Analysis of Responses to: Consultation on Scottish skills requirements for energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat networks for homes

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Report prepared by: EKOS Ltd

The opinions expressed in this report are those provided by respondents to the call for evidence.

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Executive Summary

Introduction

1. This Executive Summary presents some of the main themes arising from analysis of responses to the Consultation on Scottish skills requirements for energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat networks for homes.

2. The consultation was published alongside the consultation on the draft Heat in Buildings Strategy, which sets out the Scottish Government's vision for decarbonising heat and reducing energy demand across all buildings in Scotland. The Strategy also sets out the scale of the investment opportunity and supporting green recovery from the COVID-19 pandemic. This can only be achieved if there is a robust supply chain in place with the necessary skills to deliver on the vision.

3. This consultation sought views on the Scottish Government's proposals for energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat network skills requirements. While the primary focus was on retrofit work for homes, some of these skill requirements will also be relevant for new-build housing, and in certain circumstances non-domestic buildings. These requirements relate to retrofit installers, energy assessors, designers, advisors, evaluators and retrofit coordinators. Once implemented, these skills requirements will create a best practice standard for the sector, and will be a minimum requirement for Scottish Government-supported programmes.

4. The main engagement activities undertaken were:

    - An online consultation – a total of 52 responses were received, with the vast majority from organisations. Membership and professional bodies comprised around half of all organisation responses. The remainder were from the public, private or third sector.

    - Two supplementary webinars, one of which had a geographic focus and considered the impact of the proposed skills requirements on Scottish island supply chains. A total of 144 individuals registered for the webinars, of which 91 attended representing an actual attendance rate of almost two-thirds.

Installer Skills Requirements

Q1a: Do you agree with our proposal to integrate the installer skills matrix into the Publicly Available Specification (PAS) 2030 and Microgeneration Certification Scheme (MCS) installer standards?

5. The vast majority of consultation respondents agreed that the installer skills matrix should be integrated into the PAS 2030 and MCS installer standards (88%).

Q1b: Do you agree with our recommendation that manufacturer training should be in addition to, not instead of, these skills requirements?

6. The vast majority of consultation respondents agreed that manufacturer training should be in addition to, not instead of, the proposed skills requirements (86%).

Q1c: If you disagree with these proposals, please let us know why.

7. Ten respondents explicitly "disagreed" with the proposals. In addition, a further 13 respondents also answered this question despite agreeing with the previous questions. These respondents typically elaborated on their support for the proposals or caveated their positive response in some way.

8. A common theme related to the role of PAS 2030. A couple of respondents, disagreed with the fundamental role of PAS 2030 within the proposals, and this fed into a wider call for further consultation. It was considered important to develop a better understanding of the impacts of the proposals at a UK-wide level.

9. Further, it was considered important to ensure a co-ordinated and consistent approach to skills requirements across the UK. It was noted that this could be a more effective way to implement any changes to the skills requirements – as well as provide greater clarity to installers, including those who provide services in Scotland and elsewhere in the UK.

10. Concerns were also raised about the potential cost and administrative burden of the proposal to integrate the installer skills matrix into the MCS installer standards (e.g. in particular for micro businesses). Wider points raised were that manufacturer-led training should not be valued less than other training provision, and concerns around the potential for duplication of training.

Q2: What are your views on the timing for integrating the installer skills matrix into the PAS 2030 and MCS installer standards? What do you think would be a reasonable timescale for the making the skills matrix mandatory in the standards?

11. The general consensus was that the proposal to integrate the skills matrix within PAS 2030 and MCS by the end of 2021, as guidance in the first instance for achieving competency within the standards, was reasonable and sensible. There was broad recognition of the need to facilitate the rapid scale up and deployment of zero-emissions heating systems to support the achievement of interim and longer-term climate change targets.

12. The Scottish Government proposal is that the skills matrix then becomes mandatory "within a reasonable timescale" to allow installers to meet these requirements. A transition period was broadly welcomed.

13. While a range of views were provided, the general consensus was that the skills matrix should be made mandatory as soon as practically possible or within 12 months. In thinking about timescales, it was considered important that smaller companies and island supply chains were not disproportionally impacted.

14. In order for the proposals to become a reality, the availability of training courses was also considered crucial in to help build the required capacity within supply chains.

Q3: What are your views on how installers can meet these skills requirements, in particular the Recognised Prior Learning (RPL) route?

15. There was strong agreement that the qualifications presented in the skills matrix could be achieved by installers in different ways, including through the RPL route. RPL is considered a valuable and important route to help meet the skills requirements. For example, there is considered to be an opportunity to train up heating installers already operating within the market but not installing heat pumps.

16. A common theme was the importance of ensuring that the necessary standards and competencies outlined in the skills matrix were met whatever the route taken, and assessed independently. It would also be important for the RPL route to be integrated with, and mapped against, the skills matrix. There was also a request that the RPL route should not be overly cumbersome or burdensome.

17. There were various comments that related to the quality of training, the assessment and verification process, and/or availability of training courses. Among other things, this included: the importance of industry recognised training; reference to work underway between the Heat Pump Association and industry to support and simplify the process to becoming a competent heat pump installer; and that the skills requirements would need to be set within an islands context.

PAS 2035 Requirements for Other Roles

Q4: What are your views on the competency requirements for the retrofit coordinator, advisor, assessor, designer and evaluator roles?

18. Overall, competency requirements were viewed as essential.

19. A variety of points were raised that related to a number of the roles specified in the Consultation Document – these spanned supply-side and wider issues, and are covered in the main body of the report.

20. Common feedback on the Retrofit Coordinator was that this role would be key – and would require broad knowledge and practical experience in working in refurbishment, renovation, whole house retrofit, and new build construction. It was noted that the approved course for the Retrofit Coordinator was currently only available from one education provider in England, and that this posed a number of challenges within a Scottish context.

21. A common theme was that it was important to put in place processes to ensure high quality installations. Here, the role of Retrofit Assessor was welcomed, as it would play a key role in conducting assessments and providing the Retrofit Coordinator with the data required to inform decision-making.

22. It was considered reasonable and necessary that special consideration was given to the competency requirements required for the assessment of retrofit protected buildings. There was also reference made to the potential use of competent person registration/schemes.

23. Feedback also highlighted the specialist knowledge that a Retrofit Designer would require, and that the role would be critical to the delivery of high-quality installations and ensuring that unintended consequences are minimised.

24. The Retrofit Evaluator was also considered an important role in the retrofit process, For example, it was noted that they would be able to assess the effectiveness of a project and gather numerical, quantifiable data to validate the chosen approach, and would require to understand why a project had not been delivered as expected.

25. Retrofit Advisors were considered important given the role they would play in the delivery of independent advice to homeowners. Given the relatively low level of awareness among the general public of low carbon technologies, it was considered vital that Retrofit Advisors were able to provide efficacious advice on products and techniques to help build customer confidence.

Heat Networks

Q5: What are your views on our plans for developing heat network skills? For example, are there any gaps in heat network skills that we haven't identified?

26. There was broad support expressed for the proposals covering heat network skills in Scotland. Further, there was also wide endorsement of the use of the Energy Savings Trust's 2020 report to help guide and inform plans for developing heat network skills.

27. There was also broad agreement with the skills gaps identified in the Consultation Document (e.g. project management of heat networks, delivery and operation, heat network design). To help identify other skills gaps, it was considered important to consider factors such as:

- A review of the wider evidence base and to take stock of ongoing discussions elsewhere (e.g. BEIS Heat Network Skills Review, 2020).
- The role of local government in delivering District Heating Schemes.
- Understanding the next generation of Heat Networks.

28. A common theme that emerged related to the six colleges and universities identified in that report with an interest in, and the potential to, expand their curriculum content on heat networks to begin to address the identified skills gaps. This was considered a useful starting point. However, it was considered crucial that additional training providers were identified, and in particular to support delivery outwith the central belt.

