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Communities, Equality and Local Government Committee

Bil yr Amgylchedd Hanesyddol (Cymru)/Historic Environment (Wales) Bill

Ymateb gan: Bwrdd Hyfforddi'r Diwydiant Adeiladu

Response from: Construction Industry Training Board

A 'Material' Issue: Understanding and Responding to the Traditional Building Skills Challenge in Wales

Final report

February 2015





Study prepared by Pye Tait Consulting from a commission by CITB.

The views expressed by research participants are their own and do not necessarily represent those of their employers.

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Executive Summary

Research context, aims and methodology

In March 2012, Cadw hosted a Traditional Building Craft Skills Summit at Caerphilly Castle. The summit set out the importance of promoting building maintenance and the use of sustainable materials by 'mainstreaming' these within Further Education and Higher Education courses in Wales. There was also a call to develop training and 'up-skilling' programmes and to improve Continuing Professional Development (CPD) for those working on traditional buildings¹. These goals were echoed in a 2013 report by the Sustainable Traditional Building Alliance (SBTA), which called for education and training in traditional building issues to be made an essential part of mainstream educational programmes, including both theoretical and practical issues.

In May 2013, CITB submitted a project proposal to the Welsh Government to obtain funding for the Sustainable Construction Learning Sites Project (SCLSP). The main aim was to bring the skills associated with the repair, maintenance and conservation of traditional buildings into the mainstream of construction education and training across Wales and to establish a core set of sustainability skills for the sector. The SCLSP ran from May to December 2014 and was managed by CITB on behalf of the Welsh Government.

Two tangible outcomes from the project included:

1. The development of a new Level 3 CPD unit for trainers: *Sustainability and energy efficiency in pre and post 1919 buildings*; and
2. The development of a new Level 1 unit for learners that learners can complete as part of the Community Learner Industry Focus (CLIF) content of existing qualifications.

This research contributes to the successful completion of the SCLSP. It provides an up-to-date picture of skills demand, skills supply and training provision relating to the conservation, repair, maintenance, and energy efficiency retrofit of traditional buildings in Wales. The report also gives consideration to the future skills and learning agenda emerging from developments in the heritage and construction sectors in response to the wider economic and policy drivers such as Green Deal and the low carbon agenda.

Pye Tait Consulting carried out this research between June and December 2014, using a mixed methodology and following an iterative four-stage process:

1. **Desk review** of policy developments, skills and knowledge issues;

¹ Traditional buildings are defined as those built before 1919, as well as post-1919 buildings which are hard to treat, require similar skills and materials to those required for work on older buildings, or possess exceptional heritage and architectural merit.



2. **In-depth telephone interviews** with 55 stakeholders;
3. **Telephone survey** generating responses from 406 built environment sector employers (craft-based and professional roles); and
4. **Two focus groups** to explore the emerging issues in greater detail.

For the purpose of this research, traditional buildings are defined as: “All buildings built before 1919, as well as newer (post-1919) buildings that may have solid walls or are otherwise are hard to treat, require similar skills for work on older buildings, and/or possess exceptional heritage and architectural merit.”

Demand for work on traditional buildings

- The vast majority (94%) of surveyed employers in Wales are ‘mainstream’ construction businesses that work in relation to both modern and traditional buildings;
- Just under half of employers’ time (43%) is spent working on traditional buildings – signalling importance of the construction sector being competent and knowledgeable in relation to these types of structures;
- Routine repair and maintenance activities account for exactly half (50%) of all work undertaken on traditional buildings, followed by conservation and restoration (37%) and latterly energy efficiency retrofit (13%); and
- Looking ahead over the next two years, just under half (44%) of employers are optimistic that demand for work on traditional buildings will increase.

There are a range of demand drivers that are helping to create conditions for an upturn in work on traditional buildings following the recession of the late 2000s. Industry growth forecasts to 2019 are favourable²; energy efficiency policy and incentives such as Arbed and the Green Deal are starting to stimulate retrofit activity; and since 2012 the Welsh Government has remained committed to transforming derelict and uninhabitable properties as part of the *Houses into Homes* scheme, with the announcement of a further £20 million of funding from January 2015.

Despite these drivers, stakeholders participating in the research expressed concern that awareness is general lacking about the damage that can be caused to traditional buildings from inappropriate work, techniques and materials. A wide range of audiences need to understand these issues, including public and private sector construction clients (e.g.

² Construction Skills Network (2015): *Blueprint for Construction 2015-2019 Report*



property/estate owners); planners and building control representatives; building design professionals (including architects and building surveyors); as well as mainstream construction businesses that freely undertake work on traditional buildings.

Supply of skills and knowledge

Surveyed employers were asked to rate (on a scale from 1 to 10) the skill levels of their own workforce across a range of specific crafts/trades carried out by their organisation. Average ratings were generally high (greater than 7.0 out of 10) which led to some stakeholders expressing concerns in the subsequent focus groups that some employers may be over-confident, for example due to “not knowing what they don’t know”.

Highest rated skills (employers):

- Roofer – tiles and slates (8.8);
- General craft/trades person (8.7); and
- Plasterer – other (8.7).

Lowest rated skills (employers):

- Stone conservator (5.8 out of 10)
- Steeplejack (6.0 out of 10); and
- Glass painter (6.4 out of 10),

Skills considered to be in short supply for work on traditional buildings (albeit mentioned by a minority of employers):

- Plastering (34 respondents);
- Lime work – Including lime plastering (32 respondents);
- General shortage of tradespeople in all traditional building skills (30 respondents);
- Stone work (25 respondents);
- Carpentry and joinery (24 respondents);
- Lack of suitable apprentices (23 respondents)
- Bricklaying (17 respondents);
- Roofing (17 respondents); and
- Experience (13 respondents).

Core skills and knowledge needed for working on traditional buildings (most frequently stated by stakeholders):

- Lime work;
- Stonework;



- Carpentry and joinery;
- Roofing; and
- An understanding of why work on traditional buildings needs to be undertaken in a particular way.

Other findings related to skills and knowledge supply:

- A minority of employers (13%) reported having turned work down on traditional buildings due to a lack of skills and knowledge;
- A similar minority (11%) confirmed that they have knowingly undertaken work on traditional buildings while having insufficient skills and knowledge;
- More than half of craft employers (60%) are confident in the ability of their workforce to install low carbon and energy efficiency measures, albeit 28% stated that they couldn't say (i.e. "didn't know") whether or not they were confident;
- Among professional employers, the vast majority (87%) are confident that their workforce can design, assess or advise on these measures;
- The most common barrier facing employers when sourcing individuals to work on traditional buildings is that candidates are not skilled/knowledgeable to the levels needed (23% of responses); and
- A third of employers (33%) reported having recruited at least one apprentice or trainee to work in relation to traditional buildings over the past five years; and just over a fifth (21%) stated that they are likely to recruit an apprentice or trainee over the next 12 months;

Reasons given by employers for their level of apprentice demand primarily centre on the amount of work available and that they are willing to take on. The economic recovery and employment growth forecasts for the industry to 2015 could increase demand for apprentices.

Working with traditional building materials

- Employers are generally favourable about the knowledge of their workforce relating to traditional materials (scoring 7.6 out of 10) and their ability to work with traditional materials (8.2 out of 10); and
- The vast majority of surveyed craft employers (80%) reported using a mixture of modern and traditional materials when working on traditional buildings (this compares



with 71% for England and Scotland when comparable research was undertaken in 2012).

- Only 10% of craft employers in Wales reported that clients or professional advisors stipulate that traditional materials must always be used (lower than the 22% for England and Scotland in 2012); and
- Over a fifth of craft employers (23%) stated that traditional materials are never stipulated in Wales (higher than the 13% for England and Scotland in 2012).

In some circumstances, use of a mixture of materials might be appropriate, however the above finding highlights the risk of inappropriate materials being used that could have a damaging effect on traditional building fabric. This was raised as an issue by stakeholders who emphasised the importance of using the right materials to avoid causing undue and lasting harm.

Surveyed employers were asked what barriers, if any, can prevent the use of traditional materials on traditional buildings. The three most common responses are:

- Cost (37% of responses);
- Traditional materials are not always available (15% of responses); and
- Traditional materials do not meet building regulations/modern standards (10% of responses).

Qualifications and training

- The vast majority of surveyed craft employers (95%) reported that their workforce does not hold any qualifications directly relating to heritage, traditional buildings or conservation;
- Only a quarter of employers (25%) have participated in training specifically relating to work on traditional buildings over the past five years;
- Only a minority of employers (15%) have previously developed traditional building skills and knowledge as a result of mainstream (i.e. general construction) provision offered by FE Colleges in Wales;
- Just under half of employers (49%) don't know whether FE College training provision available in Wales is equipped to deliver the skills and knowledge required for working on traditional buildings;



- Over half of employers (58%) don't know whether FE College provision in Wales is equipped to will give craftspeople the skills they need to work on low carbon and energy efficiency measures in traditional buildings; and
- Over two thirds of employers (69%) believe that more defined and specific coverage of traditional building skills and knowledge would be valuable within mainstream FE College provision in Wales.

Types of training needed by employers which they cannot access (where mentioned by more than one respondent):

- Everything/general craft skills for working on traditional buildings (13 responses);
- Knowledge of/working with traditional materials (5 responses)
- Lime work (4 responses)
- More practical training (3 responses);
- Plastering (3 responses);
- Flooring (3 responses);
- Stone work (3 responses);
- Carpentry (2 responses); and
- Sash windows (2 responses).

On the whole employers were favourable towards mainstreaming traditional building skills provision on the basis that it would improve the general skills and knowledge of the existing workforce and help to ensure better quality of workmanship. In particular, they commented that apprentices and trainees would gain better basic skills and knowledge for tackling work on traditional buildings. A combination of theory and practical application is considered important, with the latter of particular value to ensure trainees can practise working with traditional materials and tools, and generally to “learn the art”.

Stakeholders participating in the research are also generally supportive that formal qualifications are essential as a recognisable ‘badge’ of quality and also to ensure contractors have the skills and knowledge necessary for working on traditional buildings.

According to CITB, the industry in Wales has consistently made it clear that they ideally require the construction workforce to be trained to a standard comparable to Level 3 qualifications. This has been reconfirmed to CITB on many occasions, most recently at a number of the regional forums and CITB Wales’ Construction Skills Group in November 2014.

A key concern has been raised to CITB regarding current Level 3 qualifications in that there is perceived to be too much emphasis on supervisory aspects and insufficient focus on the broader range of requirements of each trade. This has been a common theme in a number of meetings and has been raised by SMEs and major employers alike.



A suggestion to CITB that has garnered a measure of support is to re-look at the current constituent parts of Level 3 qualifications and seek to readdress the balance of supervisory elements with the wider skill base. In Wales there has been a desire to see some of the more complex work tasks, as well as heritage and sustainability skills, included in all qualifications. The perceived benefits are twofold: firstly to give apprentices who are progressing to Level 3 a wider knowledge and skill set; secondly to ensure over time that the workforce becomes more aware of the important part their work plays in the cultural surroundings in Wales.

Conclusions

The state of workmanship on traditional buildings: There is evidence to suggest that work is being carried out on traditional buildings across Wales by professionals and contractors who do not possess the requisite skills and knowledge. This risks damaging the fabric and airflow of these buildings, with potential consequences for the health of occupants.

Demand for traditional building skills: There are optimistic signs that demand for work on traditional buildings may increase over the next two years. This is evidenced by the views of employers (34% expect an increase whilst only 14% expect a decline); optimistic economic forecasts to 2019; and Welsh Government initiatives such as Arbed and the *Houses into Homes* scheme.

Skills and knowledge relevant to traditional buildings may need to be drawn upon relatively frequently, given that employers reported almost half of time (43%) is spent working on traditional buildings.

Only a small proportion of work on traditional buildings relates to energy efficiency retrofit (13%) – corroborating anecdotal evidence from stakeholders that this is still an emerging area where uncertainty remains about the suitability of existing skills and knowledge for installing such measures.

Measures of industry-supplied skills for traditional buildings: The collective insight of stakeholders has enabled the research to identify a number of ‘core skills’ for working on traditional buildings – namely:

- Lime work;
- Stonework;
- Carpentry and joinery; and
- Roofing.

It is extremely important that contractors understand the physics of traditional buildings, including qualities of breathability; the potential harm that can be caused to these structures



when work is undertaken incorrectly; and why it is so important to use the right methods and materials.

Scarcity of training provision for traditional buildings in Wales: Mainstream training provision that is directly relevant to traditional building skills appears to be scarce in Wales. This view is echoed by all research participants, including training providers themselves who stated that construction qualifications and Apprenticeships arguably focus too heavily on new build at the expense of traditional skills.

In an effort to improve traditional building skills and knowledge in Wales, attention should be turned to what employers say they need and will value – noting that two thirds of surveyed employers (69%) would like to see more defined coverage of traditional building skills and knowledge within mainstream FE College provision.

Recommendations

1. Raise awareness about the important structural qualities of traditional buildings and the implications of undertaking inappropriate work. In turn, work towards a situation where employers view traditional building skills and knowledge as vitally important to winning and undertaking work on these types of buildings;
2. Work with funders and commissioners to consider making certain grants for work on traditional buildings conditional upon contractors meeting pre-requisite requirements in terms of skills, knowledge and materials;
3. Work with FE Colleges, Awarding Organisations and other stakeholders in Wales to embed traditional building skills and knowledge within mainstream construction qualifications and Apprenticeships at Level 3; and
4. Promote wider uptake across Wales of the new Level 3 CPD unit for trainers that has been developed following the Sustainable Construction Learning Sites Project.



1. Introduction

1.1 Historic Wales

Traces of the past permeate the hills, towns and villages of Wales. Ancient strongholds, abbeys, country houses, palaces and museums provide a rich tapestry of history and offer a treasure trove of attractions for visitors throughout the year. From Caerphilly Castle and Tintern Abbey in the south to world-famous Caernarfon and Harlech castles in the north – Wales offers many portraits and symbols of its ancestry. The National History Museum at St. Fagans, just outside Cardiff, is the most popular heritage attraction in Wales with over 600,000 visitors annually.

There are some 30,000 listed buildings, 4,000 scheduled ancient monuments and three World Heritage Sites in Wales. On an on-going basis, the weather and the passage of time require historic sites and buildings to be conserved, maintained and repaired to ensure they can continue to provide a rich source of enjoyment and a vital source of tourist income for generations to come.

But, between the ancient and the modern there is another important group of structures – traditional buildings – which form the focus of this report. These are often defined in terms of their age, typically those buildings built pre-1919. They make up approximately one third (34%) of the current housing stock in Wales – well above the averages for England (28%), Scotland (19%) and Northern Ireland (12%)³

'Traditional' buildings are also differentiated from 'modern' buildings by virtue of their construction. Modern buildings are essentially designed to be waterproof, using impermeable defences such as brick, cavity walls and cement renders. In contrast, most traditional buildings are built with stone, soft timber and earth, using lime-based mortars and renders. These materials are porous and allow moisture to be absorbed and then evaporate away through roof coverings, windows and other openings. In that sense traditional buildings are said to 'breathe' and the process acts as a 'control' against dampness. The outer materials of these buildings are then dried out by the wind and sun.

While a great deal of care has been taken in the design of traditional buildings to keep water out (such as deep eaves, wide gutters and plinth at ground level), if any of these features are rendered inoperative or if the building is subject to excessive wetting, then it is effectively at risk. And if the building is at risk then, in addition to any unsightly visible symptoms, it may become dangerous and hazardous to the health of its occupants.

Anyone with responsibility for the conservation, maintenance, repair or energy efficiency retrofit of traditional buildings has a duty of care over their upkeep and protection. This encompasses public and private sector construction clients (e.g. property/estate owners);

³ CITB (2013) *Skills Needs Analysis of the Built Heritage Sector in Wales*



planners and building control representatives; building design professionals (including architects and building surveyors); as well as businesses operating right across the construction (repair and maintenance) sector that may come into contact with these buildings as part of their day-to-day work.

1.2 Research aims and objectives

1.2.1 Aims

This report presents findings from research carried out under the auspices of the Sustainable Construction Learning Sites Project (SCLSP). The SCLSP ran from May to December 2014 and was managed by CITB on behalf of the Welsh Government. It was delivered through the Welsh Government's Sector Priorities Fund programme and drew down additional support through the European Social Fund (ESF). Further details of the SCLSP are provided in section 2.6.

The report provides an update to the 2007 Skills Needs Analysis for the Built Heritage Sector in Wales⁴. It offers evidence of skills demand, skills supply and training provision relating to the conservation, repair, maintenance, and energy efficiency retrofit of traditional buildings in Wales.

The report also considers the future skills and learning agenda emerging from developments in the heritage and construction sectors in response to the wider economic and policy drivers such as Green Deal and the wider low carbon agenda.

1.2.2 Objectives

To:

1. Provide insight into the state of modern-day workmanship on older properties;
2. Develop a comprehensive picture of traditional building skills for the built heritage sector by providing tangible measures of the demand for and supply of skills and training provision;
3. Identify gaps in skills, knowledge and training provision (including associated reasons for these);
4. Identify areas of specific training need resulting from prevailing and emerging policy notably in respect of the low carbon agenda and the impact of the strategic national policies and regional/local actions to address sector needs. (Arbed and Green Deal);

⁴ National Heritage Training Group (2007) *Skills Needs Analysis for the Built Heritage Sector in Wales*



5. Provide insight into future programme development and curriculum content across Further Education;
6. Identify areas of future growth of training provision in the built heritage sector; and
7. Examine to what extent the characteristics of the traditional building workforce differ from that involved in mainstream/new build construction.

1.3 Core methodology

1.3.1 Main components of the research

Pye Tait Consulting carried out this research between June and December 2014, using a mixed methodology and following an iterative four-stage process:

1. **Desk review** of policy developments, skills and knowledge issues affecting work on traditional buildings in Wales;
2. **In-depth telephone interviews** with 55 stakeholders, comprising: 25 built environment and heritage sector stakeholders; 13 industry professionals (architects and surveyors); 8 contractors; and 9 training providers⁵.
3. **Telephone survey** generating responses from 406 built environment sector employers (craft-based and professional roles); and
4. **Two focus groups** to explore the issues emerging from the stakeholder interviews and survey in greater depth (further details about these events and the organisations represented is provided in Appendix 4).

1.3.2 Definition of traditional buildings used in the context of this research

As agreed with CITB at the outset of the research:

Traditional buildings: All buildings built before 1919, as well as newer (post-1919) buildings that may have solid walls or are otherwise are hard to treat, require similar skills for work on older buildings, and/or possess exceptional heritage and architectural merit.

⁵ NB: The scope and remit of this research did not include interviews with building owners and construction clients.



1.3.3 A note on the presentation of employer survey findings

Employer survey findings within this report are presented so that they compare:

- Regional similarities and differences – based on which region (or regions) in Wales employers reported that they undertake work; and
- Sub-sector similarities and differences – based on each employer’s main activity being either ‘craft’ or ‘professional’;

Table 1 Base number of survey respondents

North Wales only	81	20%	See Appendix 5 for a visual map of these regional derivations.
South East Wales only	77	19%	
South West Wales only	145	36%	
Multi-regional	103	25%	
Total	406	100%	

Craft sub-sector	328	81%	See Appendix 2 (Figure 27) for a breakdown of these sub-sectors by main business activity.
Professional sub-sector	78	19%	
Total	406	100%	

Further details about sampling, margins of error and other respondent information is provided in Appendix 2.

In addition to the above cross-tabulations, certain comparisons are included with comparable research that Pye Tait undertook for CITB in England and Scotland in 2012. These comparisons should be treated with caution as the base for that survey was only craft-based businesses, whereas this research for Wales includes both craft and professional sub-sectors.

Throughout this report, certain percentages in Figures and Tables may not add up to precisely 100% due to the effect of rounding.



2. Drivers of Change for Work on Traditional Buildings

Since the National Heritage Training Group (NHTG) completed the last Skills Needs Analysis for the Built Heritage Sector in Wales in 2007, there have been a number of developments (economic, policy-based, environmental and skills-related) that have had a direct or indirect effect on traditional building work. Some of the main changes are summarised below where relevant to this research.

2.1 The key role of heritage assets

In May 2009, the Welsh Assembly Government launched *One Wales: One Planet*, which articulated how it wished to develop Wales in ways which contribute sustainably to people's economic, social and environmental well-being. In this document Wales's rich culture and heritage was recognised as a vehicle for regeneration and for fostering local character and distinctiveness. These themes can also be cross-referenced to *People, Places, Futures: The Wales Spatial Plan* and the *Environment Strategy for Wales*. The Minister for Heritage issued his *Welsh Historic Environment Strategic Statement* in October 2009, which emphasised the key role that heritage can make to sustainable economic and social development.

2.2 Recession and recovery

At the time of the last NHTG study in 2007⁶, few people could have predicted the economic recession that was about to ensue. The latest five-year outlook for construction in Wales is now more optimistic to 2019⁷. Over that period, Wales is projected to see annual average output growth of 5.8% - double the UK rate of 2.9%. Expansion is expected to be primarily centred in the new work sector, with an average annual increase in output of 7.8% compared with 2% for repair and maintenance. This output growth rate is expected to drive strong employment growth averaging 2.4% a year, again well above the UK average of 1.5%. Wales' annual average recruitment requirement is projected at 5,320, which represents 4.8% of base 2015 employment⁸.

In April 2012, the Welsh Government launched the *Houses into Homes* scheme, which aimed to tackle social issues at the same time as meeting housing demand. A total of £20 million of funding was provided through the scheme to turn derelict and uninhabitable properties back into use. In January 2015 a further £20 million of funding was announced

⁶ National Heritage Training Group (2007) *Traditional Building Craft Skills: Reassessing the need – addressing the issues*.

⁷ Output from housing repair and maintenance is set to grow by 3% and employment is forecast to rise at an annual average rate of 1.8% (Construction Skills Network Wales Forecast 2014-2018),

⁸ Construction Skills Network (2015): *Blueprint for Construction 2015-2019 Report*



over two years to offer interest-free loans of up to £25,000 per property. These properties will be recycled by local authorities and provided to homeowners across Wales to maximise the funding and improve the standard of Welsh housing. Since the *Houses into Homes* scheme was launched, some 4,471 empty and run-down properties have been turned into homes against the Government's overall scheme target of 5,000. Latest figures suggest there are around 23,000 empty properties in Wales⁹.

2.3 Low carbon and energy efficiency agenda

Another major impact on the sector has been the growing threat of climate change. The EU 2020 energy efficiency targets are driving what is effectively a reallocation of Government resources towards subsidising and fostering one of the most radical shifts in energy, manufacturing and construction since the industrial revolution.

The EU targets are to achieve, by 2020:

1. A 20% reduction in EU greenhouse gas emissions from 1990 levels;
2. An increase in the contribution of renewable sources to energy consumed in the EU to 20%; and
3. A 20% improvement in the EU's energy efficiency.

The energy efficiency targets have led to a number of Government-sponsored initiatives and incentives aimed at improving the efficiency of existing building stock. This includes the Green Deal (operating in Wales, England and Scotland), as well as Wales-specific schemes such as the Arbed and Nest programmes¹⁰

Double glazing, cavity wall insulation, loft insulation, and the installation of modern energy equipment such as condensing boilers are well established techniques, but recent years have also seen a rapid growth in micro-renewable technologies such as solar power, ground and air-source heating, bio-mass heating, combined heat and power (CHP) and other low-carbon alternatives.

Traditional buildings present unique challenges for the design and installation of such measures, as they often have such issues as single, solid exterior walls, single, un-insulated party walls, limited damp-proof arrangements, little or no roof insulation, poorly fitting sash windows, and no floor insulation - quite apart from the additional likelihood of older and much less efficient heating systems.

