decisions relating to the impact of their actions on the environment and to act in ways that promote a sustainable world environment'*. The other skills sets identified in the strategy are citizenship skills, employability skills and study skills. The college's programme delivery guidelines include specific mention of the need for staff to seek opportunities to create awareness of sustainability issues. The college has developed a soft skills audit tool which curriculum teams use to provide information on how they address the various elements of soft skills within their curriculum and what plans they have for these aspects. The college monitors the delivery of the soft skills in a variety of ways including the process of annual self-evaluation, the extent to which teaching teams make use of the audit tool, soft skills development sessions delivered as part of the weekly guidance programme and through the college's arrangements for lesson observation.*

A few colleges have adapted their curriculum delivery guidelines and authorisation processes to include the consideration of sustainability issues. For example, the *Core skills and equality audit checklist* used by John Wheatley College prompts staff to consider sustainability and biodiversity issues in whole programme and single unit submissions and reviews.

Forster (2006) categorised the many examples of teaching that embed sustainability as follows:

- *'programmes within which sustainability is fully embedded into the subject matter; such as civil engineering, architecture, some construction courses;*
- *specialised sustainability modules and programmes - largely optional and generic; and*
- *generic embedding through core skills, citizenship etc.'*

Findings from the visits to the colleges broadly confirm Foster's findings. Sustainable development is embedded within programmes in specific

curriculum areas. Sustainability is strongly evident in conservation and greenkeeping programmes in land-based industries. Other curriculum areas where sustainability is embedded, though not to the same extent as land-based industries, include construction, applied sciences, engineering and nautical studies. Curriculum areas where there are specific units that target sustainability within programmes include tourism (for example, *Planning and sustainable development*), engineering (for example, *Offshore wind power*), biological sciences (for example, *Bioremediation of soils*), countryside management (for example, *Wildlife conservation*) and art and design (*Art and design: sustainability*).

SQA has developed a few generic units on sustainability that colleges can incorporate within programmes. It has a helpful guide for unit writing teams about ways of introducing sustainable development [19], but it is too early to observe the impact on qualifications and units. SQA also has a sustainability audit tool to help staff embed sustainability within their teaching. The tool is highlighted within the support notes for SQA Higher National Unit *Teaching in Further Education: Sustainable Development Education*. It uses templates which map each unit according to the opportunities it presents to learn about sustainable development as defined in terms of the key knowledge and skills (shown on pages 9 and 10). However, almost all staff in the colleges visited were unaware of the existence of the tool. This is an area for further development across the college sector, particularly given the impact of the Quality and Equality of Learning and Teaching Materials (QELTM) curriculum audit tool in promoting equalities in learning and teaching materials in colleges.

Only a minority of the colleges visited had embedded sustainable development within their learning and teaching strategies. Generally these strategies made minimal reference to sustainable development in comparison with other themes such as core skills, equalities and ICT. A few colleges were revising their learning and teaching strategies to take account of national issues such as sustainability and *Curriculum for Excellence*. Two colleges made specific reference to sustainability within their lesson planning templates. These templates required teaching staff to target opportunities for raising awareness of sustainability issues where appropriate within lessons. Both colleges had found this to be an effective way of encouraging staff to reflect on sustainability issues and exploit opportunities to highlight issues for learners.

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[19] Introducing sustainable development: an outline for unit writing teams.
  http://www.sqa.org.uk/files_ccc/FF3392_Sustainability_flyer.pdf

Learner awareness of sustainability

Across the colleges, learners demonstrated a good general awareness of sustainability issues. They cited global warming and climate change as being key issues and most were knowledgeable about the range of ways their college was addressing sustainability. However, most were less familiar with specific terms such as biodiversity. Many who studied previously in schools that were part of the Eco-Schools Scotland programme[20] had raised their awareness of sustainability. For example, one learner was critical about the college's recycling facilities because at his school they had recycling containers in every classroom whereas the college only provided these in communal areas. Employed learners who attended part-time spoke knowledgeably about how they addressed sustainability issues at work. In subject areas such as land-based industries and maritime studies where sustainability features explicitly within the curriculum, learners often demonstrated in-depth knowledge about sustainability. For example, one learner in maritime studies who was training to be a deck officer provided a most informative explanation of the risks of ships' ballast water transferring harmful aquatic organisms. She provided a comprehensive account of the precautions and regulatory requirements to prevent this.

Colleges had used a number of ways to promote learner awareness of sustainability issues beyond their programmes of study. They provided sustainability awareness-raising events to broaden learner experience. Perth College invited a previous graduate of the college and a former winner of the Scottish Business Entrepreneur of the Year award to give a lecture to staff and students on business enterprise, drawing on her experience in developing a device for measuring energy consumption in the home. The lecture demonstrated the opportunities of growing a business with an environmental sustainability theme. Learners used the device to measure energy usage in the college nursery. John Wheatley College's 2007-08 sustainability report[21] includes comment on how it promotes environmental awareness.

> *'The college recognises the importance of minimising its environmental impact, and regularly publishes topical articles in its newsletters, displays awareness raising posters and other reminders to learners and staff. Environmental awareness is now an important part of the induction process for learners and is included within the curriculum for almost all learners.'*

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[20] http://www.ecoschoolsscotland.org/
[21] http://www.jwheatley.ac.uk/documents/sustainability/CollegeSustainabilityReport07_08.pdf

Examples of sustainable development education in curriculum areas

Across a majority of the curriculum areas, there are examples of teaching staff raising learners' awareness of sustainability within their teaching and learning tasks.

Art and design

Reducing waste, recycling and conserving energy use are emphasised within learning and teaching in Aberdeen College. Learners are encouraged to recycle scrap paper and art and design learners participated in a waste-aware poster design project. The college is piloting paper-free delivery in the HND Textiles. Routine switching off computers and sewing machines at the end of lessons is part of the lesson plan.

At Ayr College, fashion students use recycled materials and a display in the college foyer included various dress designs using recycled ties and shirts. HND Product Design learners at Glasgow Metropolitan College worked with the *Metro* newspaper to develop innovative and imaginative approaches to understanding and developing the 'life cycle' of a product. They spent a day at the production plant of the newspaper, learning first hand about the materials, resources and production processes used in the production and distribution of the *Metro* and the complex environmental issues involved in the process. The *Metro* had instigated a project which sought to address the recycling or further life of the newspaper after it had been read by the consumer. Learners used this as the basis of a design brief and they developed a range of imaginative and fun products for the afterlife of the newspaper including fashion items and food packaging.

Business, management and administration

Teaching staff in business, management and administration at Perth College introduced a number of sustainability themes within programmes. They raised learner awareness of sustainable development by requiring them to address controversial issues relating to the environment as part of business strategy lessons. NC business students visited *Can-Able*, a project run by the adult resource centre in Blairgowrie, which offers adults with learning difficulties therapeutic employment by collecting, processing and sorting aluminium cans for recycling. This helped students learn about social issues as well as environmental issues and sustainable societies. Accounting students worked successfully as a team to establish a conservation area in the college and administration students contributed to a recycling awareness day in the college.

Care

Staff at John Wheatley College used a community profiling exercise within NQ Social Care and Access to Nursing programmes. This exercise is part of the coursework for the health promotion unit which introduces learners to social responsibility issues in relation to health and attitudes that may affect health promotion. Learners work in groups to examine the community profiles for two contrasting areas and create a development plan for the most deprived community to contribute to improvement in environment, society and economy. They explained how their plan contributes to aspects such as the maintenance and enhancement of biodiversity and the reduction of waste and emissions.

