The Sector Skills Council
for Building Services Engineering

Summit SKILLS

North West England Region
Building Services Engineering
Higher Education Skills Pathfinder
Sector Briefing

SummitSkills is the Sector Skills Council for Building Services Engineering

Building Services Engineering Sector
The building services sector represents the **electrotechnical, heating, ventilating, air conditioning, refrigeration and plumbing industries**.
51,000 businesses in the sector:
20,000 electrotechnical
11,000 heating, ventilating, air conditioning & refrigeration
20,000 plumbing
558,000 employees throughout the sector:
356,000 electrotechnical
95,000 heating, ventilating, air conditioning and refrigeration
107,000 plumbing
The sector carries out £20 billion of work each year - 3% of GNP (Gross National Product) and at any one time is training 18,000 apprentices.

The North West England Region
Production
It is estimated that the value of new work in the sector in the region exceeds £100,553million with an expected growth of 1.5% annually for the next five years.

Employment
There are over 58,000 people employed in the building services sector in the North West England Region.

Business in the sector
- There are over 5,500 building services engineering businesses in the North West.

Sub-regional Employment in the Sector

• Cumbria	5% =	2,900
• Lancashire	24% =	13,920
• Merseyside	19% =	11,020
• Greater Manchester	39% =	22,620
• Cheshire	13% =	7,540

The sector is often thought of as part of Construction, although the skills of those working in the sector are most closely linked to engineering and therefore the entry levels are normally higher than some career options within construction.
A high percentage of those employed within the sector are not involved in any construction process.

Annual Recruitment
It is expected that the recruitment requirement 2004-2008 will be: **4,125**
With each part of the Sector requiring the following between 2004-2008.

• Managers and Senior Professionals	617
• Professionals and Associated professionals and technical	496
• Electrotechnical and Electronic Servicing	680
• Plumbers, gas, HVACR	616

skills FOR BUSINESS

- Non Gas Plumbers 188
- BS Gas Operatives 124
- Heating and Ventilation 205
- Air Conditioning and Refrigeration 99
- Specialist Operatives 174
- Manufacturing 1573

Note: BS Operatives Gas
Gas installation, repair and maintenance is carried out as an integral process across a range of roles within the sector.
The category above indicates roles where the pre-dominant range of work is gas related although they will be working across other Building Services Engineering scope and will therefore have an appropriate competence for the respective industry, including gas work.

With a projected continued expansion of work within the main conurbations of Liverpool and Manchester a priority will be recruitment of higher level achievers, to train for Technical, Professional, Managerial and Operative roles at NVQ level 3, 4 and above.

North West Region Information Signposting

North West Home page http://www.summitskills.org.uk/cgi-bin/go.pl/regions/details.html?uid=43

Sector Careers Map
Hard copies of the **Building Services Engineering Sector Careers Map** indicating **entry requirements** for those entering employment and training in the sector, whether they are considering a career as a

- **Building Services Engineering Professional**
- **Building Services Engineering Technician**

or

- **Building Services Engineering Operative**

Careers information
Detailed information about careers in the sector is available at **CareersNorthWest** website at **http://www.careersnorthwest.com/ssc/ssc_detail.aspx?id=17**
CareersNorthWest also produce a detailed information sheet for Building Services Engineering, available in hard copy. Section includes **Job Search** and **Case Studies**.
Or **http://www.summitskills.org.uk/careers/23**

Emerging Environmental Technologies
Information is signposted from www.skills4business.org.uk

Identification of centres offering appropriate Industry Approved qualifications
SummitSkills Careers Helpline **08000 688 336**

Resource Material
Information Sheets for the region are available on request for:

- Job Activities and Roles within the Sector
- Core Industry Approved Qualifications
- 14-19 Diploma Consortium development guidance

HORIZON: The Sector Skills Agreement for Building Services Engineering
The Sector Skills Agreement is currently in development and detailed information for the North West is available at http://www.horizon-ssa.org.uk/In-your-area/289

Higher Education Skills Pathfinder
Sector Briefing

Issues affecting HE Provision.

