

3.4 The Environmental Technology Sector

Executive summary

This section summarises the main findings for the Environmental Technology (ET) sector that are detailed in the following chapter. For reference, it highlights the source of each finding. It should be noted that the summary only contains the most significant findings and recommendations. Additional issues and further detail are given in the chapter.

Sector overview: Sub-sections 3.4.1 and 3.4.2

- ❖ For the purposes of this research, the ET sector has been defined using the available SIC codes, based on the JEMU¹ definition. It should be noted that these do not cover the full sector;
 - Manufacture of ventilation equipment
 - Manufacture of electricity distribution apparatus
 - Recycling of metal waste and scrap
 - Recycling of non-metal waste and scrap
 - Collection/purification etc of water
 - Demolition and wrecking of buildings
 - Construction of water projects
 - Insulation work activities
 - Technical testing and analysis
 - Sewage and refuse disposal etc
- ❖ The ET sector is a relatively “new” one, only recently being recognised in its own right. This change in perception has been the result of developments in the technologies and services provided by the sector and the increasing concern with emissions and pollution control.
- ❖ The sector is made up of many constituent parts. It is perceived as having grown rapidly in recent years, though firm evidence for this is hard to find. Nonetheless, the sector is still a significant employer in the South West accounting for at least 16,000 employees in 2001, using the narrowest definition, and up to 30,000 using the broad definition above.
- ❖ The significance of the sector varies sub-regionally with Devon and Cornwall, West of England and Wiltshire & Swindon accounting for over two thirds of ET employment.

- ❖ It is estimated that the sector contributed c.£656m to the South West GDP in 1997.
- ❖ The ET sector is dominated by micro businesses with <10 employees, although a few large employers account for most employees.
- ❖ The future prospects of the ET sector in the South West will be driven by stricter environmental legislation creating a growing market and increasing pressure from large multinational corporations.

Sector skills needs: Sub-section 3.4.3

- ❖ The ET sector workforce is very highly skilled. Eight out of ten (82%) ET employers employed graduates and over half postgraduates (54%).
- ❖ Consequently the skills demands identified by the sector tend to be at a high level, either in managerial/professional or in associate professional/technical.
- ❖ In terms of “hard” skills, the greatest needs were for;
 - IT skills;
 - Energy usage and processes understanding; and
 - Waste management knowledge.
- ❖ While for “soft” skills the needs were;
 - Communication skills;
 - Marketing/selling skills; and
 - Project management skills.
- ❖ It should be noted that the focus of all previous skills needs work for the sector has been on *NVQ level 3 equivalent and above*. This research has followed that approach.

¹ JEMU = Joint Environmental Markets Unit

ET Skills Action Plans and project developments: Sub-section 3.4.4

- ❖ Regionally, the EnviroSkills project is undertaking a series of activities covering training and workforce development. Because of the “high” level skills needs of the sector, the focus of much of this work is HE.
- ❖ The EnviroSkills project has an Action Plan that has identified four key issues for the sector
 - ET being an emerging sector not represented by any lead industry grouping or trade body;
 - Business growth and marketing;
 - Recruitment and retention; and
 - Engagement of employers in workforce development.
- ❖ The Action Plan then identified a number of actions that are relevant to NVQ provision, including;
 - To map career and progression routes through the sector;
 - Improving technical skills;
 - Basic and craft skills; and
 - Increase dialogue between providers and employers.
- ❖ Because of its “generalist” nature, the LSCs made little direct reference to the sector other than as “emerging”. However many have plans for CoVEs in sectors that are covered by ET, i.e. engineering and construction. Somerset has three, West of England two and Devon and Cornwall plus Wiltshire and Swindon one each.
- ❖ Work by Plymouth University on a Workforce Development Strategy reemphasised the point that the sector was focused on the acquisition of HE qualifications and hence was, by default, not greatly interested in NVQs. Significantly, the report noted that many of the skills shortages being faced by the sector *could be better addressed by NVQ provision, rather than degree provision.*
- ❖ However, using NVQs to address the shortages would only work with short, “sharp” modularised provision in NVQ equivalents, rather than a full blown NVQ course and bureaucracy.

NVQ Provision in the South West for the ET Sector: Sub-section 3.4.5

- ❖ Eighty NVQs of level 3 or above were identified on the Qualification Curriculum Authority’s Framework as being relevant to the sector.
- ❖ These were nearly all at level 3, offering only limited opportunities for progression. There were only six relevant NVQs at either level 4 and one at level 5.
- ❖ Sixty two of the eighty NVQs were provided in the region in 2001-02. Nearly all of these were at level 3.
- ❖ Much relevant NVQ provision in 2001-02 was work-based. That is, the HE/FE provision of NVQs was limited in numbers of learners and course type (although N.B. several of the work-based NVQs were administered by FE/HE colleges).
- ❖ Reflecting the location of the industry, the work-based provision was concentrated in Devon and Cornwall and the West of England, although it was lower than would have been expected in Wiltshire and Swindon.
- ❖ The FE/HE provision also reflected the location of industry, although, conversely, the provision in the West of England was higher than expected.
- ❖ In 2001-02 there were over 9,500 work-based learners on NVQs at level 3 or above related to the sector: a sufficient total to meet the overall demand from both labour replacement needs and any productivity gains. However, these learners are virtually all at the level 3, with little opportunity to progress to the higher level required to meet the identified skills needs.
- ❖ Thus the overall level of NVQ provision in the region is not limiting for the sector, but progression opportunities for ET employees and, hence, the development of the sector are limited by;
 - Qualification level; and
 - Course type/depth.

Gaps in NVQ Provision: Sub-section 3.4.6

- ❖ The most significant gaps relate to the provision of suitable modularised “short” courses for private sector companies and the shortage of courses on relevant NVQs at levels 4 and 5. Considerably more courses and learners will be needed in these areas to enable the sector to significantly develop its current skills base and grow.
- ❖ This lack of opportunity to progress through the NVQ levels will also hinder the recruitment and retention of high quality personnel, identified as being one of the key issues that the EnviroSkills Action Plan needs to address.
- ❖ Furthermore, many ET employers do not perceive NVQs as being the source of managers or professionals.
- ❖ The location of NVQ provision in the South West broadly reflects the location of the industry in the region. However, the lack of work-based provision in the West of England represents a noticeable gap.
- ❖ In terms of course subjects, the clearest gaps are in;
 - Energy usage;
 - Waste management;
 - CAD skills; and
 - Environmental legislation.
- ❖ There are also concerns that the existing NVQ courses provided do not have enough depth or up-to-date content to allow ET employers to remain fully competitive.

Validation exercise with employers and stakeholders: Sub-section 3.4.7

- ❖ The findings reported above were “validated” with a range of key ET employers and stakeholders drawn from across the South West.
- ❖ This was done by means of a series of consultations and interviews. These involved the presentation of the main findings to the respondents.

The findings were checked against the respondents own experiences to check for omissions and anomalies.

- ❖ The employers and stakeholders were asked to consider means of addressing the identified issues/gaps.
- ❖ The validation exercise thus confirmed the main findings and produced recommendations.

Key recommendations for NVQ provision and progression within the ET sector: Sub-section 3.4.8

A series of recommendations substantiated by the research findings and endorsed by ET employers/stakeholders are given below.

Key recommendations:

- ❖ NVQ provision is needed in “missing” specific subject areas;
- ❖ NVQs need to be modularised to enable employers to chose relevant parts and provided as short courses;
- ❖ Course coverage and content needs to be improved and more advanced;
- ❖ There needs to be increased opportunities for progression; and
- ❖ The NVQ administration process needs to be markedly simplified.

Fit of recommendations with Action and Workforce Development Plans:

- ❖ The recommendations dovetail with the following issues and actions in the EnviroSkills Action Plan;
 - Improving technical skills, basic craft skills, work experience opportunities and linking curricula to up-to-date industry practice.
- ❖ They also contribute to Government’s National Skills Strategy;
 - Reform qualification framework;
 - Raising the effectiveness of training providers;
 - Increase ambition in skills demand; and
 - Placing employers needs for skills centre stage.

3.4.1 Introduction

This chapter begins with an overview of the Environmental Technology sector (ETS) in the South West, providing a discussion of definitional issues and a brief examination of its economic characteristics and prospects. It then examines the reported need for training and skills in the sector, based on the available research and data, before reviewing the relevant workforce development plans and sector strategy documents. The focus of this section is on the significance and role of NVQs in meeting the identified needs. The chapter then assesses the current levels of NVQs provision in relation to any identified needs and gaps in workforce training provision.