⁹ Welsh Government (27th January 2015) '£20 million investment in Welsh housing' [Online] Available at: <http://wales.gov.uk/newsroom/housing-and-regeneration/2015/150129-20-million-investment-in-welsh-housing/?lang=en> & Welsh Government (27th January 2015) 'Houses into Homes scheme' [Online] Available at: <http://wales.gov.uk/topics/housing-and-regeneration/housing-supply/empty-homes/houses-into-homes/?lang=en>

¹⁰ See Table 1 for further information about the Arbed and Nest programmes.



In 2010 the Welsh Government published guidance for the installation of micro-renewable systems in traditional buildings. This guidance covers topics such as types of micro-renewables, visual impact of installations, and organising the completion of work to a high standard¹¹. A summary of the main schemes and initiatives in place to encourage energy efficiency retrofit work in Wales are shown in Table 2.

Table 2 Summary of energy efficiency programmes available in Wales

Arbed	<p>Established in 2009 to bring environmental, social and economic benefits to Wales and coordinate investment into the energy performance of Welsh homes. The second (current) phase of the programme began in May 2012 and is partly funded by the European Regional Development Fund (ERDF). The overall investment objectives of this phase are to:</p> <ul style="list-style-type: none"> • Improve the energy efficiency of a minimum of 4800 existing homes in Wales by the end of 2015; and • Reduce a minimum of 2.54 KTC (Kilo tons of carbon) of greenhouse gas emissions by the end of 2015. <p>The programme will continue to boost local economies by using local businesses to manufacture, supply and install as many of the measures as possible and provide training and employment opportunities for local workers.</p>
NEST	<p>Nest is a Welsh Government scheme that can provide eligible householders with a 'whole house' package of energy efficiency improvements free of charge. Nest measures are designed for individual properties so there is no standard package. Measures exclude windows and doors but can otherwise include:</p> <ul style="list-style-type: none"> • A new gas boiler; • Central heating system; • Loft, cavity and external wall insulation; and • Newer technologies like air source heat pumps, biomass.
Green Deal	<p>A Coalition Government scheme that aims to help home-owners make cost-effective energy saving improvements. Instead of paying for the full cost of the improvements up front, home-owners pay over time through a charge added to the electricity bill. The Green Deal is available in Wales, England and Scotland.</p>
Energy Company Obligation (ECO)	<p>Funding from the big six energy suppliers to support energy improvements for low income households, as well as for hard-to-treat buildings where the expense of implementing energy saving measures could not be recouped through savings in energy bills.</p>

¹¹ Welsh Assembly Government (2010) *Renewable energy and your historic buildings: Installing micro-generation systems: a guide to best practice*.



Feed-in Tariffs scheme (FITs)	Designed by the Government as an incentive for uptake of electricity generating renewable technologies such as solar panels and wind turbines. Property owners (commercial and domestic) with an eligible installation could be paid for the electricity they generate as well as for the surplus electricity they export to the grid.
Renewable Heat Incentive (RHI)	A financial support scheme that offers long-term incentive payments for householders and businesses that have renewable technologies that generate heat. The Non-Domestic RHI was launched in November 2011 and the Domestic RHI was launch on 9th April 2014.

Following the Welsh Government’s recognition of the construction sector’s contribution to the Welsh economy in the Ministerial statement issued 28th March 2011, CITB is committed to working with key industry stakeholders to provide the sector’s SME businesses with skills development, business support, public procurement assistance and support for the transition to a low carbon future.

CITB runs a range of advisory groups. One such group is the *Wales Traditional and Sustainability Building Skills Advisory Group (TBSAG)*, which was established as a forum to advise CITB on skills issues, especially to and through the Wales Built Environment Forum, as well as improving the delivery of both traditional building skills and sustainability.

2.4 Towards a Heritage Bill for Wales

Building Regulations set standards for design and construction of most new buildings and many alterations to existing buildings. Before December 31st 2011 they applied identically throughout England and Wales, but since that date the Welsh Government has been able to amend them specifically for Wales. The regulations present broadly consistent rules across Wales and England, which helps the many contractors who work in more than one nation. Enforcement powers held by local authorities provide an incentive to contractors to comply which, in turn, helps to improve practices within the construction industry.

The Welsh Government’s 2013 Historic Environment Strategy for Wales set out the risks to built heritage stemming from issues such as inflexible or inconsistent application of planning policy; difficulties local authorities experience when taking enforcement action against unauthorised works; the effects of climate change; and the lack of finance to repair and maintain buildings due to the recession. These factors prompted the Welsh Government to develop the Heritage Bill for Wales¹².

The Heritage Bill (currently in post-consultation development) aims to improve protection, increase transparency and accountability, and promote better sustainable management of

¹² Welsh Government (2013) *Historic Environment Strategy for Wales*



the historic environment. The Bill is scheduled for introduction to the National Assembly for Wales in spring 2015. If passed, it will become the first heritage legislation ever enacted specifically for Wales.

2.5 The role of Cadw

As the branch of the Welsh Government which oversees historic buildings, Cadw provides support for the built heritage repair and maintenance sector, for example, through historic building grants for repairs to the fabric of (mostly listed) traditional buildings. The policy-related activities of Cadw are clearly beneficial to the built heritage of Wales, although they may be limited in their impact upon non-listed traditional buildings.

In 2011 Cadw set out six principles for the conservation of the historic environment – they are that:

1. Historic assets will be managed to sustain their values;
2. Understanding the significance of historic assets is vital;
3. The historic environment is a shared resource;
4. Everyone will be able to participate in sustaining the historic environment;
5. Decisions about change must be reasonable, transparent and consistent; and
6. Documenting and learning from decisions is essential¹³.

Cadw has been active in leading the call for mainstreaming traditional building skills within mainstream Further Education (FE) construction provision. Further details about these activities are provided in the next section.

2.6 Development of the Sustainable Construction Learning Sites Project

Over the past three years, Welsh Government-funded developments have paved the way for better sustainability skills provision in Wales. In March 2012, Cadw hosted a Traditional Building Craft Skills Summit at Caerphilly Castle. The summit set out the importance of promoting building maintenance and the use of sustainable materials by ‘mainstreaming’ these within Further Education and Higher Education courses in Wales.

There was also a call to develop training and ‘up-skilling’ programmes and to improve Continuing Professional Development (CPD) for those working on traditional buildings¹⁴. These goals were echoed in a 2013 report by the Sustainable Traditional Building Alliance

¹³ Cadw (2011) *Conservation Principles for the sustainable management of the historic environment in Wales*

¹⁴ Traditional buildings are defined as those built before 1919, as well as post-1919 buildings which are hard to treat, require similar skills and materials to those required for work on older buildings, or possess exceptional heritage and architectural merit.



(SBTA), which called for education and training in traditional building issues to be made an essential part of mainstream educational programmes, including both theoretical and practical issues¹⁵.

Also in 2013, *Historic Environment Strategy for Wales* highlighted the skills and employment opportunities open to the heritage sector through apprenticeships, work experience, training placements, and opportunities to develop transferrable skills¹⁶. Indeed the comparatively older traditional craft workforce can potentially help to support and pass on skills to construction trainees.

In May 2013, CITB submitted a project proposal to the Welsh Government to obtain funding for the Sustainable Construction Learning Sites Project (formerly termed Heritage Learning Sites). The main aim of the project was to bring the skills associated with the repair, maintenance and conservation of traditional buildings into the mainstream of construction education and training across Wales and to establish a core set of sustainability skills for the sector.

This was to be achieved by working with key stakeholders in the development of a network of three learning sites across Wales that would operate collectively to develop capacity for training provision in support of traditional building craft skills. The learning sites would link with investment activity across the heritage portfolio and other schemes, where work was taking place on older properties.

The main objectives of the project are summarised in Table 3.

Table 3 Objectives of the Sustainable Construction Learning Sites Project

Category	Description
Train the Trainer provision	Work jointly with the Further Education sector to develop a capacity for traditional building craft skills and, through 'Train the Trainer' support, provide a mechanism for transferring these skills to mainstream construction training programmes.
Creation of learning sites	Provide a specialist training network of three Learning Sites capable of delivering a range of on-site craft and professional training aimed at raising overall knowledge, skills and competence in working with older properties.
Apprentice training	Provide a specialist training network of three learning sites capable of delivering a range of on-site craft and professional training aimed at raising overall knowledge, skills and competence in working with older properties.

¹⁵ Sustainable Traditional Buildings Alliance (2013) *Responsible Retrofit of Traditional Buildings*

¹⁶ CADW (2013) *Historic Environment Strategy for Wales*



Improved understanding for clients and professionals	<p>Through the Learning Sites, provide key client groups and professionals, such as local authorities, with access to a 'live' site where they would be able to understand the dynamics of traditional building craft skills and how they could be better procured in the future.</p>
Research (i.e. this report)	<p>Conduct discrete research activities to ensure the Welsh Government and its partners would have access to the most up-to-date intelligence on traditional building crafts skills and allow Cadw and others to understand where such intelligence could be used to influence the demand for traditional building craft skills, including via industry competency schemes</p>
Wider impact	<p>Where relevant, allow for new training programmes to be accredited specifically in response to the demands of those industries in need of traditional building craft skills.</p> <p>Act as a catalyst for 'spill-over' projects which either focus on delivery past the lifetime of the project, or work alongside it, in order to further strengthen the focus of expanding and promoting the use of traditional building craft skills.</p> <p>Provide the setting to pilot new and innovative practices for the development of traditional building craft skills with a view to informing the long term vision for how to provide a mainstream skills and training offer to both employers and individuals. To include making the connection to industry-led initiatives including the proposal for a Construction Training Network.</p>

In June 2014, CITB appointed Neath Port Talbot College Group (NPTCG) to lead on the development and coordination of three train-the-trainer courses and three craft skills courses.

It was the intended that:

- Courses would be delivered across sites in North Wales, South East Wales and South West Wales;
- Approximately 150 individuals would receive training (as mentioned in the original procurement notice);
- Where possible, sites would be adjoined with existing investments being made by Cadw under its property portfolio or via similar housing regeneration projects.
- Craft courses would offer a platform for traditional construction methods to be learnt and applied to modern day issues, such as the sensitive retrofitting of Wales' older housing stock;



- Training activity would focus on the delivery of short on-site courses aimed at raising the broader construction workforce to a minimum level of competence in the repair, maintenance and conservation of a range of traditional buildings.

The three train-the-trainer courses went ahead as planned, with participation from 25 FE College practitioners at sessions in North, South East and South West Wales.

Pye Tait Consulting's evaluation of that project involved interviews with a sample of course participants, who found the courses beneficial for providing much needed clarity and insights into how traditional buildings need to be treated differently to modern buildings. Some of these tutors acknowledged having limited prior awareness of the specialist considerations needed for these buildings and have already started to cascade some of the key messages to other colleagues and learners.

Only one of the three planned craft courses for apprentices went ahead. This was held at the outdoor St. Fagans National History Museum, with participation from 12 apprentices. These apprentices were selected to participate by South West Wales Regional Shared Apprenticeship Ltd (acting as their direct employer).

The remaining craft courses were ultimately cancelled due to insufficient numbers.

Two tangible outcomes from the project included:

3. The development of a new Level 3 CPD unit for trainers: *Sustainability and energy efficiency in pre and post 1919 buildings*; and
4. The development of a new Level 1 unit for learners that learners can complete as part of the Community Learner Industry Focus (CLIF) content of existing qualifications.



3. Demand for Work on Traditional Buildings

This section explores the overarching need to raise awareness about the qualities of traditional buildings. It also sets out findings from the survey concerning the nature of work undertaken by construction sector craftspeople and professionals; the factors that influence demand for work on traditional buildings; and how demand levels for work on traditional has changed and may change again.

3.1 Awareness about the qualities of traditional buildings

Stakeholders involved in the research strongly argued that public awareness is lacking about the damage that can be caused to traditional buildings from inappropriate work, techniques and materials. It was argued that a wide range of audiences need to understand these issues, including potential public and private sector construction clients (e.g. property/estate owners); planners and building control representatives; building design professionals (including architects and building surveyors); as well as mainstream construction businesses.

In particular, building design professionals responding to the research reported variable levels of knowledge about traditional buildings among construction clients, with larger commercial clients tending to have better knowledge than homeowners.

Arguably there are a number of factors that can prevent clients seeking information about how traditional buildings should be treated. These include a desire for lower work; as well as a competitive commercial market-place saturated with searchable online directories of so-called “trusted” or “expert” builders that in reality can offer little or nothing by way of direct quality assurance, vetting and monitoring of contractors.

“Some construction firms hide behind a logo and pay to be a member of some organisation but purely for profit purposes – this offers no guarantee of quality as there are no inspections associated with many of these schemes.”

Stakeholder organisation

Resourcing pressures on publicly funded heritage bodies and local authorities are another cause for concern. Focus group participants discussed how a reduction in the number of knowledgeable advisers means less support and high quality advice for people embarking on building work. One stakeholder mentioned that some local authorities have started charging for advice where this was previously available for free.



“There has been a reduction in the number of local authority conservation officers and in some areas there aren’t any at all.”

Stakeholder

While popular television programmes such as *Homes Under The Hammer* and *Escape to the Country* have helped to showcase the aesthetic qualities of older properties, it was argued by stakeholders and contractors alike that better marketing and more visible public information would help property owners to make informed decisions when looking to undertake work.

Suggested awareness-raising (or ‘educational’) topics for property owners included:

- What is meant by a traditional building;
- How traditional buildings function differently to modern buildings;
- How to ensure energy efficiency measures are not detrimental to traditional buildings;
- The long term implications of undertaking poor work on traditional buildings;
- Examples of long term cost-benefit cycles, showing the use of traditional materials as opposed to cheaper modern alternatives;
- That traditional materials can potentially help to sustain or increase a property’s value;
- The types of questions property owners should be asking when discussing their planned work with advisers, designers and installers; and
- How property owners can source and identify suitable professionals and tradespersons.

There was a general consensus at the focus groups that if the public knew how traditional building techniques could prevent damp, draughts and decay, and that these techniques would save them money in the long run, then they would be far more likely to commission craftspeople with the requisite skills. It was argued that this would lead to better outputs for all, i.e. a healthier building, longer term savings on the part of the property owner, and a more skilled and knowledgeable workforce.

“I have a lot of faith in the market helping to bring about a shift in perceptions. We managed to teach everyone to migrate from analogue to digital televisions and that’s because the Government spent a certain amount of money on awareness-raising. So there does need to be something from the top”

Stakeholder



3.2 Nature of work undertaken in relation to traditional buildings

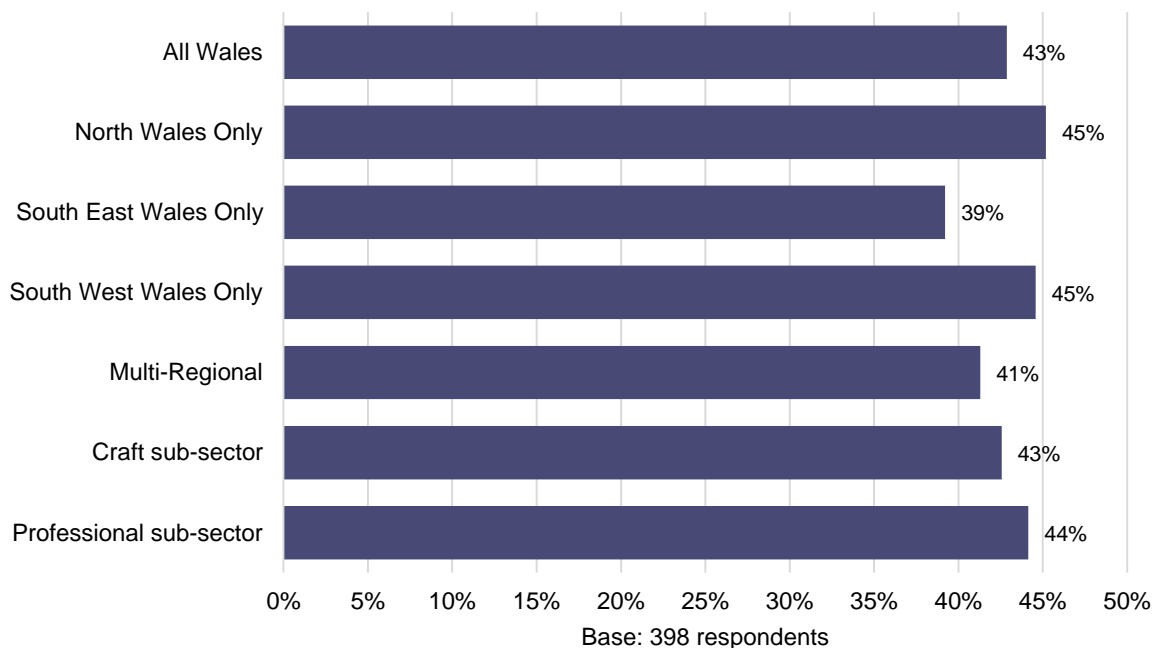
Employers surveyed for the research reported that just under half of their time (43%) has been spent working on traditional buildings over the past two years.

This percentage is slightly higher than the 40% reported for England and 38% for Scotland when comparable research was undertaken in 2012¹⁷, and may reflect the higher proportion of housing stock in Wales that was built pre-1919 (see section 1.1).

The percentage of 43% for Wales clearly signals the importance of the construction sector being competent and knowledgeable in relation to these types of structures.

The proportion of time spent working on traditional buildings is similar for employers working in each of the main regions of Wales; employers working across multiple regions; as well as between the craft and professional sub-sectors (Figure 1).

Figure 1 Proportion of time spent working on traditional buildings



The vast majority (94%) of employers in Wales work in relation to both modern and traditional buildings i.e. they may be considered ‘mainstream’ construction businesses that

¹⁷ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*

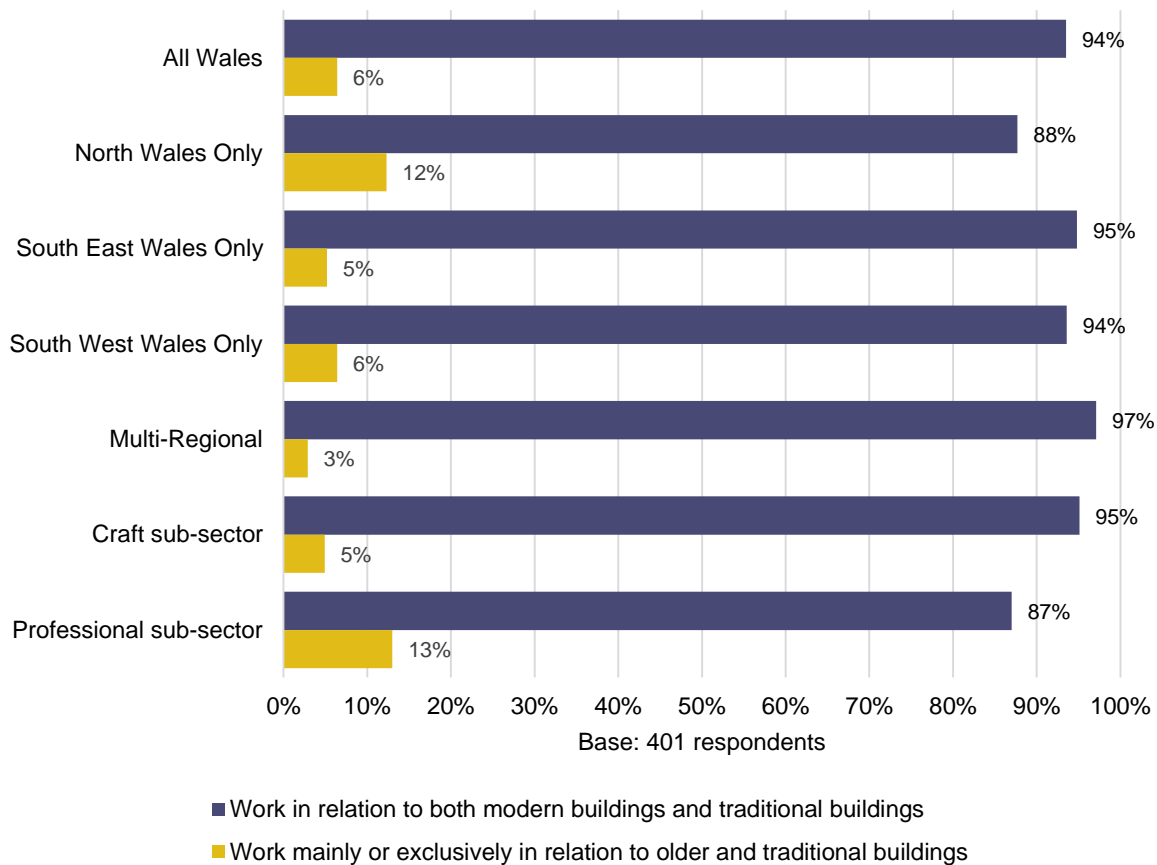


undertake work on traditional buildings from time to time. This compares with 92% for England and Scotland in 2012¹⁸.

In North Wales, the percentage of employers working mainly or exclusively in relation to traditional buildings is marginally higher than the national figure; while among multi-regional employers this percentage is below the national average.

A slightly higher proportion of professional employers work mainly or exclusively in relation to traditional buildings (13%) compared with the craft sub-sector employers (5%) – Figure 2.

Figure 2 Work in relation to different types of buildings



Routine repair and maintenance activities account for exactly half (50%) of all work undertaken on traditional buildings. This is followed by conservation and restoration (37%) and latterly energy efficiency retrofit (13%).

¹⁸ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



A comparison with the England/Scotland survey results from 2012 reveals that energy efficiency retrofit activities account for a higher proportion of work on traditional buildings by craft businesses in Wales (11%) than was the case in England and Scotland in 2012 (just 3%).

Energy efficiency retrofit work appears to be a more common undertaking among employers working across multiple regions (21% of work) as well as among the professional sub-sector (20% of work) – Table 4.

Table 4 Types of work undertaken on traditional buildings

% of work carried out	Base	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Conservation and restoration?	386	36.6	34.6	37.4	38.8	34.3	32.3	53.9
Routine Repair and maintenance	386	49.9	54.1	49.6	51.2	44.5	56.2	24.5
Energy efficiency retrofit?	386	12.6	11.2	10.2	9.1	21.2	10.7	20.2

3.3 Factors affecting demand for work on traditional buildings

There are mixed views and experiences among stakeholders, contractors and construction professionals as to whether demand for work on traditional buildings has increased, decreased or stayed largely the same over the past five years.

Stakeholders interviewed prior to the main survey pointed to a number of demand barriers from recent times:

- Most significantly the impact of the recession – which is reported to have led property owners to shelve plans for conservation work and any non-essential repair and maintenance, resulting in the “bare minimum” being undertake;
- Legislation – which can reportedly make conservation work, such as fitting new windows “unnecessarily complicated”;
- New VAT rules implemented from 1st October 2012 – standard VAT now applies to the alteration of protected or listed buildings where this was previously zero-rated); and



- Previous bad experiences on the part of the property owner, or lack of trust in the building industry – which can affect the sense of importance they place on undertaking future remedial work.

The majority of stakeholders believe that, as the construction industry recovers from the effects of the recession, demand for work on traditional buildings will slowly start to increase. This view was echoed by the majority of contractors interviewed prior to the main survey.

One stakeholder mentioned that demand for traditional building skills will be helped by any increase in consumer confidence, leading to a stable recovery in house prices, resulting in more people looking to 'buy property cheap' and renovate with a view to selling on.