The following provides an overview and extracts from the Sector Skills Agreement draft, Stage 1 report for the North West Region, highlighting issues affecting higher education and progression to higher education provision and job roles.
The full North West Region report is available at http://www.horizon-ssa.org.uk/In-your-area/289
The National report is available at http://www.horizon-ssa.org.uk

1.2 Technological/Environmental Change

Technological change is perceived to be a major issue by building services engineering companies within the Northwest, particularly in relation to environmental technologies.

1.4 Government Involvement in Training

There is concern that the Government's policies on funding are prejudicing older apprentices (19+) which, because of their maturity, are particularly attractive to the sector because of their increased employability skills.

1.10 Research and Development

Only a minority of building services engineering companies within the Northwest claim to engage in any form of research, either as a company, or through research consultancies such as BSRIA.
The sector (and indeed the whole of the construction sector) is significantly under-researched with only a fraction of the GDP of the industry being invested in research. The Department of Trade and Industry points to professional institutions, research communities in universities or the private sector to bring research and development to the forefront, together to carry out effective research to improve business performance in the light of international benchmarked performance.
SummitSkills is committed to seeking to work as a broker between the various partners within the UK and the region to enhance the marketability and relevance to the industry of research.

1.13 Competitive Advantage

There is no evidence of any strategic competitive advantage strategy from the sector, and it may be advisable to strengthen this concept within the curriculum to enable building services engineering companies in the Northwest to develop a sharper business focus in the future.

1.17 Skills Requirements

Within the building services engineering sector in the Northwest, skills that employers have identified are practical skills and IT skills. Other skills identified within this section are supervision and management skills, multi-skilling skills and communication and business acumen skills.
There is also a desire within the sector for technician training at Higher National Certificate level for a significant number of trainees.
The Northwest also shows a significant and large amount of training of management and supervisory staff in relation to other regions within the UK. There is some concern however about how much of this management training is carried out through the Higher National Certificate building studies/services courses, and whether this is sufficiently practical to meet the needs of staff, and further research may be needed. For staff unable to undertake a two-year day release course, there is also a need to investigate adequate alternative NVQ 3/4 courses and the access arrangements for them.

1.18 Future Skills Needs

Through a PESTEL analysis, a number of future skills needs have been identified in the literature related to the building services engineering sector. The primary data from the Northwest (not perhaps surprisingly) does not show the level of in-depth analysis of the market as is contained within the PESTEL analysis, however many of the future skills identified by Northwest employers are for legislation and technology, and are already present and show no evidence of perception of potential future market drivers. The emphasis of the sector therefore may perhaps be described as reactive rather than pro-active as invariably the Northwest employers see their future skill needs through the context of existing skill sets, but perhaps requiring larger numbers of them.

1.19 Retirement and Natural Wastage

The labour market intelligence evidence provided by BSRIA suggests that a significant number of craft employees may be leaving the sector in their fifties because of the physical rigour of the job. Although the Northwest again performs better than other regions within the UK, there is still not a significant amount of planning taking place within the sector to make allowances for retirement policies, particularly if this is being exacerbated by 'early retirement' from the sector in the manner suggested above. The sector's trade associations do offer training for companies in retirement planning for senior executives and SummitSkills recommends that the principles of this training are rolled out to the sector more proactively.

1.20 Diversity

Literature suggests that women are dissuaded from pursuing careers in construction due to the 'laddish' culture of the industry and the negative attitudes of some employers. Also women tend to be discriminated against by current training policy as women are likely to enter the sector as mature entrants (often after having families) rather than as sixteen year olds, and therefore employers wishing to employ women invariably are required to significantly fund the majority of their training. The Northwest building services engineering sector mirrors the rest of the construction in the UK as the majority of firms employ no women in technical roles, and those that do only employ small percentages of women.

A major entrepreneurial opportunity identified in the literature and contextualised in the primary data within the Sector Needs Analysis is the role of women craft operatives working for housing associations and with women clients from vulnerable or ethnic groups who would be uncomfortable with working with a male operative.