General Questions

Q6a: What impact do you think our skills requirements will have on the energy efficiency, microgeneration and heat networks sector in remote rural and island communities?

29. The majority of respondents who provided a response identified a range of factors or challenges which could have a negative impact on remote rural and Island communities if not addressed going forward. There was some optimism, however, that the issues could be overcome if mitigating action was taken.

30. A common theme was that the geography and remoteness of rural and island communities' poses challenges in terms of accessing training, and that this acts as a barrier to upskilling within the sector.

31. A wider factor was around capacity within the supply chain and skills shortages. On the whole, feedback was that this could be more pronounced in remote, rural and island communities (e.g. the sector in these communities is largely dominated by micro businesses and SMEs).

32. Another concern raised was that the proposals could place a disproportionate financial burden on remote rural and island communities. The main point raised related to the higher costs associated with both attending training and with installation.

Q6b: What impact do you think our skills requirements will have on the energy efficiency, microgeneration and heat networks sector in Scotland more generally?

33. Far more respondents reported that the skills requirements would have a positive (rather than negative) impact on the energy efficiency, microgeneration and heat networks sector in Scotland more generally.

34. A common theme was that the proposed skills requirements could improve and enhance professionalism and standards within the sector in Scotland. A related theme was that the skills requirements could help support the development and promotion of a clear skills pathway for the existing and future workforce to achieve the required skills and qualifications. Further, it was noted that the skills requirements present a real and significant opportunity for growth of the heat networks sector in Scotland.

35. The main reasons for a minority of respondents expressing a view that the skills requirements could have a negative (or mixed) impact on the sector were largely due to concerns about increased costs, followed by capacity concerns.

Q7: What impact do you think our skills requirements will have on competition including training provision, quality, availability or price of any goods or services in a market?

36. It was most commonly reported that the skills requirements could result in increased prices/costs and an increased demand for training.

37. There was feedback regarding a lack of competition in specific sectors and areas, particularly in remote, rural and island communities. As the proposals set out minimum skills requirements, this could result in an increased demand for training. It was noted that a combination of these factors could create a “monopoly in the market” with some concerned that there would be “risk of a premium” being placed on goods and services. Further, any increased costs for employers to meet the skills requirements were likely to be passed onto consumers and homeowners at the very least in the short term.

38. Given that the skills requirements would set a minimum standard for qualifications within the sector, feedback strongly suggested that it would improve the quality of goods and services by, for example, upskilling the workforce to improve the quality and consistency of installations. Training providers would, however, require support to adapt and develop new provision in line with the skills requirements, and to be able to meet increased demand.

39. Concerns were raised about the impact of the skills requirements on smaller companies who might face challenges in terms of ability to pay for required upskilling and training.

Q8: What suggestions do you have for how digital technology could be used effectively to meet our skills requirements?

40. The general consensus was that digital technology was one of a number of useful tools that could be used to help meet the Scottish Government's skills requirements. There was broad acknowledgement that digital technology would be an important part of the overall mix of how training is delivered. A wide range of benefits of online/remote learning were emphasised (e.g. cost effective).

41. There was also considered value in the use of digital technology to specifically reach and support the delivery of skills training in rural, remote and island communities.

42. The delivery of "blended" or "hybrid" learning opportunities and approaches, including the availability of hands-on training to develop practical skills, was deemed essential to support workforce development in the sector.

Q9: Are there any areas of skills we have not covered in this consultation that you think we should consider?

43. Developing and promoting a clear career pathway as a means of attracting new talent into the sector was highlighted as critical – attracting and training more young people, and for the sector to be seen as an attractive career option.

44. A common theme was that a mix of skills would be required by the current and future workforce. These were commonly framed as technical, traditional, professional and soft skills - all were considered crucial and should be covered appropriately in the skills matrix.

45. There was also reference to ensuring that the skills matrix takes cognisance of, and aligns closely with, wider skills strategies and plans, as well as with recent/planned developments in training provision.

46. Similar to other consultation questions, there was specific reference to the importance of ensuring that people living and working in remote and rural areas have the right skill sets required by industry and have access to opportunities for training and development.

Q10: What support you think would help the sector achieve these skills requirements?

47. A common theme that emerged was that a continued package of support for energy efficiency across the supply chain would be vitally important. There was strong support for industry-wide, longer-term investment in skills to help the sector achieve the proposed skills requirements (e.g. grant and bursary support, upskilling and reskilling support, support to stimulate demand for workforce development, industry-facing awareness raising campaigns).

48. There was very strong support for a plan of action to be developed to help inspire and attract young people into the sector, including the provision of increased apprenticeship opportunities.

49. A variety of points were raised around the provision of training. For example, that the supply side (i.e. training providers) would require support to ensure that they are in a position to meet demand; that the delivery of training could take many different forms; and as reported elsewhere, that the specific needs of rural and remote geographies would need to be considered.

50. In addition to financial support and incentives, there was strong feedback that the Scottish Government would have an important role to play in other ways to help ensure the sector can achieve the proposed skill requirements. For example, by ensuring a joined-up, coherent and collaborative approach between all stakeholders and partners, and identifying and guaranteeing the future pipeline of “green” work in order to allow businesses to be confident in any skills investment they make.

1. Introduction

Introduction

1.1 This report presents the independent analysis of responses to the Scottish Government Consultation on Scottish skills requirements for energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat networks for homes.

1.2 The engagement process ran from 5 February to 30 April 2021.

Background

1.3 This consultation was published alongside the consultation on the draft Heat in Buildings Strategy, which sets out the Scottish Government's vision for decarbonising heat and reducing energy demand across all buildings in Scotland. The Strategy also sets out the scale of the investment opportunity and supporting green recovery from the COVID-19 pandemic. This can only be achieved if there is a robust supply chain in place with the necessary skills to deliver on the vision.

1.4 Developing Scottish specific skills requirements for energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat networks is important as the current skills landscape can be fragmented, open to interpretation and is often provided by non-accredited training providers. Furthermore, the development of Scottish skills requirements will help both professionalise services in the sector and provide career pathways, particularly for young people which will be vital to the sector's future.

This Consultation

1.5 This consultation sought views on the Scottish Government's proposals for energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat network skills requirements. While the primary focus was on retrofit work for homes, some of these skill requirements will also be relevant for new-build housing, and in certain circumstances non-domestic buildings. These requirements relate to retrofit installers, energy assessors, designers, advisors, evaluators and retrofit coordinators.

1.6 Once implemented, these skills requirements will create a best practice standard for the sector, and will be a minimum requirement for Scottish Government-supported programmes.

1.7 More specifically, the consultation sought views on the proposals and their implementation. The proposals are:

- The installer skills matrix developed by the sector skills bodies, industry and other key stakeholders in Scotland is adopted and fully integrated into the British Standards Institution (BSI) Publically Available Specification (PAS) 2030 installer standards and Microgeneration Certification Scheme (MCS) installer standards to reflect Scotland's skills needs.

- To adopt the BSI PAS 2035 retrofit standards for Scotland and the associated skills and competency requirements for other retrofit roles where we will work with skills agencies, including the Scottish Qualifications Authority (SQA) and Skills Development Scotland (SDS) to consider the need for qualifications and/or further training in Scotland for these roles, particularly where no qualifications currently exist in Scotland.

1.8 The consultation also sought views on the impact these requirements will have on the Scottish supply chain, particularly in remote rural and island areas.

Report Structure

1.9 Section 2 provides details of the engagement methodology and a profile of the respondents.

1.10 Section 3 covers the proposals for installer skills requirements, and Questions 1 to 3 of the consultation.

1.11 Section 4 provides views on the PAS 2035 requirements for other roles (Question 4).

1.12 Section 5 provides views on plans to develop heat networks skills (Question 5).

1.13 Section 6 presents views on the potential impact of skills requirements on remote rural and island communities and the sector (Questions 6a, 6b and 7).