Computing and ICT

Computing staff at Aberdeen College encourage recycling of paper and other computer consumables. They promote paperless classes and encourage the use of the electronic submission of work and the use of reusable printed textbooks to supplement electronic material. The college's *hybrid class* model has no reliance on printed material. Learners are not required to attend college as much as in the traditional model of delivery. This reduces travelling, which in turn reduces the carbon footprint of the class.

Construction

Teaching staff at South Lanarkshire College have introduced an initiative called *Take 5* to address sustainability issues. Staff use a five-minute period at the end of each practical class for learners to identify what materials could be re-used and/or recycled. This encourages learners to be responsible in their use of scarce resources. The college uses e-portfolios for SVQ programmes in construction including on-site assessment and training. This initiative had a significant bearing on sustainability. Previously each learner had a portfolio in printed format and the college maintained several hundred portfolios. Using e-portfolio, staff could complete reviews of progress directly on a tablet and add photo galleries to each portfolio. They could readily refer to previous work during reviews with

learners. Learners could add notes and comments directly to the portfolio and handwritten comments were readily converted to typewritten form using special software. Dundee College works in partnership with *Worcester Bosch* to provide training and certification in the installation of solar panels within a purpose-built training facility (example of sector leading and innovative practice on pages 59 and 60).

Engineering

Engineering students at Dundee College designed and manufactured an improved red squirrel feeding box that Dundee City Council countryside rangers use to supplement the red squirrel diet.[22] As well as developing their engineering skills, the project had made the learners very aware of biodiversity issues (example of sector leading and innovative practice on page 55). The engineering section of Cumbernauld College provides a one-week course where school pupils design and construct circuit boards. Teaching staff ensure

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[22] Squirrel feeder photograph by courtesy of Fotopress, Dundee

electronics equipment are recycled which reduces cost and the amount of waste.

Hairdressing, beauty and complementary therapies

Across the colleges visited, staff in hairdressing, beauty and complementary therapies encourage learners to consider the impact that the products they used have on the environment. They raise awareness of biodiversity issues such as the impact of palm oil production. Staff encourage learners to behave in an environmentally responsible way. For example, staff at South Lanarkshire College have reduced waste of consumables in the salons by using washable sponges in preference to cotton wool and single ply tissue rather than multiple ply tissue. Teaching staff in beauty therapy at Aberdeen College encourage paperless classes and plastic products are recycled after use where appropriate. Learners dispose of associated waste such as wax and oils appropriately for subsequent removal by specialist carrier. Paper is disposed of in recycling bins. They encourage learners to avoid leaving water running in the salons as much as possible.

Hospitality and tourism

Teaching staff in hospitality at Ayr College promote sustainability in a number of ways. There are specific units within hospitality programmes that highlight sustainability issues. Staff promote the use of seasonal vegetables and fruit, and local produce to reduce transport costs and sustain local communities. They use local suppliers with a reputation for environmental and sustainable awareness. Staff teaching tourism at Aberdeen College include planning and sustainable development in lessons and case studies that address environmental issues. They use group discussions to encourage learners to consider issues such as airport developments and their impact on the environment. Learners investigate how ecotourism can benefit the environment, local communities and economies.

Land-based industries

Sustainability issues are strongly evident in programmes in conservation, golf course management and greenkeeping provided by Elmwood College. The college has strong links with the Royal and Ancient Golf Club of St Andrews (the R and A) which champions sustainability in golf course development and management. The R and A provides bursaries for international learners to study at Elmwood College. The college's golf course is the first in the UK to have received ISO 14001 for its environmental programme. Sustainability

features strongly in the college's delivery of the greenkeeping programmes, which include units such as turf grass ecology, grass fertilisation, irrigation systems, and wildlife conservation. Other land-based courses at the college also promote sustainability. NC conservation and HNC/HND countryside management programmes have units on wildlife conservation, investigation of ecosystems, natural resource use, investigating animal wildlife, biodiversity, environmental awareness, and earth science.

Media

Teaching staff in the visual communications section of Ayr College include design projects that address sustainability themes to improve learners' awareness of these issues. Learners have developed a 'snap' card game using card designs that promote energy awareness and global warming issues. HNC students in visual communications produced one of the newsletters and promotional leaflets for the college's green travel day held in October 2008.

Nautical studies

Sustainability issues are embedded within maritime programmes and feature strongly in those delivered by Glasgow College of Nautical Studies. Learners study the International Convention for the Prevention of Pollution from Ships (MARPOL) and related requirements to prevent pollution of the marine environment by ships from both operational and accidental causes. They also study the control and management of ships' ballast water and sediments to prevent the transfer of harmful aquatic organisms and pathogens and the resulting impact on local environments.

Learner contributions to sustainable development

Learning For Our Future: Scotland's First Action Plan for the UN Decade of Education for Sustainable Development, 2004–2014 describes the actions being taken by the Scottish Government to support learning for a more sustainable planet. The plan commits colleges not only to integrate education for sustainable development into curricula, but also to provide a whole experience for learners which contributes to the development of their sustainable literacy and citizenship skills, attitudes and behaviour. It recognises that learners contribute to local cultural diversity and through activities such as volunteering can make a major contribution to the well-being of local communities and community groups. The joint SFC and National Union of Students (NUS) Conference in October 2008 celebrated student contributions to the United Nations Decade of Education for Sustainable Development.

In most of the colleges visited there were good examples of learners contributing to sustainable development and these are illustrated below, grouped into five categories: volunteering; *Fairtrade*; carbon offsetting; reducing waste and recycling; and work in the community. In a few colleges, children in the college nursery also contributed to sustainability. Cumbernauld College's nursery is very committed to ensuring that the children embrace sustainability. The nursery has in place an extensive environmental programme for the children that includes recycling. It is working towards a Green Flag in the Eco-Schools Scotland programme and has already achieved the bronze award.

The predominantly part-time nature of the learner population of colleges limits the extent to which student associations are engaged in sustainable development activities in comparison with their counterparts in HEIs. However, there were a few good examples of the contribution that the student associations in colleges were able to make.

Volunteering

An excellent example of learner contributions to sustainability through volunteering was showcased at SFC/NUS Conference in 2008. In her keynote address to the conference, the Cabinet Secretary for Education and Lifelong Learning highlighted the Langside College's contributions as 'promoting a strong sense of civic participation and a valuable contribution towards building a strong and sustainable community' (example of sector leading and innovative practice on page 60). Pre-vocational construction learners at South Lanarkshire College constructed bird boxes from scrap timber and donated these to the local country park in East Kilbride. A learner group from the college is also working with the *East Kilbride Talking Newspaper* to help the newspaper move from tape cassettes to digital media. The project aims to make the newspaper widely available to people with a visual impairment.

Fairtrade

The student association of Aberdeen College is involved in achieving *Fairtrade* status for the college. The college is working in partnership with Aberdeen University and Robert Gordon University to become a *Fairtrade* college. The project is run mainly by students and they are promoting *Fairtrade* to all staff and students as a way of achieving better prices, decent working conditions, local sustainability, and fair terms of trade for farmers and workers in the developing world. The college has now started to order *Fairtrade* goods after meetings with its catering providers. The association is also leading an initiative to recycle mobile phones.

For the last three academic years, learners from the interior design section of Glasgow Metropolitan College have engaged in projects with *Fairtrade*. Representatives from *Fairtrade* have acted as clients for interior design projects. Learners have devised functional and aesthetically attractive schemes for shops and cafés that exemplify the ethos of *Fairtrade*. The completed projects were displayed at the Scottish Parliament to mark the launch of *Fairtrade* fortnight in 2008. The learners have gained in many ways from the projects, for example by enhancing their interior design skills and gaining in confidence in engaging with and presenting to external clients. Through their research into the ethos and concerns of *Fairtrade*, learners improved their awareness of working conditions, local sustainability and fair terms of trade for farmers and workers in the developing world.