People from ethnic minority groups appear to have similar issues to those of women, although major research on ethnic minority craft employees and community attitudes to the construction industry appears to be outstanding.

SummitSkills believes that further consideration needs to be made to developing training in diversity issues and behaviours to make the existing and future workforce more cognisant with the needs of women and ethnic minority groups.

1.21 Migrant Workers

The Northwest does not appear to have a large body of migrant workers within it at this time, however given the perceived requirements for skilled operatives this situation may not continue. Therefore SummitSkills recommends that plans are made to develop ESOL courses and health and safety training, to meet potential future needs should this arise.

1.23 Overall Recommendation

This Sector Needs Analysis would, it is argued, suggest that the building services engineering sector has a significant number of potential training needs emanating out of its current position and strategy. There might be a perception that the sector is reacting reactively to new technology rather than proactively, waiting for legislation or policy to filter through, rather than proactively preparing their businesses to meet potential demand, and this it is suggested is

possibly the case in relation to renewables technology such as solar and photovoltaic panels for example.
There is also, it is argued, a need for more business orientated training, perhaps incorporated into curriculum below graduate level, as the industry appears to operate on a more anecdotal than evidence based footing than is desirable in the Northwest specifically and the UK generally.
Courses in formal benchmarking, planning for staff retirement, supply chain management, competitive advantage positioning, future skills analysis and business positioning, entrepreneurial leadership techniques would all it is suggested allow the development of a more 'business focussed' discourse within the sector, and begin to tackle the worryingly poor productivity performance of the sector. SummitSkills believes that it has a major role to play in producing a climate of development of skills to improve productivity within the sector.

5 SummitSkills Introduction

Section 5 identifies the SSC responsibility for the areas of business covered by the listed SIC codes including a wider range than provided below, but the following highlights the key SIC codes relevant to the project.
Professional

- 2121 Civil Engineers.
- 2123 Electrical Engineers.
- 2124 Electronics Engineers.
- 2126 Design and Development Engineers.
- 2129 Engineering Professionals not elsewhere classified.
- 2132 Software Professionals.
- 2433 Quantity Surveyors.

Associated Professional and Technical

- 3112 Electrical and electronic technicians.
- 3113 Engineering technicians.
- 3122 Draughts persons.
- 3541 Buyers and purchasing officers.
- 3542 Sales Representatives
- 563 Vocational and Industrial Trainers and Instructors.

7.2.1 The Northwest Building Services Engineering Sector Perceptions on (Non Environmental) Technological Change

Technological change is a significant factor in the development of the building services engineering sector, and may highlight skills issues within the sector as technology impacts on existing skill sets.

7.2.2 Conclusions

The data from the building services engineering sector companies within the Northwest suggests that technological change is impacting on the work that they are doing. This will raise a number of training needs within the sector, and these appear at the current time either to not being addressed, or addressed through the medium of manufacturer training.

7.3 Technological Change (Environmental)

7.3.1 Introduction

SummitSkills is currently in consultation on the following as an extension of the research completed to date and contained in the draft report.
The following areas of responsibility fall within the sector footprint.

- Solar Water and Heating
- Photovoltaics for Microgeneration
- Combined Heat and Power
- Micro Wind Energy

- Ground Source Heat Pumps
- Air Source Heat Pumps
- Biomass
- BioFuels (Liquid)
- Micro Hydro Generation Systems
- Fuel Cell Technology
- Rainwater Harvesting
- Grey Water

Others may also be included following consultation.

7.3.6 Conclusions

The building services engineering sector within the Northwest is generally aware of the environmental agenda, and there is evidence that they are receiving more tenders with environmental technologies within them. As with other regions within the UK a large number of the companies in the sector in the Northwest assume that they have the capabilities to deliver the new technologies, although SummitSkills has a concern that many of these competences oscillate around existing technologies imposed by legislation such as condensing boilers, and that there still remain significant gaps in the skills sets in relation to many of the technologies described within the literature section of this SNA. There is also a risk that the building services engineering sector in the Northwest is being reactive rather than proactive in identifying new technologies. This may become prevalent particularly as the Northwest seeks to achieve its Kyoto targets.
SummitSkills believes that this will be particularly prevalent in microgeneration technologies such as photovoltaic and solar panelling.
SummitSkills, in conjunction with stakeholders and partners, intends to work towards developing appropriate certified provision to projected needs and with the sector to generate interest and business planning to gear the sector up for this expected development.