1.14 Section 7 presents views on the potential role of digital technology to meet the skills requirements (Question 8).

1.15 Section 8 reports on any additional areas of skills which should be also considered (Question 9).

1.16 Section 9 presents views on support which would help the sector achieve the proposed skills requirements (Question 10).

1.17 The following appendices have been attached:

- Appendix A provides a classification by organisation type for those organisations that responded to the online consultation.

- Appendix B presents a list of the questions raised by participants that attended webinar(s) held to supplement the online consultation.

2. Engagement Methodology

Engagement Activities

2.1 The main engagement activities undertaken were an online consultation and supplementary webinars. Each is considered in turn below.

Online Consultation

2.2 The Scottish Government promoted an online consultation on Scottish skills requirements for energy efficiency, zero emissions and low carbon heating systems, microgeneration and heat networks for homes on its Consultation Hub website (Citizen Space). The consultation ran from 5 February to 30 April 2021.

2.3 The vast majority of consultation responses were submitted through the Scottish Government's online portal. Ten responses were submitted to the Scottish Government directly, for example, by email. Where this was the case, the Scottish Government logged and added each response directly to Citizen Space.

2.4 All responses received were checked and moderated by the Scottish Government prior to providing EKOS Ltd access to Citizen Space. EKOS exported consultation responses from Citizen Space into Microsoft Excel for data cleaning, review and analysis.

2.5 A total of 53 responses were received, including two duplicate responses from the same individual within an organisation (i.e. a submission via Citizen Space and an email copy). One response was therefore removed prior to the final analysis.

2.6 There were therefore a total of 52 valid responses, with almost all submitted by organisations, **Table 1**.

2.7 No campaign responses were identified.

Table 1: Profile of Respondents

Respondent	Number	%
Individual	5	10%
Organisation	47	90%

N=52

2.8 Membership or professional bodies were more likely to have responded to the consultation, and accounted for almost half of all organisation respondents, **Table 2**.

Table 2: Profile of Organisation Respondents

Organisation Type	Number	%
Membership or Professional Bodies	23	49%
Public Sector	9	19%
Third Sector	8	17%
Private Sector	7	15%

N=47

2.9 Appendix A provides details of how organisation respondents have been categorised.

Analysis

2.10 The analysis seeks to identify the most common themes and issues. It does not report on every single point raised in the consultation responses. All submissions to the consultation will be reviewed separately by the Energy & Climate Change Directorate.

2.11 Equal weighting has been given to responses. This includes the views of, on the one hand, large organisations with a national or UK remit or membership, and, on the other, smaller organisations with a more local focus (or an individual's viewpoint).

2.12 All but two of the consultation questions were open-ended, and we have tried to theme and quantify responses where possible and appropriate.

Limitations

2.13 Respondents to any consultation or survey are self-selecting.

2.14 The depth of responses to survey questions varied – some respondents have provided full and detailed responses, while others have provided short or even single word responses.

2.15 Not every respondent answered each and every question, and some responses went beyond the scope of the question(s) posed.

Webinars

2.16 Two webinars were hosted and facilitated by the Energy Saving Trust on the 11 March and 15 March 2021 which supplemented the main online consultation. The webinars provided an additional opportunity for stakeholders and interested parties to feed into the wider engagement process.

2.17 The first webinar session was open to stakeholders across Scotland. The second session was focused geographically, and among other things, specifically considered the impact of the proposed skills requirements on Scottish island supply chains.

2.18 The two webinars comprised:

- Presentations by representatives from the Scottish Government Short Life Working Group to set the scene and to go through the detail of the proposals and questions in the consultation.
- Interactive Polls.
- Question and Answer sessions.
- Signposting to the Citizen Space online consultation to encourage responses.

2.19 A total of 144 individuals registered for the webinars, of which 91 attended, representing an actual attendance rate of almost two-thirds, **Table 3**.

Table 3: Webinar Registration and Attendance

Webinar	Registered	Attended	Attendance
Stakeholder	109	69	63%
Island Stakeholder	35	22	63%
Total	**144**	**91**	**63%**

Source: Energy Saving Trust, Key stats from Scottish Government Skills Consultation webinars.

2.20 From the information provided, a wide range of individuals that work in the sector registered for the webinars. A majority were coded as "other", **Table 4**. The data, however, provides a flavour of who registered for each webinar.

Table 4: Job Type of those Registered for Webinars

Respondent	Stakeholder Webinar	Island Stakeholder Webinar	Total	Total %
Other	62	18	80	56%
Energy assessor	12	6	18	13%
Installer (other)	12	3	15	10%
MCS Installer	8	4	12	8%
Manufacturing	10	2	12	8%
Surveyor	4	1	5	3%
Architect	1	1	2	1%
Total	**109**	**35**	**144**	**100%**

Source: Energy Saving Trust, Key stats from Scottish Government Skills Consultation webinars.

2.21 **Tables 5 to 7** provide details of webinar poll questions and responses. Key points to note include that:

- Prior to the webinar session, a majority of attendees that answered the poll question **were aware** of the BSI PAS 2035/30 standards (68%).
- Some 60% of attendees that answered the poll question, however, reported that they had no or little **overall knowledge** of the BSI PAS 2035/30 standards.
- The main barriers facing suppliers on the islands were identified as training and certification costs, and a lack of awareness about what is happening in the market.

Table 5: In your opinion, what is the biggest barrier facing suppliers on the islands? (Island Stakeholder webinar only)

Response	Number	%
Uncertainty/confusion over government schemes	2	17%
Training and certification costs	4	33%
Time and cost issues for accessing island properties	2	17%
Lack of awareness about what's happening in the market	4	33%
Paperwork and administration involved with retrofit	0	-
Total	**12**	**100%**

Source: Energy Saving Trust, Key stats from Scottish Government Skills Consultation.

Table 6: Prior to today, were you aware of the BSI PAS 2035/30 standards?

Response	Stakeholder Webinar	Island Stakeholder Webinar	Total	Total %
Yes	41	10	51	68%
No	19	5	24	32%
Total	**60**	**15**	**75**	**100%**

Source: Energy Saving Trust, Key stats from Scottish Government Skills Consultation webinars.

Table 7: What is your overall knowledge of the BSI PAS 2035/30 standards?

Response	Stakeholder Webinar	Island Stakeholder Webinar	Total	Total %
None	17	3	20	27%
Little	18	6	24	33%
Reasonable	12	5	17	23%
Good	5	0	5	7%
Very good	6	1	7	10%
Total	**58**	**15**	**73**	**100%**

Source: Energy Saving Trust, Key stats from Scottish Government Skills Consultation webinars.

2.22 A list of questions asked by webinar participants are contained in Appendix B. The team that facilitated the sessions either answered questions on the day and/or committed to providing a response in due course.

3. Installer Skills Requirements

Integration of Installer Skills Matrix and manufacturer training

Context

3.1 The Scottish Government proposes to integrate the Scottish installer skills matrix, developed by the Quality and Skills Working Group, into the BSI PAS 2030 and Microgeneration Certification Scheme (MCS) installer standards. The Consultation Document notes that this would provide more clarity for the qualification annexes already in these standards as PAS 2030 states the need to hold an "industry agreed, vocational qualification of apprenticeship" without stating what these are.

3.2 Also, in the case of PAS 2030, it states an alternative requirement would be a "certificate of competence relevant to the Energy Efficiency Measure (EEM) to be installed". In practice, this could be manufacturer-led training. While the Scottish Government see manufacturers as having an important role in training, it is proposed that this should be in addition to, and not instead of, recognised qualifications or equivalent.

3.3 The Quality and Skills Working Group recognised that there were already a number of existing industry recognised qualifications, and that it was important to bring these together into one overarching skills matrix covering construction, heating and electrical work. The development of this skills matrix is now complete with all members of the group agreeing that it should be implemented as soon as practically possible.