Carbon offsetting

HNC Construction learners from Ayr College attended *Ecobuild 2009* at London's Earls Court to learn about sustainable design and construction. The learners valued the experience greatly and volunteered to offset their flight by contributing to the Americas reforestation project. The college's first student member of the college's Eco Team contributed an excellent article to the college's newsletter *What's the Buzz*, reporting on a creative project that her class were working on. The brief was to help overcome problems of minimising waste at source and during consumption and disposal. The learners researched and analysed waste reduction issues and applied their own knowledge and skills of the design process to suggest strategies for intervention and solution. The article recorded many innovative solutions that demonstrated how well the learners had engaged with the project and raised their awareness of sustainability issues.

Reducing waste and recycling

Intermediate 2 Early Education and Childcare learners and pre-vocational construction learners at John Wheatley College worked together to produce portable flower planters from a prototype designed by a workshop assistant in the construction section. The vocational construction learners made the wooden boxes and the childcare learners painted these before staff helped them mount the boxes onto recycled computer chair bases. The childcare learners planted flowers and are responsible for watering and nurturing them. The portable planters can be easily accessed by learners with impaired mobility and wheelchair users. A local company that manufactures storage containers from recycled materials provided a large container to store rainwater for watering the flowers. The learners plan to donate the planters to a local nursery

and nursing home at the end of the session. This project was successful in promoting awareness of sustainability issues, the value of joint working and learner involvement in eco friendly practices.

Work in the community

Across the colleges visited, sustainability was a prominent theme in programmes for learners with additional support needs. Learners contributed in many ways including volunteering, recycling projects, energy conservation and promoting biodiversity. Student development learners contributed to Elmwood College's *Veg-box* scheme where organic vegetables from local producers are delivered in recycled boxes to the local community. The learners organised a fashion show that exhibited clothes from local charity shops to demonstrate the value of recycling clothes as well as benefiting charities. In Glasgow College of Nautical Studies, transition learners have established and maintain a community garden that gives them a sense of ownership of sustainability issues, caring for and contributing to the local environment. A few of the learners have work experience placements in the Gorbals Recycle project which is part of the Community Recycling Network for Scotland. Learners often achieve recognition for their achievements through the John Muir Award Scheme[23].

Learners undertaking *Prince's Trust* programmes often engage in project work to improve the local environment. A group from Dundee College were finalists in the *Prince's Trust Community Impact Award* in December 2008. The group were all either homeless or young offenders. They undertook a project to clear two ponds on the Loch Leven Heritage Trail to make way for footpaths and a dipping pond for wildlife. The group worked well as a team and supported each other. Their work added value to the local environment.

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[23] http://www.jmt.org/jmaward-home.asp

*Using e-portfolio, staff at South Lanarkshire College complete reviews
of learner progress directly on a tablet PC*

6 | Sustainability and college estates, employers and communities

Sustainability within college estate developments

SFC's commitment to promoting sustainability in colleges includes the integration of sustainability into all aspects of estate development and management. The Council encourages colleges to embrace the principles of sustainable development in major capital projects. For example, in its capital funding circular to colleges (SFC/24/2008: Capital funding for colleges 2008-11[24]) the Council requires as follows.

> *'As a condition of grant, colleges are required to:*
>
> - *develop a sustainability policy that takes account of the Council's guidance on sustainable development and is linked to the college's estate strategy;*
> - *ensure that its capital works/projects are linked to its sustainability policy and achieve a minimum of BREEAM 'Very Good' for design and procurement, post construction, and management and operation; and*
> - *where applicable, upon completion (and at appropriate intervals thereafter), provide post-occupancy evaluations in line with Council guidance.'*

BREEAM[25] is the Building Research Establishment Environmental Assessment Method which measures the environmental performance of buildings. BREEAM assesses buildings against a number of criteria (eg energy use, pollution, transport and ecology) and awards credits according to the building's performance. The building is rated *Excellent*, *Very Good*, *Good* or *Pass* according to its credit score. The Council's Sustainable Development Guidance for Estate Management provides important advice to colleges on developing and implementing estate strategies and capital projects that reflect best practice in sustainable development.

The impact of the Council's estates development strategies was evident in the colleges visited. Two colleges had recently occupied new campuses both of which included many sustainability features. One college was about to occupy the first phase of its new building, three were at the advanced stages of planning new capital projects and one was at the early stages of planning a major capital project. John Wheatley College's new £15m East End Campus opened in August 2007 to replace the former Shettleston premises. The

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[24] http://www.sfc.ac.uk/news_events_circulars/Circulars/2008/SFC2408.aspx

[25] http://www.breeam.org/

campus is an excellent example of sustainability in the design of an educational building and details are shown in the example of sector leading and innovative practice on pages 60 and 61.

John Wheatley College, East End Campus

Aberdeen College aims to achieve a BREEAM rating of 'excellent' for its new building at Altens. The college has accepted many of the recommendations made by the Carbon Trust *regarding reduction of carbon dioxide emissions. Particular attention has been paid to the effectiveness of the building insulation (designed to a standard significantly above current regulations), the amount of glazing in the building to optimize energy consumption, the collection of roof rainwater for flushing toilets, solar panels and a wind turbine. The college's environmental and sustainability group, the membership of which includes both staff and learners, are involved in making suggestions to guide the fitting out and operation of the building.*

These suggestions include the use of recycled material for fixtures and fittings, the use of low power equipment, electronic document storage, and the effective management of waste and recycling.

As well as the new capital projects, colleges were also engaged in projects to improve the operating efficiency and addressing sustainability with their existing estates. Ayr College had invited the *Carbon Trust* to carry out two studies. One of these was an 'assessment of energy saving opportunities' and the other a study on energy monitoring and targeting, building thermal performance and heating system operation and controls. Both studies had been helpful to the college in identifying areas in which to concentrate efforts to improve energy efficiency thereby reducing the carbon footprint of the estates. The college was also developing an energy action plan within its estates strategy in response to its commitments under the University and Colleges Climate Commitment for Scotland. In August 2005, Aberdeen College committed to managing parts of its Clinterty estate under a Voluntary Rural Stewardship Scheme concerned with protecting and enhancing the environment. A number of habitats have been created at Clinterty. This has enhanced the environment for nesting birds, for particular bird species, including snipe, and for arable land insects.

Langside College, among a few others, has used *Salix* funds to invest in estates projects with a view to saving costs and thereby reducing its carbon footprint. *Salix* is an independent company set up to accelerate public sector investment in energy efficient technologies. It has public funding from the *Carbon Trust*. Energy saving measures undertaken by the college include a new energy management system for its Rutherglen campus to accommodate seasonal changes, the replacement of light bulbs with low energy ones, installation of equipment to reduce energy costs through voltage reduction, and insulation of Woodburn House using *Salix* funds. College policies have resulted in a significant reduction in the use of paper and the associated demand for storage space, PCs are automatically switched off by software, the college uses downloaded digital copies of software rather than requesting CDs, and more use is being made of virtual learning environment (VLE) and e-portfolios.

South Lanarkshire College has reduced the number of physical file servers required in the new college building from 21 to seven. This is achieved by creating virtual file servers which lead to a reduction in the demand for equipment, energy supplies, maintenance and replacements.

Colleges give high priority to reducing, reusing or recycling waste. They are required to comply with legislation such as the Waste Electronic and Electrical Equipment (WEEE) regulations, and dispose of their waste responsibly.

Recycling points that segregate waste are common across colleges. Dundee College has used Dundee City Council's integrated waste disposal and recycling service since 2005 and this has reduced the college's environmental impact greatly.