The Heritage Lottery Fund was reported by stakeholders and construction professionals as a crucial source of funding for work on traditional buildings in Wales that meet the programme's funding aims¹⁹; and that this needs greater leverage in a climate where funding from other types of conservation organisations has reportedly 'dried up' in recent years.

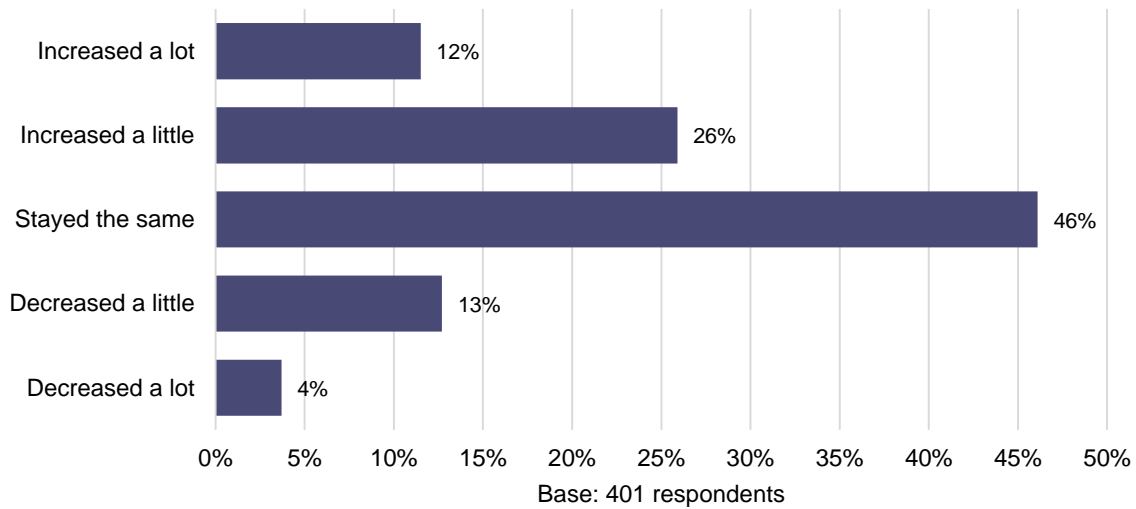
3.4 Demand over the past five years

There appear to be mixed experiences among employers surveyed for this research concerning levels of client demand for work on traditional buildings over the past five years. Over a third have experienced an increase (38%); just under half believe demand has stayed the same (46%); while 17% have seen a decline (Figure 3).

¹⁹ The HLF offers a range of different funding programmes with grants from £3,000 to over £5million. In assessing applications, the HLF takes account of the outcomes for heritage, people and communities that projects will achieve.



Figure 3 Client demand for work on traditional buildings over the past five years



Further analysis reveals similar patterns by region, although professional employers appear to have experienced a small additional increase in client demand for work on traditional buildings (43%) compared with craft employers (36%) – Table 5.

Table 5 Client demand for work on traditional buildings over the past five years – by region and sub-sector

% respondents	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Increased a lot	10%	8%	10%	17%	11%	15%
Increased a little	26%	23%	29%	24%	25%	28%
Stayed the same	49%	49%	48%	39%	49%	36%
Decreased a little	13%	12%	11%	16%	13%	13%
Decreased a lot	3%	8%	2%	4%	3%	8%

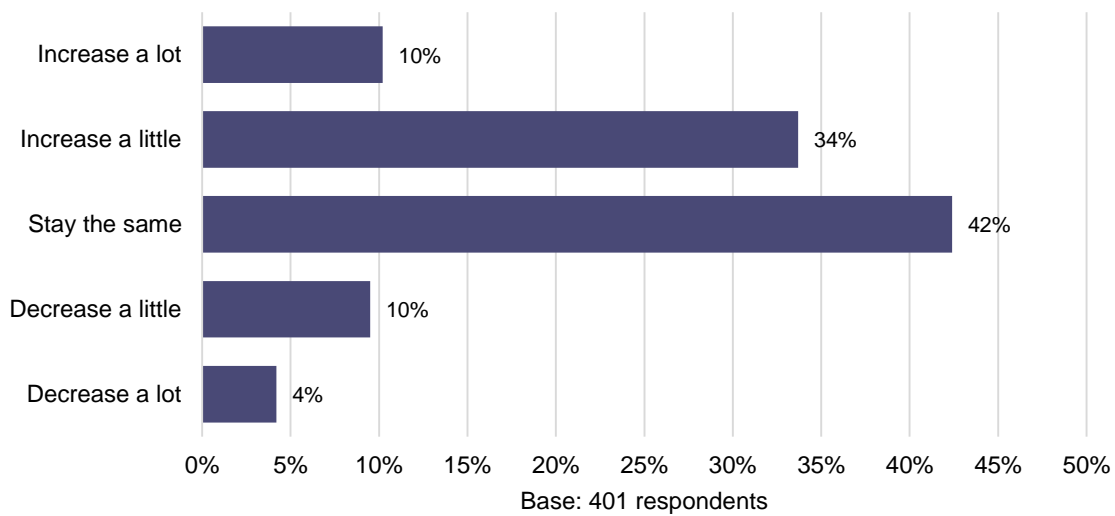
3.5 Demand over the next two years

Looking ahead over the next two years, 44% of employers are optimistic that demand for work on traditional buildings will increase (Figure 4).



This compares with 35% when the same question was asked as part of the equivalent England/Scotland research in 2012²⁰ – suggesting that there may be something of a resurgence in demand as we move further away from the recession of the late 2000s.

Figure 4 Client demand for work on traditional buildings over the next two years



Similar demand expectations are evident by region and sub-sector (Table 6).

Table 6 Client demand for work on traditional buildings over the next two years – by region and sub-sector

% respondents	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Increased a lot	9%	9%	8%	16%	10%	12%
Increased a little	40%	31%	32%	34%	33%	37%
Stayed the same	38%	48%	47%	35%	43%	39%
Decreased a little	6%	8%	11%	11%	9%	12%
Decreased a lot	7%	4%	3%	4%	5%	1%

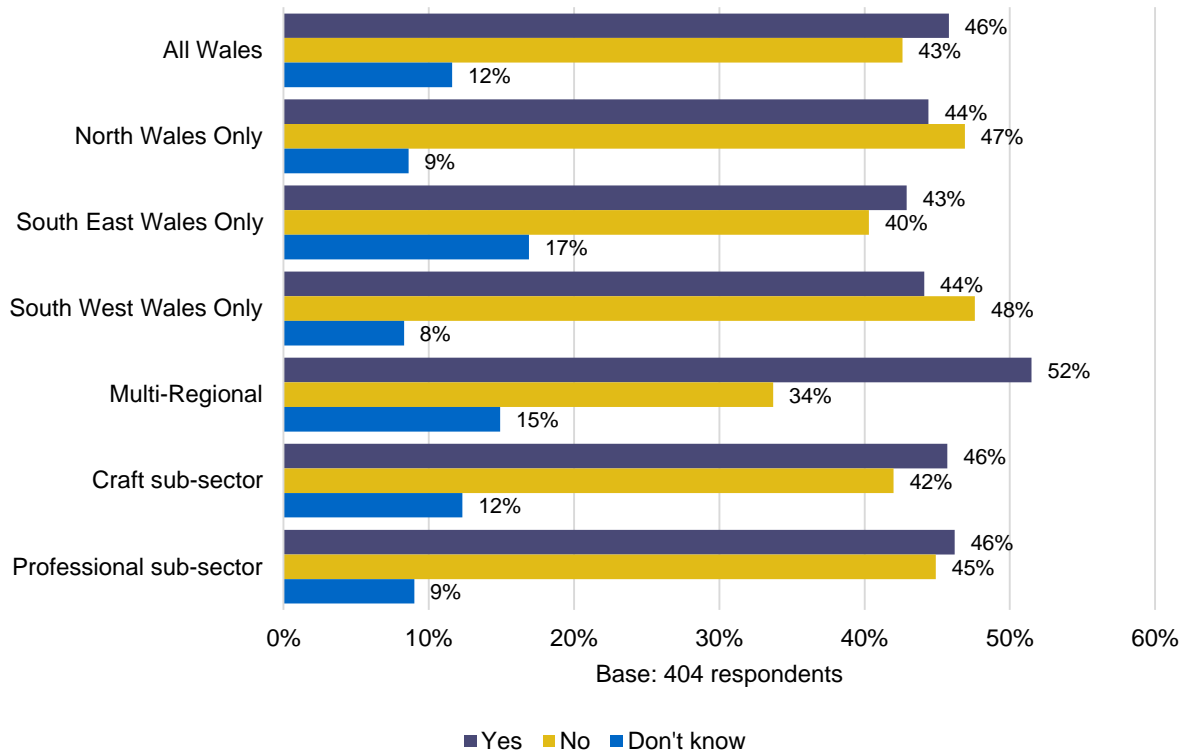
Views among surveyed employers are divided as to whether or not they are trying to increase the amount of work they do on traditional buildings. Just under half report that they

²⁰ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



are trying to do so (46%); with greater appetite among employers working across multiple regions of Wales (52%) – Figure 5.

Figure 5 Whether or not trying to increase the amount of work on traditional buildings





4. Supply of Skills and Knowledge for Work on Traditional Buildings

This section presents both existing and new evidence on the skills and knowledge issues associated with work on traditional buildings, with particular attention given to the challenge of tackling low carbon and energy efficiency measures.

Other themes tackled include recruitment issues; hard-to-find occupations; and employers' views and experiences of apprentices and trainees in relation to traditional buildings.

4.1 The existing evidence base

4.1.1 General skills and knowledge issues for working on traditional buildings

Wales faces a problem common to all other UK nations in that many traditional building skills appear misleadingly similar to those required by the mainstream sector. In order to successfully maintain or repair traditional buildings, a combination of traditional construction materials are required, along with specialist craft skills and knowledge to ensure the structural fabric and unique qualities of these buildings are preserved and not damaged²¹.

Over the past five years, several reports have emphasised that one of the most basic requirements for working on traditional buildings is an understanding of their physiology and how different parts and materials work together. Where this basic understanding is lacking, or existing problems are misdiagnosed, further problems can result such as unwanted and potentially harmful moisture.

Cadw has also stressed the importance of using the right types of tools and materials, highlighting for example that good quality mortar repointing could last for 60 to 120 years whereas bad repointing might last less than 15 years²².

These issues were also reflected in Pye Tait Consulting's 2013 report for CITB: *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*. This report also made the point that contractors can often be mistaken in considering their own skills and knowledge to be fit for purpose, meaning that the wrong types of building materials and techniques may be used which can have adverse effects²³.

²¹ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*

²² Cadw (2013) *Retrofit and Sustainability of Buildings in Wales – presentation*

²³ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Knowledge of traditional buildings is needed by professionals who commission and specify renovation work, as well as by the contractors undertaking it. Moreover, contractors must be able to correctly interpret and follow the specifier's instructions. Failure to do so could undermine the energy efficiency cost savings that a new installation should achieve.

4.1.2 Energy efficiency skills and knowledge issues for working on traditional buildings

The emerging market of energy-efficiency retrofitting brings on board not only new technologies and processes, but the need for an holistic understanding as to how these new technologies and requirements relate to other systems in the home.

There is a well-documented need for established and qualified construction operatives to undertake new training in such techniques and technologies to ensure the desired energy efficiency and carbon reduction targets are achieved, while also protecting the health of the building. The challenge here is that it opens up a market for potentially expensive additions to domestic buildings that can be met by almost anyone who can design and distribute a leaflet.

Wales-specific research carried out by BRE in 2011 revealed several issues connected to retrofit work on existing buildings – applicable equally to both modern and traditional structures. The main opportunity for improvement is through better organisation of work that is undertaken by multiple trades. On a single retrofit project there might be several types of tradesmen needed, meaning that communication as well as management skills are vitally important. The research indicated that these skills need further development²⁴.

Pye Tait Consulting has been one of the forerunners in energy efficiency skills research since about 2010, having consulted with industry in Wales as well as other parts of the UK on the drivers, implications and changes needed as a result of this agenda.

In 2012, our report for Build Up Skills UK - *Analysis of the National Status Quo*, identified a number of priority knowledge requirements relating to energy efficiency and some of these have been expanded by more recent research for CITB.

The main knowledge requirements are set out below, which are applicable equally to both modern and traditional buildings:

²⁴ BRE (2011) *Delivering Low Carbon Skills in Wales – Retrofit Learning Project*



Underpinning knowledge required for Green Deal and Energy Efficiency Job Roles^{25 26}:

- The principles of heat loss;
- Air quality, air tightness and ventilation requirements within buildings;
- Range of energy efficiency measures, and their suitability for different building fabrics and ages, including pre-1919 stock and hard to treat buildings;
- Hierarchy of energy efficiency measures, i.e. the sequence in which issues in buildings must be addressed in order to ensure maximum energy efficiency;
- Building regulations and how they will evolve over time;
- Energy consumption;
- Energy efficiency targets and what they mean for the building sector;
- Legislation relating to energy efficiency (as it continues to emerge) and its impact;
- Quality assurance specifically in relation to energy efficiency materials, measures and procedures;
- Integration of tasks by different trades;
- Causes and remedies of design performance gaps;
- Roles of the industry and building users in creating building energy demand;
- Health and comfort of buildings;
- Sustainable building materials;
- Efficient building systems;
- Waste minimisation;
- Water efficiency;
- Whole build process;
- Consumer benefits;
- Climate change adaptation; and
- Working to more precise tolerances and a greater degree of technical accuracy.

²⁵ Build Up Skills UK (2012), *Analysis of the National Status Quo*

²⁶ Build Up Skills (2013) *2020 Skills Roadmap and Action Plan*



4.2 Overview of the current issues in Wales

Stakeholders involved in the research consider it vitally important that funders, contractors and professionals alike, possess a degree of core knowledge and understanding about the qualities of traditional buildings and that they need to be treated differently to modern buildings. It was pointed out in particular that public sector organisations responsible for commissioning heritage-related work can risk placing too much emphasis on price over skills and quality of work as part of competitive tender arrangements.

For contractors and professionals an understanding of the fabric and physics of traditional buildings is considered important so they are aware of the potential damage that incorrect techniques or materials can cause. Furthermore, it was argued that contractors must be able to assess for themselves the types of approaches and materials each property requires and judge whether or not they have the skills to take on a project.

Most stakeholders agree that the availability and quality of traditional building skills and knowledge is extremely variable across Wales, with expertise in certain materials likely to be limited to a particular geographical area where those materials are used.

While it is understandable that some mainstream contractors will have sought new avenues of work since the onset of the economic downturn, there is concern among stakeholders that some may have moved into heritage work without the requisite knowledge and skills. It was pointed out that heritage work could prove attractive for contractors seeking to secure higher fees for their work; while construction clients themselves may prefer to use mainstream contractors if they are still somewhat cheaper than heritage specialists.

4.3 General skills and knowledge levels

Based on the views of stakeholders, **core skills and knowledge** needed for working on traditional buildings relate primarily to the following:

- Lime work;
- Stonework;
- Carpentry and joinery;
- Roofing; and
- An understanding of why work on traditional buildings needs to be undertaken in a particular way.

Employers were asked to rate the skill levels of their own workforce on a scale from 1 'not at all skilled' to 10 'completely skilled'. Respondents were encouraged to answer openly and honestly and reassured that their views would be treated confidentially.



This type of analysis enables a comparison of how employers perceive their own skills alongside how those same skills are viewed by stakeholders.

A complete set of ratings by occupation, region and sub-sector are shown in Table 7.

Highest rated skills (occupations):

- Roofer – tiles and slates (8.8);
- General craft/trades person (8.7); and
- Plasterer – other (8.7).

Lowest rated skills (occupations):

- Stone conservator (5.8 out of 10)
- Steeplejack (6.0 out of 10); and
- Glass painter (6.4 out of 10),

“There are only a small number of firms who specialise in conservation work in Wales so it is very difficult to gain experience unless you work for one of these companies.

Employer



Table 7 Occupational skills ratings (score from 1 to 10)

Average rating (score from 1 to 10)	Base	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional
Rofer (tiles and slates)	85	8.8	9.1	8.9	8.8	8.4
General craft/trades person ¹⁰³	112	8.7	8.4	9.0	9.0	8.2
Plasterer (other)	65	8.7	8.8	8.8	9.1	8.2
Joiner	91	8.7	8.5	9.0	8.9	8.3
Carpenter	102	8.6	8.3	8.6	9.2	8.2
Painter or decorator	75	8.6	8.4	8.8	8.5	8.6
Plasterer (fibrous)	58	8.5	8.6	8.4	8.6	8.2
Building or structural engineer	64	8.5	8.0	8.7	8.6	8.4
Rofer (lead)	51	8.4	8.9	8.6	8.7	7.6
Glazier	65	8.4	8.3	8.2	8.5	8.5
Plasterer (lime etc.)	50	8.4	8.4	7.8	8.7	8.0
Bricklayer	59	8.4	8.3	8.8	8.7	7.7
Stone mason (fixer mason)	32	8.3	8.8	8.5	7.8	8.4
Tiler (floors/walls)	50	8.2	8.4	9.0	8.3	7.4
Lead worker (excluding lead roofing)	21	8.1	8.3	8.7	8.0	7.6
Architect	42	8.0	7.7	7.5	8.1	8.2
Rofer (metal)	24	8.0	9.7	9.3	7.6	7.3
Dry-stone waller	19	7.9	8.0	8.0	9.3	6.8
Building surveyor	50	7.9	7.7	7.4	7.9	8.1
Quantity surveyor	56	7.8	7.1	7.4	8.1	7.8
Blacksmith	14	7.7	9.2	-	6.0	7.3
Cabinet maker	21	7.7	8.8	6.7	7.0	7.8
Timber preserver	24	7.6	8.0	9.3	7.7	6.3
Wood machinist	19	7.6	9.3	7.0	7.6	7.0
Planner/planning consultant	51	7.5	7.5	7.1	7.8	7.6
Metalworker - architectural, e.g. cast work	22	7.4	7.6	9.3	6.0	7.0
Stone carver	13	7.3	8.0	8.0	5.0	7.5
Conservation officer/adviser	54	7.2	6.6	6.8	6.8	8.5
Energy adviser/assessor	55	7.2	5.5	6.6	8.0	7.4
Rofer (thatch)	9	7.0	6.0	-	6.3	7.6
Wood carver	7	7.0	10.0	10.0	1.0	7.0
Gilder	7	6.7	8.0	10.0	5.0	6.3
Glass painter	8	6.4	6.0	8.0	1.0	7.5
Steeplejack	6	6.0	9.0	-	1.0	5.7
Stone conservator	6	5.8	7.0	-	5.5	5.7



Employers mentioned a wide range of specific occupations and skills as being in short supply for working on traditional buildings. The most common of these – mentioned by at least 10 respondents – are presented below.

Skills considered in short supply:

- Plastering (34 respondents);
- Lime work – Including lime plastering (32 respondents);
- General shortage of tradespeople in all traditional building skills (30 respondents);
- Stone work (25 respondents);
- Carpentry and joinery (24 respondents);
- Lack of suitable apprentices (23 respondents)
- Bricklaying (17 respondents);
- Roofing (17 respondents);
- Experience (13 respondents).

The presence of lime, stone work, carpentry and roofing in this list are of some concern given that these were also highlighted by stakeholders as being the ‘core’ traditional building skills needed in Wales.

“The shortage of skills and knowledge [for traditional buildings] will lead to a widening gap between those buildings which have been sympathetically restored and well maintained, and those which are damaged beyond redemption and have been adapted and worked upon with incorrect tools and materials to too great an extent.”

Employer

There is evidence that insufficient skills and knowledge have affected the ability of the sector to respond to demand for work on traditional buildings, with a minority of employers (13%) having turned work down on traditional buildings for this very reason.

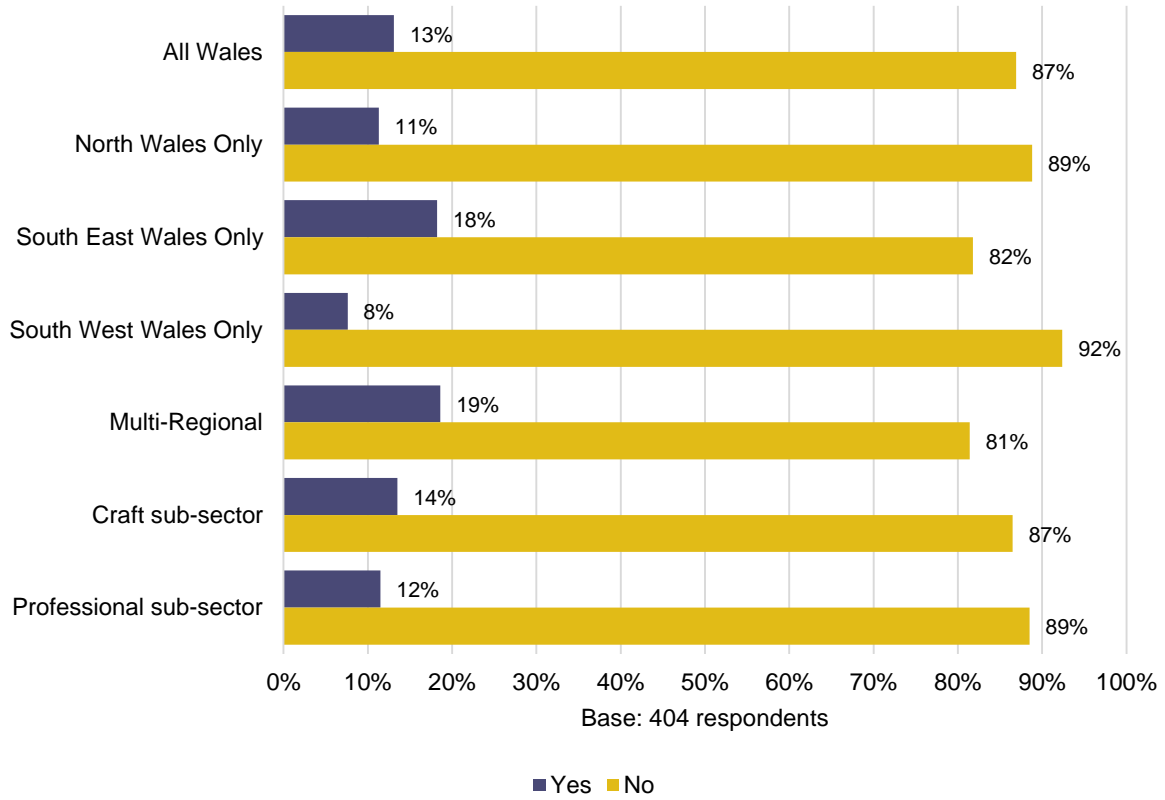
In the craft sub-sector, 14% reported having turned down work, which compares with 7% for England and Scotland in 2012. This indicates that gaps in skills and knowledge may be presenting a greater barrier to working on traditional buildings in Wales²⁷.

This percentage is slightly higher in South East Wales (18%) and among multi-regional employers (19%) – Figure 6.