3.4 The full skills matrix has been developed on a measure by measure basis and can be found in the Consultation Document (Annex B). It can be broken down as follows:

- Mandatory vocational career paths where applicable.
- Mandatory qualification elements as recommended by the Quality and Skills Working Group.

3.5 The qualifications presented in the skills matrix can also be achieved through Recognition of Prior Learning (RPL) - a method of assessing whether a learner's experience and achievements meet the evidence requirements of a recognised training unit which may or may not have been developed through a course of learning. RPL is therefore another route to achieving these competencies. This is contingent on the current skills set of the operative and may be less time consuming compared with a full training course to achieve the necessary qualification. Local colleges can support industry to develop pathways to support installers to achieve the minimum competencies.

3.6 The intention is to integrate the skills matrix within PAS 2030 and MCS by end of 2021. It is proposed that the skills matrix, in the first instance, is initially included as a guide for achieving competency within the standards. However, the Scottish Government would expect the skills matrix to become mandatory within a reasonable timescale to allow installers to meet these requirements.

Question 1a

Table 8: Do you agree with our proposal to integrate the installer skills matrix into the PAS 2030 and MCS installer standards?

Respondent	Yes		No	
	Number	%	Number	%
Individual	4	80%	1	20%
Organisation	38	88%	5	12%
Total	**42**	**88%**	**6**	**12%**

N=48. "Not answered" removed.
Figures have been rounded therefore totals may not equal 100%.

A vast majority supported the proposal

3.7 A vast majority of consultation respondents agreed that the installer skills matrix should be integrated into the PAS 2030 and MCS installer standards (42, 88%). Relatively equal proportions of individuals and organisations agreed, albeit absolute numbers of individuals is small, **Table 8**.

3.8 A relatively small proportion of respondents disagreed with this proposal (six, 13%). While absolute numbers are small, this included a number of large public sector organisations.

Question 1b

Table 9: Do you agree with our recommendation that manufacturer training should be in addition to, not instead of, these skills requirements?

Respondent	Yes		No	
	Number	%	Number	%
Individual	5	100%	0	0%
Organisation	37	84%	7	16%
Total	**42**	**86%**	**7**	**14%**

N=49. "Not answered removed".

A vast majority supported the proposal

3.9 A vast majority of consultation respondents agreed that manufacturer training should be in addition to, not instead of, the proposed skills requirements (42, 86%), **Table 9**.

3.10 A relatively small proportion of respondents disagreed with this proposal (seven, 14%).

Question 1c

If you disagree with these proposals, please let us know why.

3.11 Question 1c was aimed specifically at those respondents who disagreed with the proposals outlined at Question 1a and/or Question 1b i.e. answered "no" to the closed question(s), and sought reasons for this disagreement. Ten respondents explicitly answered "no".

3.12 In addition, a further 13 respondents also answered this question despite agreeing with the previous questions. These respondents typically elaborated on their support for the proposals or caveated their positive response in some way.

3.13 Further, Question 1c asked for wider commentary on both Question 1a and Question 1b. We have tried to identify and cluster feedback that related to each specific question accordingly where this was clear.

Support for the integration of the installer skills matrix

3.14 Around ten respondents expanded on their support for the proposal to integrate the installer skills matrix into existing PAS 2030 and MCS installer standards.

3.15 Support was expressed for the standardised approach set out in the installer skills matrix. The feedback also noted that this would bring greater clarity to the skills requirements and pathways, while also increasing consumer confidence and assurance. Further, it was considered necessary in order to help deliver on wider policy ambitions and targets around the transition to net-zero.

Few respondents disagreed with the proposal regarding integration of installer skills matrix or caveated their support for the proposal

3.16 While the vast majority of respondents agreed with the proposal at **Question 1a**, several went on to highlight specific concerns or caveated their "agreement" with the proposal in some way. The main points can be themed as follows.

Integration with PAS 2030

3.17 A common theme related to the role of PAS 2030.

3.18 A couple of respondents, including SELECT and BCA Insulation Limited, disagreed with the fundamental role of PAS 2030 within the proposals. One respondent reported a number of concerns with PAS 2030 (and PAS 2035) including increased costs for retrofit work and creating additional hassle and "dealbreakers" (such as need to refit/replace kitchens and bathrooms, replace windows and removal/covering of period features) as a result of the meeting the requirements within the standards.

3.19 Although again only reported by a few respondents, this fed into a slightly wider call at Question 2 for further consultation regarding integration with PAS 2030, and in particular the importance of considering the impacts of the proposal at UK-wide level.

3.20 The following concerns with PAS 2030 were raised individually:

- That the focus of the proposals should be on skills shortages "which cannot be mitigated by tossing a rule book at the problem".

- PAS is a process and "does not define specifically energy efficiency measures that should be introduced….care needs to be taken to ensure that the proposed skills matrix and qualifications are properly aligned with the process."

3.21 A further point raised was that the skills requirements "should apply to all energy efficiency measures not just where PAS is applicable".

Consistent approach across UK

3.22 Another common theme related to the importance of ensuring a consistent approach to skills requirements across the UK.

3.23 A handful of respondents, such as Construction Industry Training Board, felt that a consistent and collaborative approach across the UK could be a more effective way to implement any changes to skills requirements. It was noted that this could benefit installers by providing greater clarity as well as "allow installers to provide services across geographical borders".

3.24 To this end, it was suggested by several respondents, including Energy Saving Trust and NIBE Energy Systems that equivalent qualifications available across the UK, such as National Vocational Qualifications (NVQs), should be included in addition to the SQA qualifications listed in the skills matrix which are only available in Scotland.

3.25 Feedback from some respondents noted that the list of qualifications could be kept under review and routinely updated. The Energy Saving Trust went further and suggested that there might be merit in including qualifications from other parts of the world, as reflected in an extract from its response:

> "We think it would be helpful for the installer skills matrix to be further developed to include equivalent qualifications from other parts of the UK (England, Wales, and Northern Ireland) and potentially also qualifications from other parts of the world. This would ensure that installers who are based in other parts of the UK and/or who qualified in other parts of the UK (or indeed in other parts of the world) would be able to easily know if they have the skills necessary to work on Scottish Government-supported programmes and be able to easily identify where further training would be required."
>
> Energy Saving Trust

Qualifications

3.26 There were a few calls for greater clarity around what qualifications would be required for each measure, with one insulation industry body "somewhat dismayed that with only two months to the implementation of the new PAS standards, there is still no qualifications, never mind route to achieving them available in Scotland".

3.27 It was also suggested that the rewording of certain parts of the skills matrix could help to clarify what qualifications would be required by installers.

Integration with MCS Installer Standards

3.28 To a lesser extent, similar concerns about the detrimental impact of PAS 2030 were raised about the effectiveness of MCS. The point raised is reflected in the respondent quote below.

> There could be a "cost and administrative burden of MCS… for the many micro-businesses operating in this field [which] puts those businesses at a distinct disadvantage when trying to secure such work".

SELECT

3.29 One respondent caveated their support on the "basis that small installers can operate under a manufacturer's MCS umbrella scheme".

Support for manufacturer training to be in addition to, not instead of, the skills requirements

3.30 Some of the wider qualitative feedback on **Question 1b** expressed support for the proposal that manufacturer training should be in addition to, not instead of, these skills requirements.

3.31 Here, the main feedback was that given the specific nature of manufacturer training, the proposal could help develop a consistent skillset among installers. Further, it could help upskill the existing workforce and "drive up" standards of installations. In addition, The Association for Decentralised Energy noted that manufacturer training "being additional to underlying standards places greater security of skills requirements".

Few respondents disagreed with the proposal regarding manufacturer training or caveated their support with the proposal

3.32 While the vast majority of respondents agreed with the proposal put forward at **Question 1b**, several went on to highlight specific concerns and/or caveated their "agreement" with the proposal in some way.