Prior to 2005, all waste generated by Dundee College was taken to landfill. Now that proportion is reduced to 6% of overall waste disposal through recycling in a variety of waste commodities. Almost all the college's waste is processed in the City Council's Waste to Energy Plant where further extractions are made including ferrous and non-ferrous metals recovered by electromagnets. Once this process is complete all remaining waste is converted into electricity which is fed back into the public supply via the national grid. The college recycles substantial quantities of cardboard, paper, glass and electrical and electronic waste.

There were several innovative examples of the use of recycled materials at Elmwood College. For example, one of the bunkers in college's golf course is made from recycled glass. In equestrian, the area used for dressage is made from recycled car tyres.

Environmental management systems

A majority of colleges visited had developed systems to monitor and improve their environmental performance. More than a few colleges visited had or were developing externally accredited Environmental Management Systems (EMS). EMS provide structured frameworks for the assessment and management of an organisation's environmental impacts. They can help colleges improve their existing management systems and efficiency, reduce costs, ensure compliance with environmental regulations and reduce their environmental impact. Colleges can use EMS to demonstrate that they are managing their environmental risks responsibly. ISO 14001:2004 is the most commonly adopted certified scheme because of its international status.

In 1995, Elmwood College became the first educational establishment in Europe to achieve the environmental ISO 14001. The Environmental Association of Universities and Colleges (EAUC) features the college's approach to using the curriculum to implement ISO 14001 in one of its published case studies. *'In 1995 the Scottish Strategy for Environmental Education was published with over 90 recommendations on how environmental education should be taken forward for the following ten years. Elmwood College believed that in order to demonstrate its compliance with the strategy it should gain accreditation to a recognised environmental system standard. Elmwood integrated the ISO 14001 system within the college's team management system which provides a framework for teaching activity (organic farming, golf course management and land management). Learners are taught about the requirement of the standard as part of their course which prepares them for future jobs.'* The college has made its environmental management system publicly available to help other organisations respond to the challenges of the Scottish and UK climate change legislation. The college's approach to sustainability and environmental management is illustrated in the example of sector leading and innovative practice on page 58.

Aberdeen College is committed to the achievement of ISO 14001 for its environmental management system. Its recent appointment of an environment and sustainability manager underlines the college commitment in this area and the college is registered with the *EcoCampus Award Scheme*. The college is adopting the *EcoCampus* incremental approach to ISO 14001 and the college was successful in achieving the ISO standard in June 2009. Striving for the ISO standard is in line with the college's practice in targeting awards which identify the standard in an area and then testing its performance against the standard. Glasgow College of Nautical Studies already has ISO 9001 status for its Faculty

of Maritime Studies courses. The college plans to implement ISO 9001 college-wide by May 2009. It plans to extend this work using the quality standard ISO 14001, which will allow it to develop an EMS. This system will allow the college to identify the negative impacts it has on the environment, evaluate their significance and introduce procedures to control them.

Sustainable accounting

SFC's estate management statistics and the estate management data exchange (*eMandate*) provide a helpful resource that allows colleges to compare and benchmark their performance against other colleges in areas such as energy efficiency, water consumption and waste disposal. A sustainable accounting project comprising representatives from John Wheatley, Elmwood, Oatridge, Edinburgh's Telford and Carnegie colleges, and the Council is exploring how colleges can report on their sustainability performance in annual reports. The project is led by John Wheatley College and a firm of sustainability consultants provides technical support. A pilot study has investigated the measuring and recording of sustainability performance data and key qualitative and quantitative performance indicators have been developed and trialled.

> *John Wheatley College includes information on its sustainability performance in its Annual Report and Financial Statements for 2007/08. The information demonstrates the dramatic effect that the college's sustainable technology investment in its East End Campus has had upon the carbon footprint of the building. In 2007/08 Easterhouse campus used 243 kWh per m^2 while the East End campus used only 114 kWh per m^2. One of the college's priorities in its estates strategy is to reduce the carbon footprint of its traditionally-built Easterhouse campus (opened in 2001) by retrofitting appropriate sustainable technologies. In addition to the above, John Wheatley College has employed the Scottish Government's Best Value Evaluation methodology to its activities. This requires an analysis of its progress against sustainability targets. The college makes public this evaluation and includes it in its annual accounts each year.*

Campus sustainability learning

One of SFC's priorities for the college sector is that 'estate developments embody the principles of sustainable development and encourage learners and staff to act sustainably' (SFC report to Ministers on sustainable development,

May 2007). This aspect was explored by inspectors in their visits to colleges and evidence sought from review reports on Scotland's colleges over the period 2005–2008.

There was evidence of the impact of campus sustainability learning in three colleges. The 2008 HMIE review report on Carnegie College highlighted as an example of sector-leading practice the ASPIRE centre which is located within the college's Ecospace (example of sector leading and innovative practice on page 54). The college had capitalised on the *Ecospace* to promote the concept of renewable resources, which was embedded in the programmes and activities of learners in the ASPIRE centre. All activities related to the concept of renewable resources and this aspect had become a focus of learners' lives away from college. Learners at John Wheatley College appreciate and are proud of the college buildings and the college environment. They find the college a stimulating and attractive place to be in and enjoy being part of it. Learners cooperate willingly and effectively in the college's recycling arrangements. Elmwood College uses its EMS as a framework for teaching activity. Learners are taught about the requirement of the standard (ISO 14001) as part of their programmes and they operate within the standard and the college's systems and procedures. As part of its commitment to sustainability education and to achieving energy efficiency in the college, the computing section of Cardonald College developed and distributed to learners its *Green Guide*. (example of sector leading and innovative practice on page 56)

However, in most cases there was little evidence of the impact of campus sustainability learning. Learners were often unaware of sustainable features within the design of the college buildings. For example, at one college a group of building apprentices were unaware of the college's sustainable urban drainage system in the college car park. Only a few colleges had included campus sustainability within induction sessions or handbooks. A significant barrier to campus sustainability learning in colleges is the relatively short period that most learners attend college. Nevertheless, there are a few simple measures colleges can take to improve learner awareness of campus sustainability and the behaviours required to support it. Colleges could display information of changes to environmental performance of college building arising from sustainable features added. Staff could highlight sustainable features in college buildings and discuss related issues with learners. Learner handbooks could include reference to sustainable features in college buildings.

Employer expectations

The 2008 report *Skills for a Low Carbon and Resource Efficient Economy (LCREE)[26]* produced by Pro EnviRo for the Department for Environment, Food and Rural Affairs (Defra) reviews the skills implications for a low carbon and resource efficient economy. The report draws on evidence from a wide range of organisations including sector skills councils, government departments and professional bodies. It identifies problems regarding understanding and awareness of LCREE. Part of this is considered to arise from *'….the interchangeable use of terms such as sustainable development, green, eco, environmental.'* The report comments that organisations currently lack an understanding of the skills requirements and of their importance and benefits *'…only when these links and a clear business case are made will businesses demand LCREE training'*. The report identifies a range of generic and sector-specific skills required for LCREE, and notes that many of these skills are not new, but need to be applied in new situations.

College staff provided comment on changes in employer expectations regarding learner skills sets or attitudes arising from sustainability issues. In more than a few vocational areas, there was evidence that employers expect learners to be aware of sustainability issues and have appropriate skill sets. The subject areas where colleges report employer demand for sustainability skills or improved awareness of sustainability issues include art and design, construction, engineering, land-based industries, nautical studies, and hairdressing, beauty and complementary therapies. The examples that follow provide evidence of this demand in subject areas and the positive way in which colleges have responded.