²⁷ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Figure 6 Whether or not turned down work on traditional buildings due to lack of skills and knowledge

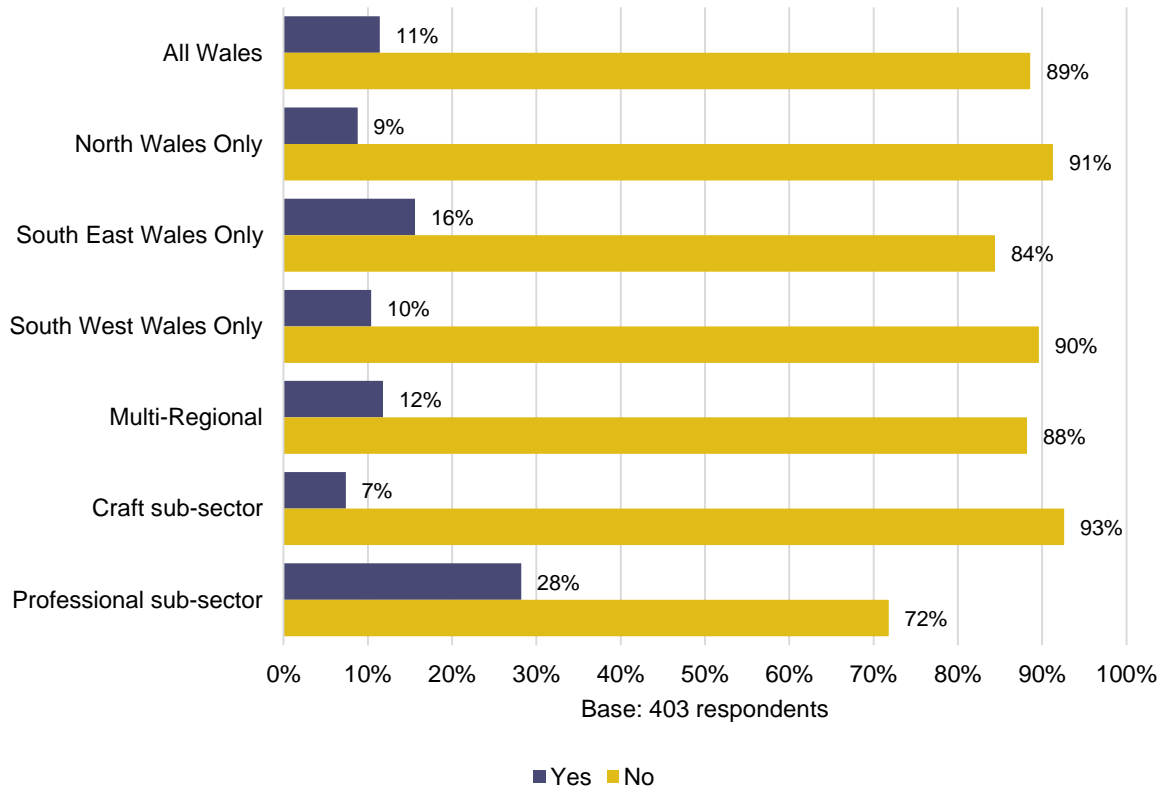


A similar minority (11%) confirmed that they have knowingly undertaken work on traditional buildings while having insufficient skills and knowledge.

This figure is considerably higher among professional organisations (28%) – Figure 7.



Figure 7 Whether or not knowingly undertaken work on traditional buildings with insufficient skills and knowledge



“Contractors think that specialist training is not available to them and that modern techniques are the only option.”

Stakeholder

4.4 Low carbon skills and knowledge levels

Stakeholders and construction professionals involved in this research described how energy efficiency policies, initiatives and retrofit incentives have not been designed with traditional buildings in mind, with the example given of insulation work that risks undermining the important qualities of ‘breathability’ that are intrinsic to these buildings.

Views remain mixed among stakeholders about whether contractors are equipped to deal with energy efficiency retrofit, with the majority of interviewees somewhat uncertain.



“If you look at what has happened with local authorities and Registered Social Landlords, they were among the first adopters of the Arbed scheme and they are now having to undo the damage they have caused to these buildings and to people’s health”.

Stakeholder

More than half (60%) of craft employers are confident in the ability of their workforce to install low carbon and energy efficiency measures.

This mirrors the results for England in 2012 (61% confident) and is slightly greater than the result from the same year in Scotland (55% confident)²⁸.

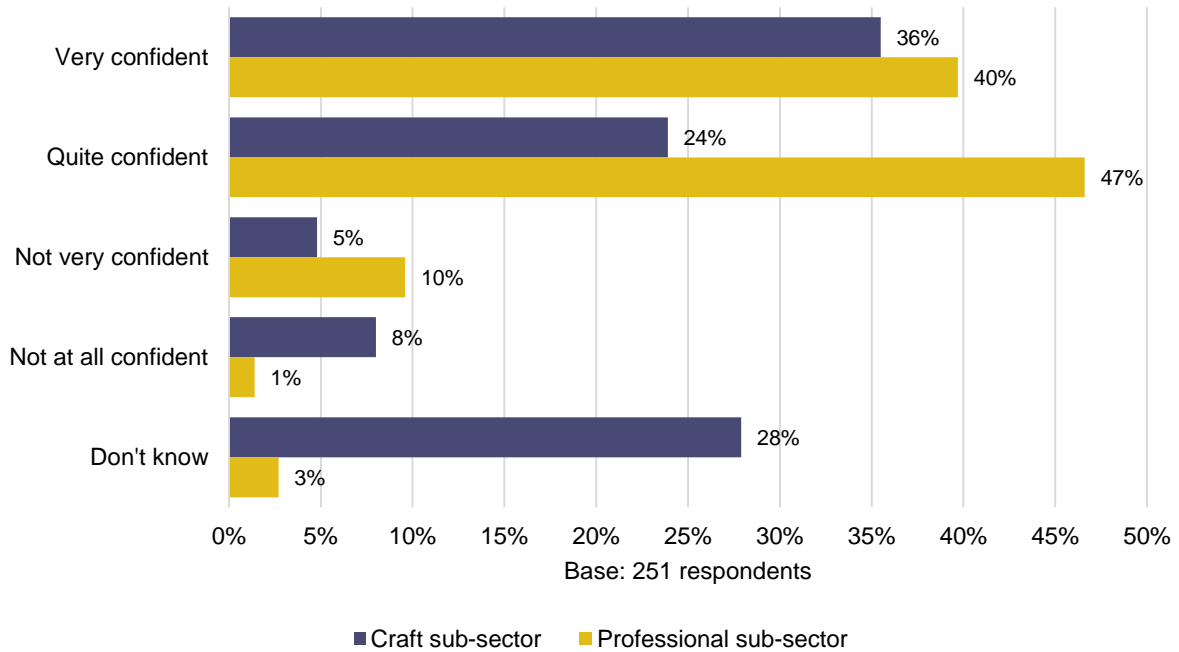
Just under two thirds of craft businesses in Wales (28%) stated that they didn’t know how confident they were, compared with just 3% of professionals.

Among professional employers, the vast majority (87%) are confident that their workforce can design, assess or advise on these measures (Figure 8).

²⁸ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Figure 8 Confidence in workforce skills relating to low carbon and energy efficiency measures



Further analysis by region shows that surveyed craft employers in South East Wales are marginally more confident in their ability to install low carbon and energy efficiency measures compared to those working in other regions.

Professionals working across multiple regions are also particularly confident in relation to these measures. This may be due the fact this is an emerging market, with the rise of dedicated energy assessors willing to travel further in order to provide advice and assessments (Table 8).



Table 8 Confidence in workforce skills relating to low carbon and energy efficiency measures

% respondents	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional
CRAFT EMPLOYERS:					
Very confident	36%	29%	44%	33%	39%
Quite confident	24%	28%	23%	24%	21%
Not very confident	5%	8%	6%	5%	0%
Not at all confident	8%	4%	4%	11%	11%
Don't know	28%	31%	23%	27%	30%
PROFESSIONAL EMPLOYERS:					
Very confident	40%	25%	36%	36%	55%
Quite confident	47%	58%	50%	48%	36%
Not very confident	10%	8%	14%	8%	9%
Not at all confident	1%	0%	0%	4%	0%
Don't know	3%	8%	0%	4%	0%

4.5 Recruiting for work on traditional buildings

Surveyed employers were asked to rate the importance of a range of different factors when recruiting employees or hiring sub-contractors for working on traditional buildings, on a scale from 1 'not at all important' to 10 'very important'.

The most important factors are:

- Personal recommendation or word of mouth (8.5); followed by
- Length of experience carrying out similar work (8.1).

Craft employers rated accredited qualifications and other industry accreditations as being of lower importance (5.8 out of 10) than some other factors – Table 9.



Table 9 Importance of specific factors when recruiting (score from 1 to 10)

Average rating (score from 1 to 10)	Base	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Personal recommendation or word of mouth	372	8.5	8.4	8.3	8.6	8.5	8.5	8.4
Length of experience carrying out similar work	365	8.1	8.4	8.1	8.0	8.0	8.0	8.4
CSCS Card in Heritage Skills	332	6.2	5.4	5.9	6.1	7.0	6.2	6.2
Accredited qualification relevant to traditional buildings, e.g. NVQ	348	6.1	5.4	6.1	6.1	6.4	5.8	6.9
An industry-recognised accreditation (non-qualification)	340	6.0	5.4	5.8	6.1	6.3	5.8	6.6
Membership of a professional body	330	5.4	5.2	5.5	5.3	5.4	5.0	6.6
Professional qualification (degree level or higher)	336	4.9	4.5	4.7	4.8	5.6	4.4	6.8

“I haven’t been able to find a suitable worker in the past 6 months due to lack of skills and poor attitude.”

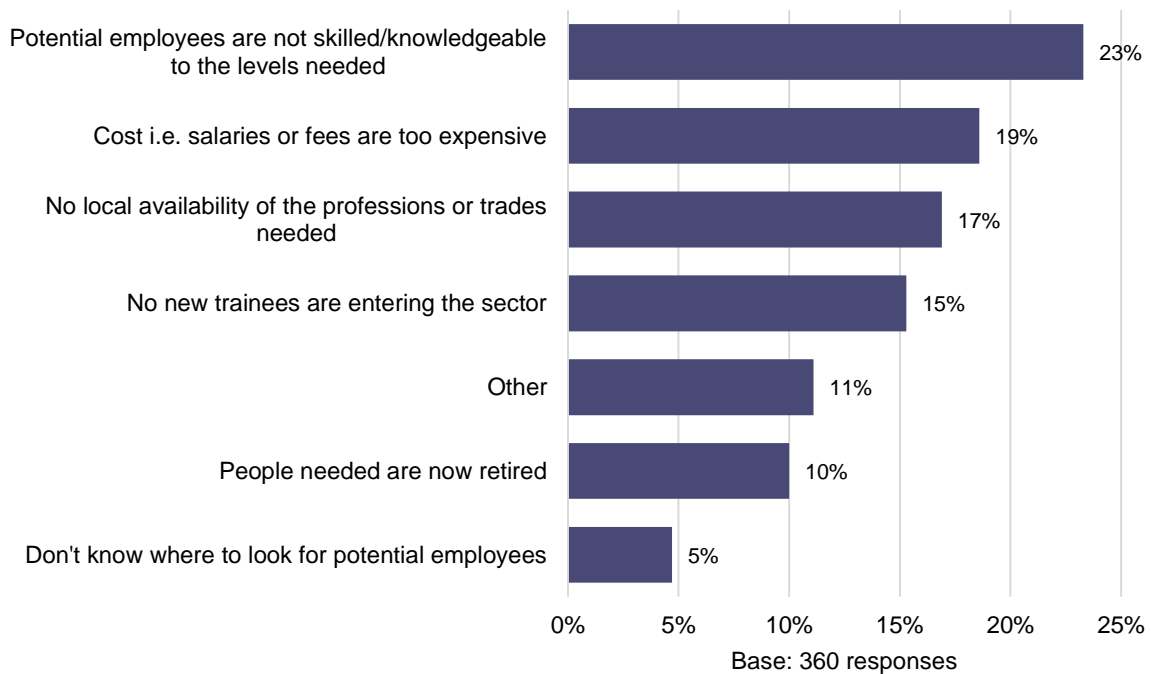
Employer

The most common barriers facing employers when sourcing individuals to work on traditional buildings include:



- Potential employees are not skilled/knowledgeable to the levels needed (23% of responses);
- Cost, i.e. salaries are too expensive (19% of responses); and
- No local availability of the trades and professions needed (17% of responses) – Figure 9.

Figure 9 Barriers to sourcing employees for working on traditional buildings



'Other' responses include:

- Difficulties finding candidates with the right attitude and work ethic;
- Health and safety burden;
- Lack of time;
- Resource burden for sourcing suitable candidates; and
- Too many other traders in the local areas.

Further analysis by region and sub-sector suggests that lack of availability of relevant trades/professions appears to be a particular concern for employers in South West Wales; while cost is a more predominant issue among the professional sub-sector (Table 10).



Table 10 Barriers to sourcing employees for working on traditional buildings – by region and sub-sector

% responses	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Potential employees are not skilled/ knowledgeable to the levels needed	26.3%	27.3%	12.6%	30.6%	20.4%	12.9%
Cost i.e. salaries or fees are too expensive	14.5%	18.2%	26.1%	12.9%	19.6%	35.3%
No local availability of the professions or trades needed	15.8%	12.5%	23.4%	14.1%	17.5%	15.3%
No new trainees are entering the sector	11.8%	15.9%	17.1%	15.3%	15.6%	14.1%
Other	18.4%	4.5%	9.0%	14.1%	11.6%	9.4%
People needed are now retired	7.9%	13.6%	10.8%	7.1%	9.5%	11.8%
Don't know where to look for potential employees	5.3%	8.0%	0.9%	5.9%	5.8%	1.2%

“The days of employers finding somebody down the local pub who has a son wanting to try out traditional building work have gone. It nearly all comes through the colleges now.”

Training provider

4.6 Hard-to-find occupations

A total of 40 employers (10% of survey respondents) reported occupations that are hard to find.

While this represents only a small minority of survey respondents (10%), the three most commonly cited hard-to-find occupations for each region are shown in Table 16, with a more detailed breakdown presented in Appendix 3.



Across each region, carpenters, joiners and roofers (tiles and slates) were among the most mentioned occupations.

Table 11 Hard-to-find occupations

Top 3 most cited	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional
1	Roofer – tiles and slates	Roofer – tiles and slates	Joiner	Joiner	Roofer – tiles and slates
2	Joiner	Roofer – lead	Carpenter	Carpenter	(Equal) General trades person Glazier Joiner Roofer (lead)
3	Carpenter	Plasterer (lime etc)	Roofer – tiles and slates	Glazier	

A total of 43 employers (11% of respondents) reported occupations that are hard to find among sub-contractors. The results span a wide range of occupations and once again a complete breakdown is presented in Appendix 3.

4.7 Apprentices and trainees

A third of employers (33%) have recruited at least one apprentice or trainee to work in relation to traditional buildings over the past five years – primarily those in the craft sub-sector (38%).

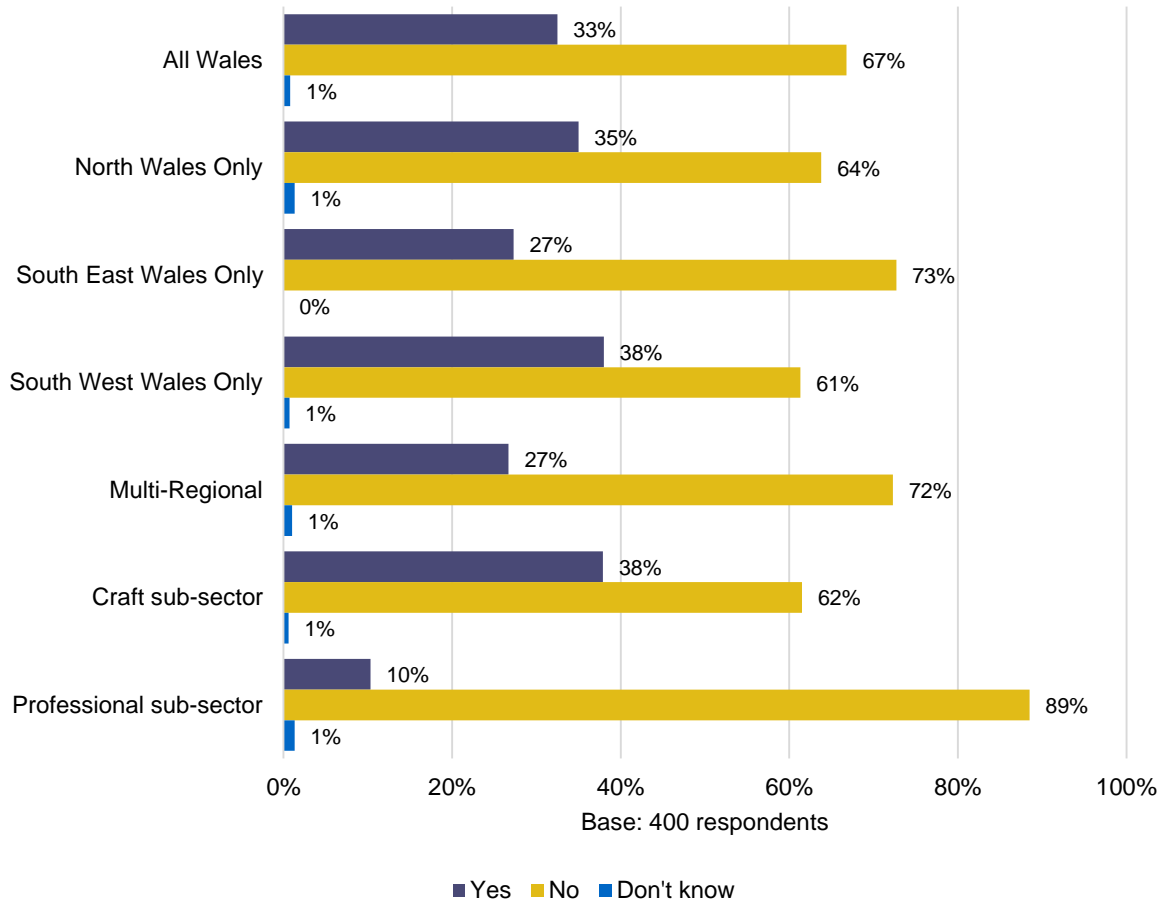
This compares to 40% of craft employers that reported having recruited apprentices in England and Scotland when comparable research was undertaken in 2012²⁹.

Over two thirds of employers (67%) have not recruited an apprentice/trainee over that period – 89% in the professional sub-sector (Figure 10).

²⁹ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Figure 10 Whether or not recruited any apprentices/trainees over the past five years



Just over a fifth of employers (21%) are likely to recruit an apprentice or trainee over the next 12 months. The figure is slightly higher for craft employers (24%) and those employers working in South West Wales (25%).

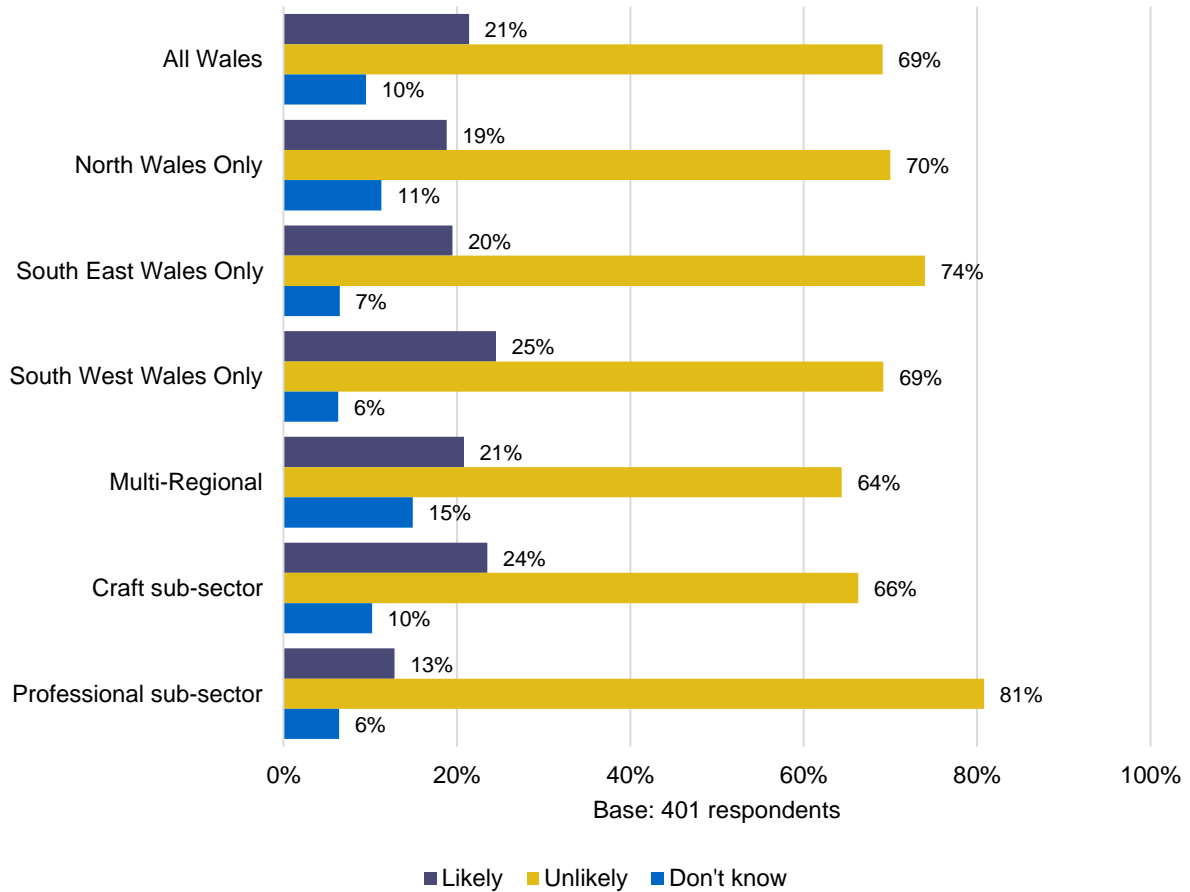
This compares to 28% for craft employers England and Scotland in 2012³⁰, suggesting that there may be a slightly lower level of interest in recruiting apprentices for work on traditional buildings in Wales.

That said, the majority of employers (69%) remain reluctant and report that they are unlikely to recruit an apprentice over the same period (Figure 11).

³⁰ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Figure 11 Likelihood of recruiting an apprentice/trainee in the next 12 months



Reasons given for being likely to hire an apprentice or trainee in the future:

- An apprentice can be trained to work in the same way as the business owner;
- Important to bring new people into the business;
- The business is expanding; and
- Workload is increasing.

Reasons given for not wanting to hire an apprentice or trainee in the future:

- Approaching retirement and not looking to undertake succession planning;
- A sole trader and not looking to expand;
- Not enough work for an apprentice;
- Too expensive; and
- Too much responsibility.



5. Working with Traditional Building Materials

This section examines the extent of knowledge employers possess about traditional materials; ability work with traditional materials; the types of materials used by employers in Wales; the extent of their use and barriers to their use.

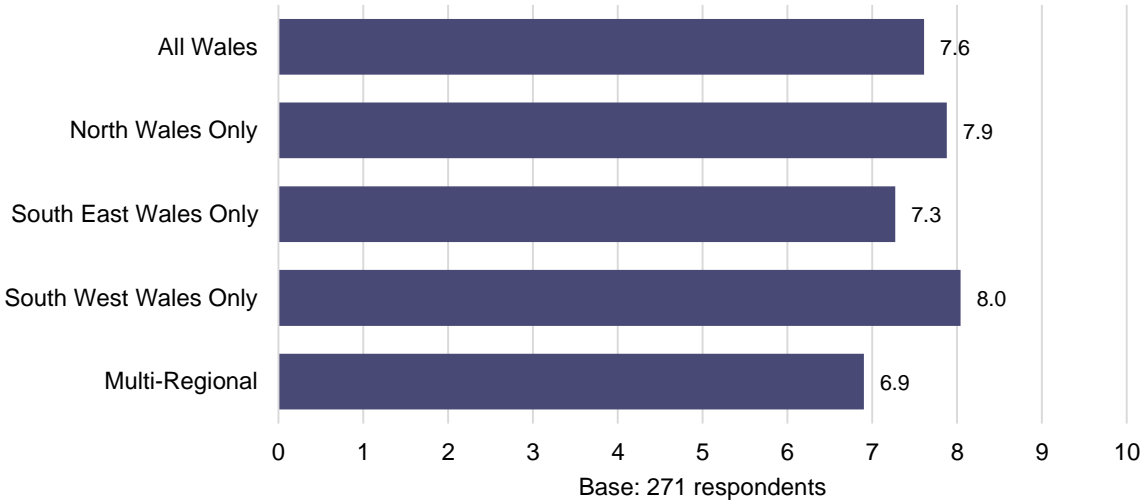
Most of the survey questions in relation to this topic were only asked of craft-based (as opposed to professional) employers.