8 Government Impacts on the Building Services Engineering Sector

8.2.2 Conclusion

Leitch (2005) provides an interesting set of differing scenarios that in isolation will produce a number of impacts not just on the economy generally, but on the building services engineering sector specifically. Different models will affect the quality of inflows of new craft trainees, technicians and graduates into the sector, and will also improve productivity in the sector indirectly if not directly. It is therefore suggested that out of this SNA, further work is undertaken based on these scenarios, to facilitate the effective lobbying of Government in relation to which model, or which mix of potential models might best facilitate the sector.

8.2.10 Conclusions

There would appear to be within the building services engineering sector, a great deal of concern about the funding and planning of training by the Government and Government bodies who allocate funding and designate curricula as attracting funding.
SummitSkills will continue to work with stakeholders and partners and the sector, both regionally and nationally to address the concerns that companies within the building services engineering sector have about the current funding and qualification structure to seek to make sure that the funding and curricula meets the needs of the sector as far as is reasonably practicable.

9.4.7 Conclusions

SummitSkills therefore believes that in the main the building services engineering sector in the Northwest and in the UK generally would benefit from inclusion within existing curriculum of supply chain management theories supplemented with be-spoke and short courses for

senior managers within the sector in the region teaching business planning and supply chain management theory for incorporation into their business practice.

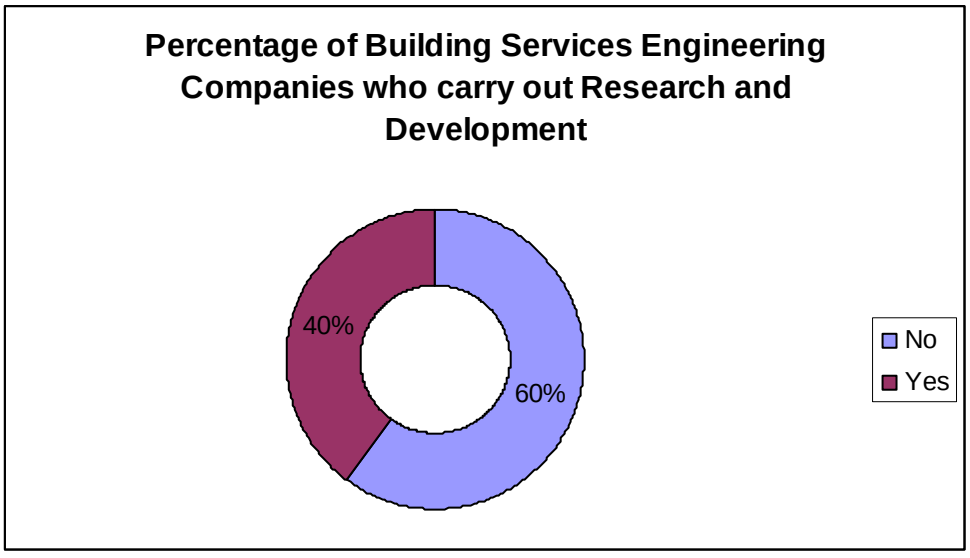
10.2 Research and Development

The dispersion of research funding and activity varies around the UK and the table below shows the estimated regional breakdown of intramural (within the walls) research and development expenditure in business, Government and the HE sectors for the nine English regions and the four devolved nations: (North West comparison extracted from draft SNA).