Before starting the overview of the ETS, it is worth noting that in 2001 the RDA invited regional training providers to form a Skills Development Fund Partnership for the ETS because information on skills needs in the sector was very limited. With the University of Exeter acting as lead partner, EnviroSkills SW evolved as a regional project to support skills and training in the ETS. The project involved two stages: firstly, a review of the skills base and needs and secondly, the implementation of a long-term strategy based on stage one. Stage one was completed in February 2002 and it forms the basis of some of the findings in this chapter. Stage two is the subject of current activity and development and is reviewed in section 3.4.4.1.

3.4.2 Overview of the Environmental Technology Sector in the South West

Until fairly recently ETS was not seen as a sector in its own right. Rather it was perceived as being “part” of other sectors, such as utilities, marine and advanced engineering. This perception has been changed by recent developments in the technologies and services provided by the sector combined with the increasing demand for solutions to environmental problems and legal requirements to meet pollution and emission controls. Now it is regarded as an important emerging sector with the potential to become one of the fastest growing sectors of the economy.

The work of the ETS ranges from energy efficiency and effective solutions to pollution, to the “greening” of all activities in the region. As green issues and environmental sustainability move up the agenda, the sector is likely to continue to grow in size. Because of the all-pervasiveness of the environmental issues and activities that the sector confronts, the sector is extremely diverse, with overlap into other sectors. This overlap does, however, present some problems for the current study, because of the need to identify NVQs that are relevant to the ETS, but which might also be relevant to other sectors. Consequently, both the “blurring” of boundaries with other sectors and the potential for double-counting between sectors should be borne in mind when assessing the findings in this chapter.

3.4.2.1 Definition of the Environmental Technology Sector

As mentioned, the ETS encompasses many sub-sectors. The RDA’s series of priority papers described the sector as being made up of companies involved in pollution control, water supply, waste management, environmental services and renewable energy². It identifies the largest sub sectors in the South West region as being:

Sewage and refuse disposal;
Collection/purification of water;
Manufacture of electricity distribution apparatus; and
Manufacture of ventilation equipment.

² *The Environmental Technologies Sector in the South West Priority Sectors Working Paper No. 5*
South West of England Regional Development Agency, November 2000, p.1

EnviroSkills SW has adopted the Joint Environmental Markets Unit (JEMU) definition identifying the sector as being businesses providing products, systems or services for the following applications³;

- Air Pollution Control;
- Environmental Consultancy Services;
- Water Treatment (including wastewater);
- Energy Management;
- Renewable Energy;
- Noise & Vibration Control;
- Waste Management/Recovery & Recycling;
- Marine Pollution Control;
- Contaminated Land Remediation;
- Environmental Monitoring & Analysis;
- Technology for Sustainable Land Use & Management; and
- Other Technologies.

It is worth noting that the relative currency and the specialist nature of some of these activities means that they do not map onto the available Standard Industrial Classification codes (which were devised in the early 1990s). This study has therefore taken a broad approach in order to cover as many as possible of the relevant activities and NVQs, within the existing SICs;

- 2923: Manufacture of ventilation equipment etc;
- 3120: Manufacture: electricity distribution apparatus;
- 3710: Recycling of metal waste and scrap;
- 3720: Recycling of non-metal waste and scrap;
- 4100: Collection/purification etc of water;
- 4511: Demolition and wrecking of buildings;
- 4524: Construction of water projects;
- 4532: Insulation work activities;
- 7430: Technical testing and analysis; and
- 9000: Sewage and refuse disposal etc.

This definition covers all four of the largest sub-sectors identified in the SWRDA paper and also encompasses many of the applications listed by JEMU, given the limitations imposed by SIC 1992.

3.4.2.2 Economic characteristics and prospects for the Environmental Technology Sector

In economic terms, the ETS in the South West is a small sector. It is commonly perceived as being rapidly growing, although recent trends do not provide firm evidence for continued growth. The RDA Working Paper on the sector states that in 1997 the sector⁴:

“Employed around 21,000 people – just over 1% of total employment in the region; and contributed £656 million to regional output”.

Using the SIC codes above, the latest estimates from NOMIS indicate that by 2001 the sector employed c.19,750⁵, representing a decrease of c.6% over the period. This followed a period of growth of 19% between 1991 and 1997.

³ *EnviroSkills SW - The Environmental Technology Sector and Project Background* EnviroSkills SW, 2002, p.1

⁴ *The Environmental Technologies Sector in the South West* Priority Sector Working Paper No. 5

South West of England Regional Development Agency, November 2000, p.1

⁵ *Annual Business Inquiry Employee Analysis, 2001* www.nomisweb.co.uk The total figure quoted is derived from summing the employees in manufacture of ventilation equipment (1,868), re-cycling of metal waste (464), re-cycling of non-metal waste (505), collection/ purification of water (3,255), sewage/waste (6,351), demolition and wrecking of buildings (1,035), construction of water projects (104), insulation work activities (638), technical testing and analysis (918) and manufacture of electricity distribution apparatus (4,613).

It is likely that much of the growth between 1991-97 can be attributed to increased public intervention regarding waste disposal and pollution. The apparent subsequent decline is probably the result of differences in the definition of the ETS used to calculate the figures, rather than an actual decline in the sector. EnviroSkills estimate that the number of employees working in ET, using a narrow definition is 16,000, while taking the broader definition of all businesses associated with the sector the figure increases to c.30,000.

At the sub-regional level, the sector offers strengths in the construction of water projects, the collection and purification of water and the recycling of non-metal waste and scrap. Similarly, the significance of the sector as an employer varies across the region.

In the Devon & Cornwall, West of England and Wiltshire & Swindon sub-regions the sector is particularly important, providing between them over two thirds of all employment in the sector. Table 3.4.1 contains the details and also emphasis that not only is the ET sector important in absolute terms of employee numbers in Wiltshire and Swindon, but also in terms of its relative importance. That is, in the Wiltshire & Swindon sub-region, the ET sector provides more than 1% of all employment in the sub-region.

Table 3.4.1 Concentration of ET Employment in the South West

LSC Area	Percentage of ETS employment in South West %	Percentage of total employment in sub-region %
Devon & Cornwall	27	0.7
West of England	21	0.8
Wiltshire & Swindon	19	1.1
Gloucestershire	14	0.9
Bournemouth, Dorset & Poole	10	0.6
Somerset	9	0.7

Source: NOMIS: Annual Business Enquiry 2001, Employee Analysis

EnviroSkills estimate that there are c.400 businesses in the region that fall within the definition given above. In addition to these, there are a further c.600 businesses associated with the sector. Between them these c.1,000 businesses account for nearly 1,300 workplaces, that is a proportion of them have more than one site or location from which they operate. Table 3.4.2 provides a summary of this information.

Table 3.4.2 Types of ET Workplaces in the South West

Type of Workplace (based on 1992 SIC)	Number	%
Manufacture of ventilation equipment etc	97	8
Manufacture: electricity distribution apparatus	93	7
Recycling of non-metal waste and scrap	82	6
Collection/purification etc of water	171	13
Demolition and wrecking of buildings	150	12
Construction of water projects	30	2
Insulation work activities	92	7
Technical testing and analysis	173	14
Sewage and refuse disposal etc	391	31
Total	1,279	100

Source: NOMIS: Annual Business Enquiry 2001, Workplace Analysis

Ten major employers dominate the sector, each having 200 or more employees. However, small businesses form the backbone of the sector, with those having less than 10 employees accounting for over seven out of ten of all Environmental Technology employers⁶. Indeed, nearly nine out of ten employers in the sector have fewer than 50 employees.

⁶ Annual Business Inquiry Workplace Analysis, 2001 www.nomisweb.co.uk.

The SWRDA paper on the sector states that overall the future economic prospects for the sector are promising for a variety of reasons⁷:

- Stricter environmental standards are being established in the UK, especially in connection to waste disposal and pollution. This creates a growing domestic market;
- Supply chain pressures are becoming more important as many larger multinational companies are encouraging their suppliers to conform to environmental standards such as ISO 9000; and
- The industry is growing world wide, and UK firms have established a strong competitive position. The UK is currently the second largest exporter in Europe.

The paper concludes that in terms of skills issues, the environmental skills base in the region is small and limited. As the sector develops, skills shortages and gaps could hinder growth prospects.