5.1 Understanding of traditional materials

On a scale from 1 'poor' to 10 'very good', employers were asked to rate their employees' and sub-contractors' knowledge of different types of traditional building materials, for example knowing which materials are appropriate, where to source them and their specific properties.

The average rating is a moderately high 7.6 out of 10, with employers working in South West Wales returning a rating of 8 out of 10 (Figure 12).

Figure 12 Knowledge of traditional materials (score from 1 to 10)

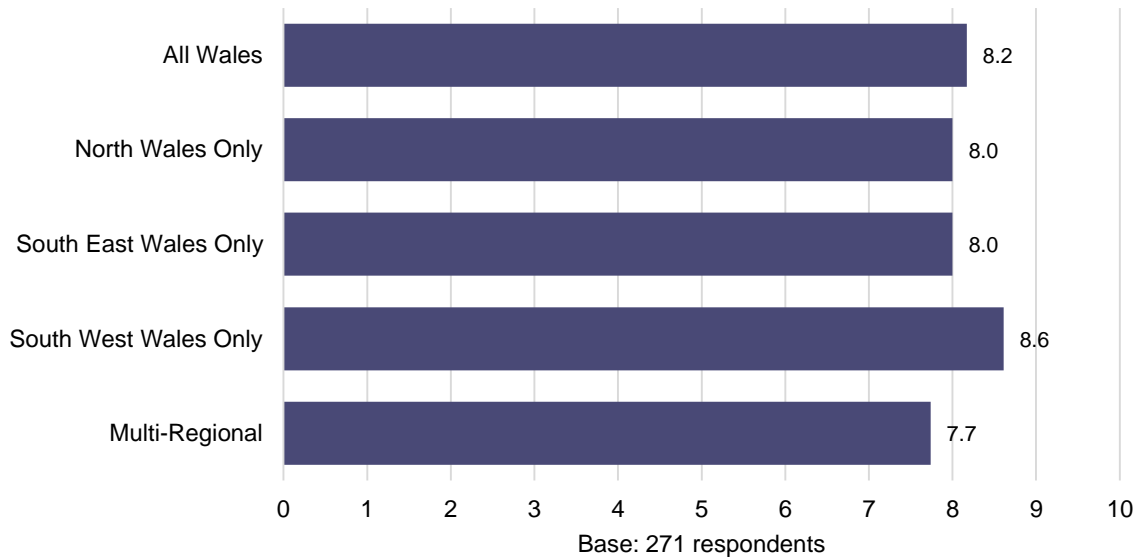


Using the same scale from 1 'poor' to 10 'very good', employers were also asked to rate their employees' and sub-contractors' ability to work with traditional building materials.

This returned a higher average rating of 8.2 out of 10 with employers working in South West Wales returning a rating of 8.6 out of 10 – Figure 13.



Figure 13 Ability to work with traditional materials (score from 1 to 10)



One contractor interviewed prior to the survey pointed out the importance of understanding regional and local variations, i.e. once in possession of knowledge about the local materials, one also needs to be aware of the local vernacular style.

5.2 Use of materials on traditional buildings

Stakeholders involved in the research strongly emphasised the importance of selecting, using and being able to work with the right materials on traditional buildings. This is on the basis that repair work using the wrong materials could do more harm than good to these buildings.

“If you look at what happens when cement or vapour-impermeable materials are used on a traditional building, you are damaging that building and causing accelerated decay, which is completely unsustainable.”

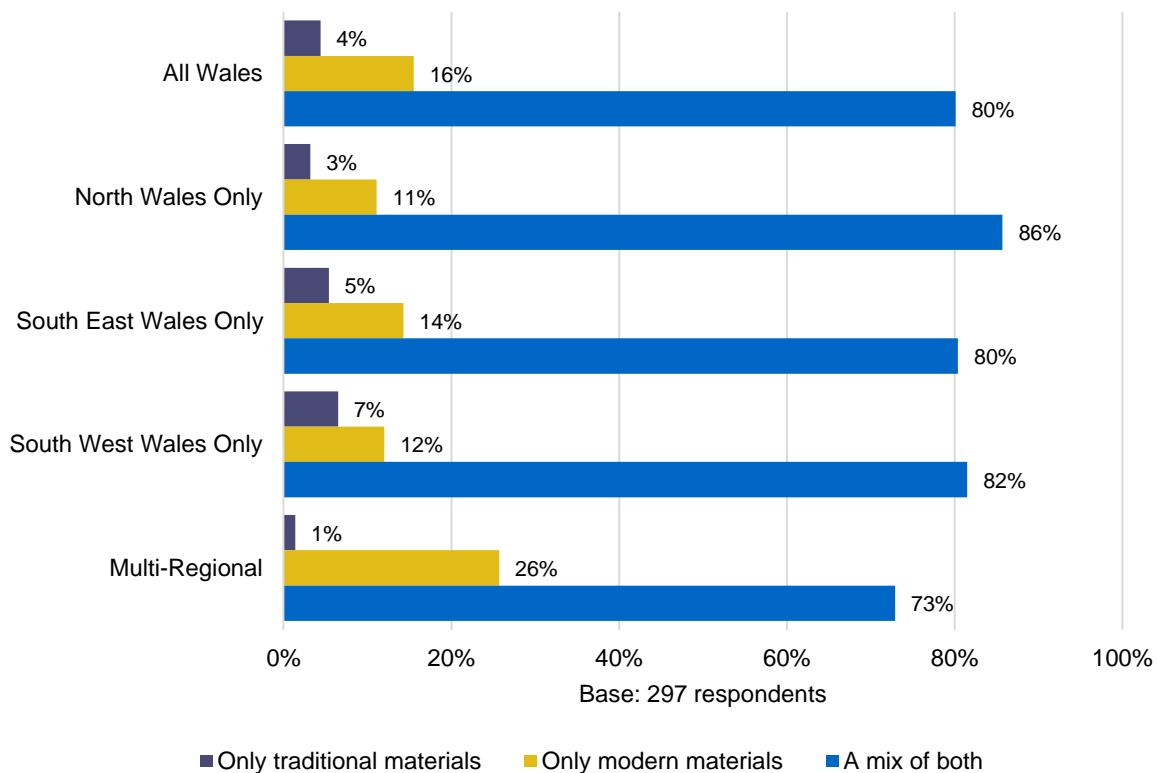
Stakeholder



The vast majority of surveyed craft employers (80%) use a mixture of modern and traditional materials when working on traditional buildings (Figure 14). This compares with 71% for England and Scotland when comparable research was undertaken in 2012³¹.

In some circumstance, use of a mixture of materials might be appropriate, however this finding highlights a possible risk of inappropriate materials being used that could have a damaging effect on traditional building fabric.

Figure 14 Types of materials used on traditional buildings



Among those surveyed craft businesses who reported using traditional materials, the most regularly used material is sawn timber, followed by slates and tiles (Table 12).

³¹ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Table 12 Traditional materials used regularly

% responses	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional
Base responses:	543	137	98	219	89
Sawn timber	20.8%	24.1%	23.5%	16.9%	22.5%
Slate/tiles	15.3%	16.1%	14.3%	15.5%	14.6%
Other	11.6%	12.4%	12.2%	10.0%	13.5%
Stone	8.5%	5.8%	7.1%	12.3%	4.5%
Glass	8.3%	10.9%	10.2%	5.5%	9.0%
Lime plaster	8.1%	4.4%	5.1%	12.3%	6.7%
Brick	7.6%	8.0%	9.2%	6.4%	7.9%
Lime mortar	7.6%	4.4%	5.1%	11.0%	6.7%
Lead	7.0%	9.5%	8.2%	5.9%	4.5%
Metal roofing	2.2%	1.5%	2.0%	2.3%	3.4%
Wrought iron	1.1%	1.5%	2.0%	0.5%	1.1%
Cast iron	0.9%	0.7%	-	0.9%	2.2%
Stained glass	0.9%	0.7%	-	0.5%	3.4%
Thatch	0.2%	-	1.0%	-	-

'Other' responses include:

- Aluminium;
- Breathable membranes;
- Copper pipes;
- Lime wash;
- Magnesium;
- Oak;
- Oil-based sealers;
- Paints;
- Vinyl; and
- Wool.



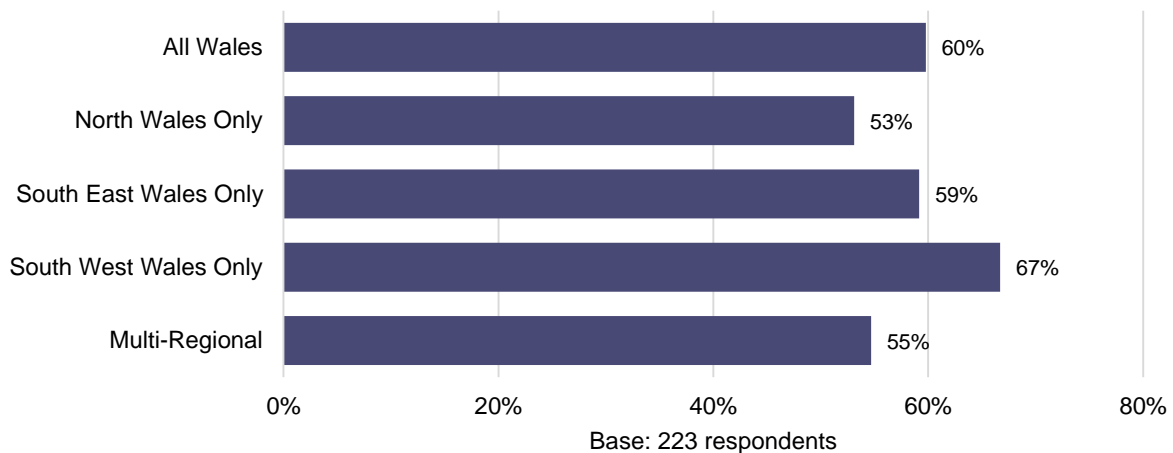
Only 27 employers (8% of all surveyed craft businesses) reported one or more traditional materials as being difficult to source.

A total of 38 responses were received and those reported as most difficult to source are:

- Slate/tiles (10 responses);
- Sawn timber (7 responses);
- Stone (4 responses) and
- Brick (4 responses).

Employers were asked to state approximately what percentage of the traditional materials they use originated from Wales. The average is 60% and slightly higher in South West Wales at 67% (Figure 15).

Figure 15 Percentage of traditional materials originating from Wales



Only 10% of craft employers in Wales reported that clients or professional advisors stipulate that traditional materials must always be used. This compares with 22% for England and Scotland in 2012³².

Over a fifth of craft employers (23%) stated that traditional materials are never stipulated in Wales, compared with just 13% for England and Scotland in 2012³³.

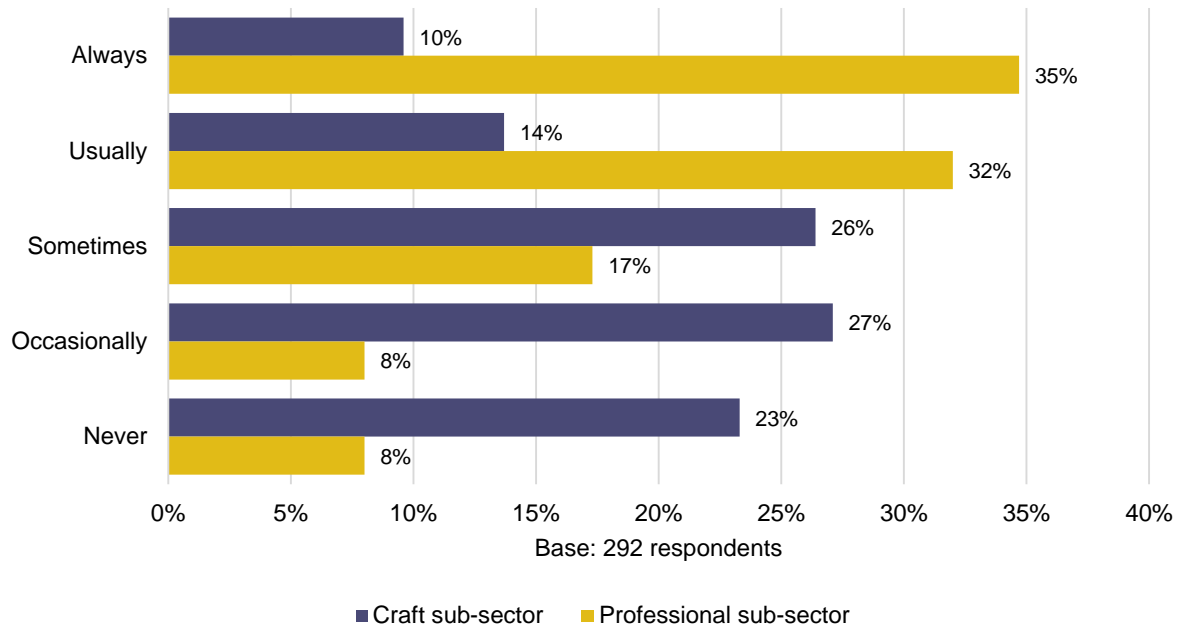
³² CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*

³³ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



This contrasts with the views of professionals in Wales, among which the majority (57%) report that they always or usually stipulate that traditional materials are used (Figure 16).

Figure 16 How often clients stipulate that traditional materials must be used



Craft employers working in North Wales reported a higher incidence of traditional materials always or usually being stipulated (31%) compared with South East Wales (18%) – Table 13.

Table 13 How often clients stipulate that traditional materials must be used

% respondents	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional
CRAFT EMPLOYERS:					
Always	10%	13%	11%	7%	9%
Usually	14%	18%	7%	15%	13%
Sometimes	26%	21%	26%	31%	25%
Occasionally	27%	29%	33%	29%	18%
Never	23%	19%	24%	19%	34%
PROFESSIONAL EMPLOYERS:					
Always	35%	42%	7%	39%	46%
Usually	32%	33%	53%	31%	18%
Sometimes	17%	17%	27%	15%	14%
Occasionally	8%	8%	13%	4%	9%
Never	8%	-	-	12%	14%



5.3 Barriers to using traditional materials

“There is too much emphasis on using traditional materials which aren't cost effective.”

Employer

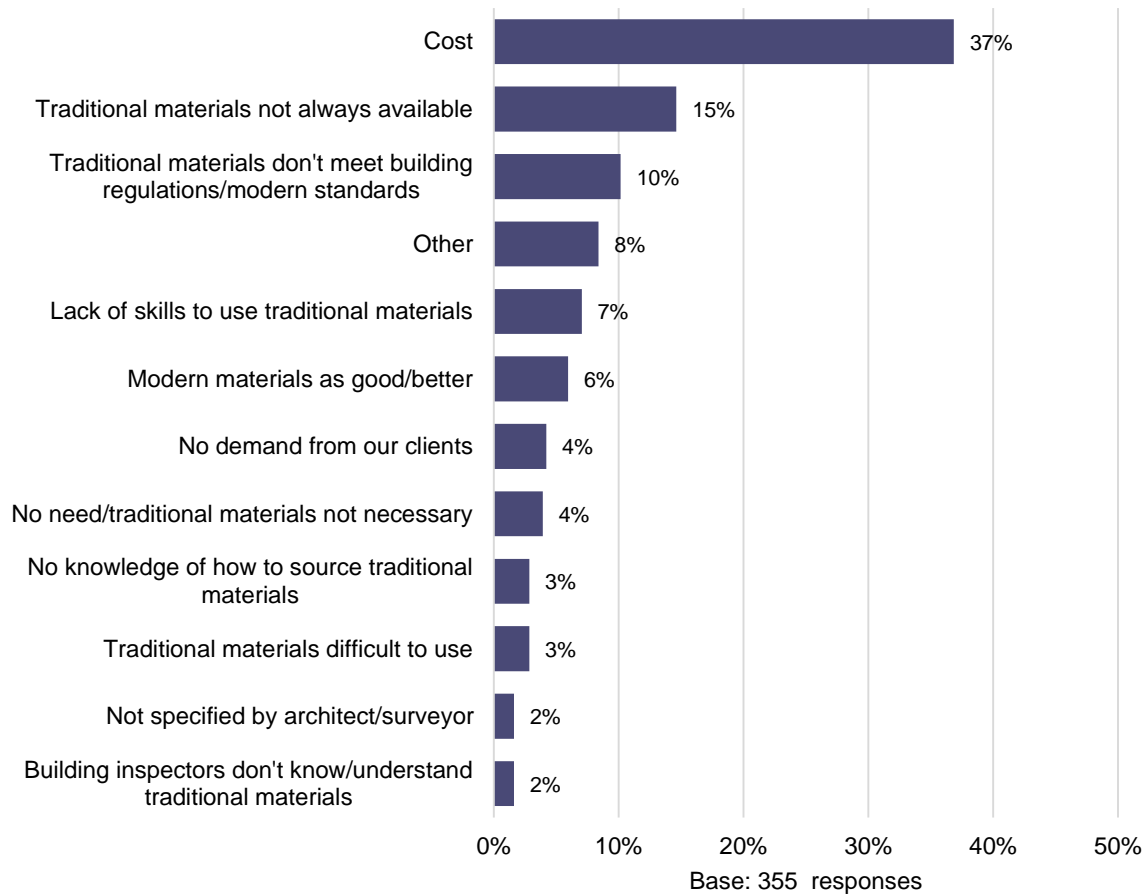
Several contractors interviewed prior to the main survey commented that the supply line for traditional materials is generally good, although this can prove difficult among contractors who haven't formed and established the right contacts.

Surveyed employers were asked what barriers, if any, can prevent the use of traditional materials on traditional buildings. The three most common responses are:

- Cost (37% of responses);
- Traditional materials are not always available (15% of responses); and
- Traditional materials do not meet building regulations/modern standards (10% of responses) – Figure 17.



Figure 17 Barriers to using traditional materials



'Other' responses include:

- Better back-up when using a manufacturer of modern materials;
- Customer ignorance;
- Other builders stuck in their ways;
- Speed of job completion, e.g. additional drying time needed for traditional materials; and
- The weather.

The percentage mix of barriers to using traditional materials is similar across each region of Wales. A notable exception is that a 'lack of skills to use traditional materials' is a more common complaint among professionals (20% of responses) as opposed to craft businesses (2% of responses) – Table 14.



Table 14 Barriers to using traditional materials – by region and sub-sector

% responses	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Cost	36.9%	32.0%	31.0%	44.1%	37.3%	41.5%	24.5%
Traditional materials not always available	14.6%	14.1%	15.4%	13.6%	15.6%	15.5%	12.3%
Traditional materials don't meet building regulations/modern standards	10.2%	14.1%	8.4%	7.2%	12.0%	10.4%	9.2%
Other	8.4%	6.5%	3.6%	13.6%	8.4%	6.6%	13.3%
Lack of skills to use traditional materials	7.0%	6.5%	9.5%	6.4%	6.0%	2.0%	20.4%
Modern materials as good/better	6.0%	5.1%	7.2%	3.5%	8.4%	6.2%	5.1%
No demand from our clients	4.2%	3.9%	8.4%	1.8%	3.6%	3.8%	5.1%
No need/traditional materials not necessary	3.9%	6.5%	3.6%	2.7%	3.6%	4.7%	2.0%
No knowledge of how to source traditional materials	2.8%	1.3%	5.9%	1.8%	2.4%	2.7%	3.1%
Traditional materials difficult to use	2.8%	2.6%	4.8%	2.7%	1.2%	2.3%	4.1%
Not specified by architect/surveyor	1.6%	3.9%	2.4%	0.8%	0.0%	2.0%	1.1%
Building inspectors don't know/understand traditional materials	1.6%	3.9%	0.0%	1.8%	1.2%	2.3%	0.0%

“A lot of regulatory red tape restricts the ability to restore traditional buildings and make use of traditional materials.”

Employer



6. Qualifications and Training

This section begins with a summary of learner numbers undertaking qualifications within CITB’s footprint over each of the past three years, with additional focus on heritage-related qualifications. It goes on to explore the extent to which surveyed employers have participated in various types of training (formal and informal) relating to traditional buildings, and how that training has been accessed.

Following this, the views of stakeholders and employers are explored in relation to the suitability of existing mainstream (FE College) provision at meeting the skills and knowledge needs of traditional buildings; and the potential appetite for ‘mainstreaming’ traditional building skills and knowledge training in the future, i.e. as part of formal qualifications and construction Apprenticeships.

6.1 Learners undertaking FE College construction and heritage-related qualifications

The past three years has seen a decline in the total number of learners in FE Colleges in Wales who are enrolled on recognised learning aims within CITB’s footprint. FE College starts have dropped by 16% and the total number reported ‘in learning’ has dropped by 19%. These data may be affected by factors such as changes in learning aims over the years and the number of places available at FE Colleges (Table 15).

Table 15 Total FE College construction learners over the past three years

Academic year	Total starts	In learning (aged under 25)	In learning (aged 25+)	Total in learning
2012-13	9,480	9,850	3,055	12,905
2011-12	10,605	11,210	3,700	14,910
2010-11	11,270	11,795	4,055	15,850

Source: Welsh Government

Despite the decline in overall learner numbers, there appears to have been a marginal increase in construction apprentice starts between 2010/11 and 2012/13 (although accurate trend analysis is not possible due to changes in the framework descriptions used within statistical datasets and the lack of available data for 2011/12) – Table 16.



Table 16 Total FE College construction apprentices over the past three years

Academic year/framework	Total starts	Level 2	Level 3	Level 4
2012-13				
Construction (Building - excluding Specialist)	1,015	740	275	0
Construction (Specialist)	225	200	30	0
Construction (all)	1,240	940	305	0
2011-12				
Construction (all)	Data not available	Data not available	Data not available	Data not available
2010-11				
Construction (all)	1,145	855	285	0

Source: Welsh Government

Based on Welsh Government statistics, the list of general heritage-based construction learning aims for the period 2012/13 is shown Table 17.

The number of learners undertaking these qualifications represents less than 1% of the total number of FE College construction learners for the same year. Uptake has been limited to two FE Colleges – Coleg Sir Gar (South West Wales) and Grwp Llandrillo Menai (North Wales).