	R&D performed within business	R&D performed within Government	R& D performed within HEIs
United Kingdom	13,110	1,752	4,413
England	12,138	1,459	3,568
North West	1,661	67	354

10.2.3 Northwest Building Services Engineering Sector's Perception of Research and Development

The literature element within this section suggests that the building services engineering sector remains predominantly under researched, and that there is no interface between HEIs and the sector in any meaningful way. As can be seen from the pie chart below however the Northwest appears to have a healthy research base among companies in the sector regionally:



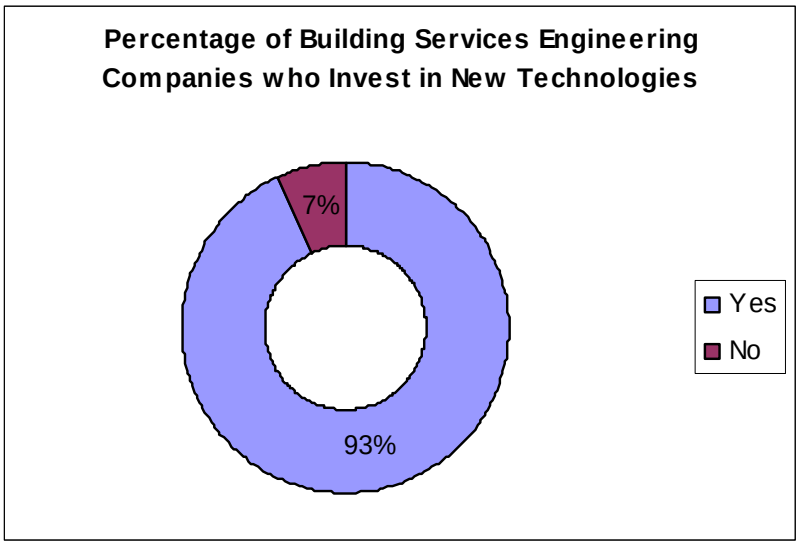
10.2.4 Conclusions

The data suggests that among certain companies within the Northwest building services engineering sector there is a good grounding for research activity taking place. However, the data triangulates with the literature in that the use of HEIs (mentioned only by one company and not active) suggests that more needs to be done to bring HEIs and industry together.

SummitSkills proposes to act as a research broker between the HEIs and the sector where possible, both in the Northwest region and in the UK generally to create opportunities for building services engineering sector companies and HEIs to engage in meaningful research with each other that meet the needs of industry and in particular raise the productivity levels of the sector in the Northwest region and in the UK generally.

10.3.2 Northwest Building Services Engineering Sector's Perception of New Technologies

Porter identifies new technologies as being a major driver in the achievement of increased productivity and efficiencies within a competitive business environment. The diagram below indicates that the majority of building services engineering sector companies within the Northwest invest in new technologies:



10.3.3 Conclusions

The data suggests that the Northwest building services engineering companies are performing extremely well in integrating IT into their business functions generally. SummitSkills believes that there may be a need to contextualise this IT development with the basic skills of older workers in IT to maintain efficiency and productivity improvements with continued investment in IT hardware and software. SummitSkills intends to work with partners and stakeholders and the sector to make sure that be-spoke and certified training courses in IT are readily available not just in the Northwest, but in the UK generally, to maintain the value added productivity function of continued investment in IT.

10.4.4 The Northwest Building Services Engineering Companies Perspective on Enterprise and the Function of the Entrepreneur in the Building Services Sector

10.4.5 Conclusions

SummitSkills does believe that entrepreneurship and enterprise is a key element in developing the performance of the building services engineering sector not just in the Northwest, but in the UK generally, and therefore entrepreneurial concepts should be integrated in to existing curricula at all levels, particularly at craft level where the majority of new business starts within the sector emanate from. SummitSkills also believe that the sector would benefit from the development of bespoke training courses to introduce senior managers and existing staff within the sector to the concepts of enterprise and entrepreneurship, and will work with partners and stakeholders and the sector both regionally and nationally to facilitate this development.