3.33 The main points can be themed as follows, with the two main reasons being that manufacturer training should not be valued any less for delivering training which is as "rigorous and recognised" as other training, and concerns around the potential for duplication of training.

Recognition of Manufacturer-Led Training

3.34 Firstly, it was reported that "just because training will be delivered by a manufacturer through awarding organisations who have approved their training centres, should not make it any less rigorous or recognised".

3.35 For example, some respondents highlighted an example of heat pump manufacturers who "currently deliver their own training and, through the Heat Pump Association, have recently all agreed to deliver a new qualification". A suggestion was that the skills matrix could "follow the Heat Pump Association recommended training route (Recommendation 3 of its report) developed by an industry-wide collaboration spanning heating technologies" which is to be adopted by MCS standards. See also **Section 3.81**.

3.36 Feedback highlighted the wider context of skills gaps and shortages in the sector, and how adopting an approach which is inclusive to all training providers, including manufacturers, could contribute towards tackling these skills challenges:

> "Disagree with the statement manufacturers should be additional, some manufacturers offer regularity [sic] training at various levels so as long as they fulfil the criteria it shouldn't make any difference if it is a college, independent training provider or manufacturer. With the upskilling of the workforce, it is going to need an inclusive strategy to bridge the skills gap."
>
> Private Sector Respondent

Duplication of Training

3.37 Secondly, a few respondents were of the view that the proposal might risk creating too many forms of training.

3.38 The point raised was that the proposal could lead to unnecessary duplication and add financial and administrative burden to a process which "already has a long list of requirements". It was further noted that the potential duplication of training without sufficient guidance might also result in installers paying multiple times for training.

> "There is a real danger that an uncoordinated approach, which this consultation seems to advocate, will mean staff are left with a range of training to be provided by manufacturers all promoting their own products as the best solutions on the market without the offerings being contextualised by important information such as independent evaluations based on in-situ testing and data on the market shares of different products within a product category."
>
> Joint response from: The Energy Poverty Research Initiative, Common Weal, The Built Environment Asset Management Centre, Glasgow Caledonian University

3.39 To this end, a respondent highlighted that lessons could be learned from the recent Green Homes Grant Scheme in England, where confusion around complaint handling arose from multiple consumer codes.

3.40 A suggestion put forward to help mitigate the perceived risk around the duplication of training was for more generic training to be provided with manufacturers then providing additional "tailored advice, specific to the technology".

Other Issues Raised Regarding Manufacturer Training

3.41 Albeit mostly raised individually, wider issues highlighted by those that supported the proposal included:

- A couple of respondents, such as BCA Insulation Limited, recognised the important role that manufacturer-led training will play in skills requirements but asked for greater clarity on "how colleges will be able to cover the full range of systems on the market."

- The Insulation Assurance Authority stated that "PAS2030 -19 currently does not permit manufacturer training to replace formal qualifications - what it does permit is from schemes such as the Electrical certification approach to be recognised but each must have a formal qualification."

3.42 Finally, a concern raised was that allowing manufacturer-led training could compromise a consistent approach to skills requirements. Albeit there was recognition of the substantial time and resource invested by industry and manufacturers in the development of such training, "and that the quality and specialist nature of manufacturer training can be useful."

Question 2

What are your views on the timing for integrating the installer skills matrix into the PAS 2030 and MCS installer standards? What do you think would be a reasonable timescale for making the skills matrix mandatory in the standards?

3.43 Over three-quarters of respondents provided a response to Question 2 (40, 77%), while the remainder left the question blank or had no comment to make.

A reasonable proposal

3.44 The general consensus was that the proposal to integrate the skills matrix within PAS 2030 and MCS by summer 2021, as guidance in the first instance for achieving competency within the standards, was reasonable and sensible.

3.45 There was broad recognition of the context of net zero targets and the draft Heat in Buildings Strategy, and that urgent action was also required on the skills front to help deliver on Scotland's ambition.

3.46 Further, there was broad acknowledgement that the focus should now be on the rapid scale up and deployment of zero-emissions heating systems (e.g. heat pumps and heat networks) in order to meet interim climate targets, and to ensure longer-term delivery of net-zero targets by 2030. For example, it was suggested that this would mean more than doubling installations each year so that by 2030 over one million homes and around 50,000 non-domestic buildings are converted to use these heating systems.

3.47 Given the urgency and the need to scale up activity, there was acknowledgement and support across the responses for the upskilling and reskilling of installers as soon as was practically possible. It was noted that this would then allow low carbon installations and energy efficient measures to be completed quickly, and importantly to a similar, high and recognised standard.

Suggested timescales for skills requirements to become mandatory

3.48 The Scottish Government proposal is that the skills matrix then becomes mandatory "within a reasonable timescale" to allow installers to meet these requirements.

3.49 Almost three-quarters of respondents that provided a response to Question 2, specified a timescale for when the skills matrix should be made mandatory into the standards (29, 73%).

3.50 Views were fairly mixed:

- Almost half held the view that the skills requirements should be made mandatory as soon is practically possible (14, 48%).
- Almost one-quarter reported that it should become mandatory by summer 2022 (seven, 24%).
- The remainder (eight, 28%) held a view that a reasonable timescale for the proposal to become mandatory would be more than 12 months (timescales ranged upwards to three years).

3.51 As such, almost three-quarters reported that the skills matrix should be made mandatory as soon as practically possible or within 12 months. Here, the urgency of action in the face of net zero targets was emphasised. Wider feedback included that:

- Integration of the installer skills matrix should be achievable relatively quickly as it would be integrated into already established standards, PAS and MCS, and qualifications would be available through range of United Kingdom Accreditation Service accredited certification bodies.
- "Installers should already have a skilled workforce, therefore, the introduction of a minimum standard should be relatively easy to meet".
- This would match the ambition set out in the draft Heat in Building strategy, especially in terms of retrofitting.
- It is already a requirement "under PAS2030-19 now that the installer either holds or is working towards the appropriate qualification and Scottish installers who work under ECO are already having evidence compliance with the IBT requirement."

3.52 Among respondents that specified a longer timescale (i.e. at least one year) – largely third sector and membership and professional bodies - a common and strong view was that this would give sufficient time to assess, develop and regularly monitor supply chains to ensure that installers were able to meet demand. Further, it was noted that this could mitigate the potential risk of a large proportion of installers requiring upskilling to meet the new mandatory requirements. Although reported to a lesser extent, it was noted that a longer timescale might also be beneficial given the events of the past year and to best support COVID-19 recovery.

A transition period was broadly welcomed

3.53 Overall, the Scottish Government proposal to include a transition period, whereby the skills matrix would be initially introduced as voluntary guidance before becoming mandatory, was broadly supported.

3.54 The main benefits of a transition period were commonly framed as follows:

- It could help to avoid/mitigate the risk of adverse consequences arising from implementing the mandatory skills requirements too soon/early:
    - Financial risks e.g. loss of revenue from not having an adequately skilled workforce to carry out installations.
    - Environmental risks e.g. delays to low carbon and energy efficient installations could have a negative effect on the sector's and Scotland's ability hit its climate change targets and reduce emissions to net-zero.

- In the context of sectoral skills shortages and gaps, it was reported that a transition period could provide an ample opportunity to market, promote and communicate the skills matrix and the mandatory skills requirements to the supply base. This could increase awareness of skills requirements among the existing/potential future workforce before the installer skills matrix becomes mandatory.

3.55 There was acknowledgement within the consultation responses that there was still much to do to ensure that supply chains and training courses/options could be scaled up to meet potential demand. This was identified as a key challenge should the skills matrix be made mandatory over a short timescale. Further, it was noted that a transition period offered a reasonable solution to this issue, and could avoid a "cliff edge of installers being unable to work within Scottish Government's Heat in Buildings programme".