Table 17 Heritage-related learning aims and total learners over the past three years

Learning aim title	Level	Total learners 2012-13	Total learners 2011-12	Total learners 2010-11
Award in Building Heritage (QCF)	2	65 (Coleg Sir Gar)	-	-
Award in Heritage Construction (QCF)	2	-	-	-
Award in Understanding Repair and Maintenance of Traditional Pre1919 Buildings (QCF)	3	-	15 (Coleg Llandrillo)	-
NVQ for Heritage Skills (Construction)	3	-	-	-
NVQ in Heritage Skills (Construction)	3	-	-	-
NVQ Diploma in Heritage Skills (Construction) (QCF)	3	<5 (Grwp Llandrillo Menai)	<5 (Coleg Menai)	-
NVQ in Building Site Management (Conservation)	4	-	-	-
NVQ Diploma in Senior Crafts (Construction) (QCF)	4	-	-	-
OCN North East Region Level 3 NVQ Diploma in Heritage Skills (Construction) (QCF)		-	-	-

Source: Welsh Government

6.2 Overview of training issues for traditional buildings

Stakeholders interviewed for the research argued in favour of more widespread education about traditional buildings among the entire built environment community – not just for contractors and trainers but also policy makers, including those responsible for energy efficiency policy, initiatives and incentives that are considered by stakeholders to conflict with the breathability requirements of traditional buildings.



The general view among stakeholders is that existing training provision offered by FE Colleges and Higher Education Institutions (HEIs) does not fully equip students with the necessary skills and knowledge to work on traditional buildings. This is on the basis that mainstream content is mainly focused on new build construction and not all trainers understand the value (let alone the technical requirements) of traditional building skills.

The majority of stakeholders feel that accredited qualifications are essential as a recognisable 'badge' of quality and also to ensure contractors have the skills and knowledge necessary for working on traditional buildings. Some disagreed and expressed concern that placing more emphasis on formal attainment risks isolating young people and experienced construction personnel who may not function well in a classroom environment.

On the issue of qualifications, several contractors interviewed for the research mentioned that experience is perceived as comparatively more valuable, with the "best craftsmen" learning "hands on" from an experienced mentor.

Two stakeholders expressed interest in the idea of developing a 'heritage specialist register' so property owners can easily source a specialist. It was suggested this might encourage a greater uptake of heritage-related qualifications among employers on the basis that it could prove a competitive advantage.

6.3 Participation in qualifications and training relevant to traditional buildings

"Clients are not asking for high-level skills, so employers don't see a need to train. A positive driver to increase employer uptake of training would be clients insisting upon it. That needs the influence of Government."

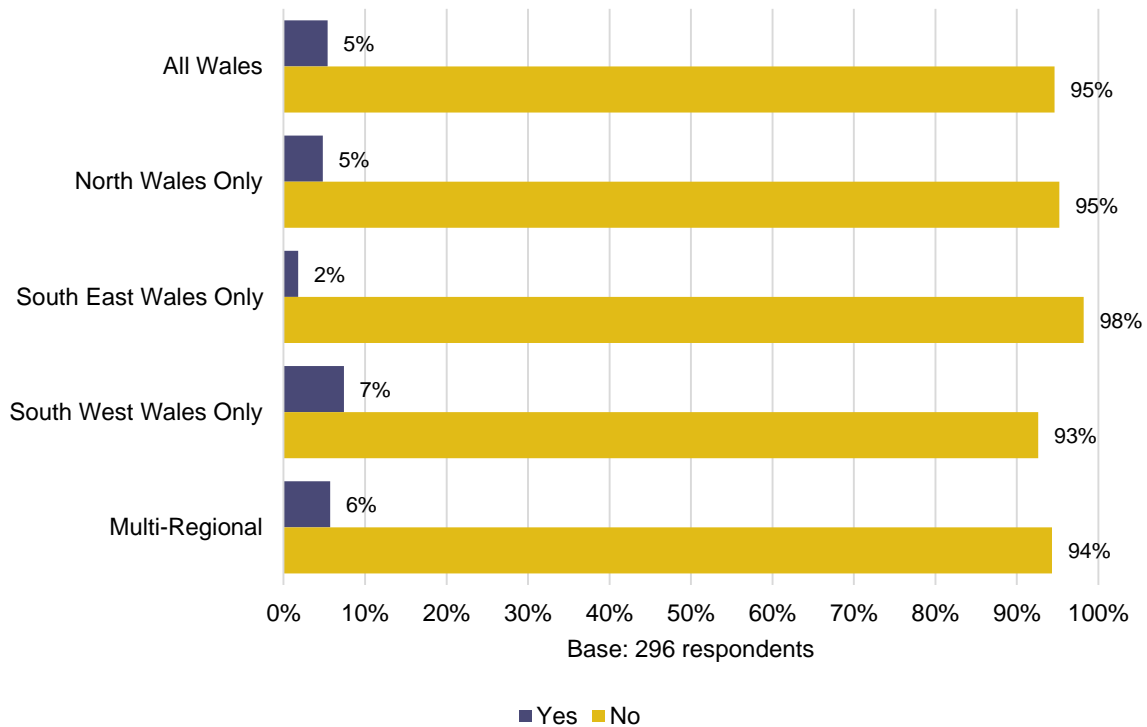
Training provider

The vast majority of craft-based employers (95%) reported that their workforce does not hold any qualifications directly relating to heritage, traditional buildings or conservation (Figure 18). This compares with 90% for England and Scotland when comparable research was undertaken in 2012³⁴.

³⁴ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Figure 18 Whether or not heritage-related qualifications are held by the workforce



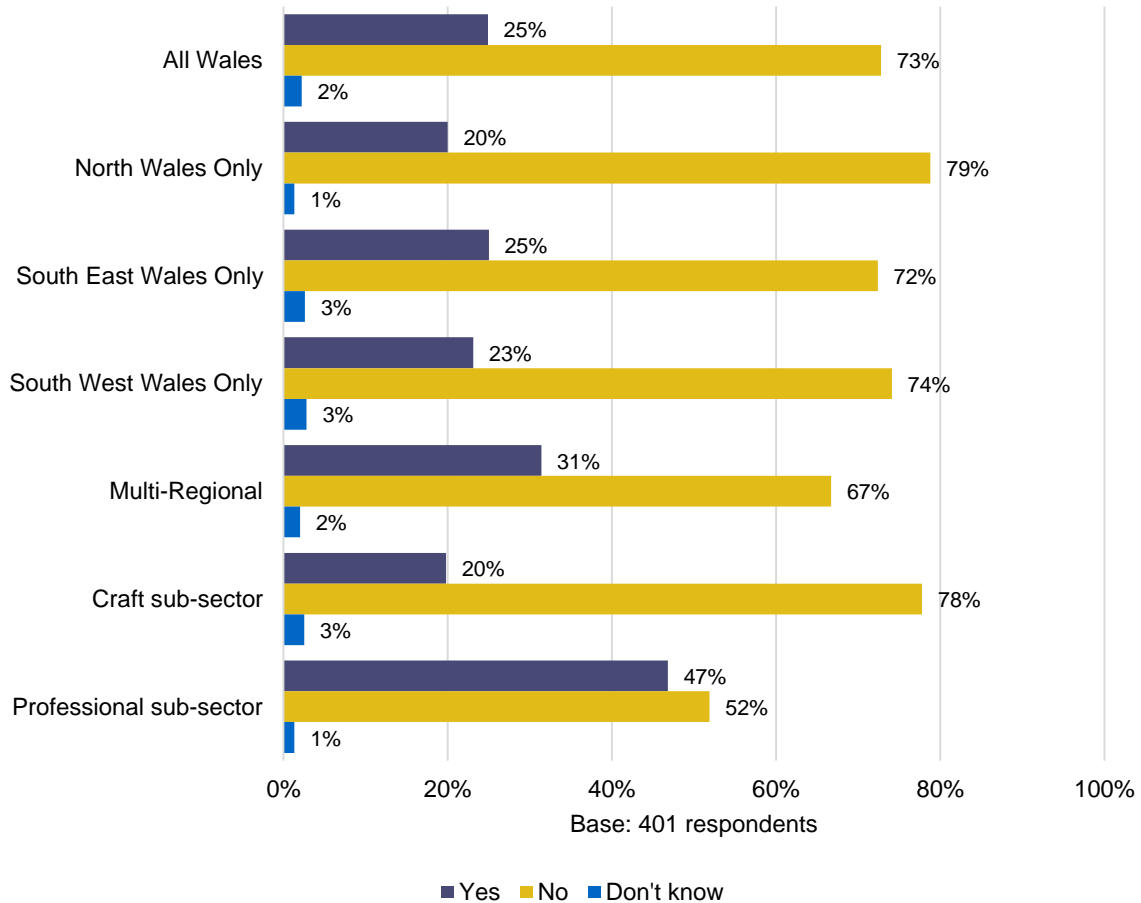
A quarter of employers (25%) reported that their workforce has participated in any training specifically relating to work on traditional buildings over the past five years. There is notable disparity here between craft businesses (20% participation) and professionals (47% participation) – Figure 19.

In England and Scotland in 2012, some 25% of craft employers reporting having participated in traditional building skills training over the past five years³⁵.

³⁵ CITB/English Heritage/Historic Scotland (2013) *Skills Needs Analysis for the Repair, Maintenance and Energy Efficiency Retrofit of Traditional Buildings in England and Scotland*



Figure 19 Whether or not the workforce has participated in traditional buildings training over the past 5 years



6.4 Access routes to traditional building skills training

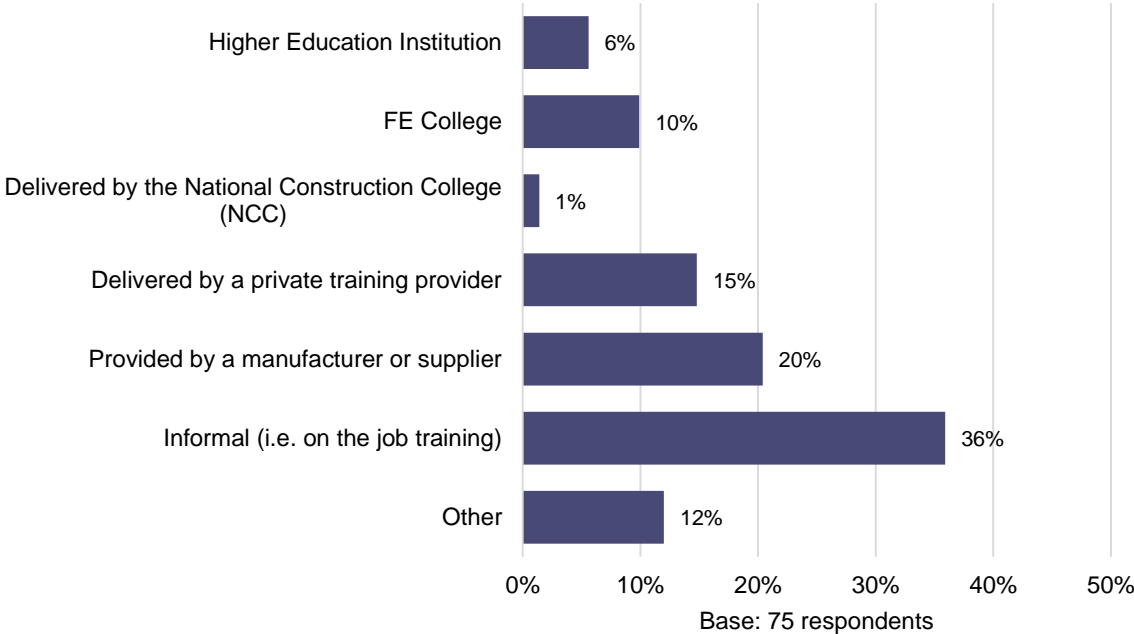
Among employers that reported having participated in training specifically related to work on traditional buildings, the most common access routes have been:

- Informal on-the-job training (36% of responses); followed by
- Training delivered by a manufacturer or supplier (20% of responses).

Only 10% of employers reported having participated in training through a Further Education College and 6% via a Higher Education Institution (Figure 20).



Figure 20 How training relating to traditional buildings has been accessed



'Other' responses include:

- Local authority heritage training course;
- Professional body training; and
- Other external short courses such as those provided by Tŷ Mawr Lime, the Tywi Centre and the Natural Building Centre.

Informal, on-the-job training appears to be most favoured by employers in North Wales and more so especially among the craft sector than professional sector (Table 18).



Table 18 How training relating to traditional buildings has been accessed (region and sub-sector)

% responses	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Higher Education Institution	-	-	4.7%	11.3%	1.2%	11.7%
FE College	8.7%	13.0%	9.3%	9.4%	12.2%	6.7%
Delivered by the National Construction College (NCC)	-	-	-	3.8%	-	3.3%
Delivered by a private training provider	13.0%	13.0%	18.6%	13.2%	12.2%	18.3%
Provided by a manufacturer or supplier	13.0%	26.1%	23.3%	18.9%	19.5%	21.7%
Informal (i.e. on the job training)	47.8%	39.1%	34.9%	30.2%	47.6%	20.0%
Other	17.4%	8.7%	9.3%	13.2%	7.3%	18.3%

6.5 Suitability of existing mainstream provision for traditional building skills

According to CITB, the industry in Wales has consistently made it clear that they ideally require the construction workforce to be trained to a standard comparable to Level 3 qualifications. This has been reconfirmed to CITB on many occasions, most recently at a number of the regional forums and CITB Wales' Construction Skills Group in November 2014.

A key concern has been raised to CITB regarding current Level 3 qualifications in that there is perceived to be too much emphasis on supervisory aspects and insufficient focus on the broader range of requirements of each trade. This has been a common theme in a number of meetings and has been raised by SMEs and major employers alike.

A suggestion to CITB that has garnered a measure of support is to re-look at the current constituent parts of Level 3 qualifications and seek to readdress the balance of supervisory elements with the wider skill base. In Wales there has been a desire to see some of the more complex work tasks, as well as heritage and sustainability skills, included in all qualifications. The perceived benefits are twofold: firstly to give apprentices who are progressing to Level 3



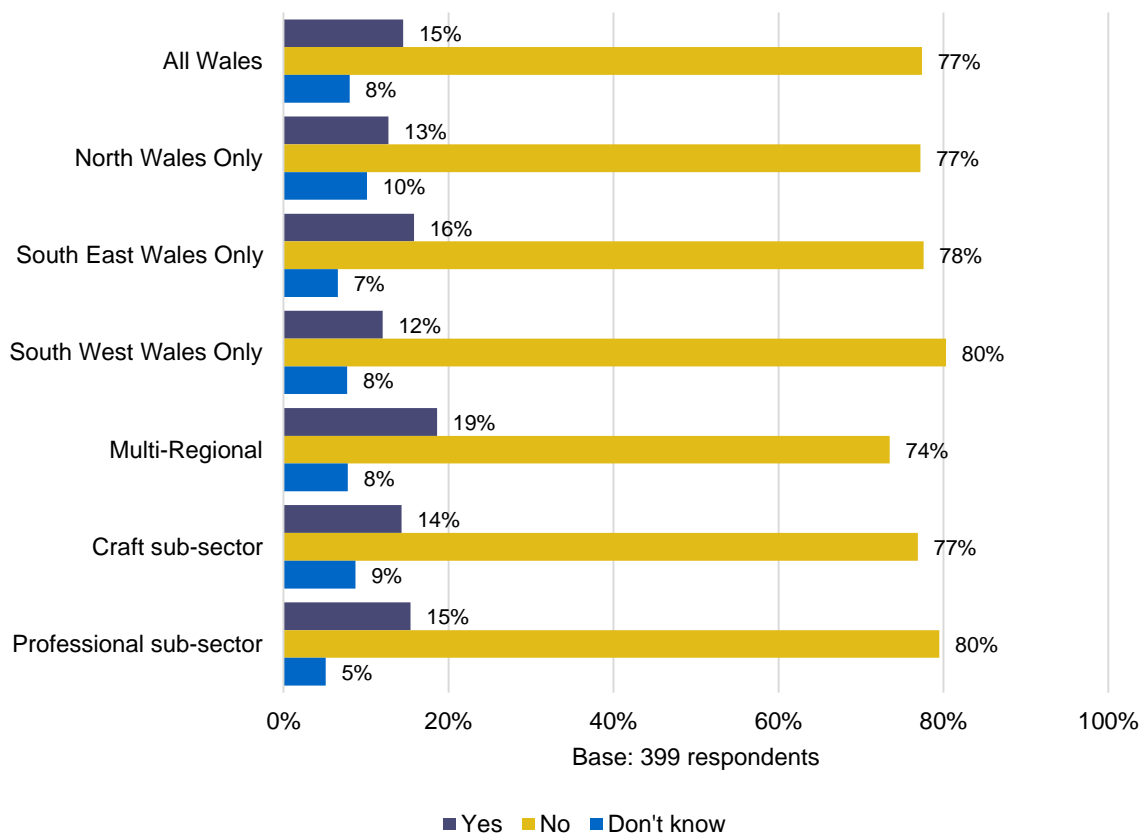
a wider knowledge and skill set; secondly to ensure over time that the workforce becomes more aware of the important part their work plays in the cultural surroundings in Wales.

“Recruits are often very enthusiastic but not knowledgeable – they don’t come into contact with traditional building skills during their mainstream education.”

Employer

Employers were asked if the workforce had previously developed any traditional building skills and knowledge as a result of mainstream (i.e. general construction) provision offered by FE Colleges in Wales. Just 15% of employers confirmed this to be the case, with similar responses across each of the regions and between craft and professional businesses (Figure 21).

Figure 21 Whether or not traditional building skills and knowledge has been developed through mainstream FE College provision

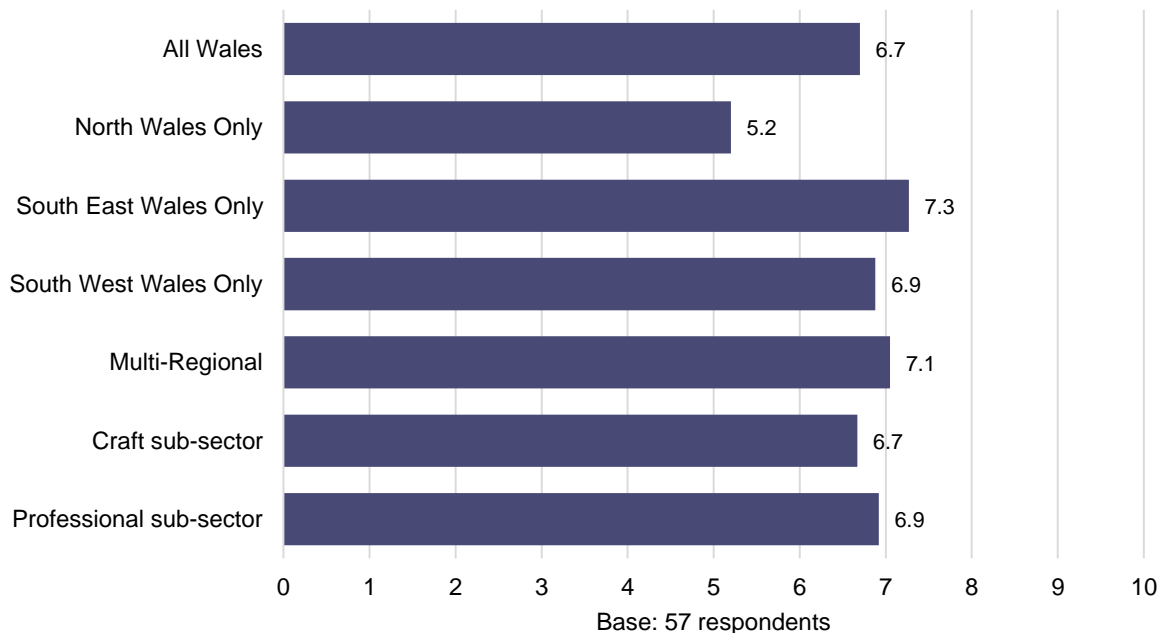




Employers reporting that they had developed traditional building skills and knowledge through mainstream provision were asked to rate on a scale from 1 'not at all' to 10 'very well', the extent to which that knowledge had enabled the workforce to specialise more in traditional buildings work.

The overall average score is 6.7 out of 10, with employers in South East Wales most favourable (7.3 out of 10) and employers in North Wales least favourable (5.5 out of 10) – Figure 22.

Figure 22 Extent to which knowledge from mainstream FE College provision has enabled the workforce to specialise in traditional buildings (score from 1 to 10)

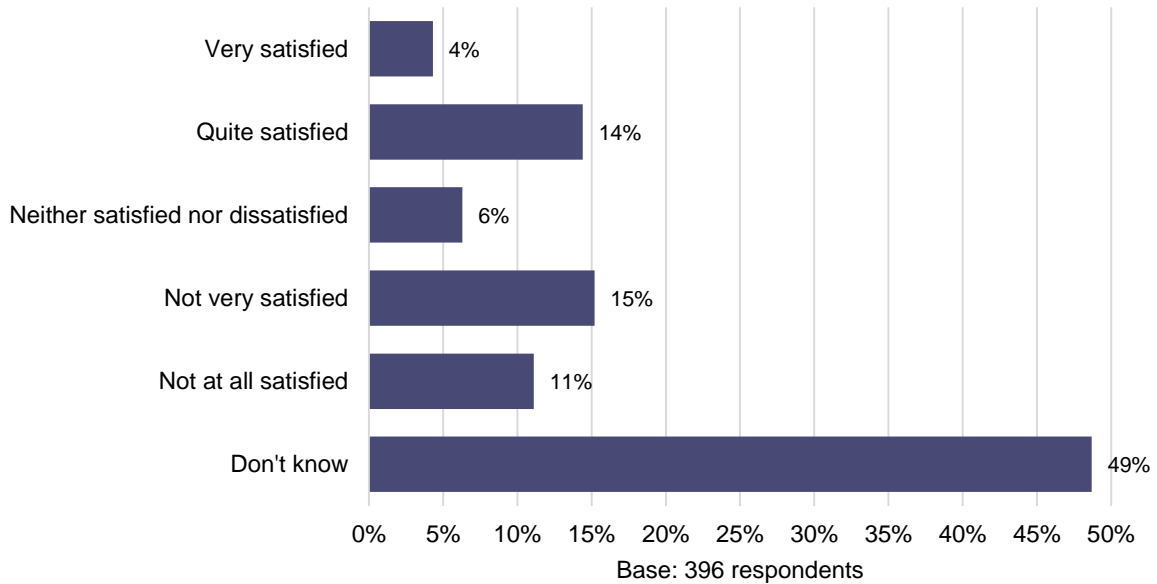


“Apprentices need to be taught practical skills rather than classroom knowledge.”
Employer

Just under half of employers (49%) do not know whether FE College training provision available in Wales is equipped to deliver the skills and knowledge required for working on traditional buildings. A larger proportion of employers are not satisfied (26%) than satisfied (18%) – Figure 23.



Figure 23 Satisfaction that FE College provision is equipped to deliver skills and knowledge for working on traditional buildings



Satisfaction levels are very similar across the different regions of Wales, although only 16% of craft businesses are satisfied compared with 20% of professionals (Table 19).

Table 19 Satisfaction that FE College provision is equipped to deliver skills and knowledge for working on traditional buildings – by region and sub-sector

% respondents	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Very satisfied	4%	3%	8%	5%	2%	5%
Quite satisfied	14%	14%	14%	16%	14%	15%
Neither satisfied nor dissatisfied	6%	4%	7%	4%	11%	5%
Not very satisfied	15%	15%	16%	16%	14%	15%
Not at all satisfied	11%	11%	10%	11%	12%	12%
Don't know	49%	54%	46%	49%	47%	49%



“A mainstream architecture degree does nothing to ready you for working with older buildings. That’s all learned on the job.”

Employer

“At degree level, traditional techniques are not popular with architecture students.”

Training provider

Employers were asked to comment on what types of training for traditional buildings they need but have not been able to access.

A total of 208 respondents (51%) stated “none” or “nothing”, with a small minority elaborating that they already have sufficient skills. Very few respondents mentioned specific requirements and tended to reiterate the main barriers to training.