10.7.4 The Northwest Building Services Engineering Sector's Perspective on Benchmarking

10. 7.5 Conclusions

SummitSkills believes that benchmarking is a vital function in obtaining productivity and efficiency improvements within the sector and proposes to work with partners and stakeholders in the Northwest region, and in the UK generally, to develop bespoke courses for companies within the sector to facilitate them in undertaking benchmarking exercises. SummitSkills also believes that benchmarking techniques should also be incorporated into existing curriculum within the building services engineering sector to prepare the future employees within the sector with the requisite skills.

11 Skills for Business Requirements

11.1 Workforce Qualification Levels

11.2.11 Conclusions

Basic skills are an issue for the Northwest building services engineering sector in relation to the quality of school leavers seeking entry into the various industries. Building services engineering sector companies within the Northwest continue to receive applications (in large numbers) from candidates that lack the relevant basic skills to be suitable for apprenticeship training.

SummitSkills remains committed to work with the sector in schools and with career officers to raise awareness of the academic underpinning standards required of new entrants to address these issues.

The increase in technology as is highlighted in one of the quotes within this element and is highlighted in other regions is that advancing technology will expose particularly in IT, basic skill needs among older employees.

SummitSkills will work with partners and stakeholders within the Northwest and the UK generally, to make be-spoke and flexible training available to companies to update the IT skills of the existing workforce to maximise the productivity advantages that should accrue from investment in cutting edge technology.

11.3.3 The Northwest Building Services Engineering Sector's Perceptions of Skills Requirements

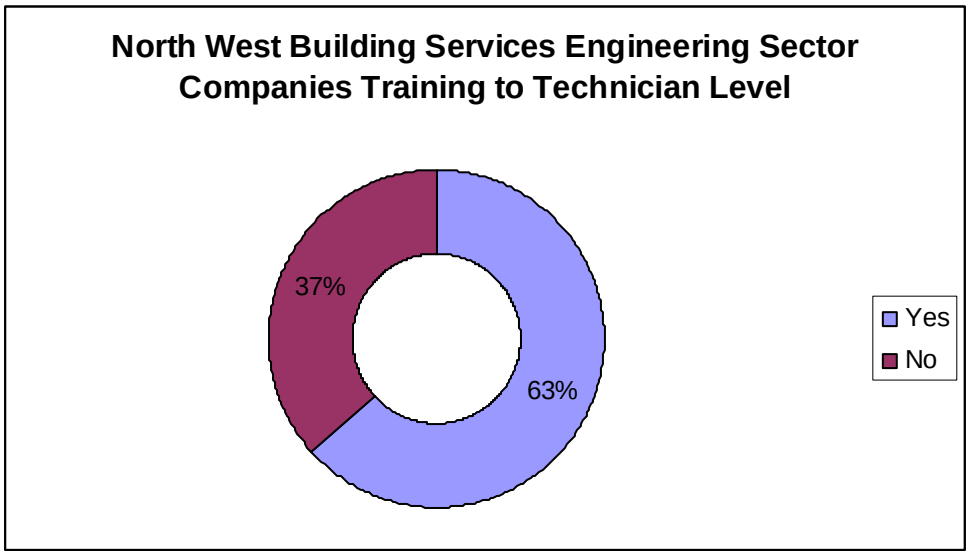
The Northwest region building services engineering sector companies were asked first about t

their skill requirements, and the results are summarised within the pie chart below. They

indicate a range of issues which are triangulated to a greater or lesser extent with the data

contained within the literature review:

The diagram below indicates the percentage of companies within the sector who train to technician level:



11.3.4 Conclusions

The skills requirements of the Northwest building services engineering sector suggest that companies have identified a number of issues that need to be addressed with practical skills being predominant. There does not seem to be a great amount of enthusiasm for multi-skilling, regardless of the productivity efficiencies that can be achieved from multi-skilling techniques. It is also interesting to see that 34% of companies do not see that they require any further skills whatsoever, which it is submitted is worrying as it might indicate a failure to understand the potential movements that the sector may face in the future.
In relation to technician qualifications, then 63% of companies in the Northwest building services engineering sector actually use them.
SummitSkills do have a concern that some of the companies may be using these 'technician' qualifications for supervisory and management training.
SummitSkills is concerned about the type of HNC studies for example whether the curriculum content is sufficiently management focussed to facilitate robust management training.
SummitSkills is committed to working with stakeholders and partners to develop where required robust, flexible and relevant qualifications to meet the needs of supervisors and middle management with a view to improving productivity through effective management.
SummitSkills notes with disappointment, that of the 43% of companies within the sector in the Northwest not offering management training to their supervisors et al, only 13% perceive the need to actually do so.
SummitSkills will work with partners and stakeholders, particularly trade associations to raise awareness of the sector not just in the Northwest, but across the UK of the need to address this important issue.

11.4 Future Skills Needs

11.4.9 Conclusions

SummitSkills believes that the future skills section of this report highlights the problems facing the sector, not just in the Northwest but in the rest of the UK, of the industry understanding or being able to engage in the discourse of skills that is emanating from the Government or the Government bodies.
It is argued that there is no concept of future skills needs emanating from companies within the building services engineering sector in the Northwest, linked to any planning for how the sector may have to develop as a result of globalisation, new technologies, environmental technologies or anything that may impact on the sector in the future.

SummitSkills is committed to working with stakeholders and partners in the Northwest to develop bespoke training packages and CPD courses to enable companies within the sector to engage in the skills discourse emanating from Government, and also beginning to plan the future skills sets of their employees to meet projected changes in the sector.
SummitSkills believes that this is a vital function in the battle to improve the sector's productivity as workers should be trained to meet future needs rather than companies having to engage in reactive training when new skills sets become required.

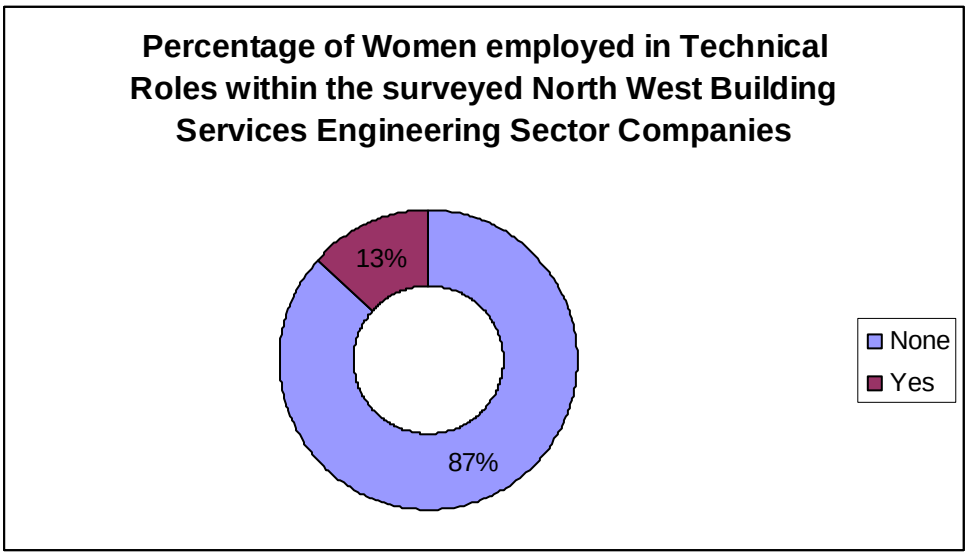
11.5 Retirement and Natural Wastage

11.5.3 Conclusions

SummitSkills believes that effective retirement planning is a tool that companies within the sector in the Northwest and indeed in the UK itself are not using to their best advantage, as being a way to retain productivity when older workers retire.
SummitSkills is therefore committed to working with partners and stakeholders to provide bespoke business training packages that facilitate the development of retirement packages within companies.
The retention rates, contrary to popular myth within the sector, do appear to be stable in relation to the Northwest building services engineering sector, and therefore the myth that trained employees' whist undoubtedly a number do move on, do not move on in the droves that are sometimes indicated by popular gossip.
SummitSkills believes that constant training and updating of staff is key to the competitiveness not only of individual companies within the Northwest building services engineering sector, but the competitiveness and productivity of the sector as a whole across the UK, and therefore SummitSkills working with partners and stakeholders will continue to promote the message, that skills pays.