Glasgow Metropolitan College's advisory boards are comprised of representatives from industry and the professions and provide an important forum for addressing curriculum issues. Representatives from design practices who attend the college's design advisory board confirmed that within all aspects of the design profession there is a need to address sustainability within their practice and in the development of new products and environmental projects. The professionals acknowledged that their own knowledge was limited and looked to learners as new graduates to bring current knowledge and skills in the field. Staff in design have responded positively to this feedback. They have contributed to the development of units in a new SQA award including a new unit Art and design: sustainability. They have developed project work that

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[26] http://www.skills4lowcarboneconomy.co.uk/reports.aspx

addresses sustainability issues. (see example of sector leading and innovative practice on page 54)

The Sector Skills Councils in construction (*ConstructionSkills* and *SUMMITskills*) provide clear evidence of demand for sustainability skills in the industry. Three colleges have been proactive in their response to this area and provide excellent examples of how colleges are responding to these issues.

Dundee College's sustainable energy classroom

Dundee College has secured a knowledge transfer partnership grant to support an innovative development with a major contracting company in micro-renewable technologies. In partnership with Worcester Bosch the college has established a purpose-built training facility and provides training and certification in the installation of solar panels to meet rising demand skills in this area (example of sector leading and innovative practice on pages 59 and 60). Staff from the construction section have worked with the Sector Skills Council for the building services engineering sector (SummitSkills) and SQA to produce a range of new SVQ units in micro-renewable technologies.

South Lanarkshire College is working with some 20 companies and suppliers of construction materials to design and construct a low energy, low carbon house on the college campus. The college's lead partner in the project is *Dawn Homes* and the project is on schedule to be completed in October 2009 when the college hosts the annual skill build competition (example of sector leading and innovative practice on page 55). The School of Construction and Forestry at Inverness College worked in partnership with *Highlands and Islands Enterprise Community Energy Company* and kit manufacturers to design and deliver micro-renewable installer programmes for employees within the plumbing, electrical and heating industries (example of sector leading and innovative practice on pages 58 and 59).

South Lanarkshire College's low-energy house incorporates photovoltaic panels, solar hot-water panels, air heat recovery system, ground source heat exchanger, low-energy heating systems, one third of the air leakage of a typical new house, rainwater harvesting system and energy-saving light tunnels on the upper floor. When operational it will be 'net zero carbon' in that over the course of a year it will produce more or less the same amount of energy as it uses.

In land-based industries, Elmwood College is well placed to exploit its in-house expertise with regard to sustainable development and knowledge of legal and regulatory requirements concerning the environment in making effective partnerships with external agencies. One of its members of staff has championed sustainability for many years and leads *Scotland's Colleges* sustainable development education project. Across land-based industries, there is clear evidence of employer demand for sustainability skills and this is reflected in the curriculum delivered (see pages 29 and 31). For example, the Royal and Ancient Golf Club of St Andrews demonstrates clear commitment to sustainability and has a lead role in supporting sustainability initiatives in the golfing industry.

In the maritime industry, the wide range of legislation to prevent pollution of the marine environment by ships governs the content of courses and accounts for employer demand (see page 30). In most of the colleges, staff in hairdressing, beauty and complementary therapies report that employers expect learners to be aware of sustainability issues. Colleges have responded well in raising awareness of biodiversity issues such as the impact of palm oil production (see page 29). However, beauty therapy staff report that customers also are raising issues about product sourcing and sustainably sources products. Teaching staff at Glasgow College of Nautical Studies have included sustainability within the employability portfolios that learners share with prospective employers.

Community engagement

Staff in the colleges visited described how they had engaged with communities to raise awareness of sustainability and how college expertise is used to support the community. Overall, colleges have responded well in engaging with communities about sustainability issues.

Aberdeen College invited several local organisations to provide information and advice on a variety of topics including recycling, energy use and transport at its Environmental and Sustainability day held in November 2008. The college also launched new initiatives on the day including multiple occupancy parking and liftshare. A well as improving staff and learner awareness of sustainability, events such as this allow colleges to demonstrate to interested groups in the community how seriously they are addressing these important issues.

The involvement of colleges in local green travel plans provides further opportunity for college engagement with local communities on sustainability issues. John Wheatley College liaised with Strathclyde Partnership for

Transport and others to lobby for the inclusion of a new train station to be located in close proximity to its new East End Campus as part of development options which were included in the plans to develop further the Glasgow Queen Street to Bathgate railway line. Dumfries and Galloway College's green travel plan provides an excellent example of how a college can contribute to the enhancement of the public transport infrastructure for the wider community. The college worked in partnership with a range of organisations including the Council, Health Authority, Barony College and the Crichton Universities to implement the plan and the project was shortlisted for a EAUC *Green Gown* award[27], which is open to all universities and colleges in the UK (example of sector leading and innovative practice on page 56). There are several excellent examples of colleges contributing to the establishment of sustainable communities. These include:

- The joint working and the development of shared services by John Wheatley College in the operation of *the Bridge* in Easterhouse, which is an innovative shared library service that the college has developed with Culture and Sport Glasgow (example of sector leading and innovative practice on page 63).

- Forth Valley College's partnership working in Stirling's Raploch provides workplace learning to assist learners' progress into employment in tourism and hospitality. Learners produce school lunches for three Stirling primary schools and bistro meals for the community from the college's Raploch campus, which is a focal point within the community and an important part of the regeneration of Raploch (example of sector leading and innovative practice on pages 57 and 58).

- An example of Langside College's contribution to the development of sustainable communities is the volunteering work of its beauty therapy learners who provide free treatments for residents in care homes for the elderly, for staff and patients in local hospitals where they help to de-stress staff and help patients, and for various community groups (example of sector leading and innovative practice on page 60).

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[27] http://www.eauc.org.uk/results

The examples demonstrate four broad areas where colleges are already active in contributing to the development of sustainable communities, raising awareness of sustainability and promoting the services that colleges provide.

Ayr College, Dam Park Building

7 | Conclusions

Overall, Scotland's colleges have responded well to the Scottish Government's *Greener Scotland* strategic objective. Almost all colleges have embedded sustainability within their strategic plan aims and objectives and the majority have clear policies and strategies to address sustainability in most aspects of their operation. Most colleges have supported the University and Colleges Climate Commitment for Scotland (UCCCfS) and those that were not are expected to have signed up by the end of 2009. In the context of the Kyoto Protocol and the European Union Burden Sharing Agreement, this represents an important public commitment from colleges and universities to allocate time and resources to implementing measures that will reduced their greenhouse gas emissions and carbon footprints.

There is good leadership for sustainability in colleges. In most colleges visited, a senior manager has overall responsibility for sustainability, while often this is shared by two senior managers with one having responsibility for curricular issues and one for estates. Across the colleges, there are good examples of initiatives to raise staff awareness of sustainability issues. Many staff have undertaken continuing professional development on sustainability within their specialist areas. A few colleges include induction training in sustainability for new staff. However, the majority of colleges have not developed sufficiently in this area.

Overall, staff and learners have a good general awareness of sustainability issues. More than a few colleges have used the web successfully to raise staff and learner awareness of sustainability issues. However, in most colleges sustainability issues are not embedded systematically within design of programmes. Only a few colleges included sustainability with their programme delivery guidelines. More than a few colleges are identifying sustainability within their policies and strategies for developing essential skills or soft skills. However, most colleges have not defined sustainability skills sufficiently or unpacked these skills into their constituent elements.

A few colleges have developed systematic approaches that require curriculum teams to audit their curriculum and nominate opportunities to embed sustainability skills within programmes and to prepare plans for doing so. In all colleges, sustainability issues are promoted within learning experiences in more than a few subject areas. However, only a few colleges have embedded sustainability within their learning and teaching strategies. In all colleges there are good examples of learners contributing to sustainable development. These include student associations championing *Fairtrade* products, volunteering work in communities, recycling materials and products including mobile phones, carbon offsetting, and community garden schemes.