3.4.3 Environmental Technology Sector Skills Needs

Before assessing the ETS Workforce Development and Action Plans it is worthwhile briefly looking at the skills needs in the Sector. The Entri report contains a breakdown of the skills needs, shortages and need for future training in the sector. The rest of this sub-section is drawn directly from that report⁸. In relation to the skills needs being faced by the sector, the Entri report identified a range of needs under two broad headings (“hard” and “soft”) that were confronting employers⁹:

- Nearly two thirds of employers said that they would like to develop technical (hard) skills within their current workforce over the next 2 to 5 years;
- A third highlighted a need for non-technical (soft) skills development;
- Hard skills development needs were extremely varied making any form of amalgamation into generic groups extremely difficult. The most often mentioned categories were (with the % of employers mentioning them shown in brackets):
 - IT skills (33%),
 - Energy usage/processes understanding (10%),
 - Waste management knowledge (9%),
 - CAD skills (6%),
 - Environmental legislation understanding (6%),
 - Electrical engineering knowledge (6%).
- The pattern of soft skills requirements was more uniform covering:
 - Communication skills (26%),
 - Marketing/selling skills (21%),
 - Project management skills (19%),
 - Management skills (18%),
 - Accountancy (11%),
 - People skills/teamworking (11%).

These skills needs were reported as being among both managerial/professional and associate professional/technical employees over the next 5 years¹⁰. The report found that the current training and education infrastructure in the South West (in terms of FE and HE) was adequate to meet these individual categories of need.

⁷ *Environmental Technologies* SWRDA Working Paper No. 5, p.2, Ibid.

⁸ *Skills Review of the Environmental Technology Sector, South West Region* Entri Research, February 2002, ref: M:\EnviroSkills\2554.

⁹ *Skills Review of the Environmental Technology Sector, South West Region* pp. 3-4, Ibid.

¹⁰ *Skills Review of the Environmental Technology Sector, South West Region* p. 21, Ibid.

However, it was not clear whether the training delivery mechanisms were accessible by employees. In particular, for staff at the managerial/professional level there were concerns that obtaining the required specific technical knowledge meant attending 1-3 year teaching programmes. The opportunity costs of such attendance were far too high for many ETS employers. Currently the availability of flexible learning through modular delivery is very limited, in terms of the specific requirements identified above.

The Entri report contains a list of course provision in the South West FE/HE sector that is relevant to the ETS at NVQ level 3 equivalent or above only. Reflecting the diversity of the sector, the list contains over 500 entries. The table in section 5.1 summarises just the NVQ courses contained in the list. It contains over eighty NVQs at level 3 or above.

It is worth noting that the focus of the Entri study was on only NVQ level 3 equivalent or above and revealed that employees in the ETS were very highly qualified. Over eight out of ten ETS organisations employed graduates (82%), over half postgraduates (54%) and nearly half NVQ level 3+ (48%)¹¹. However, the research indicated that micro employers were significantly less likely than larger employers to employ either graduates or postgraduates.

Indeed, this focus on level 3+ was reflected in one of the key messages reported by the DfES from the Regional Skills summits in 2002 that *“some employers believe that level 2 qualifications only provide a basic platform for further learning and that it is skills at higher levels that really affect productivity. More efforts should be made to market foundation degrees, which can provide an excellent route to get higher-skilled workers”*¹².

3.4.4 Workforce Development and Skills Plans relevant to the Environmental Technology Sector

The following sub-section reviews the various workforce development and skills action plans that are relevant to the Environmental Technology sector, covering the sector itself, the local LSCs and other existing sub-regional plans.

In assessing these plans, it is worth noting that the ETS does not yet have a single recognised Sector Skills Council or NTO. The diversity of the sector means that it could conceivably be covered by up to six different SSCs. At present, both LANTRA and COGENT sit on the EnviroSkills Steering Group. Work on the skills action plan will be progressed during the EnviroSkills forum in October 2003 in conjunction with the new Sector Skills Councils relevant to ET and other partners.

3.4.4.1 The Environmental Technology Sector, EnviroSkills SW and Skills Action Plan

As mentioned, the second stage of the EnviroSkills SW project is currently undertaking a series of activities covering the broad spectrum of training, workforce development, etc. However, the primary focus of the project is the HE sector, because of the specialised skill issues emerging in the ETS. As such, it is difficult to relate many of the activities being undertaken to the NVQ framework:

- The recruitment of three Skills Facilitators to assist Environmental Technology businesses;
- On-going development of the EnviroSkills SW Training and Innovation Needs Analysis (TINA) process (focusing on higher skills – NVQ level 3 upwards);
- Further development of the EnviroSkills SW partnership and links with Business Links, LSCs, FE and HE institutions;

¹¹ *Skills Review of the Environmental Technology Sector, South West Region* pp. 16-17, Ibid.

¹² www.dfes.gov.uk/skillsstrategy/key.shtml

- Submission of bids for Objectives 1 and 3 funding to assist with project operational costs and training grants;
- Development of the EnviroSkills SW website: www.EnviroSkillsSW.org.uk; and
- Development of Phase 3 funding proposal (2003-06) and strategy for project sustainability.

Nonetheless, the second and third activities, the Training and Innovation Needs Analysis and the partnership work with the LSCs, etc, will be of relevance to the issues being addressed by this study. Work on these is on-going.

As part of its first stage, the EnviroSkills project produced an action plan for the ETS that identified four key issues being confronted by the sector. The Action Plan described the issues as follows¹³;

1. “An emerging technologies” sector, not represented by any lead industry grouping eg NTO/SSC or trade body.
The sector consists of a highly diverse range of business segments, each with a broad range of skills development needs. Many organisations operate in more than one sub-sector: employees require multi-disciplinary skills, particularly in micro businesses where departmental specialism is not a feasible option. This requires highly flexible training provision which does not appear to be widely available yet.
2. Business growth.
The project research highlighted “marketing” as an issue for sector development. Clarification needed on key issues for mgmt skills – people management; commercial; entrepreneurship; leadership.
3. Recruitment and retention.
There is significant evidence to suggest that difficulty in recruiting appropriately skilled graduate/technician level personnel is proving a limiting factor in sector development. Training providers have a major role to play. NB while there appears to be adequate capacity in terms of existing provision, FE and HE institutions report difficulties in recruiting students to science and engineering courses.
4. Engagement of employers in workforce development.
Generally, adequate training provision exists within the region to meet the vast majority of skills needs, However, current delivery formats are not ideal for businesses, particularly micro businesses and SMEs. Research pointed to 84% of employers providing formal training for their workforce, if only on an ad hoc basis. Time constraints are the main barrier to undertaking Training Needs Analysis, sourcing specialist training etc.”

From these four issues, various actions were proposed which relate to NVQ provision and progression opportunities;

- Complete the mapping of occupational structure of the sector, started by EnviroSkills SW;
- Map career and progression routes into and through the sector;
- Identify proposals to improve entry and progression routes through the sector;
- Map qualifications and assessment framework (and if necessary develop new);
- Identify/access appropriate management skills training/development;
- Workforce development activities including initiatives to:

¹³ *Environmental Technologies Action Plan*, EnviroSkills 2002, pp.1-2

- Improve technical skills (inc multi-skilling);
- Improve innovation/R&D skills; and
- Basic and craft skills (inc multi-skilling);
- Improve work experience opportunities;
- Increase engagement and dialogue between providers and employers to upskill the workforce appropriately, eg flexibility of content, funding and delivery; and
- Link curricula to up-to-date industry practice.

Further to this, the plan identifies various performance measures including developing MAs, AMAs and foundation degrees related to specific subject areas and also the number of take ups and completions of courses.

3.4.4.2 Relevant LSC Strategies, Workforce Development Plans and Programmes

The relevant strategic documents and plans of the six LSCs in the region were reviewed for evidence of future programme provision relating to the Environmental Technology Sector. Very few direct references to the sector were found, either in terms of the strategic development of the sector or in the provision of individual programmes/training targets tailored to the needs of the sector.

Just two of the six LSCs referred directly to the ETS. As described in the Strategic Review chapter, the draft workforce development plan for Devon & Cornwall LSC highlights the need for “*training in emerging sectors*”, such as Environmental Technologies, while the Wiltshire & Swindon LSC Local Strategic Plan identified the ETS as one of its *priority sectors*. Beyond these general references there were no specific plans to provide programmes or training targeted on the sector.

There was evidence in the plans for CoVE provision that parts of the ETS, specifically those related to Engineering and Construction, will benefit from some form of specialist training. These include;

- Wiltshire and Swindon LSC (Engineering);
- Somerset LSC (Automotive Engineering);
- Somerset LSC (Advanced Engineering);
- Somerset LSC (Construction);
- Devon & Cornwall LSC (High Technology Engineering);
- West of England LSC (Aeronautical Engineering); and
- West of England LSC (Truck Technicians).