3.56 It was also suggested that a transition period could allow for further consultation to be undertaken regarding integration with PAS and any UK-wide implications of the Scottish Government proposals.

Availability of training and developing capacity within supply chains to meet new mandatory requirements

3.57 It was considered important to regularly monitor that training courses were being deployed at scale and helping to build capacity within supply chains. It was noted that this could help ensure that the Scottish Government proposed timing for integrating the installer skills matrix into the PAS 2030 and MCS installer standards, and for this guidance to then become mandatory, was realistic and achievable. Further, this could help to mitigate the financial and environmental risks outlined earlier at **Section 3.54**.

3.58 A few respondents noted concerns that there could be a disproportionate impact of adhering to a short timescale for the skills matrix becoming mandatory on small companies and island supply chains. Further, COVID-19 has likely exacerbated this issue.

> "The islands have been mostly shut down for the past year. It has been impossible to leave to attend training and there are no local (anywhere in the Highlands and Islands) trainers to deliver courses to meet the standards. Online training is uncertain to meet the needs and current GB wide trainers were unable to enter Scotland and certainly visit the islands to conduct assessments. If this is implemented as is, or in a short timescale, then all installation of energy efficiency measures will cease in most island communities. This will certainly stop activities required under the Fuel Poverty Act in the areas of the highest fuel poverty. This is despite having highly skilled installers in the local supply chain, time served with a wealth of experience built up over decades, with extremely high customer satisfaction and evaluation by energy companies and the local authority".
>
> Tighean Innse Gall

3.59 Several respondents noted that there was currently limited availability for related training courses, and were concerned that the Scottish Government proposal to integrate the skills matrix within PAS 2030 and MCS by summer 2021, as guidance in the first instance, was not realistic.

Question 3

What are your views on how installers can meet these skills requirements, in particular the Recognised Prior Learning (RPL) route?

3.60 Almost three-quarters of respondents provided a response to Question 3 on how installers can meet these skills requirements, in particular the RPL route (73%). The remainder left the question blank or had "no comment" to make (27%).

RPL is a valuable and important route to help meet the skills requirements

3.61 There was strong agreement across consultation responses that the qualifications presented in the skills matrix could be achieved by installers in different ways, including through the RPL route.

3.62 Here, there was wider recognition of the "value" of RPL, the "contribution it can make" to upskilling existing workers, and that "many diplomas and competency schemes already recognise prior learning and enable installers to gain recognition of qualifications or experience gained in industry". Upskilling existing workers as well as bringing new installers into the low carbon sector were considered crucial.

3.63 Aligned to this, was a point raised by Kingspan Insulation Ltd on the need for "a strong, skilled, and geographically dispersed installer base to deliver upon Scotland's net zero aspirations"…we need to ensure that the installer base is equipped, engaged and ready".

> "For those already qualified, we recommend industry and SCQF credited and levelled "top-up" training on specific types of installation as the most effective means of gaining the required skills. For those who are not yet qualified, industry has recognised routes to either facilitate the acquisition of these skills, or indeed the recognition of existing skills or learning towards them. Processes such as the Scottish Joint Industry Board Crediting Electrotechnical Competence (CEC) Scheme allow practising electricians to obtain industry-recognised qualifications".

SELECT

3.64 Further, and as a specific example, the Chartered Institute of Building pointed to its own "non-academic route" to achieving Chartered Membership for those working in manual roles who have the professional experience but might not have relevant qualifications. The membership body suggested that a "similar approach should be taken for those who wish to meet the minimum skills requirements through a non-academic route in addition to those who have qualifications outside of Scotland where it is difficult to compare the level of education they have received".

3.65 Common themes in support of the RPL route were typically framed in the following terms:

- RPL would be a "necessary" route to achieving the competencies, in part given the timescales proposed (i.e. the intention is to integrate the skills matrix within PAS 2030 and MCS as guidance by the end of 2021).

- The inclusion of the RPL route would provide added “flexibility” and ensure that qualified installers were not excluded from continuing to work on low carbon, energy efficient installations.

- It would ensure “continuity of installation” (in particular in an islands context where the installer base includes many small businesses and sole traders) and keep the “momentum growing” with the low carbon transition.

- RPL could play an important role in “engaging and encouraging suppliers to diversify” – for example, specific professions could be targeted with clear, logical pathways (e.g. “solar PV for electricians”).

- RPL could help to “maximise opportunities and uptake”, including crossover from other industries where there are comparable or transferrable skillsets.

Meeting the necessary standards and competences and independent assessment

3.66 Another common theme was the importance of ensuring that the necessary standards and competencies outlined in the skills matrix were met “whatever the route taken and assessed independently”.

3.67 There was wider feedback that it would be important for the RPL route to be “integrated closely” with, and “mapped against” the skills matrix. This included a specific example provided by Historic Environment Scotland:

> “Given that very few installers will have undertaken a recognised qualification in Insulation and Building Treatments, RPL will need mapping against the new skilled matrix. Any installers would need to be able to demonstrate the areas of the relevant qualifications could be met with existing knowledge and skills which will require investment in assessors and verifiers”.

3.68 It was suggested that undertaking such a mapping exercise could also help to mitigate a perceived risk of “creating a loophole in skill requirement qualifications” as well as ensuring RPL “is utilised to its fullest potential”. In this regard, there was agreement that “there needs to be processes in place” and a “robust way of observing this”.

> “Many diplomas and competency schemes already recognise prior learning and enable installers to gain recognition of qualifications or experience gained in industry. It is essential that this on-site training is supported and accepted as an important part of any learning journey. Many of the skills needed can be developed outside of formal courses through in-house training, onsite mentoring, and on-the-job experience in a variety of settings. However, it is important that these skills and competencies are tested, approved, or assessed and there are assurances that the installers meet and maintain the required standard….Valid and reliable evidence should be necessary to support prior learning assessment decisions”.
>
> Kingspan Insulation Ltd

3.69 United Kingdom Accreditation Service hold the view that “competence (rather than qualifications) needs to be demonstrated…and current”, and that this might require “a periodic, meaningful assessment by an external body”.

3.70 Similarly, the West of Scotland Housing Association felt that there should be "standards and clear identification of a course that meets the skills requirements (e.g. kitemark, SQA certification) that would allow this to form part of a procurement exercise for buyers".

3.71 There was a request that the RPL route should not be overly cumbersome or burdensome, a point reflected in the organisation quotes below.

> "…it may be the case that people will have been out of formal education for a very long time and it should be positioned as a positive step for them, not a negative one. We must also ensure that we strike the right balance in the approach so as to mitigate the risk of having an overqualified and under-experienced workforce versus an over-experienced, underqualified one".
>
> Warmworks Scotland

> "In identifying how installers can meet the proposed skill requirements and in particular, the RPL route, a balance must be struck between maintaining and raising standards within industry and ensuring that installers are not exposed to excessive burdens. Many installers have been working in the sector for several years and have developed knowledge and experience through practical work as opposed to qualifications and it is important that this knowledge and experience is recognised and accounted for".
>
> National Insulation Association

> "For RPL installers there needs to be a means of assessing their capabilities and competences without spending hours in a classroom or workshop environment. Online courses may be the best way of determining existing levels of knowledge in an affordable way for existing workers. These may, in some cases, need a follow up visit to a centre for a practical assessment depending on the skill sets being examined".
>
> Building Engineering Services Association

3.72 While there was strong support for RPL, a few wider comments were provided, for example:

- A local authority and Tighean Innse Gall posed various questions around the need for clarity to better understand for example: "what RPL means in practice", "what the RPL is", "who would deliver the assessment", "how it is accredited", and how it would be "applied" in different scenarios.

- Construction Industry Training Board noted that RPL is a methodology used to determine entry to a course/qualification – "it does not negate the need to obtain the qualification. Particularly if the qualification is mandated through something like PAS2020 and PAS2035. RPL should be applied by the training provider/college to determine the gaps in knowledge/skills/ competencies when mapped against the relevant qualification the learner is being entered for…It is then used to determine what needs to be taught and assessed".