In all colleges, sustainability is a key priority in the management of college estates. Estate developments embody the principles of sustainable development and there are excellent examples of sustainability in the design of an educational building. A majority of colleges have developed systems to monitor and improve their environmental performance. More than a few colleges have or are pursuing accredited Environmental Management Systems under ISO 14001. They are engaged in projects to improve the operating efficiency and addressing sustainability with their existing estates. Colleges give high priority to reducing, reusing or recycling waste. Recycling points that segregate waste are common across colleges. A sustainable accounting project is exploring how colleges can report on their sustainability performance in annual reports.

In a few colleges, there are good examples of how estate developments that embody the principles of sustainable development encourage learners to act sustainably. However, in most colleges there was little evidence of the impact of campus sustainability learning on students. Students were often unaware of sustainable features within the design of the college buildings.

8 │ Recommendations

Colleges should:

- provide guidance on college policies and strategies in sustainability within the induction programmes for new staff;

- develop their policies and strategies for sustainability to define the essential knowledge, skills and behaviours for learners to develop;

- develop and implement systematic approaches for embedding sustainable development within all programmes;

- include sustainable development within their strategies for learning and teaching;

- encourage and support student associations to include events and activities, which contribute to sustainable development; and

- include sustainability issues within the induction programmes for learners and information as appropriate on the sustainable features within the design of college buildings.

To support developments nationally, SFC should consider:

- encouraging Scotland's Colleges to develop and disseminate to colleges guidance on embedding sustainable development within the curriculum;

- promoting and disseminating good practice in sustainable development across the colleges; and

- commissioning investigations to assess whether all colleges have the understanding and commitment, and whether they are sufficiently supported to address the skills implications for a low carbon and resource efficient economy.

Appendix 1

Colleges involved in the fieldwork for the report

Aberdeen College
Ayr College
Cumbernauld College
Dundee College
Elmwood College
Glasgow College of Nautical Studies
John Wheatley College
Langside College
Perth College
South Lanarkshire College

Appendix 2

Themes investigated during visits to colleges

1. Educational leadership and direction

- Embedding sustainability within strategic plan aims, objectives and targets.
- Universities and Colleges Climate Commitment for Scotland: college plans to take forward the commitment.
- Staff awareness of sustainability issues.
- Sustainable development policies and procedures.
- Sustainability within college arrangements for self-evaluation and internal review.

2. Education, training and lifelong learning

- Promotion of sustainability.
- Embedding sustainability within learning and teaching strategies.
- Extent to which sustainable development is integrated within the curriculum.
- Programmes and units that target sustainability.
- Reviewing the curriculum and resources.
- Use of resources, advice and support mechanisms to embed sustainable development education within units, programmes and the wider learner experience.
- Sustainability within lesson plans.

3. Impact on learners and other users of college services

- Learner contributions to sustainable development including aspects such as volunteering, community collaboration, and carbon management.
- Benefits to learners and accreditation issues.
- Campus sustainability learning: learner encounters with campus environmental management practices.

4. Management and support of staff

- Staff development in sustainability.
- Consideration of sustainability issues in induction of new staff.

5. Management and use of resources

- Extent to which estate developments embody principles of sustainable development.
- Environmental management systems.
- Fulfilment of statutory duties, relevant legislation, directives, regulations. Energy certification – Energy Performance Certificates (EPCs) and estate plans to improve performance.
- Benchmarking studies.

6. Impact on employers and communities

- Employer and professional expectations regarding learners' skill sets or attitudes arising from sustainability issues.
- Community engagement and sustainability: use of college expertise, link with schools, knowledge transfer.

Appendix 3

Examples of sector-leading and innovative practice.

Glasgow Metropolitan College: interior design students project with Fintry Community Council.

Staff have contributed to the development of units in new SQA award including a new unit Art and design: sustainability. They have developed project work for learners that addresses sustainability issues. One such project involved HND Interior Design learners working with Fintry Community Council. Fintry aims to be Scotland's first 'carbon neutral' community and has an active community council with a strong interest in environmental issues. The learners were commissioned to redesign part of the local community centre using eco-friendly guidelines. Learners made a visit to the site and engaged in discussions with the clients and end users. Each learner developed a design solution to the functional, aesthetic and ethical concerns of the client. Lecturing staff developed informative and thought provoking presentations on aspects of sustainable design and learners engaged in focused research into environmentally sound materials, fixture and fittings. A selection of final design solutions was presented to the clients at Fintry and these were displayed in a public exhibition at the community centre. Learners had direct feedback from clients and it is anticipated that one of the schemes will actually be built at Fintry when funding is finalised.

Carnegie College: additional support programmes in real environments (ASPIRE)

The ASPIRE initiative provided realistic work experiences, combined with an integrated approach to the use of renewable resources, for a wide range of learners with additional support needs. Learners worked with a range of partners in the community and used the ASPIRE centre, located within the college's *Ecospace*, as well as external facilities. They used a range of industry-standard resources to help them develop their skills. For example, they attended the Rosyth Resource Centre to use the professional laundry facilities to deliver a contract to launder protective clothing of learners on construction and beauty programmes. The college capitalised on the *Ecospace* to promote the concept of renewable resources which was embedded in learner programmes and activities. Environmental issues were very much part of the curriculum with units like *Be green while you clean* as examples of the priority the college placed on these issues and the use of natural products wherever possible. All learner activities related to the concept of renewable resources. This aspect had become a focus of their lives away from college, and many parents and carers reported that learners were urging family members and

friends to utilise more eco-friendly practices in their everyday lives. The developing knowledge of this team of staff continues to have a positive impact across other teams. (source HMIE review report of Carnegie College, published 2008)

Dundee College: red squirrel feeder project in engineering

Dundee is the only city in the UK that still has a large resident red squirrel population. However, as in other areas of the country, the red squirrel is under threat from the ever-increasing grey squirrel population. The engineering section of the college was approached by Dundee City Council Countryside Rangers service to contribute to their red squirrel project. Engineering learners designed and manufactured an improved red squirrel feeding box that the countryside rangers use to supplement the red squirrel diet. They carried out the task while undertaking the NQ Design and Make unit. The design brief required the feeding box to be accessible only to red squirrels, to be easily replenished with food, easily cleaned and maintained, easily mounted and safely secured on trees and to allow good views of the squirrels while they are feeding. The learners designed and manufactured suitable feeding boxes that met the required standards and which are used by the countryside rangers. As well developing their engineering skills the project had made the learners very aware of biodiversity issues.

South Lanarkshire College: low carbon house

The college is working with some 20 companies and suppliers of construction materials to design and construct a low energy, low carbon house on the college campus. The college's lead partner in the project is *Dawn Homes* and the project is on schedule to be completed in October 2009 when the college hosts the annual skill build competition. The project aims to showcase the design and construction standards contained in the Low Carbon Building Standards Strategy for Scotland document. It will meet the requirements of a code 5 rating under the energy efficiency code for sustainable homes. A key principle in the development of the house is affordability and in this regard the project is at the leading edge of developments in Scotland. The project is an impressive focus for the college in bringing together its range of activities in sustainability. The house will be used to showcase to learners, staff and the outside world the importance of sustainable habitations and the key domestic elements of energy saving methods and systems. The college plans to use the building for training purposes for its own learners and those of employees of the construction industry.