3.4.4.3 Other Significant Sub-Regional Workforce Development Plans

Plymouth Travel to Work Area Sectoral Workforce Development Programme: Medium- to Long-Term Skills Needs. Key Sector: Environmental Technologies

The University of Plymouth produced the above report in December 2002, identifying the medium to long-term skills needs for the ETS in the travel-to-work area of Plymouth¹⁴. The executive summary of the study highlighted several points of relevance to the current research into NVQ progression routes, including generalised issues such as;

- The difficulty of making employment estimates and forecasts about the ETS, because of the fact that many “ETS employees” work for companies whose

¹⁴ *Plymouth Travel to Work Area Sectoral Workforce Development Programme: Medium- to Long-Term Skills Needs. Key Sector: Environmental Technologies*
Beer, J., Bryant, L., Sewell, H. Social Research and Regeneration Unit, University of Plymouth, Dec. 2002

primary business is *not* ETS (and hence the difficulty of making any accurate assessment about the level of potential demand for qualifications and training);

- The diverse nature of the sector means that there is an equally diverse range of “core” competencies; and
- The likelihood of the development of the demand side in the ETS over the next ten years, which needs to be matched by similar growth on the supply side.

Further to these general issues, there were also several NVQ related concerns:

- The focus of the sector on the acquisition of HE qualifications – with over two thirds of the sector being qualified to degree level or above – and by default the relative lack of focus on the potential value of NVQs;
- The significance of volunteers to the sector and the difficulty of incorporating such volunteers into the NVQ framework; and
- The skills shortages primarily reported by ETS businesses (62% of unfilled vacancies in the PTTWA being in skilled trades) could be addressed by greater NVQ provision, rather than degree provision, but this did not appear to be recognised by the ETS.

One of the useful findings in the report is a “future skills matrix”, which divides the skills requirement of the ETS sector into a threefold framework – environmental skills specific to the sector, generic skills and those just for the manufacturing sub-sector. The environmental skills list in the Matrix is compared with the available currently NVQ courses in section 3.4.5.1;

Future Skills Matrix: Environmental Technologies Sector¹⁵

Environmental Skills	Generic Skills	Manufacturing Skills
Environmentally aware product, process, system and service design	ICT skills	Engineering/technical skills
Energy and waste efficiency and minimisation	Communication skills	Product, process, system and service design skills including energy, waste, efficiency and minimisation
Identifying, designing and delivering renewable energy	Entrepreneurial skills and commercial awareness	Cost control skills
Waste and resource management skills	Marketing/retailing	Team and cell working skills
Engineering and technical skills	Business/management	
Land, water and air remediation skills	Project management	
Identifying and applying technological and biotechnological solutions	Financial/accountancy	
Identifying, designing and applying environmental and sustainable solutions to the built environment, construction and manufacturing process	Customer interactive skills	
Pollution monitoring and control skills including noise and vibration	Health and safety	
Testing and analysis skills	Flexibility and multi-skilling	
Environmental impact and risk assessment skills	Quality control	
Environmental legislation understanding.	Team working	
Land water management and conservation skills		
Re-cycling skills, including spotting and assessing new markets for recycled products		

¹⁵ Plymouth Travel to Work Area Sectoral Workforce Development Programme, Dec. 2002, p.vi, Ibid.

3.4.5 Mapping NVQs relevant to the Environmental Technologies Sector

3.4.5.1 A map of NVQs relevant to the Environmental Technologies Sector¹⁶

Table 3.4.3 below lists the NVQs specifically relevant to the Environmental Technologies Sector, as identified by the EnviroSkills research, based on the Qualification Curriculum Authority's Framework of 738 accredited and available NVQs. As mentioned, the EnviroSkills research was based on identifying all qualifications that might be of relevance to the ET Sector and that were of level 3 equivalent or above. As such the table contains 80 different NVQs covering a very broad range of occupations, nearly all of which are at level 3, very few at level 4 and one at level 5. In terms of NVQ progression routes, there is, therefore, a clear barrier beyond level 3 for the ETS. It is recognised that there are other NVQs at levels 1 and 2 and also, possibly, others covering other occupations that are of less relevance to the sector. However, in order to conform with the Enviro Skills research these have been excluded from this table.

Table 3.4.3 NVQs Relevant to the Environmental Technology Sector

NVQ	Level
NVQ in Agriculture (Livestock Management)	4
NVQ in Agriculture (Livestock Production)	3
NVQ in Agriculture and Commercial Horticulture (Crop Management)	4
NVQ in Agriculture and Commercial Horticulture (Mechanised Field Crop Production)	3
NVQ in Amenity Horticulture (Arboriculture)	3
NVQ in Amenity Horticulture (Decorative Horticulture)	3
NVQ in Amenity Horticulture (Hard Landscape)	3
NVQ in Amenity Horticulture (Hard Landscape)	3
NVQ in Amenity Horticulture (Sports Turf Maintenance)	3
NVQ in Animal Welfare and Management	3
NVQ in Bench Joinery (Construction)	3
NVQ in Bricklaying (Construction)	3
NVQ in Building Site Management	4
NVQ in Building Site Supervision	3
NVQ in Carpentry and Joinery (Construction)	3
NVQ in Commercial Horticulture (Nursery Stock Production)	3
NVQ in Construction (Bricklaying)	3
NVQ in Construction (Carpentry and Joinery)	3
NVQ in Electrical Installation (Construction)	3
NVQ in Emergency Fire Services - Supervision and Command	3
NVQ in Engineering Assembly	3
NVQ in Engineering Design	3
NVQ in Engineering Installation and Commissioning	3
NVQ in Engineering Maintenance	3
NVQ in Engineering Manufacture (Craft Competences) -Electrical and Electronic	3
NVQ in Engineering Manufacture (Production Planning)	4
NVQ in Engineering Production	3
NVQ in Engineering Technical Services	3
NVQ in Environmental Conservation (Landscapes and Ecosystems)	3
NVQ in Environmental Management	4
NVQ in Extensive Crop Production	3
NVQ in Fenestration Installation and Surveying	3
NVQ in Fenestration Surveying	3
NVQ in Fish Husbandry	3
NVQ in Fishing Vessel Operations (Limited Area)	4
NVQ in Floristry	3
NVQ in Gas Services Installation	3
NVQ in General Construction Operations	3
NVQ in Glass Manufacturing Processes and Production Operations	3
NVQ in Glass Processing	3
NVQ in Highways Maintenance	3
NVQ in Horse Care and Management	3
NVQ in Housing	3
NVQ in Installation and Commissioning	3
NVQ in Installing and Commissioning Electrical Systems and Equipment	3

¹⁶ It is worth re-emphasising that the ET sector itself does not regard NVQs as being of relevance to its skills needs, perceiving that these will be met by either academic qualifications (i.e. MScs, Phds) or short specialist private sector training.

Table 3.4.3 NVQs Relevant to the Environmental Technology Sector (Ctd)

NVQ	Level
NVQ in Installing and Commissioning Electrotechnical Systems and Equipment	3
NVQ in Livestock Production	3
NVQ in Mechanical Engineering Services – Commercial & industrial air conditioning systems	3
NVQ in Mechanical Engineering Services (Heating and Ventilating Installation)	3
NVQ in Mechanical Engineering Services (Plumbing)	3
NVQ in Mechanical Engineering Services: Heating and Ventilating - Installation	3
NVQ in Merchant Vessel Operations	3
NVQ in Mixed Farming	3
NVQ in Motorcycle Mechanical and Electronic Systems - Maintenance and Repair	3
NVQ in Operating and Maintaining the Performance of Telecommunications Equipment	3
NVQ in Operational Management	5
NVQ in Painting and Decorating (Construction)	3
NVQ in Plant Operations (Construction)	3
NVQ in Plastering Solid and Fibrous (Construction)	3
NVQ in Quality Management	4
NVQ in Roof Slating and Tiling	3
NVQ in Roof Slating and Tiling (Construction)	3
NVQ in Security Systems Technical Services	3
NVQ in Service Engineering - Agricultural and Groundcare Machinery	3
NVQ in Service Engineering (Agricultural Machinery)	3
NVQ in Service Engineering (Garden Machinery)	3
NVQ in Site Inspection	3
NVQ in Stonemasonry (Construction)	3
NVQ in Technical Services	3
NVQ in Town Planning Support	3
NVQ in Treatment Operations (Inert Waste)	3
NVQ in Vehicle Body Refinishing	3
NVQ in Vehicle Body Repair	3
NVQ in Vehicle Mechanical and Electronic Systems - Maintenance and Repair (Heavy Vehicles)	3
NVQ in Vehicle Mechanical and Electronic Systems - Maintenance and Repair (Light Vehicles)	3
NVQ in Vehicle Parts Distribution and Supply	3
NVQ in Vehicle Refinishing	3
NVQ in Veterinary Nursing	3
NVQ in Wood Occupations (Construction)	3
NVQ in Woodmachining	3
NVQ in Woodmachining (Construction)	3

It is interesting to compare the environmental specific needs of the ETS listed in the future skills matrix in the previous section with the table above. This comparison appears to demonstrate that there may well be a mismatch between current provision and need in terms of two of the four major sub-sectors of the ETS identified by SWRDA. The comparison is, of course, only based on course title and, as such, cannot give a full indication of the depth of coverage of the courses. Nonetheless, it does seem to indicate that there is little or no current NVQ provision to match to many of the specific environmental needs listed in the matrix which relate to two of the major sub-sectors of the ETS, sewage and refuse disposal and the collection/purification of water. The particular gaps occur with;

Sewage and refuse disposal;
 Energy and waste efficiency and minimization;
 Pollution monitoring and control skills including noise and vibration;
 Waste and resource management skills; and
 Re-cycling skills, including spotting and assessing new markets for recycled products.