Types of training needed by employers which they cannot access (where mentioned by more than one respondent):

- Everything/general craft skills for working on traditional buildings (13 responses);
- Knowledge of/working with traditional materials (5 responses)
- Lime work (4 responses)
- More practical training (3 responses);
- Plastering (3 responses);
- Flooring (3 responses);
- Stone work (3 responses);
- Carpentry (2 responses); and
- Sash windows (2 responses).

“The problem is that there are no traditional building courses at the local college and being a remote village location means accessibility is the main problem.”

Employer

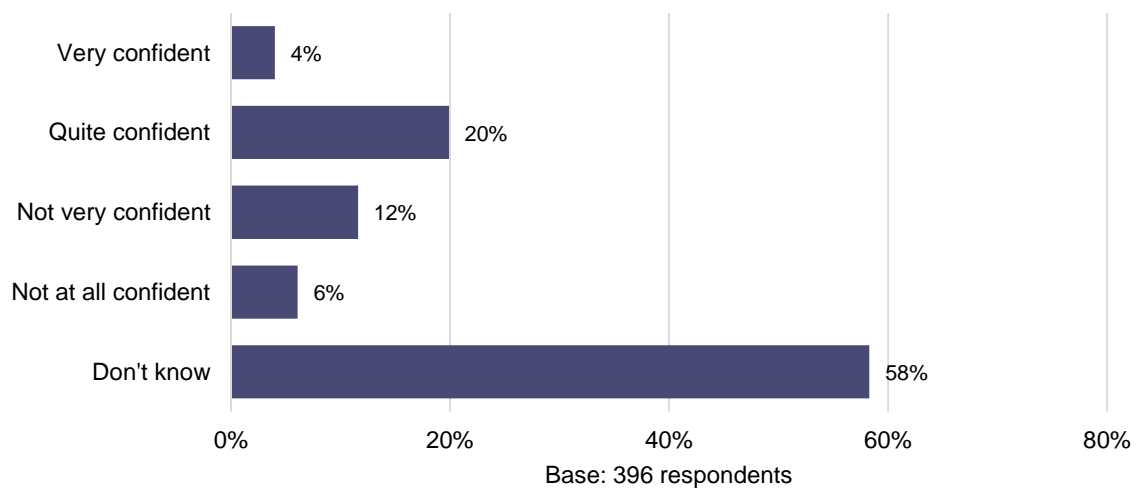


“If you look hard enough and you’re willing to travel then you can find what you need.”

Employer

Most surveyed employers (58%) stated that they don’t know whether existing FE College provision in Wales is equipped to will give craftspeople the skills they need to work on low carbon and energy efficiency measures in traditional buildings. A quarter of employers (24%) are confident and 18% are not confident in this regard (Figure 24).

Figure 24 Extent of confidence that FE College provision can provide craftspeople with the skills for installing low carbon and energy efficiency measures



This pattern is very similar across all regions, while craft employers are less confident than professionals (Table 20).



Table 20 Extent of confidence that FE College provision can provide craftspeople with the skills for installing low carbon and energy efficiency measures – by region and subsector

% respondents	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Very confident	4%	4%	4%	5%	3%	5%
Quite confident	20%	22%	16%	20%	22%	20%
Not very confident	12%	9%	9%	11%	17%	9%
Not at all confident	6%	5%	5%	7%	6%	5%
Don't know	58%	61%	66%	58%	51%	60%

“There is a lack of information around the energy efficiency products themselves, how to install them, specifications and the legislation behind them. I had to go to Ireland for this type of information recently – there’s nothing in Wales.”

Employer

“Qualifications take a long time to be approved and those relevant to energy efficiency are already behind the times. Courses need to be sustainable, unlike the Green Deal.”

Training provider

Surveyed employers were asked what new kind of training if any, is needed in relation to the installation of low carbon and energy efficiency measures in traditional buildings. A total of 147 respondents (36%) stated that they didn’t know or were unsure.

Among employers that gave details, there is a call for better awareness and knowledge about the general principles of energy efficiency measures; how they need to be adapted for use on traditional buildings; and how they need to be integrated with the existing components of traditional buildings.

Other specific training requests mentioned by more than one respondent:

- Installing insulation technologies (10 responses);



- Windows and glazing (7 responses);
- More understanding about how traditional buildings ‘breathe’ (6 responses);
- The implications of changes to the building regulations that put more emphasis on the conservation of fuel and power (6 responses); and
- Installing solar panels, particularly on a slate roof (3 responses).

Training providers interviewed for this research mentioned that some colleges have good quality resources such as access to experts and skilled staff with experience of working on heritage buildings, as well as a good stock of live sites so they can show learners. It was felt that others might struggle if they lack the necessary in-house expertise or do not have links with local contractors who can offer sites on which trainees can work.

6.6 Improving mainstream provision for traditional building skills

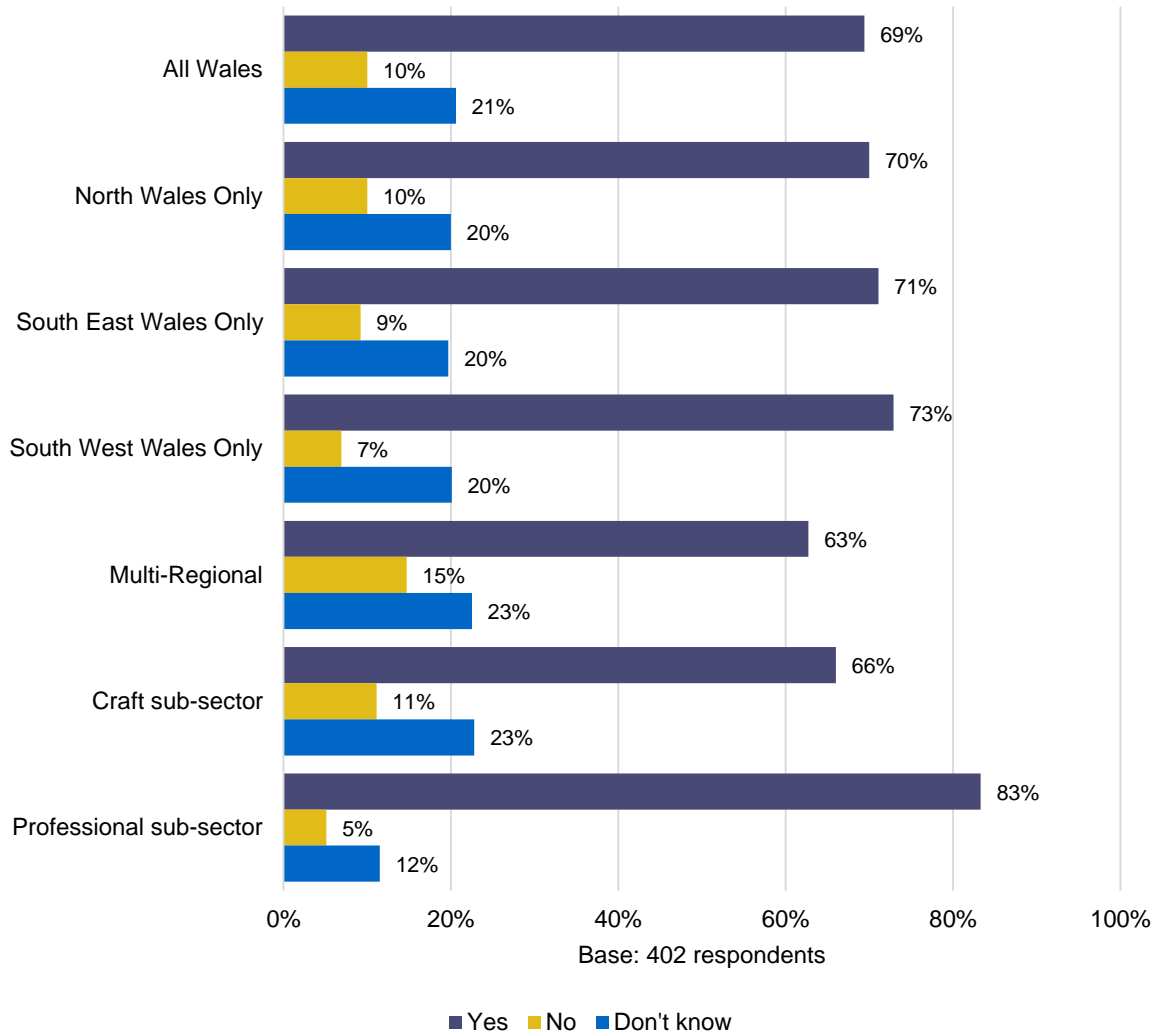
“I’m glad the Welsh Government is taking action on this issue because it’s bound to get worse at the current rate.”

Employer

Over two thirds of surveyed employers (69%) believe that more defined and specific coverage of traditional building skills and knowledge would be valuable within mainstream FE College provision in Wales. Employers working in South West Wales are particularly in favour of this (73%) as are professionals (83%) – Figure 25.



Figure 25 Whether or not more defined coverage of traditional building skills and knowledge would be valuable within mainstream FE College provision in Wales



“Mainstreaming traditional building skills and knowledge would help to ensure people leave college able to work on either new build or historic buildings or both.”

Employer



On the whole employers were favourable towards mainstreaming traditional building skills, on the basis that this would improve the general skills and knowledge of the existing workforce and help to ensure better quality of workmanship. In particular, apprentices and trainees would gain better basic skills and knowledge for tackling work on traditional buildings.

A combination of theory and practical application is considered important, with the latter of particular value to ensure trainees can practise working with traditional materials and tools, and generally to “learn the art”.

Employers believe that mainstreaming traditional skills would stimulate greater interest and confidence among young people to undertake work relating to traditional buildings, or indeed to specialise in this area. This in turn, could create a better employment market and enable more choice for employers.

Some employers argued that mainstream would help with skills replacement where time-served craftspeople are approaching retirement. Indeed this could be a particular issue among micro businesses where succession planning is not in place.

One employer commented that as traditional buildings get ever older, their restoration and repair needs will only become more important, making it all the more important to build up a more prepared workforce for the future.

Finally, training providers largely back the idea of mainstreaming traditional skills, pointing out that the most viable option would be to embed content within existing construction courses via mandatory or optional bolt-on units.

“The keyword here is ‘mainstream’. Anything that is considered an “add on” can be all too easily overlooked if it does not interest the apprentice or trainee.”

Employer

There is general agreement among stakeholders and training providers that a more defined syllabus for traditional building knowledge and skills would be valuable within mainstream construction training.

Justifications are as follows:

- The construction industry currently experiences real difficulties finding and retaining suitably skilled and knowledgeable people to undertake traditional work;



- The ageing profile of the traditional workforce means there is an urgent need to replace these skills so they do not become lost;
- Not enough young people are given a chance to try traditional building skills, so they never find out if it's something they would enjoy as a career;
- In the future, “the old could become the new” if cavity walls are phased out and solid walls brought back in as the preferred option, due to the poor energy performance of cavity walls; and
- The alternative to mainstreaming, i.e. focusing more on promoting standalone courses, is not sustainable as employers do not demonstrate enough demand, be it for reasons of cost or an assumption that they don't need the training.

One focus group participant mentioned that some local authorities have tried delivering heritage skills and information days for industry, although these have not been well attended. It was suggested that employers (particularly SMEs and micro businesses) simply cannot afford to release people where this could lose money for the business. This issue was also given as one possible explanation for such low levels of employer engagement with the craft courses delivered as part of the Sustainable Construction Learning Sites Project.

“Heritage courses need to be tailored to the locality of the industry and the nature of the local heritage”

Training provider

Providers made the point that location affects the nature of training that can be offered, i.e. if a particular college is surrounded by new build houses then traditional skills are less of a priority and would not be so highly sought after through training.

It is considered important that trainers themselves are suitably knowledgeable about traditional buildings, particularly those involved in delivering mainstream FE College construction courses. Discussion at one of the focus groups touched on the issue that by continuing to focus mainstream courses on new build, trainers are unlikely to feel the need to undertake Continuing Professional Development in relation to traditional buildings.

In relation to this issue, training providers interviewed for the research were keen to point out that colleges are responsive to change and would be very capable of establishing more traditional buildings training if there was sufficient demand. Indeed a willingness among training providers to respond to this agenda has arguably been proven by the success of the ‘train-the-trainer’ aspect of the Sustainable Construction Learning Sites Project, for which 25



college tutors attended courses in North, South East and South West Wales in the autumn of 2014, in order to improve their own knowledge on this agenda.

One provider emphasised how manufacturers and suppliers also have an important part to play in training, particularly on the installation of energy efficiency technologies. These types of short courses may be useful as top-up training and would inevitably only involve limited time away for the trainee



7. Conclusions and Recommendations

7.1 Conclusions

1. The dynamic of demand, skills and training

The current dynamic between client demand, the industry-supplied skills base, and training provision for working on traditional buildings, appears to be driven by factors such as cost, convenience and importance (in terms of undertaking work and participating in training).

In particular:

1. Construction clients (e.g. public and private sector building owners) are largely unaware of how and why they should protect a traditional building and might not think twice about opting for a cheaper solution where this is more readily available;
2. Mainstream construction employers may be working on traditional buildings without necessarily being fully aware of how these buildings should be treated; and without necessarily wanting to invest too heavily in expensive materials or their own training while clients are not demanding that they do so; and
3. Mainstream training providers by their own admission are primarily focusing on new build aspects of construction where there is greatest demand; while some college tutors by their own admission have admitted to lacking awareness of the needs of traditional buildings;

2. The state of workmanship on traditional buildings

There is evidence to suggest that work is being carried out on traditional buildings across Wales by professionals and contractors who do not possess the requisite skills and knowledge. This risks damaging the fabric and airflow of these buildings, with potential consequences for the health of occupants.

Poor workmanship on traditional buildings does not rest with contractors alone. Policy-makers (e.g. those responsible for energy efficiency initiatives), commissioners, specifiers, designers, planners and building control all have a part to play in ensuring that repair, maintenance and retrofit activities are responsible and sustainable.

As modern and traditional properties require very different approaches, it has led to a situation where some professionals, contractors and even training providers have insufficient knowledge of the different requirements between these two types of structures. In cases where designers lack knowledge of the special considerations that must be given to



traditional buildings, this can lead to flaws that are subsequently built in by contractors who follow these plans.

Furthermore the fact that 80% of surveyed employers reported using a mixture of modern and traditional materials on traditional buildings only serves to exacerbate concerns across the sector that the right materials may not always be used under the right circumstances.

3. Demand for traditional building skills

There are optimistic signs that demand for work on traditional buildings may increase over the next two years. This is evidenced by the views of employers (34% expect an increase whilst only 14% expect a decline); optimistic economic forecasts to 2019; and Welsh Government initiatives such as Arbed and the *Houses into Homes* scheme.

Skills and knowledge relevant to traditional buildings may need to be drawn upon relatively frequently, given that employers reported almost half of time (43%) is spent working on traditional buildings.

Only a small proportion of work on traditional buildings relates to energy efficiency retrofit (13%) – corroborating anecdotal evidence from stakeholders that this is still an emerging area where uncertainty remains about the suitability of existing skills and knowledge for installing such measures.

4. Industry-supplied skills for traditional buildings:

It is extremely important that contractors understand the physics of traditional buildings, including qualities of breathability; the potential harm that can be caused to these structures when work is undertaken incorrectly; and why it is so important to use the right methods and materials.

The collective insight of stakeholders and employers has enabled the research to identify a number of 'core skills' (craft-specific) for working on traditional buildings – namely:

- Lime work;
- Stonework;
- Carpentry and joinery; and
- Roofing.

Across all four these skill areas, employers highly rated the skill levels of their own workforces (scores of at least 8 out of 10) but these were also among the most commonly mentioned skills as being in short supply and hard to find.



5. Scarcity of training provision for traditional buildings in Wales

Mainstream training provision that is directly relevant to traditional building skills appears to be scarce in Wales. This view is echoed by all research participants, including training providers themselves who stated that construction qualifications and Apprenticeships arguably focus too heavily on new build at the expense of traditional skills. Indeed, according to Welsh Government statistics, only two FE Colleges in Wales are reported to have offered a general heritage-related construction qualification during the 2012/13 academic year.

Despite low participation in heritage-related qualifications in Wales, one should bear in mind that training is only viable where there is demand. The challenge of engaging employers with standalone courses for traditional buildings is no more evident than has been the case with the Sustainable Construction Learning Sites project. The pilot in 2014 only succeeded in recruiting 12 apprentices against an initial goal of 150; with several of these courses having to be cancelled due to insufficient take-up.

In an effort to improve traditional building skills and knowledge in Wales, attention should be turned to what employers say they need and will value – noting that thirds of surveyed employers (69%) would like to see more defined coverage of traditional building skills and knowledge within mainstream FE College provision.

7.2 Recommendations

- 1. Raise awareness about the important structural qualities of traditional buildings and the implications of undertaking inappropriate work. In turn, work towards a situation where employers view traditional building skills and knowledge as vitally important to winning and undertaking work on these types of buildings.**

Awareness-raising activities are relevant to a wide range of stakeholders, including public and private sector construction clients (e.g. domestic and non-domestic property owners and tenants); design professionals, contractors, planners and building control representatives.

The short term objective will be to reduce instances of contractors providing what are perceived to be the easiest or cheapest solutions where this might not be appropriate to the building. This should also enable them to recognise that possessing the right skills and knowledge relating to a traditional building can offer a competitive advantage in relation to clients who are either educated about the issues or know their rights if things go wrong. Longer term, better awareness and understanding among all concerned should encourage employers to view training and recruitment of suitably qualified employees as vital to being able to win and undertake work on traditional buildings.



CITB should consider working with expert stakeholders, partners and advisory groups to educate contractors in the important principles associated with working on traditional buildings. It should be made clear to contractors that poor work can have serious implications for the fabric of traditional buildings and the health of their occupiers, and that clients could take legal action as a result. CITB may wish to consider raising awareness among employers through face to face meetings, seminars, a dedicated web 'resource' or through the publication and distribution of written guidance and signposting to further information and training.

Where any kind of householder/consumer awareness-raising activities are concerned, the appropriate action to take will depend on whether the goal is to 'educate' property owners about traditional buildings, or 'inform' them of their rights, i.e. as consumers, if work is sub-standard. The first approach (to 'educate') would require strong marketing and promotion, with endorsement from the Welsh Government and bodies such as Cadw. It would need to simplify what is potentially a very complex area and could be costly in terms of merchandise, websites, pamphlets and support, such as consumer questions. The second approach (to 'inform') might simply need to take the form of an email or leaflet campaign to reiterate to property owners their rights when purchasing goods and services, for example fitness for purpose. This approach might mean working in partnership with consumer groups such as Citizens Advice and Trading Standards.

2. Work with funders and commissioners to consider making certain grants for work on traditional buildings conditional upon contractors meeting pre-requisite requirements in terms of skills, knowledge and materials.

Funding levers (such as the Arbed programme and the *Houses into Homes* scheme) could incorporate grant conditions to ensure contractors are able to demonstrate minimum levels of skills and knowledge and/or commit to using appropriate materials.

This type of approach could simultaneously work to:

1. Raise awareness about the important qualities of traditional buildings (as per recommendation 1) and;
2. Create the conditions for future training demand and supply (as per recommendation 3, below)

3. Work with FE Colleges, Awarding Organisations and other stakeholders in Wales to embed traditional building skills and knowledge within mainstream construction qualifications and Apprenticeships at Level 3.

This research has revealed general favourability among employers, training providers and other stakeholders towards embedding traditional buildings skills and knowledge



within mainstream FE provision. This approach would ensure wider benefits are felt across industry where previous approaches of running standalone heritage-related qualifications and short courses have suffered from limited take-up.

Apprentices attending the Sustainable Construction Learning Sites craft course at St. Fagans in December 2014 offered a great deal of praise when feeding back about the training as part of the project evaluation. This suggests that a traditional buildings pathway within an Apprenticeship could spark a good deal of curiosity and interest among young people.

In terms of a possible approach – CITB’s recent industry insights relating to the content of Level 3 qualifications (cf. section 6.5) reveals a need and potential opportunity to replace some of the existing supervisory content within Level 3 vocational qualifications with more focused trade-specific content, including traditional building skills and knowledge. This could be taken forward with the development of a specialist unit covering the principles and knowledge required for working on traditional buildings, including responsible energy efficiency retrofit.

Practical course components should be included given that employers consider hands-on experience to be very important in helping apprentices to practise and hone their skills. This would likely require identifying trainers and delivery partners (i.e. host sites) with suitable facilities within a reasonable travelling distance from the college.

4. Promote wider uptake across Wales of the new Level 3 CPD unit for trainers that has been developed following the Sustainable Construction Learning Sites Project

Feedback from College tutors that participated in the pilot was that the train-the-trainer course was valuable. Some tutors reported not being aware of some the important facts and considerations about treating traditional buildings and have already made efforts to pass this information on to others.



Appendix 1: Sector profile and characteristics

7.3A1.1 Construction (repair and maintenance) enterprises in Wales

There are estimated to be 4,390 construction enterprises operating in Wales under the Standard Industrial Classification (SIC) codes most relevant to repair and maintenance activities, i.e. excluding new build codes (Table 21)³⁶.

Table 21 Total construction enterprises in Wales (excluding new build)

SIC code	SIC description	Wales no. enterprises
43.29	Other construction installation	230
43.31	Plastering	160
43.32	Joinery installation	810
43.33	Floor and wall covering	235
43.34	Painting and glazing	495
43.39	Other building completion and finishing	670
43.91	Roofing activities	250
43.99	Other specialised construction	1,015
71.11	Architectural activities	355
74.90/2	Quantity surveyors	170
TOTAL:		4,390

Source: ONS UK Business Activity, Size and Location 2013, Table B3.4.

7.4A1.2 Estimated size of the traditional building workforce in Wales

Employers surveyed for the research have an average of 8.3 staff.

Of these, 6 work in relation to older and traditional buildings, of which almost all (5.8) are employed full-time.

Perhaps unsurprisingly, businesses working on traditional buildings across multiple regions of Wales are larger by comparison to those working within a single region, employing an average of 18.2 staff.

Employers in the professional sub-sector that work on traditional buildings are slightly larger in employment terms (9.5 staff) than those in the craft sub-sector (8.1 staff) – Table 22.

³⁶ The Standard Industrial Classification (SIC) system was defined by the Office for National Statistics and provides a long-established taxonomy of businesses in the UK. The system offers a common framework for the production and comparison of statistical data by industry sector. At the time of writing the last update to the SIC system was in 2007.



Table 22 Workforce numbers

% of workforce	Base	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
How many employees does your company have?	402	8.3	4.5	5.8	4.8	18.2	8.1	9.5
How many of those employees work on older and traditional buildings?	391	6.0	3.5	4.3	4.1	11.7	5.9	6.2
How many of those employees that work on traditional buildings are employed full-time?	388	5.8	3.3	4.3	3.8	11.8	5.8	6.0

Based on an estimated 4,390 enterprises operating in the repair and maintenance sub-sector (Table 21), it can be estimated that around 26,340 employees in Wales work on older and traditional buildings.

7.5A1.3 Demographics of the traditional building workforce in Wales

Surveyed employers were asked to provide demographic information about their staff who undertake work on traditional buildings. The data are provided in Table 23 with summary information as follows:

- The vast majority of the traditional building workforce is male (94%) versus female (6%). This is broadly in line with existing published statistics for the construction sector as a whole that estimate it to be 90% male and 10% female³⁷;
- Over a third of the traditional building workforce is aged over 50 (38%). The percentage of the workforce in this age bracket is slightly higher in the professional sub-sector (51%) than the craft sub-sector (34%);

³⁷ CITB(2010) *Sector Skills Assessment for the Construction Sector 2010 – Wales report*



- Young people aged 16 to 24 account for 11% of the traditional building workforce. This proportion is marginally higher among employers working across multiple regions (13.5%);
- Craft businesses employ a larger share of young people aged 16 to 24 than professionals (12.7% compared with 4.1%, respectively). This may reflect the proliferation of Apprenticeships in mainstream construction and the fact training and education for professional roles often requires degree level qualifications and above. Architecture, for example, requires seven years of study and work-based experience from the point of entering university (Table 23).