Cardonald College: The *Green Guide,* improving sustainability

As part of its commitment to sustainability education and to achieving energy efficiency in the college, the computing section developed and distributed to learners its *Green Guide*. In addition, the section had introduced a number of measures to reduce energy consumption and use of consumable resources. The *Green Guide* covered topics including: sustainable choices; purchasing computers; energy consumption; peripherals; and consumable items. It covered issues related to computer use such as reducing consumption, best practice, power management, and recycling. The measures to reduce energy consumption by staff and learners in the computing section included: centralised printing with lecturer authorisation; increased electronic storage and access to documents; discouragement from printing; and measures to prevent electrical equipment in computing rooms from being left switched on overnight.

As a result of the introduction of the *Green Guide*, learners had enhanced awareness of sustainability issues and, in particular, how to acquire, use and dispose of ICT equipment in the most environmentally sustainable manner. The initiative had led directly to a 50% reduction in costs of printer toner and paper in one year and a 66% reduction in paper consumption over three years. Measures to reduce power consumption in computer labs included the automatic tripping of all power to the lab if any computer equipment was still live at a certain time each evening. Teaching staff had no access to restore power and had to rely on technician staff to perform this service. Computer labs affected in this way were a source of serious inconvenience to staff and learners as they could not begin work in the morning until a technician had restored power. After a high incidence of power trips in labs in the early stages of the initiative, staff and learners learned to check thoroughly that all computers were switched off and the number of instances of power tripping dropped abruptly, with consequent savings in power. (source HMIE review report of Cardonald College, published 2008)

Dumfries and Galloway College: *Green Travel Plan,* promoting access and inclusion, healthy working lives and sustainability

The project promoted the use of sustainable transport for learners and employees of the college, and fitted well with the Scottish Government aim for a *Greener Scotland.* The college worked in partnership with a range of organisations including the Council, Health Authority, Barony College and the Crichton Universities to implement the plan to provide a public transport network. The transport network enabled learners in rural and remote areas to attend their chosen programme at all campuses and enhanced the public

transport infrastructure for the wider community. The public transport network was an integral part of the college's wider *Green Travel Plan* which also incorporated measures to promote and encourage cycling, walking, and car sharing for learners, staff and visitors to the college.

The college had appointed a travel coordinator to implement the range of actions and initiatives within the *Green Travel Plan*, and to ensure that they would be sustained after the move to the new college campus at Crichton. In March 2008, the college, in partnership with South West of Scotland Transport Partnership (SWESTRANS), Dumfries and Galloway Council and the NHS launched a joint *journey share database,* as part of a national initiative for finding others with similar travel requirements. (www.dgtripshare.com)

The sustainable transport project had recently been shortlisted for a *Green Gown* award, which was open to all universities and colleges in the UK. The project was very successful with over 65% of learners travelling by college-funded public transport. This was a remarkable achievement given that Dumfries and Galloway is one of the most sparsely populated areas of the UK. Recent *Learner Voices* feedback indicated that 50% of learners would not have been able to attend college without this provision. (source HMIE review report of Dumfries and Galloway College, published 2008)

Forth Valley College: Partnership working to develop work based learning

Forth Valley College's Raploch Campus is situated in one of Scotland's most deprived areas and seeks to provide realistic workplace learning which assists learners' progress into employment in the tourism and hospitality industries. Most of the seventy learners currently undertaking vocational programmes left school with few or no qualifications and had been disengaged from learning. In the hospitality programme, the college incorporated learning activities within a real-life working environment which prepared learners to meet the responsibilities, demands and culture of the industry. Staff identified an opportunity for contributing in partnership to Scottish Government's *Hungry for Success* initiative and collaborated and contracted with Stirling Council to produce the school lunches for three Stirling primary schools and bistro meals for the community of Raploch. Learners on the programme worked as a team to prepare, cook and deliver these meals throughout the school terms. A core part of the programme was to develop teamwork, self-esteem and responsibility. Although most learners had a previous history of disengagement from learning, all of them successfully completed the *Get Ready For Work* programme and progressed to a *Skillseeker* programme. The most notable

benefits of the programme were the increase in responsibility, commitment, confidence and aspiration of learners who responded well to the demands of a real-life learning experience and took part enthusiastically in their activities. (source HMIE review report of Forth Valley College, published 2008)

Elmwood College: Sustainability and environmental management

The college embedded the ISO14001 Environmental Management System in all its activities. In addition, it had registered with a number of other environmental management systems including *Committed to Green* and the *Wildlife Trust's Biodiversity Benchmark*. By setting annual environmental improvement targets the college sought to develop a sustainable estates strategy and bring about an overall reduction in its carbon footprint. On-site initiatives such as recycling, waste streaming, composting and energy management led to substantial financial savings over a number of years and these savings were used to improve the learner experience. For example, learners recycled aluminium cans at the campus recycling stations and used the cash raised to purchase karaoke equipment for the student union. The adoption of these environmental standards had an impact on the curriculum in a number of ways. For example, the biodiversity agenda and integrated management of the golf course involved learners at all stages of implementation. In hairdressing, beauty and complementary therapies, learners considered the impact that the products they used had on the environment. Such initiatives supported the development of a 'green' ethos which influenced the behaviour and practice of staff and learners. Learners behaved in an environmentally responsible way, fostering a sense of global stewardship. (source HMIE review report of Elmwood College, published 2007)

Inverness College: Micro-Renewable Installer Programmes – Hot Water Solar

The School of Construction and Forestry had worked in partnership with Highlands and Islands Enterprise Community Energy Scotland and kit manufacturers to design and deliver this successful programme to workers within the plumbing, electrical and heating industries. The programme met a number of needs including:

- addressing the Scottish Government agenda for carbon reductions and energy targets;
- adding value to plumbing and electrical frameworks for Modern Apprentices;

- encouraging the construction industry to design and build homes with a wide choice of heating systems that involve micro-renewable technology; and
- raising awareness of the benefits of micro-renewable and community heating systems.

During the 3.5 days programme, learners engaged in a variety of theory and practical activities. These included a visit to the college renewable laboratory, the installation of panels and evacuated tubes to various roof types and installation of relevant plumbing and electrical systems. Learners gained valuable vocational and employability skills through completion of this programme, including the attainment of a British Plumbing Employers Council (BPEC) nationally accredited qualification for hot water solar installers. This also resulted in extended employment opportunities for heating, plumbing and electrical industry personnel. (source HMIE review report of Inverness College, published 2007)

Dundee College: knowledge transfer partnership

The college has operated an environmental group for a decade and considers sustainability education as important for learners, staff and employers.

Innovative projects and major seminars characterise the college's sustainability activities with emphases on energy, construction and preparing learners for *green* jobs. The college has been successful in gaining a knowledge transfer partnership grant to support an innovative development with a major contracting company in micro-renewable technologies. The project aims to provide the company with the capability to become a major contractor in Scotland for the design, installation and maintenance of micro-renewable technologies. The transfer of expertise in micro-renewable technologies from the college to the company enables it to integrate the technologies into the business through establishing a new operating division in to its commercial and domestic building services activities. The knowledge transfer partnership offers the college opportunities to apply staff knowledge and expertise to important business problems related to micro-renewable technologies. Staff in turn gain experience of current business developments and the project will generate research ideas and teaching materials relevant to business. The closer working relationship with the company facilitates on-site student visits and practical demonstrations of the implementation of micro-renewable technologies.