Collection/purification of water;
 Land, water and air remediation skills;
 Testing and analysis skills; and
 Land water management and conservation skills.

There were also gaps for some of the other more minor, but nonetheless significant sub-sectors within ETS, such as renewable energy and environmental consultancy services.

3.4.5.2 Work-based NVQ provision (level 3+ only) relevant to the ETS in the South West

Table 3.4.4 overleaf contains details of the extent of work-based NVQ provision relevant to the ETS in the South West. It shows the number of learners who were;

- Undertaking work-based learning in the year up to June 2002;
- Registered on the NVQ shown;
- Resident in a postcode of the relevant South West LSC area or, if not resident in a South West postcode, registered with the South West LSC shown.

When assessing the table and the observations made about the table below, it is important to bear in mind the wide range of NVQs included in the analysis and the broad definition of the ET sector used by the study. As mentioned, it can be argued that many of the NVQs listed are more strongly related with “other” sectors, such as Advanced Engineering or Transport than with the ETS. The ETS sector encompasses a diverse range of occupations. As such, some of the points noted will be affected by the issues pertinent to these other sectors, rather than those affecting the ETS directly.

The first point to note about the table concerns the fact that of the 80 NVQs identified in table 3.4.3 as being “relevant” to the ETS, only 50 are provided in the South West for work-based learners. The 30 that are not available are listed in table E.5 and are spread across the various ETS sub-sectors. However, it is noticeable that the NVQ level 4 in Environmental Management, the level 4 in Quality Management and the level 5 in Operations Management are among those not available.

The second point to note about the table concerns the distribution of work-based provision across the six South West LSC areas. In proportionate terms as would be expected, this distribution fairly closely matches the spread of ETS employees across the region. However, this match does not cover all sub-regions, as there is a discrepancy in Wiltshire & Swindon where provision is markedly lower than would be anticipated given the number of ETS employees in the area. In contrast in Bournemouth, Dorset and Poole plus Devon and Cornwall provision is higher than would have been expected, given the level of ETS employees in these sub-regions.

The table also shows that there were nearly 8,000 work-based learners in the South West on NVQs related to the ET sector in 2001-2002. As mentioned in section 2, the sector employs between 16,000 and 30,000 people depending upon the definition used. On the basis of the lower figure of 16,000, a total of 8,000 learners approaching qualification at least at NVQ level 3, represents 50% of the workforce. Using the higher figure of 30,000 employees, this proportion decreases to 26%. In either case this represents a very high level of potential provision, though it is clear that a high proportion of the provision (such as the c.2,500 learners on engineering-related NVQs and the c.1,200 on vehicle-related NVQ) will be subsumed into other sectors.

Nonetheless, even allowing for such potential overlap with other sectors and on the basis of the estimated levels of growth for the sector, it seems likely that this level of provision will meet the demand caused by either future labour replacement needs or productivity gains.

A further point concerns the concentration of provision in particular NVQ courses. Of the 50 available NVQs, just eleven account for over 6,700 of the c.8,000 work-based learners. That is, these eleven NVQs had an average of over 600 registered learners each, while the remaining 39 had an average of 29 each. The eleven were concentrated within engineering, but not limited to it;

- Bricklaying (Construction)
- Engineering Maintenance
- Engineering Production
- Installing and Commissioning Electrotechnical Systems and Equipment
- Mechanical Engineering Services (Plumbing)
- Mechanical Engineering Services: Heating and Ventilating – Installation
- Operating and Maintaining the Performance of Telecommunications Equipment
- Technical Services
- Vehicle Body Repair
- Vehicle Mechanical and Electronic Systems - Maintenance and Repair
- Wood Occupations (Construction)

Thus in summary, it can be reported that although overall work-based NVQ provision levels appear sufficient to meet overall demand and needs, work-based NVQ progression opportunities within the South West ETS sector are to some extent limited by three factors;

- **Geography**
There being a shortfall in provision in the Wiltshire & Swindon area;
- **Qualification level**
There being a lack of level 4 and 5 qualifications; and
- **Course type**
There being both a concentration of provision on a few specific subjects and a lack of any provision in some subject areas.

Consequently at the qualification course and type level within sub-regions there could be some difficulties for ET employers in fully meeting their skills needs.

Table 3.4.4 South West NVQ Work-based provision in the Environmental Technology Sector (Level 3+ only): Number of learners 2001-02

Title	NVQ level	Devon & Cornwall	Somerset	B, D & P	West of England	W & S	Glosc	South West
NVQ in Agriculture (Livestock Management)	4	16	-	-	-	-	-	16
NVQ in Agriculture and Commercial Horticulture (Crop Management)	4	1	-	-	-	-	-	1
NVQ in Amenity Horticulture (Decorative Horticulture)	3	9	-	-	-	-	1	10
NVQ in Amenity Horticulture (Hard Landscape)	3	-	1	1	1	-	10	13
NVQ in Amenity Horticulture (Sports Turf Maintenance)	3	5	8	3	4	1	15	36
NVQ in Animal Welfare and Management	3	8	4	-	1	-	5	18
NVQ in Bricklaying (Construction)	3	123	28	11	32	10	28	232
NVQ in Building Site Supervision	3	2	-	-	-	-	-	2
NVQ in Engineering Assembly	3	3	-	2	1	-	3	9
NVQ in Engineering Design	3	4	14	7	48	2	28	103
NVQ in Engineering Installation and Commissioning	3	3	4	22	1	1	3	34
NVQ in Engineering Maintenance	3	150	29	20	83	123	60	465
NVQ in Engineering Manufacture (Production Planning)	4	13	-	2	-	-	-	15
NVQ in Engineering Production	3	606	305	251	231	90	192	1675
NVQ in Engineering Technical Services	3	-	-	-	-	-	3	3
NVQ in Environmental Conservation (Landscapes and Ecosystems)	3	9	-	1	-	-	-	10
NVQ in Extensive Crop Production	3	23	-	7	-	-	-	30
NVQ in Fenestration Installation and Surveying	3	1	-	9	-	-	-	10
NVQ in Fish Husbandry	3	1	-	-	-	-	-	1
NVQ in Floristry	3	10	-	15	3	1	-	29
NVQ in Gas Services Installation	3	4	-	-	-	1	-	5
NVQ in Glass Processing	3	1	-	12	-	-	-	13
NVQ in Horse Care and Management	3	19	1	14	-	10	38	82
NVQ in Housing	3	1	-	-	-	-	2	3
NVQ in Installing and Commissioning Electrical Systems and Equipment	3	54	16	8	6	4	8	96
NVQ in Installing and Commissioning Electrotechnical Systems and Equipment	3	485	75	33	194	27	173	987
NVQ in Livestock Production	3	77	25	11	1	1	8	123
NVQ in Mechanical Engineering Services – Commercial & industrial air conditioning systems	3	4	-	-	-	-	-	4
NVQ in Mechanical Engineering Services (Heating and Ventilating Installation)	3	2	-	1	-	-	3	6
NVQ in Mechanical Engineering Services (Plumbing)	3	228	82	6	103	7	11	437
NVQ in Mechanical Engineering Services: Heating and Ventilating - Installation	3	31	4	102	2	24	12	175
NVQ in Mixed Farming	3	40	-	-	-	4	-	44
NVQ in Motorcycle Mechanical and Electronic Systems – Maintenance/Repair	3	1	-	3	12	2	-	18
NVQ in Operating and Maintaining the Performance of Telecommunications Ept	3	-	-	707	-	3	-	710
NVQ in Painting and Decorating (Construction)	3	32	8	9	13	6	12	80
NVQ in Plastering Solid and Fibrous (Construction)	3	12	2	-	3	-	1	18

Table 3.4.4 South West NVQ Work-based provision in the Environmental Technology Sector (Level 3+ only): Number of learners 2001-02 (ctd)