11.6 Diversity

The Northwest building services engineering sector continues to perform poorly in relation to recruiting women, and the diagram below indicates the percentage of companies who took part in the survey who employed women in technical, as opposed to administrative, roles:

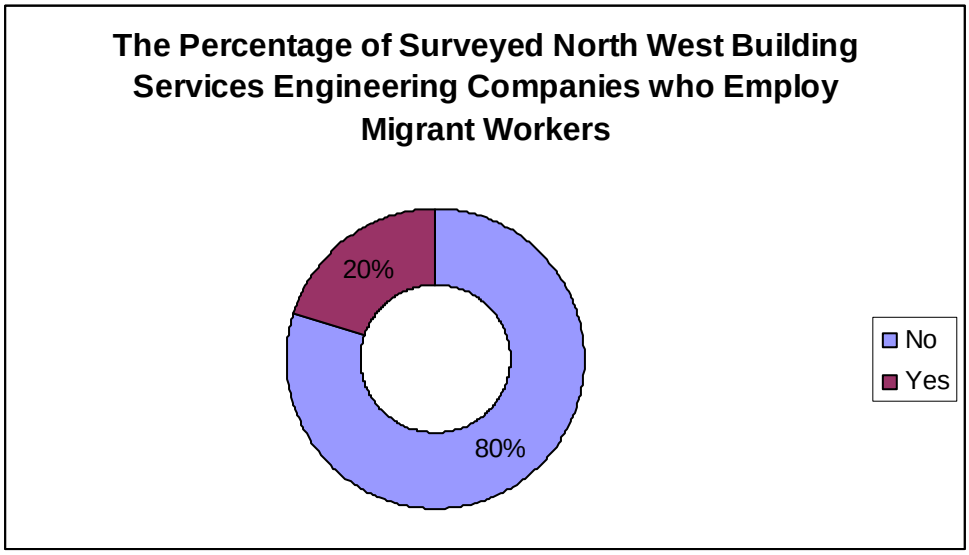


11.6.8 Conclusions

The North West region's building services engineering companies are struggling to recruit women into technical roles.
SummitSkills will continue to work with partners and stakeholders to facilitate the smoother entry into the sector of women, and where necessary lobby Government on changes to funding policies.
In relation to ethnic minority workers, then it is clear that there are issues relating to their recruitment into the sector.
SummitSkills will work with ethnic minority community leaders both in the North West and in the UK generally to identify what the potential barriers are to ethnic minority candidates entering the sector, and seek to address these and promote the industry more effectively.

11.7.3 The Northwest Building Services Engineering Sector's Perspective on Migrant Workers

The issue of migrant workers is receiving a significant amount of press coverage at the current time, however from the primary data gathered within the Northwest, the percentage of building services engineering sector companies who recruit migrant workers is very small indeed, and this can be seen from the diagram below:



11.7.4 Conclusions

SummitSkills believes that increasingly migrant workers will play a role in the development of the building services engineering sector both in the Northwest and the UK generally. SummitSkills will work with partners and stakeholders to try to ensure that adequate training in ESOL and Health and Safety is in place to help migrant workers to integrate into the sector both regionally and nationally. SummitSkills will continue to seek to map qualifications of migrant workers against national qualifications to facilitate harmonisation of labour rates and employment practices and continue to watch the situation and advise partners and stakeholders accordingly.

National Occupational Standards

Many courses, including degrees, although developed in conjunction with local employers may not have been mapped to the National Occupational Standards.
http://www.ukstandards.org.uk/

Building Services Engineering Careers Map

For A2 colour copies contact rob.wellman@summitskills.org.uk.
Provide contact details and postal address as well as number required.

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North West webpage http://www.summitskills.org.uk/cgi-bin/go.pl/regions/details.html?uid=43

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