Langside College: volunteering

The college promotes volunteering as having an important contribution to make in the development of sustainable communities as well as a way of improving links with its own community. The college uses volunteer tutors in literacy and information technology and learners take part in volunteering activities in sport studies, computing and hairdressing, beauty and complementary therapies. Learners provide free treatments for residents in care homes for the elderly, for staff and patients in local hospitals where they help to de-stress staff and help patients, and for various community groups. Learners also contribute to events such as *International Women's Aid* day and *Children in Need*. They enjoy volunteering and consider it helps them build their confidence and consolidate their learning. Learners said 'By providing treatments to help the elderly, stressed and vulnerable, we help them to feel better about themselves and build their confidence. This in turn creates positive attitudes in people, and helps to sustain the communities in which they live.'

John Wheatley College: East End Campus

The college opened its new £15m East End campus in August 2007 to replace the former Shettleston campus. The campus is an excellent example of sustainability within the design of an educational building. The campus is designed and constructed to be extremely energy efficient and features an extensive range of sustainable technologies to reduce overall energy

consumption and to utilise on-site renewable energy sources. In 2008, the new campus secured the *Institute of Glasgow Architects' Best Educational Building and Sustainable Design Award*, and was shortlisted in the learning category of the World Architecture Festival Awards. The design of the building achieved a BREEAM *Excellent* rating. The many environmental and sustainability features in the campus include:

- rainwater harvesting, collection and recycling;
- photo-voltaic cells;
- air-source heat pumps (see above)
- solar collectors to pre-hear domestic hot water;
- ETFE roof for sun and shade control;
- higher than required thermal insulation;
- passive ventilation in main areas;
- deep building structure to provide thermal mass with periscope lighting;
- high level windows to improve natural light penetration;
- proximity switching for lighting control;

- bio-diverse planting scheme; and
- sustainable urban drainage scheme.

College managers promote the sustainable features of the college's estate to staff and learners. To help users of the college to appreciate the impact of energy saving measures, the building management system is used to display on plasma screens the amount of water recycled and energy saved. The campus development complies with the Nature Conservancy Scotland Act 2004. It has been designed to promote biodiversity and the building features an environmental education display system. The college is retrofitting a number of energy efficiency and sustainable energy technologies to its Easterhouse Campus, which opened in 2001. These include photovoltaic cells, an air-source heat pump and 6 kW wind turbine. The wind turbine is some 15m high and provides a clear visual statement to the local community of the college's commitment to saving energy and sustainable technologies.
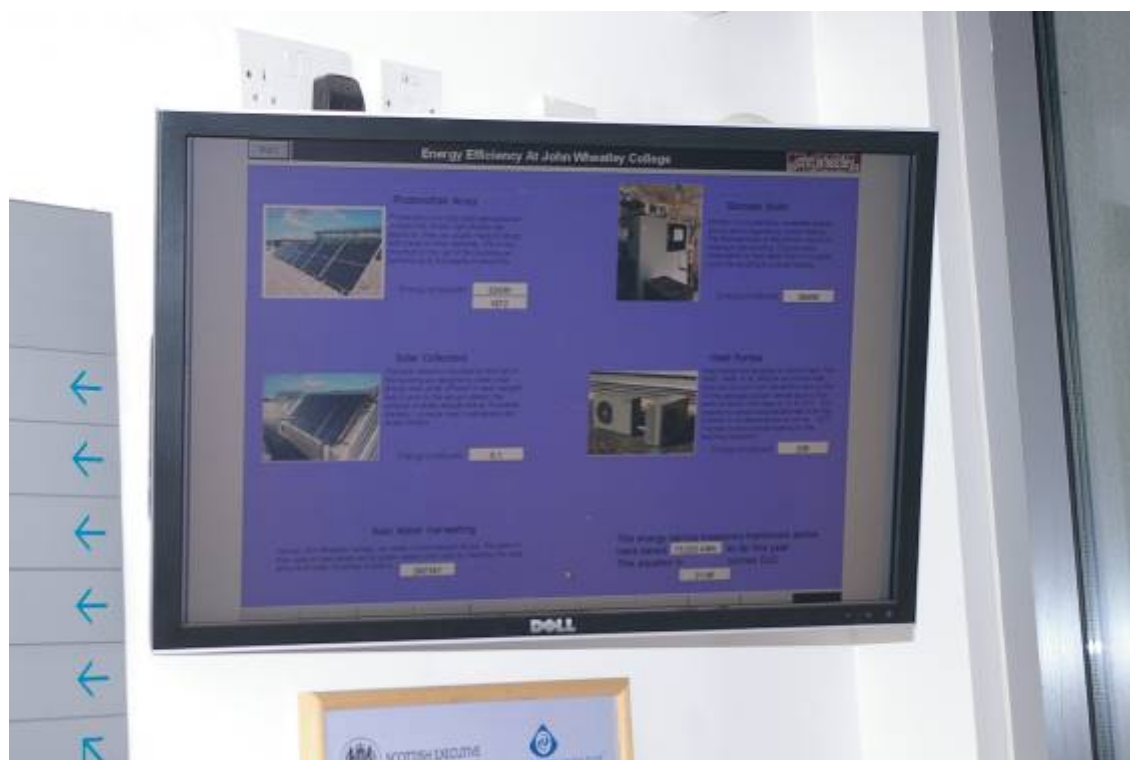
The display on the plasma screen located in the reception area at John Wheatley College's East End Campus provides energy efficiency information on the building's photovoltaic array, biomass boiler, solar collectors, rainwater harvesting and heat pumps.

John Wheatley College: joint working and the development of shared services

The college is committed to joint working and the development of shared services. It participates in the operation of the *Bridge* in Easterhouse. This is an innovative shared library service that the college has developed with Culture and Sport Glasgow. It challenges traditional views of sector-based library services and develops new ways of enabling clients to access library services, learning and information. The college transferred its library staff and services to Glasgow City Council prior to the opening of the *Bridge* in 2007. The shared service has resulted in a significant improvement in the quality of library services in Easterhouse and a substantial increase in library activity. The joint library provision has propelled the Easterhouse public library to being regularly in the top five most busy libraries in Glasgow, whereas previously it was ranked around 27th in the list. An evaluation, funded by the *Scottish Library and Information Council*, confirmed that the shared arrangements have improved significantly the quality and range of both the college and public library services. The development relies on a high degree of integration with local service providers to enable the Greater Easterhouse community to access joined-up public services of high standards. The project contributes greatly to local regeneration and sustainable communities.

Appendix 4

Glossary

ASPIRE	Additional Support Programmes In Real Environments
BPEC	British Plumbing Employers' Confederation
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Method
DEFRA	Department for Environment, Food and Rural Affairs
DfES	Department for Education and Skills (now Department for Schools, Children and Families (DCfS)
EAUC	Environmental Association for Universities and Colleges
EMS	Environmental Management System
ETFE	Ethylene Tetra Fuoroethylene
HEI	Higher Education Institution
HMIE	Her Majesty's Inspectorate of Education
HNC	Higher National Certificate
HND	Higher National Diploma
ICT	Information and Communications Technology
ISO 9001	International Standard for Quality Management Systems
ISO 14001	International Standard for Environmental Management Systems
kWh	kilowatt-hour
LCREE	Low Carbon and Resource Efficient Economy
MARPOL	Marine Pollution – refers to the International Convention for the Prevention of Pollution from Ships
NC	National Certificate
NQ	National Qualification
NUS	National Union of Students
QELTM	Quality and Equality in Learning and Teaching Materials
R and A	Royal and Ancient Golf Club of St Andrews
SDE	Sustainable Development Education
SEABS	Scottish Environmental Attitudes and Behaviours Survey
SFC	Scottish Funding Council
SFEU	Scottish Further Education Unit
SQA	Scottish Qualification Authority
SVQ	Scottish Vocational Qualification
UCCCfS	University and Colleges Climate Commitment for Scotland
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Educational Organisation
VLE	Virtual Learning Environment
WEEE	Waste Electronic and Electrical Regulations

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