Title	NVQ level	Devon & Cornwall	Somerset	B, D & P	West of England	W & S	Glocs	South West
NVQ in Roof Slating and Tiling	3	7	-	1	-	-	-	8
NVQ in Security Systems Technical Services	3	17	1	18	10	-	-	46
NVQ in Service Engineering - Agricultural and Groundcare Machinery	3	15	4	1	-	20	2	42
NVQ in Service Engineering (Agricultural Machinery)	3	-	-	-	-	-	1	1
NVQ in Stonemasonry (Construction)	3	4	1	2	5	3	1	16
NVQ in Technical Services	3	48	45	20	49	36	77	275
NVQ in Vehicle Body Repair	3	46	10	9	51	7	1	124
NVQ in Vehicle Mechanical and Electronic Systems - Maintenance and Repair	3	190	55	79	235	56	94	709
NVQ in Vehicle Parts Distribution and Supply	3	10	1	11	21	2	9	54
NVQ in Vehicle Refinishing	3	33	3	2	28	5	2	73
NVQ in Veterinary Nursing	3	2	14	16	-	-	-	32
NVQ in Wood Occupations (Construction)	3	344	134	90	210	81	108	967
NVQ in Woodmachining	3	6	15	-	-	2	-	23
Total of Work-based learners by sub-region	-	2,700	889	1,506	1,348	529	911	7,883

Source: LSC Central Work-Based Learning (WBL) Interim Individualised Learner Data 2001-2002

For information, table 3.4.5 below lists the 30 NVQs relevant to the ETS that were not provided in a work-based form anywhere in the South West in 2001-2002.

Table 3.4.5 NVQs relevant to the Environmental Technology Sector not provided in work-based form in the South West

Title	NVQ level	Title	NVQ level
NVQ in Agriculture (Livestock Production)	3	NVQ in General Construction Operations	3
NVQ in Agriculture and Commercial Horticulture (Mechanised Field Crop Prodn)	3	NVQ in Glass Manufacturing Processes and Production Operations	3
NVQ in Amenity Horticulture (Arboriculture)	3	NVQ in Highways Maintenance	3
NVQ in Bench Joinery (Construction)	3	NVQ in Installation and Commissioning	3
NVQ in Building Site Management	4	NVQ in Merchant Vessel Operations	3
NVQ in Carpentry and Joinery (Construction)	3	NVQ in Plant Operations (Construction)	3
NVQ in Commercial Horticulture (Nursery Stock Production)	3	NVQ in Operational Management	5
NVQ in Construction (Bricklaying)	3	NVQ in Quality Management	4
NVQ in Construction (Carpentry and Joinery)	3	NVQ in Roof Slating and Tiling (Construction)	3
NVQ in Electrical Installation (Construction)	3	NVQ in Service Engineering (Garden Machinery)	3
NVQ in Emergency Fire Services - Supervision and Command	3	NVQ in Site Inspection	3
NVQ in Environmental Management	4	NVQ in Town Planning Support	3
NVQ in Engineering Manufacture (Craft Competences) - Electric and Electronic	3	NVQ in Treatment Operations (Inert Waste)	3
NVQ in Fenestration Surveying	3	NVQ in Vehicle Body Refinishing	3
NVQ in Fishing Vessel Operations (Limited Area)	4	NVQ in Woodmachining (Construction)	3

3.4.5.3 FE/HE NVQ provision (level 3+ only) specific to the Environmental Technology Sector in the South West

Table 3.4.6 overleaf contains details of the extent of NVQ provision through FE and HE colleges specific to the ETS in the South West. It shows the number of learners;

- Registered for the academic year 2001-2002;
- Registered on the NVQ shown; and
- Registered with a FE/HE college situated in the South West.

Of the 80 NVQs identified earlier in the chapter (table 3.4.3) as being “relevant” to the ETS, it is perhaps not surprising that only 44 are provided in the South West by the FE/HE sector. The 36 that are not available are listed in table 3.4.7 and are again spread across the various ETS sub-sectors. However, it is worth noting that 18 of these were identified as being available through work-based provision. That is, of the 80 relevant NVQs in total, 62 are available either through work-based or FE/HE provision within the South West. The 18 that are not available through either route are:

- | | |
|---|--|
| - Bench Joinery (Construction) | - Commercial Horticulture (Nursery Stock Production) |
| - Construction (Bricklaying) | - Construction (Carpentry and Joinery) |
| - Emergency Fire Services | - Supervision and Command |
| - Engineering Manufacture (Craft Competences) - Electric and Electronic | |
| - Fenestration Surveying | - Fishing Vessel Operations (Limited Area) |
| - General Construction Operations | - Highways Maintenance |
| - Installation and Commissioning | - Merchant Vessel Operations |
| - Plant Operations (Construction) | - Roof Slating and Tiling |
| - Town Planning Support | - Treatment Operations (Inert Waste) |
| - Vehicle Body Refinishing | - Woodmachining (Construction) |

The next point to note about table 3.4.6 concerns the distribution of FE/HE based provision across the sub-regions. In proportionate terms overall, and as would be expected, this distribution closely matches the spread of ETS employees across five of the sub-regions. However, this match does not occur on the West of England sub-region, where provision is much higher than would have been expected, given the level of ETS employees there. (It is worth noting that work-based provision in the West of England was much *lower* than expected. These two apparent anomalies may well cancel each other out, or simply be due to differences in recording).

The table indicates that there were over 1,600 FE/HE learners in the South West on NVQs related to the ET sector in 2001-2002. On the basis of the ETS sector employing 16,000, the lowest estimate from EnviroSkills, 1,645 learners approaching qualification at least at NVQ level 3, represents over 10% of the workforce. Using the higher figure of 30,000 employees, this proportion decreases to 5%. Nonetheless, when combined with the level of work-based provision, this represents a very high level of overall provision, albeit that the caveat concerning the fact that a high proportion of the provision will be subsumed into other sectors needs to be borne in mind.

As with the work-based provision, it is worth noting the concentration of FE/HE provision in particular NVQ courses. Although this provision is more evenly spread than the work-based, of the 44 available FE/HE NVQs, just 2 account for nearly 600 of FE/HE learners;

- Vehicle Mechanical and Electronic Systems - Maintenance and Repair (Heavy Vehicles)
- Vehicle Mechanical and Electronic Systems - Maintenance and Repair (Light Vehicles)

In summary, overall FE/HE NVQ provision levels appear sufficient to meet overall demand and needs, progression opportunities are to some extent limited by qualification level and course type.

Table 3.4.6 South West NVQ FE/HE Provision in the Environmental Technology Sector (level 3+ only): Number of learners 2001-02

Title	NVQ level	Devon & Cornwall	Somerset	B,D & P	West of England	W & S	Glosc	South West
NVQ in Agriculture (Livestock Management)	4	11	-	-	-	-	-	11
NVQ in Agriculture (Livestock Production)	3	38	-	-	-	12	-	50
NVQ in Agriculture and Commercial Horticulture (Mechanised Field Crop Prodn)	3	-	-	8	-	-	-	8
NVQ in Amenity Horticulture (Arboriculture)	3	-	-	3	-	-	-	3
NVQ in Amenity Horticulture (Decorative Horticulture)	3	20	-	6	1	-	-	27
NVQ in Amenity Horticulture (Hard Landscape)	3	-	-	5	-	3	4	12
NVQ in Amenity Horticulture (Sports Turf Maintenance)	3	-	-	-	2	-	12	14
NVQ in Animal Welfare and Management	3	1	-	-	-	-	5	6
NVQ in Bricklaying (Construction)	3	17	-	22	-	25	-	64
NVQ in Building Site Management	4	22	-	-	-	16	-	38
NVQ in Building Site Supervision	3	9	-	-	-	25	-	34
NVQ in Carpentry and Joinery (Construction)	3	29	-	-	-	-	-	29
NVQ in Electrical Installation (Construction)	3	57	-	-	-	-	-	57
NVQ in Engineering Installation and Commissioning	3	-	65	-	-	-	-	65
NVQ in Engineering Maintenance	3	24	1	-	1	29	1	56
NVQ in Engineering Production	3	23	6	1	-	3	-	33
NVQ in Environmental Conservation (Landscapes and Ecosystems)	3	3	-	-	-	-	-	3
NVQ in Environmental Management	4	10	-	-	-	-	-	10
NVQ in Fenestration Installation and Surveying	3	-	-	-	-	13	-	13
NVQ in Fish Husbandry	3	2	-	-	-	-	-	2
NVQ in Floristry	3	7	1	18	2	1	-	29
NVQ in Glass Manufacturing Processes and Production Operations	3	-	-	-	-	2	-	2
NVQ in Glass Processing	3	-	-	-	-	2	-	2
NVQ in Horse Care and Management	3	-	-	-	-	2	3	5
NVQ in Installing and Commissioning Electrical Systems and Equipment	3	4	-	9	-	-	102	115
NVQ in Installing and Commissioning Electrotechnical Systems and Equipment	3	17	3	5	23	21	-	69
NVQ in Livestock Production	3	13	-	11	-	-	4	28
NVQ in Mechanical Engineering Services (Heating and Ventilating Installation)	3	-	-	19	-	31	-	50
NVQ in Mechanical Engineering Services (Plumbing)	3	-	-	3	-	-	-	3
NVQ in Mechanical Engineering Services: Heating and Ventilating - Installation	3	-	-	28	-	-	-	28
NVQ in Mixed Farming	3	28	-	-	-	1	-	29
NVQ in Motorcycle Mechanical and Electronic Systems – Maintenance/Repair	3	-	-	-	-	47	-	47
NVQ in Operational Management	5	4	-	28	-	-	-	32
NVQ in Painting and Decorating (Construction)	3	7	-	-	-	-	-	7
NVQ in Quality Management	4	1	-	2	-	-	-	3
NVQ in Security Systems Technical Services	3	-	-	5	-	-	-	5
NVQ in Service Engineering - Agricultural and Groundcare Machinery	3	5	-	-	-	11	2	18