Table 23 Demographics (gender and age) of the traditional building workforce

% of workforce	Base	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-regional	Craft sub-sector	Professional sub-sector
Male	399	93.8	95.0	95.0	93.7	92.1	94.6	90.4
Female	399	5.4	4.6	5.0	5.6	5.9	4.4	9.6
Employees aged between 16 and 24	398	11.0	8.8	8.9	11.7	13.5	12.7	4.1
Employees aged between 25 and 49	398	50.5	50.6	48.5	47.6	55.9	51.7	45.2
Employees aged 50 or over	398	37.5	39.4	42.5	40.0	28.7	34.3	50.7



Appendix 2: Sampling and respondent information

The sample frame for the employer survey was drawn from a reputable national commercial database of businesses, fully searchable by geography and industry sector.

To be valid for selection, businesses needed to:

1. Have their main/head based in Wales; and
2. Be classified according to one of the Standard Industrial Classification (SIC 2007)³⁸ codes relevant to construction repair and maintenance activities within CITB's footprint, including professional activities.

A further pre-requisite for employers to participate in the survey was that they must have undertaken at least some work in relation to traditional buildings over the previous 24 months. This was established via an initial filtering question at the start of the survey.

The survey achieved a broad spread of responses ranging from mainstream general builders, to niche craft-related businesses operating exclusively in relation to older and traditional buildings, such as thatchers and stone masons.

The survey achieved a total of 406 responses against a target of 400. This provides a statistically reliable margin of error of +/- 4.6% at the 95% confidence interval. This calculation is based on a population of 4,390 construction enterprises in Wales operating in SIC codes relevant to repair and maintenance, i.e. excluding new build³⁹.

It is important to note that not all survey respondents answered all questions, therefore the margins of error will be variable per question. Margins of error can also be affected by the performance of cross-tabulations.

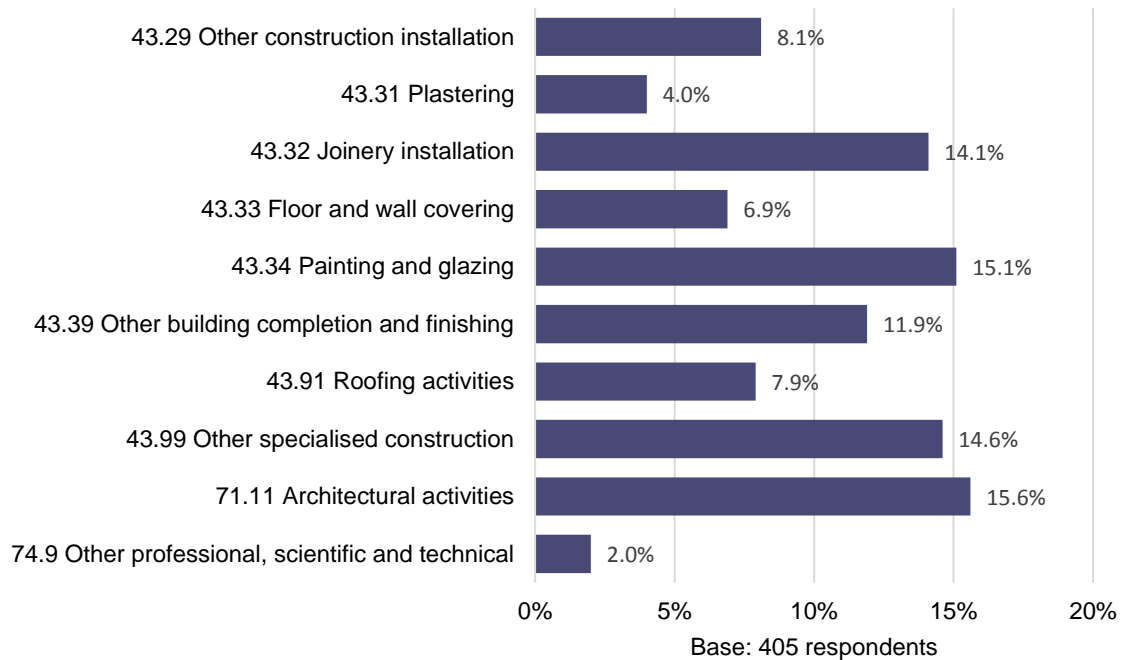
The achieved mix of responses by SIC code is shown in Figure 26.

³⁸ The Standard Industrial Classification (SIC) system was defined by the Office for National Statistics and provides a long-established taxonomy of businesses in the UK. The system offers a common framework for the production and comparison of statistical data by industry sector. At the time of writing the last update to the SIC system was in 2007.

³⁹ Office for National Statistics: *UK Business Activity, Size and Location 2013 (Table B3.4)*



Figure 26 Survey respondents by SIC code



The achieved mix of responses by base region is shown in Table 21, alongside the mix of total enterprises in Wales across the same SIC codes. A regional map of Wales, illustrating the boundary lines for these three regional clusters, is presented in Appendix 5.

Table 24 Base region of Wales – achieved survey sample vs. total enterprises

Nation	Achieved survey mix	Mix of construction enterprises in relevant SIC codes
North Wales	22.1%	26.3%
South East Wales	33.1%	41.0%
South West Wales	44.8%	32.3%

Source for population data: NOMIS

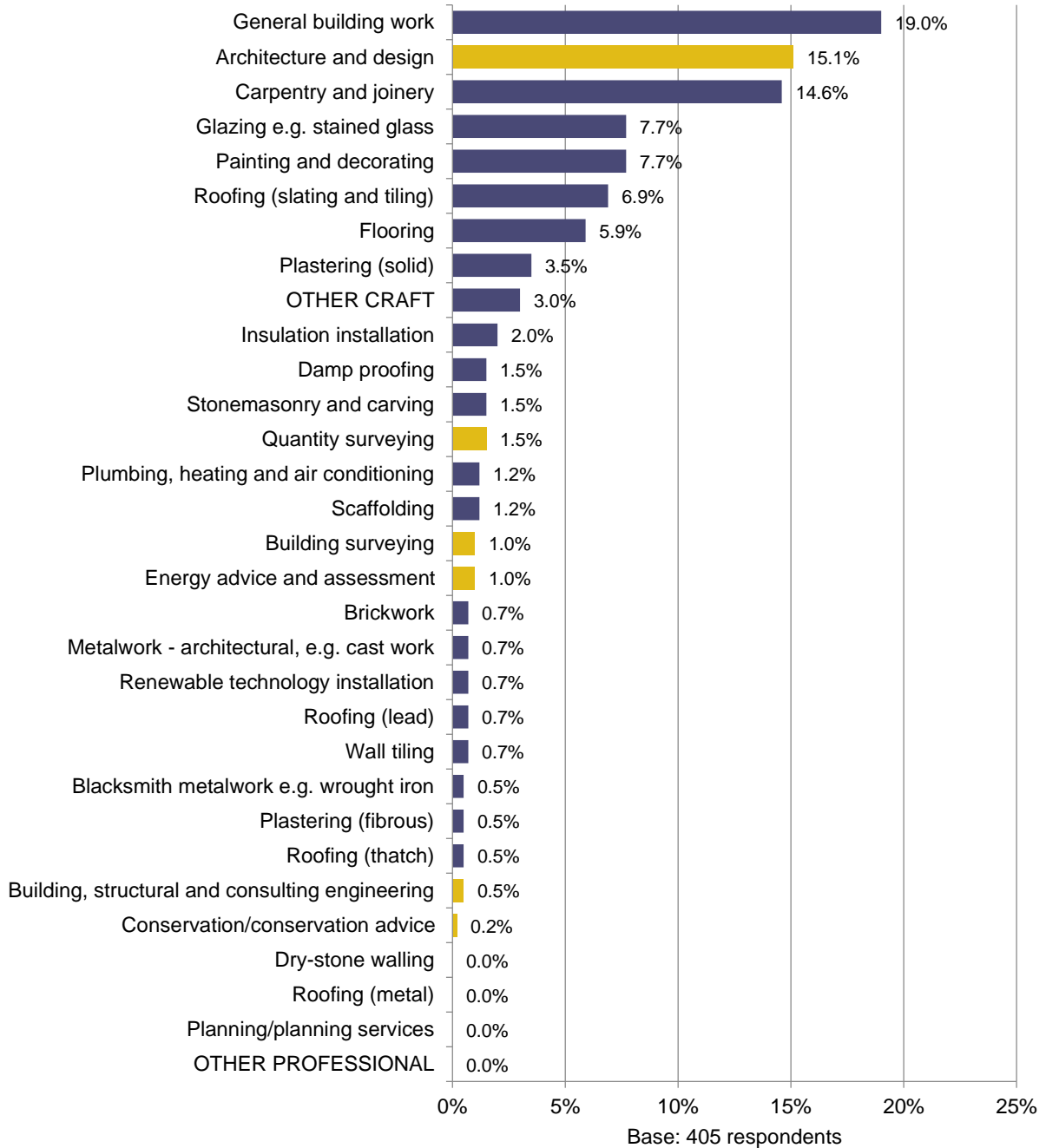
As part of the survey, employers were asked to confirm their main business activity, with the most common being 'general building work' (19% of respondents). The full mix of main business activities is shown in Figure 27, with colour-coding used to denote the two main sub-sectors:

- Craft activities (dark blue shading); and



- Professional activities (pale yellow shading).

Figure 27 Main business activity



'Other' craft occupation include:

- Damp proofing;
- Deep cleaning;
- Lift maintenance;
- Guttering; and



- Maintenance.

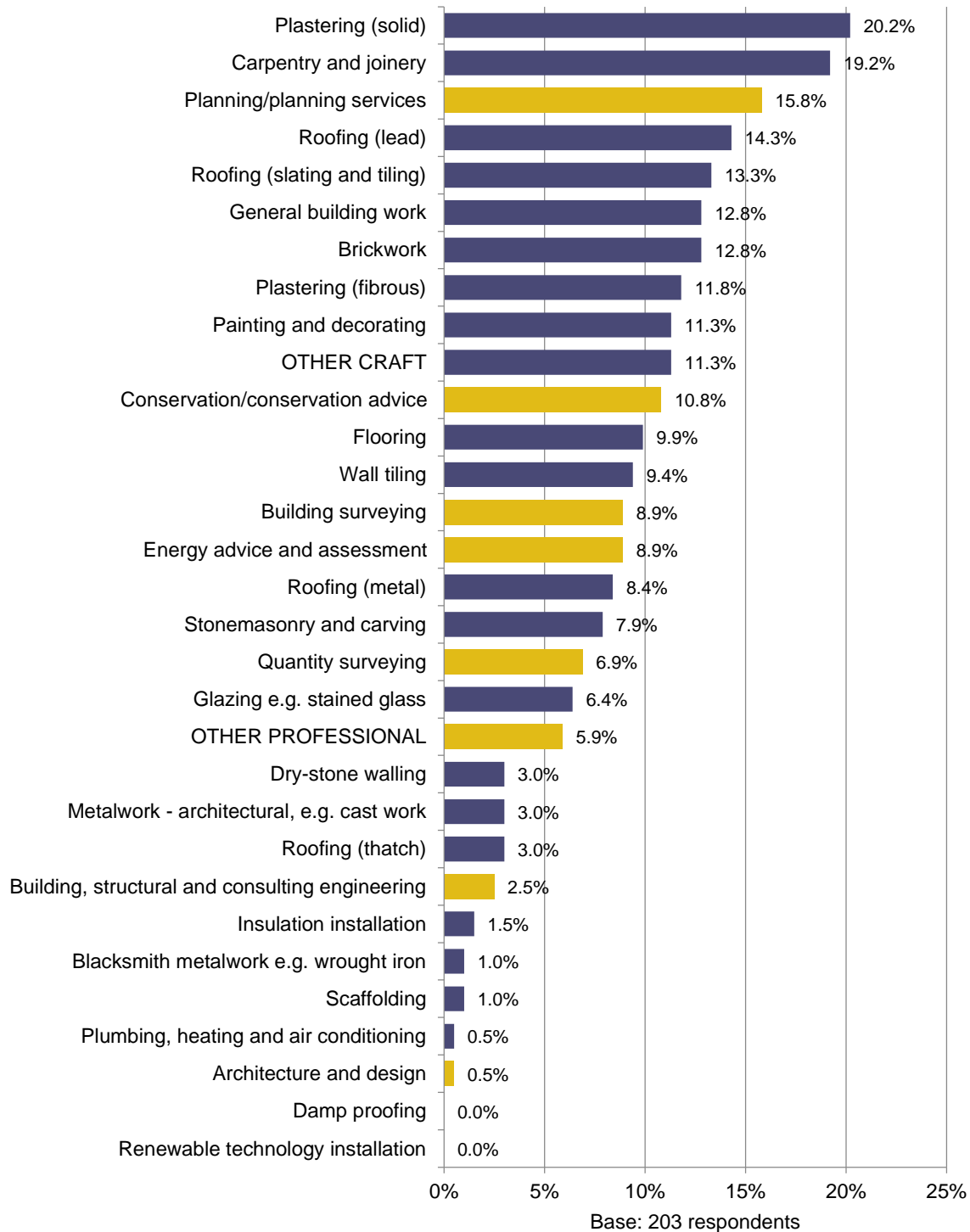
A total of 203 respondents (50%) reported that they undertake one or more secondary activities in addition to their main business activity.

The most commonly cited additional activities are:

- Plastering (solid) – mentioned by 20% of employers;
- Carpentry and joinery – mentioned by 19% of employers;
- Planning/planning services – mentioned by 15% of employers (Figure 28).



Figure 28 Additional/secondary business activities⁴⁰



⁴⁰ This chart is based on 'respondents' rather than 'responses', thereby showing the percentage of all respondents who mentioned each listed activity.



'Other' craft occupations include:

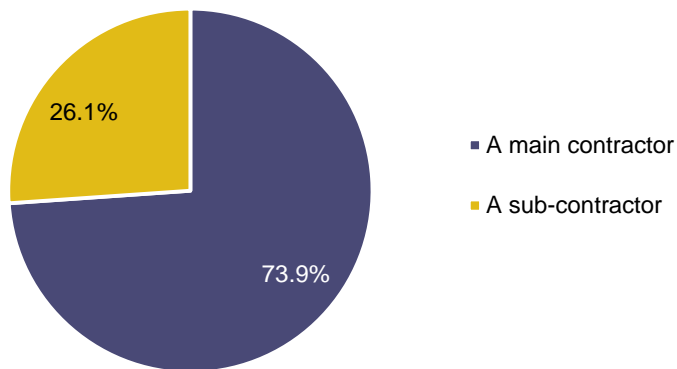
- Bathroom fitting;
- Conservatory installation;
- Flat roofing;
- Gutting; and
- Polishing.

'Other' professional' occupations include:

- Interior design;
- Landscape architecture;
- Project management; and
- Training.

Almost three quarters (74%) of survey respondents classified themselves as a main contractor, with the remainder classifying themselves as a sub-contractor (Figure 29).

Figure 29 Contractor/subcontractor

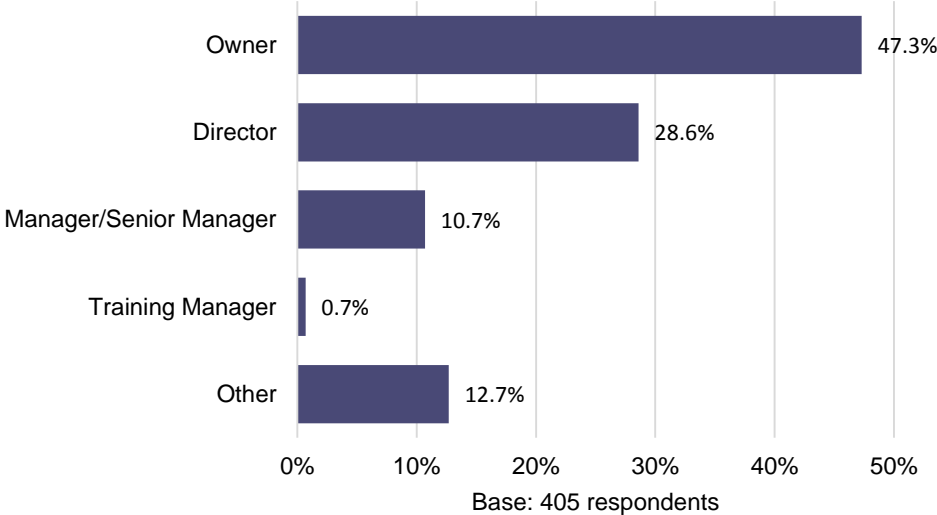


Base: 398 respondents

Three quarters of individuals responding to the survey (75%) were either owners or directors of their businesses (Figure 30).



Figure 30 Respondent job role



'Other' job roles primarily included Office Managers, Secretaries and specialists within a small practice, such as architects.



Appendix 3: Supplementary cross-tabulations

Table 25 Hard to recruit occupations – by region

	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-Regional
Base responses	71	19	15	16	21
CRAFT SUB-SECTOR					
General craft/trades person	7.0%	5.3%	6.7%	6.3%	9.5%
Blacksmith	1.4%	-	-	-	4.8%
Bricklayer	2.8%	5.3%	-	6.3%	-
Cabinet maker	-	-	-	-	-
Carpenter	8.5%	-	20.0%	12.5%	4.8%
Dry-stone waller	-	-	-	-	-
Gilder	-	-	-	-	-
Glass painter	-	-	-	-	-
Glazier	8.5%	5.3%	6.7%	12.5%	9.5%
Joiner	12.7%	5.3%	26.7%	12.5%	9.5%
Lead worker (excluding lead roofing)	-	-	-	-	-
Metalworker - architectural, e.g. cast work	1.4%	-	-	-	4.8%
Painter or decorator	1.4%	-	-	6.3%	-
Plasterer (fibrous)	4.2%	5.3%	6.7%	6.3%	-
Plasterer (lime etc.)	2.8%	10.5%	-	-	-
Plasterer (other)	4.2%	5.3%	6.7%	6.3%	-
Rofer (tiles and slates)	14.1%	21.1%	13.3%	6.3%	14.3%
Rofer (lead)	8.5%	15.8%	-	6.3%	9.5%
Rofer (metal)	1.4%	-	-	-	4.8%
Rofer (thatch)	-	-	-	-	-
Steeplejack	-	-	-	-	-
Stone carver	1.4%	5.3%	-	-	-
Stone conservator	1.4%	5.3%	-	-	-
Stone mason (fixer mason)	1.4%	5.3%	-	-	-
Tiler (floors/walls)	1.4%	-	6.7%	-	-
Timber preserver	-	-	-	-	-
Wood carver	1.4%	5.3%	-	-	-
Wood machinist	1.4%	-	-	-	4.8%
Other craft	11.3%	-	6.7%	12.5%	23.8%
PROFESSIONAL SUB-SECTOR					
Architect	-	-	-	-	-
Building or structural engineer	-	-	-	-	-
Building surveyor	-	-	-	-	-
Energy adviser/assessor	-	-	-	-	-
Conservation officer/adviser	-	-	-	-	-
Planner/planning consultant	-	-	-	-	-
Quantity surveyor	-	-	-	-	-
Other professional	1.4%	-	-	6.3%	-



Table 26 Hard to find as sub-contractor – by region

	All Wales	North Wales only	South East Wales only	South West Wales only	Multi-Regional
Base responses	141	36	43	44	18
CRAFT SUB-SECTOR					
General craft/trades person	2.1%	-	4.7%	2.3%	-
Blacksmith	2.8%	2.8%	2.3%	2.3%	5.6%
Bricklayer	2.1%	2.8%	2.3%	2.3%	-
Cabinet maker	2.1%	-	2.3%	2.3%	5.6%
Carpenter	5.0%	-	7.0%	6.8%	5.6%
Dry-stone waller	2.1%	2.8%	2.3%	2.3%	-
Gilder	1.4%	-	2.3%	2.3%	-
Glass painter	1.4%	-	2.3%	2.3%	-
Glazier	2.1%	2.8%	2.3%	2.3%	-
Joiner	4.3%	5.6%	2.3%	2.3%	11.1%
Lead worker (excluding lead roofing)	2.1%	2.8%	2.3%	2.3%	-
Metalworker - architectural, e.g. cast work	2.1%	2.8%	2.3%	2.3%	-
Painter or decorator	2.1%	2.8%	2.3%	2.3%	-
Plasterer (fibrous)	5.7%	8.3%	4.7%	6.8%	-
Plasterer (lime etc.)	7.1%	11.1%	4.7%	2.3%	16.7%
Plasterer (other)	3.5%	5.6%	4.7%	2.3%	-
Rofer (tiles and slates)	5.0%	2.8%	4.7%	6.8%	5.6%
Rofer (lead)	3.5%	-	2.3%	6.8%	5.6%
Rofer (metal)	2.1%	-	4.7%	2.3%	-
Rofer (thatch)	1.4%	-	2.3%	2.3%	-
Steeplejack	1.4%	-	2.3%	2.3%	-
Stone carver	2.1%	2.8%	2.3%	2.3%	-
Stone conservator	2.1%	2.8%	2.3%	2.3%	-
Stone mason (fixer mason)	3.5%	5.6%	2.3%	4.5%	-
Tiler (floors/walls)	3.5%	-	2.3%	6.8%	5.6%
Timber preserver	2.1%	-	2.3%	4.5%	-
Wood carver	2.1%	2.8%	2.3%	2.3%	-
Wood machinist	1.4%	-	2.3%	2.3%	-
Other craft	7.1%	8.3%	9.3%	2.3%	11.1%
PROFESSIONAL SUB-SECTOR					
Architect	1.4%	2.8%	-	-	5.6%
Building or structural engineer	2.1%	2.8%	-	2.3%	5.6%
Building surveyor	0.7%	2.8%	-	-	-
Energy adviser/assessor	0.7%	2.8%	-	-	-
Conservation officer/adviser	4.3%	5.6%	4.7%	2.3%	5.6%
Planner/planning consultant	0.7%	-	-	-	5.6%
Quantity surveyor	1.4%	2.8%	-	-	5.6%
Other professional	2.8%	5.6%	2.3%	2.3%	-



Appendix 4: Organisations represented at the focus groups

The research involved two round-table focus groups events held at:

- The Oriel Hotel, St. Asaph (North Wales) – 11th November 2014;
- Margam Discovery Centre, Port Talbot (South Wales) – 13th November 2014.

Organisations represented across the two focus groups are shown in Table 27.

Table 27 Organisations represented at the focus groups

Built Environment Sustainability Training (BEST)
Cadw
Coleg Cambria
Coleg Llandrillo (Dolgellau campus)
Coleg Sir Gar
DEWIS CONSULTANTS LTD/RICS Chair North Wales
Federation of Master Builders Cymru
Heritage Initiatives Ltd. //IHBC representative
Historic Houses Association
Pembrokeshire Thatch & Carpentry Services
Snows Construction
Taliesin Conservation
The Building Futures Group
The Institute of Historic Building Conservation (IHBC)
The Lime Company of West Wales
The Royal Society of Architects in Wales (RSAW)
The Royal Society of Architects in Wales (RSAW)
The Tywi Centre
Ty Mawr Lime



Appendix 5: Regional map of Wales

The three main regional groupings set out in this map were used to cluster survey respondents for geographical analysis.