- National Insulation Association in its response noted that “past experience of an existing installer may not be the right experience, and it may be argued that installer experience should be assessed against the framework for new installers undergoing training to raise standards for all within the sector to ensure that the skills are relevant to methods used today, new products / services and the holistic approach to retrofit”.

- National Insulation Association also noted that it would be important to bear in mind that “new qualifications have been developed to keep up to date with new products and techniques, which may not have been relevant to someone working ten years ago”.

- The joint response from The Energy Poverty Research Initiative, Common Weal, The Built Environment Asset Management Centre, Glasgow Caledonian University commented that the Scottish Government would have to “work closely with currently qualified installers, their trade organisations, professional associations, and further and higher education institutions to define the existing skills set, and likewise with the installers and trade bodies of new technology. It will then be incumbent on the Scottish Government to develop such a matrix”.

Quality, provision and availability of training

3.73 There were various comments that related to the quality of training, the assessment and verification process, and/or availability of training courses.

3.74 Sustainable Energy Association and Scottish Power noted agreement with the following recommendations of the Short Life Working Group on Quality Assurance (Consultation Document, Pages 4 and 5):

- Recommendation 1 - There should be Quality Assurance criteria developed which detail the key mandatory requirements for suppliers wishing to participate in Energy Efficient Scotland.

- Recommendation 2. There should be a Quality Mark for Energy Efficient Scotland and suppliers wishing to take part in the Programme will have to Page 5 demonstrate that they meet all of the requirements (set out in Recommendation 1) through a robust vetting and verification process to achieve the Quality Mark. All approved suppliers should be listed on a publicly available Directory and where possible the use of operative ID cards should be considered.

3.75 Both organisations noted that implementing these recommendations would ensure suppliers adhere to a set criteria in order to participate in retrofit activities, and that it would also serve as an additional verification of quality for consumers.

3.76 Snipef Management Ltd welcomed the involvement of industry in the development of the skills matrix, and the importance of “industry recognised” provision and standards as a further commitment to quality and a benchmark of competency.

> "It is essential we avoid any training packages that are not valued by industry and will not result in being an industry recognised operative. Fast track course for people coming from other industries are not acceptable".
>
> Snipef Management Ltd

3.77 Tighean Innse Gall emphasised that the achievement of the skills requirements would need to be set within an islands context

> "Island based installers require islands based solutions. This means that provision of training, accreditation and certification have to be available in the islands. Given some proposed qualifications require 150 hours of learning, this can only be achieved if available in the islands. To attend a course of this magnitude on the mainland….the cost of travel and accommodation would be at least £1,000 per week journey aside of training costs".

3.78 National Insulation Association reported that the Education and Skills Fund Agency does not mandate how an assessor determines prior learning, and pointed to a UK Government example of a model that might be used to assess prior learning could include "a professional discussion with the apprentice to discuss knowledge, skills and behaviours gained in previous roles against the knowledge, skills and behaviours set out in the apprenticeship". It suggested that the following measures could be used to assess an installer's competency via the RPL route:

- Length of time working for an organisation within the sector.
- Number of jobs completed.
- Existing qualifications.
- Site observations/assessments of previous projects.

3.79 Further, Falkirk Council noted that the measures or "criteria to use this route should be made clear to ensure consistency in approach and should be evidenced to allow scrutiny".

3.80 A common theme was that an important area to focus on would be "supporting training providers to develop the appropriate competencies to hit the skills requirements", including progressing discussions with providers outwith the central belt. A related point was that it would be important for there to be an "increase in the training courses that are available, this will ensure there is sufficient volume to facilitate the attainment of the requirements, whether in the classroom or on-site".

Acknowledgement of work currently being progressed by Heat Pump Association and industry

3.81 The Heat Pump Association and others (e.g. NIBE Energy Systems UK) emphasised the importance of capitalising on the opportunity to train up heating installers already operating within the market but not installing heat pumps.

3.82 Common feedback was that this workforce has "many of the skills required to install heat pumps" and that the "plumbing principles will be the same". In this context, RPL was considered a useful mechanism or methodology through which the skills requirements could be achieved, and should be given due consideration.

3.83 Aligned to this, it was noted that work was currently underway between the Heat Pump Association and industry to "support and simplify the process to becoming a competent heat pump installer". This new installer route consists of a "technology neutral two day course which would ensure that installers are able to install and commission a systems to perform efficiently, regardless of the technology". Further, following the completion of the technology neutral course, installers will then embark on specific heat pump training, and will cover knowledge required regardless of the specific heat pump technology as part of a two day course before then specialising in heat pump technologies, such as air source or ground source.

Funding to help meet skills requirements

3.84 Scottish Land and Estates commented that "appropriate funding" would require to be provided to installers to ensure they have the resources to meet the proposed skills requirements, including the RPL route.

3.85 While the Energy Saving Trust noted that it would be important that "financial support is provided whilst people reskill to avoid the disincentive of a reduced income during the training period".

4. PAS 2035 Requirements for Other Roles

Context

4.1 PAS 2035/30 covers a number of specific roles involved with retrofit work. PAS 2030 covers the installer requirements and PAS 2035 covers skills requirements for other roles.

4.2 Figure 2 in the Consultation Document (Page 11) summarises PAS 2035/30 in terms of the roles, including the new Retrofit Coordinator which is a critical component of the new standards. The Consultation Document provides an overview of the following roles, alongside more detailed proposals on competency requirements:

- Retrofit Coordinator. The Retrofit Coordinator could also be the advisor, assessor, designer, or evaluator.
- Retrofit Assessor.
- Retrofit Designer
- Retrofit Evaluator.
- Any person delivering retrofit advice.

4.3 The Scottish Government will work closely with Scottish colleges to deliver training and qualifications in line with the proposed competency requirements.

Question 4

What are your views on the competency requirements for the retrofit coordinator, advisor, assessor, designer and evaluator roles?

4.4 The vast majority of respondents answered Question 4 and provided views on the competency requirements for the retrofit coordinator, advisor, assessor, designer and evaluator roles (85%). The remainder left the question blank (15%). There was a mix of more general feedback as well as commentary on the different roles.

Competency requirements are essential

4.5 Overall, competency requirements were viewed as essential, and this was reflected in a variety of comments, including the following:

- “An absolute must. There should be a large degree of comfort for the buyer of this service that the appointed team know what they are doing. There should be certification that includes x hours of onsite work in a project and a requirement through CPD to maintain current knowledge”. (West of Scotland Housing Association).
- “Roles should have minimum competency requirements to protect the client, householder and public pound”. (Falkirk Council).

- "Kingspan welcomes greater focus on these roles to support a holistic approach to renovation. However, we do advocate for a 'fabric first' approach and therefore would emphasise that this should be at the forefront of recommendations for these roles". (Kingspan Insulation Ltd).

- "The ADE is supportive of the ambition to align qualifications with the mandatory competency requirements set out in PAS2035, but would urge further work with industry and training providers to ensure all options for retrofit/low carbon heat and considered through training and development". (The Association for Decentralised Energy).

- "It is encouraging to see that the Scottish Government has acknowledged the need for specialised training when working with Older and Traditional Buildings. Many rural properties fall within this category, and many contractors do not have the required training or knowledge to ensure all installations are sympathetic to the building's needs. The requirement for contractors to hold a qualification specifically tailored to these properties will help to resolve this issue". (Scottish Land and Estates)

- "…it is very important that (a) competence is demonstrated, (b) it should be assessed regularly to ensure it is up to date, and (c) this should be done by a suitably accredited (e.g. by UKAS) third-party certification body. (United Kingdom Accreditation Service).