Table 3.4.6 South West NVQ FE/HE Provision in the Environmental Technology Sector (level 3+ only): Number of learners 2001-02 (ctd)

Title	NVQ level	Devon & Cornwall	Somerset	B, D & P	West of England	W & S	Glocs	South West
NVQ in Service Engineering (Garden Machinery)	3	19	-	-	-	-	-	19
NVQ in Site Inspection	3	-	-	-	-	3	-	3
NVQ in Technical Services	3	-	2	-	-	-	-	2
NVQ in Vehicle Body Repair	3	-	-	-	9	-	-	9
NVQ in Vehicle Mechanical and Electronic Systems - Maintenance and Repair (Heavy Vehicles)	3	9	27	4	174	-	-	214
NVQ in Vehicle Mechanical and Electronic Systems - Maintenance and Repair (Light Vehicles)	3	63	35	13	246	18	12	387
NVQ in Wood Occupations (Construction)	3	-	-	1	3	-	-	4
Total of FE/HE learners by sub-region	-	443	140	191	461	265	145	1645

Source: LSC Central ISR25fc – Qualification data for FE/HE 2001-2002

For information, table 3.4.7 below lists the 36 NVQs relevant to the ETS that were not provided at any South West FE/HE institutions in 2001-2002.

Table 3.4.7 NVQs relevant to the ETS not provided in South West FE/HE

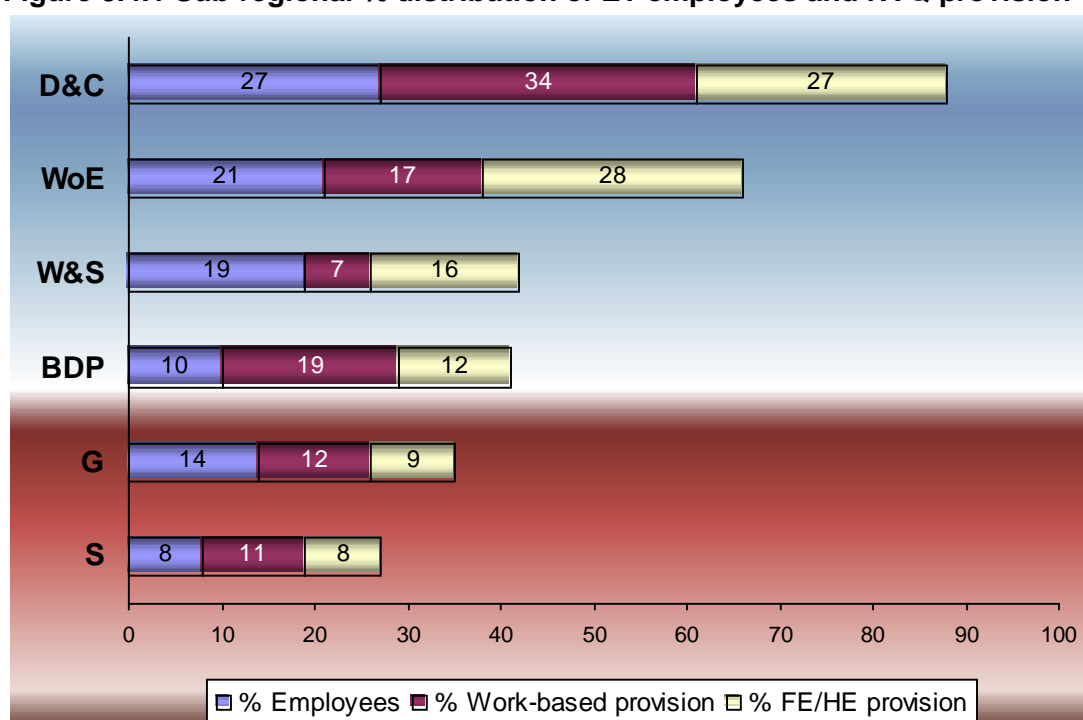
Title	NVQ level	Title	NVQ level
NVQ in Agriculture and Commercial Horticulture (Crop Management)	4	NVQ in Installation and Commissioning	3
NVQ in Bench Joinery (Construction)	3	NVQ in Mechanical Engineering Services – Commercial & industrial air conditioning systems	3
NVQ in Commercial Horticulture (Nursery Stock Production)	3	NVQ in Merchant Vessel Operations	3
NVQ in Construction (Bricklaying)	3	NVQ in Operating and Maintaining the Performance of Telecommunications Ept	3
NVQ in Construction (Carpentry and Joinery)	3	NVQ in Plant Operations (Construction)	3
NVQ in Emergency Fire Services - Supervision and Command	3	NVQ in Plastering Solid and Fibrous (Construction)	3
NVQ in Engineering Assembly	3	NVQ in Roof Slating and Tiling	3
NVQ in Engineering Design	3	NVQ in Roof Slating and Tiling (Construction)	3
NVQ in Engineering Manufacture (Craft Competences) - Electric and Electronic	3	NVQ in Service Engineering (Agricultural Machinery)	3
NVQ in Engineering Manufacture (Production Planning)	4	NVQ in Stonemasonry (Construction)	3
NVQ in Engineering Technical Services	3	NVQ in Town Planning Support	3
NVQ in Extensive Crop Production	3	NVQ in Treatment Operations (Inert Waste)	3
NVQ in Fenestration Surveying	3	NVQ in Vehicle Body Refinishing	3
NVQ in Fishing Vessel Operations (Limited Area)	4	NVQ in Vehicle Parts Distribution and Supply	3
NVQ in Gas Services Installation	3	NVQ in Vehicle Refinishing	3
NVQ in General Construction Operations	3	NVQ in Veterinary Nursing	3
NVQ in Highways Maintenance	3	NVQ in Woodmachining	3
NVQ in Housing	3	NVQ in Woodmachining (Construction)	3

3.4.6 Gaps in Provision of NVQ Training

This section discusses and highlights gaps in NVQ provision for the ET sector in the South West. Some of these gaps were identified in the previous sections. Overall there are sufficient levels of provision to meet replacement demand and natural wastage in the sector. However, in terms of geography, course type/level, course content/coverage and ease of NVQ use there are identifiable gaps.

Section 3.5 examined ET-relevant NVQ training in the South West on a geographic basis by comparing the location of the provision with the location of the employees in the region. In order to minimise barriers to taking up training, it is clear that the more closely aligned these two are the better. Figure 3.4.1 demonstrates that, proportionally, the amount of work-based provision in Devon and Cornwall was slightly higher than the proportion of ETs employees in the two counties. In both Wiltshire & Swindon and West of England it was lower. However, in the West of England FE/HE provision was higher than expected.

Figure 3.4.1 Sub-regional % distribution of ET employees and NVQ provision



As well as assessing gaps in provision in terms of geography, it is necessary to look at gaps in terms of course type and coverage. This can be best achieved by revisiting the literature review that listed the skills issues and needs being faced by ET employers. This allows us to compare these skills issues with the provision mapped out in the previous section. It is then possible to assess whether there are any gaps between what is actually being provided and what is needed.

To recap, for the sector as a whole, the Entri report listed a range of “hard” skills that needed developing. The most commonly mentioned by ET employers were:

- Energy usage/processes understanding,
- Waste management knowledge,
- CAD skills,
- Environmental legislation understanding,
- Electrical engineering knowledge.

The currently provided NVQs, both work-based and FE/HE, only cover the last of these skill sets – electrical engineering knowledge, with courses such as Installing and Commissioning Electrical Systems and Equipment, Installing and Commissioning Electrotechnical Systems and Equipment and Vehicle Mechanical and Electronic Systems. Consequently, there is no current NVQ provision covering energy usage, waste management, CAD skills or environmental legislation.

Furthermore, the skills needs listed above were reported at both the managerial/professional and associate professional/technical level. However, nearly all of the existing provision of NVQs relevant to the ETS is at level 3, with little at level 4 and none at level 5. It is therefore extremely improbable that the hard skill needs identified above will be met by current NVQ learners when they have completed their courses.

At a more general level the EnviroSkills Action Plan identified several key actions that are directly relevant to NVQ provision, i.e.:

- *Workforce development activities including initiatives to:*
 - *Improve technical skills (inc multi-skilling);*
 - *Basic and craft skills (inc multi-skilling); and*
- *Improve work experience opportunities.*

In broad terms, the number and breadth of available NVQs in the South West indicates that the training opportunities already exist to attain these aims. However, the views of the employers (see section 3.4.7 below) show that while the framework and qualifications may already exist, further refinement of course content, depth, up-to-dateness and flexibility before the EnviroSkills action points can be fully realised.

3.4.7 Validation exercise with ET employers and stakeholders

The validation exercise involved consultations and interviews with a range of employers and stakeholders drawn from across the South West ET sector. It is important to note that the exercise was designed as a “check” on the main findings of the earlier parts of the research on which recommendations were to be based. That is, the main findings were presented to key employers and stakeholders to test whether they were consistent with the employers and stakeholders own experiences. Thus the validation exercise was not intended to be a sample survey of the population as a whole, but rather as a litmus test among key players.

The first finding from the validation exercise confirmed that the overall level of provision was regarded as being sufficient to meet future demand within the sector. Nonetheless, there was concern that because of the overlap with other sectors of the economy, it was difficult to be sure that the learners on the NVQ courses identified would actually end up working in the ET sector, rather than in another closely linked non-ET area.

There was general agreement and concern about the two key gaps identified in terms of;

- Course coverage (no energy usage, waste management, CAD skills or environmental legislation NVQs); and
- Opportunities for progression (the relative lack of NVQs at levels 4 and 5).

It was recognised that these gaps were causing problems for the parts of the sector in which they were of importance.

For the waste management and environmental legislation areas it is worth noting that several employers reported that *“if you’re handling waste you need a certificate of technical competence (COTC)”* and that *“an NVQ could go towards this demonstration of competence”*.

However, in respect of obtaining COTCs or such an NVQ equivalent, some employers noted that it was not a “skills need” that was driving them to do this, but rather the legislation forcing them to and the Environment Agency enforcing this. Other employers though felt that the *“NVQs they need aren’t provided (so) they use a specialist COTC provider”*. Interestingly these employers also noted that the COTC providers offered *“more flexible learning”* that was *“easy to cater for the different range of skills (needs)”*.

In terms of the lack of progression opportunities beyond level 3, employers were not overly concerned by this as many felt that staff at this level would need degrees or postgraduate qualifications and, most importantly, *“years of experience”* which no training course could provide. NVQs were also seen as either being *“intended for those under 25”* or *“focused on young people”* so by default were not likely to provide senior management or high level professional staff to drive the sector forward.

The employers were divided between those who expressed general satisfaction with the manner in which NVQ courses were provided and those who had reservations and problems. Among those who were satisfied comments included *“we’re happy with the length and flexibility”* and they *“meet our requirements”*.

The employers who reported specific problems with NVQs said that these problems had either caused them to stop using NVQs altogether as a means of training staff or to cut back on the number of staff being sent on them. These problems mainly concerned the areas of the cost, time, and level of commitment required to complete courses. Their comments included:

“(We) used to use NVQs, but stopped using them because of the cost in terms of the time and money (– in manufacturing operations –) NVQs were subsidised at the time when they were being promoted hard”

“(We) have had people that have done NVQs in admin and customer care, but it was a mixed experience – the people who took them found them a lot of work, without really gaining anything – a lot of preparation. Lots of hours (were) required to complete it, and they didn’t think they got much out of it”

These problems led onto the poor perception of NVQs again which was a common theme expressed by employers across all sectors covered by the research. Their principal points were either that *“NVQs aren’t relevant to our industry”* or that *“NVQs don’t meet our specific (skills) needs”*. In numerous cases, employers not currently using NVQs said that they had to develop their own internal training provision, because existing course content and coverage was simply not suited to their requirements.

In this respect, specific concerns that were expressed included;

“(We) could never find an NVQ in the right area”;

“(The content of the) electronics (NVQ) is less helpful than it was, we need more specialist internal training”;

“Course content was very, very basic”;

“Someone could pass the NVQ, yet still do the job unsafely”.

3.4.8 Recommendations for NVQ provision and progression within the ET Sector

The following section has two parts:

1. The detail of recommendations addressing the issues identified by the study;
2. The “fit” of these recommendations with the strategic documents reviewed earlier in the chapter.

3.4.8.1 Detail of recommendations

The mapping and research work, combined with the validation exercise, identified four sets of recommendations to help improve NVQ provision and progression for the ET sector in the South West;

- **Increased provision in specific areas**

There needs to be the introduction of a significant level of NVQ provision in certain “missing” subject areas. This is true for both work-based and FE/HE provision, and the situation is particularly acute for employers seeking staff with NVQs covering the following occupations;

- Energy usage;
- Waste management knowledge;
- CAD skills; and
- Environmental legislation.

- **Short modularised provision**

For NVQs to be utilised on a wider basis, they need to be provided in a modular format. This would enable employers to “pick and mix” the most relevant parts at their discretion. Many employers were unhappy with the perceived amount of “wastage”, in terms of irrelevant course material on current NVQ courses.

To further facilitate uptake NVQs also need to be provided as “short” courses, i.e. with each module being run individually to allow employees to minimise their absence from work and maximise the return from the training session.

- **Improved/advanced course coverage**

Reflecting the wide range of NVQs available to the sector, opinions on their content and coverage was mixed. In some areas there was a clear demand for increased depth and currency, particularly in sub-sectors where industry development was related to its ability to perform at the cutting-edge. It is recommended that courses relevant to such sectors are reviewed more regularly to ensure both their contemporaneousness and their depth of coverage.

- **Increased opportunities for progression**

The currently available NVQs do not offer many opportunities for progression beyond level 3. Significantly more level 4 and 5 qualifications are required to fill the gaps, if the NVQ system is to address the need for higher level management and professional staff within the sector.

However, it should be noted that many ET employers do not feel that this is the purpose of the NVQ system and that these skills needs will be met from elsewhere. Hence the additional provision of level 4 and 5 qualifications would need to be accompanied by a “marketing campaign” to sell their value to such employers.

- **Ease of NVQ administration**

In order to improve the perception of NVQs among ET employers, and hence to encourage their use, the existing administrative system needs to be simplified. The current system is particularly off-putting for small employers (SMEs) for whom the cost and time commitments are too great. Consequently it is recommended that the NVQ system;

- Reduce paperwork and documentation overall;
- Increase the flexibility of provision in terms of length of absence from work;
- Increase the number of verifiers/assessors to speed up the process; and
- Simplify its processing and monitoring procedures.

3.7.8.2 Fit of recommendations with Workforce Development Plans and Skills Action Plans

Most of the recommendations listed in the previous section can be mapped onto the South West EnviroSkills Action Plan discussed in section 3.4.4.1.

- **Increased provision in specific areas**
- **Improved/advanced course coverage**
- **Increased opportunities for progression**

Each of these recommendation dovetails with the Skills Action Plan, issue 3: “Recruitment and retention”. In particular they will help address the identified difficulties in both recruiting technician level personnel and also the difficulty of recruiting students to science and engineering courses.

The three recommendations will also contribute to actions listed in the Plan: “improve technical skills”, improve “basic and craft skills”, “improve work experience opportunities and “linking curricula to up-to-date industry practice”.

- **Ease of NVQ administration**

The Action Plan also addresses the issue of increasing employer engagement and dialogue with providers. The fourth set of recommendations will assist in this process by helping to improve the “image” of NVQs among employers to encourage demand. The Action Plan lists concerns over flexibility of provision, content, funding and delivery, all of which the recommendations seek to address.

In the broadest sense, the four sets of recommendations also dovetail with the objectives and actions from the Government’s National Skills Strategy;

- Reforming the qualification framework;
- Raising further effectiveness of the FE colleges and training providers;
- Increasing ambition in the demand for skills; and
- Placing employers needs for skills centre stage.

It is in relation to the last of these objectives “*placing employers’ needs for skills centre stage*”, that most work needs to be done in addressing NVQ provision for the ET sector. Overall provision is sufficient, but content and depth must be tailored to employers needs if the sector is to have a well-enough trained workforce necessary to drive it forward.