- "It is considered that the competency requirements for these roles is crucial for effective application of the standards. The level of training required needs to provide a level of comfort in order to ensure competency and consistency. Those carrying out these roles will need to have an in-depth understanding of technologies, methods of construction and how they all work in conjunction within a property". (Perth & Kinross Council Housing Improvements)

Key points to note

4.6 A variety of points were raised through the consultation responses that relate to a number of the roles specified in the Consultation Document.

Supply side issues

- There was agreement that the roles listed are not necessarily individual persons. There was feedback that many individuals train for multiple roles (e.g. Retrofit Assessors also gain Retrofit Coordinator qualifications). Aligned to this, Built Environment Forum Scotland commented that "if this were to be the case, is there the temptation that Risk Assessments could be downgraded/diminished to ensure the work can be carried out by those less qualified?

- That it was important that, for all aspects of retrofit, "standards for all roles must be fit for purpose and independently assessed" (i.e. building on quality assurance principles, particularly consumer protection).

- It was suggested that competencies common to all roles might include, for example: understand broad construction processes (e.g. design, procurement, programme delivery); be familiar with construction roles and responsibilities; understand current/future energy efficiency technologies available; willingness to engage and communicate delivery challenges; surveying skills; comprehensive report writing skills; quality assurance; willingness to share skills and provide training opportunities; commit to availability within programme delivery timescales; understand grant funding opportunities.

- It is desirable that the roles have training and/or experience in the "practicalities of construction" to ensure their recommendations are pragmatic and implementable by the tradespeople who carry out the work.

- The roles would require an understanding of the "importance of undertaking heat loss calculations" to ensure that systems are appropriately sized. As well as an understanding the need to lower flow temperatures as part of a heating system replacement.

- It was suggested that further thinking would be required around the levels of competency specifically on "topics such as energy efficiency and sustainability".

- A key point raised was that there is a lack of approved training centres across the UK, and particularly in Scotland. A connected point, was that other organisations, over and above colleges, could offer training towards the competency requirements, and it was suggested that this could be explored further. The importance of ensuring any academic or practical training/qualifications was "thorough and rigorously vetted" was also emphasised.

- A constraint identified was the current availability of "suitably qualified people in Scotland to undertake certain roles". Further, it was noted that some roles (e.g. Retrofit Coordinator, Retrofit Assessor) "might be hard to fill due to the level of knowledge, competency and understanding of multiple industry disciplines required", and also might not be cost effective for micro businesses.

- A concern raised was that that the "volume of competency requirements for each role had the potential to disadvantage micro businesses". Further, it was considered important that the introduction of any scheme or specification "should not limit opportunity for micro and SME businesses".

Wider points

- It was suggested that lessons could be learned from the "inadequacies" of the current assessment methods used to measure performance of traditional buildings (EPC), to ensure "systemic mistakes are not repeated".

- A further proposal was that the Scottish Government could work with professional bodies (e.g. The Royal Institution of Chartered Surveyors - RICS) to "ensure the supply chain is developed". For example, it was noted that "many more accredited Building Surveyors will be required in Scotland if aspirations are to be met".

- A "fabric first approach" should be advocated at all times.

- Assurance would need to be provided that "Whole Dwelling Assessment" would include maintenance assessment of the current state of the dwelling. Without this any interventions will not produce the outcomes, whether they are occupant comfort and health, cost, or climate impact, as expected.

- As PAS 2035 is a UK wide document, a comment was that "much wider consultation and agreement would be required to write them into the standard".

Feedback on the different roles

4.7 Much of the wider commentary related to one or more of the roles, and this is considered at a high level below.

Retrofit Coordinator

4.8 Common feedback on the Retrofit Coordinator was that this role would be key –- and would require broad knowledge and practical experience in working in refurbishment, renovation, whole house retrofit, and new build construction.

4.9 National Insulation Association emphasised the importance of this role in terms of "…managing a retrofit project from start to finish". The same organisation added that "a Retrofit Co-ordinator, alongside other roles such as the Retrofit Designer can help to ensure that appropriate measures are installed to high quality standards and crucially, that these are correctly sequenced in accordance with a fabric first approach". Retrofit Co-ordinators are professionally accountable for protecting the homeowner and public interests and to this end, it is important that they are suitably qualified".

4.10 Kingspan Insulation Ltd commented that the Retrofit Coordinator would play an important role in ensuring "there are no unintended consequences associated with renovation works which includes the appropriate phasing and co-ordination of improvements and the junctions and interactions that exist between them". Further, this role was also needed to make sure that "the measures work together in harmony and support the wider decarbonisation objectives as well as ensuring affordability and energy security".

4.11 The Association for Decentralised Energy and MCS Charitable Foundation and MCS Service Company Ltd noted that Retrofit Coordinators "must also be aware of the relevant local decarbonisation strategies driven by Local Heat and Energy Efficiency Strategies (LHEES) and work on behalf of local authorities to drive consumer buy in". This was viewed as important to help ensure success across the other roles.

4.12 A common point raised was that the approved course for the Retrofit Coordinator was currently only available from one education provider in England, and that this posed a number of challenges within a Scottish context. Various points raised are reflected in the respondent quotes below.

> "Diploma in Retrofit co-ordinator etc is currently only awarded by one awarding body across the UK which severely limits the ability to obtain PAS2035. There needs to be a range of different awarding bodies delivering the same qualification to the same standard. There needs to be National Occupational Standards (NOS) for the various roles".
>
> Construction Industry Training Board

> "As a company we have grasped the nettle and have put staff through the coordinator and assessor courses and are concerned that it has just recently been suggested that the coordinators course (the only one available in the UK) will not be recognised in Scotland! This has put us off seeking competency training down south for our operatives".
>
> BCA Insulation Limited

> "..achieving this qualification in the short term requires a number of prerequisites and time to achieve qualification. This may make this role unachievable in the short to medium term due to limited availability of suitably qualified personnel". (Individual).

> "The Retrofit Coordinator role could also be fulfilled by those undertaking training on the retrofit pathway in Construction Site Management, the NOS for which have recently been developed. As all existing training for retrofit coordinators is delivered in England, it will be important to establish how suitable this is for Scottish building types, and to tailor accordingly. There are also question marks around whether the training for Retrofit Coordinators is sufficiently in depth to allow all the functions of the role to be met, and Scottish Government may want to investigate this further".
>
> Historic Environment Scotland

4.13 It was therefore considered vitally important to avoid a "shortage of coordinators that are fully qualified and able to undertake this work".

4.14 The commitment made by the Scottish Government to work with organisations, including the SQA and SDS, to consider the need for qualifications and/or further training in Scotland, particularly where no qualifications currently exist, was welcomed. There was also a request for this to be progressed as soon as is practically possible.

> "Whilst this commitment is welcomed, and we recognise that centres such as the Retrofit Academy in England do have an e–learning programme, we would like to see the Scottish Government's commitment to build training provision delivered upon as rapidly as possible.

> The new ECO requirements due to be implemented from 1st July (for ECO, PAS 2035/PAS 2030:2019 will become mandatory) will lead to an increasing demand for retrofit co-ordinators, which further emphasises the need for training additional retrofit co-ordinators. A lack of training provision could negatively impact the delivery of retrofit schemes and could undermine quality".
>
> National Insulation Association

4.15 Tighean Innse Gall posed a question around why RPL was not included for the Retrofit Coordinator role, as the organisation further expanded on below:

> "….this has created a very select market if not a monopoly for the Retrofit Academy in selling their course. Surely experienced professionals with particular relevant skills can upskill quicker. If this is not recognised then we would think this will simply disenfranchise part of the experienced existing supply chain which we surely want to encourage not discourage from participating in this process".

4.16 OFTEC noted that "For a single measure installation (i.e. heating) it must be the installer who provides these functions….Only on complex, multi-trade projects would a fully qualified Retrofit Coordinator be mandatory".

4.17 NIBE Energy Systems UK considered the Retrofit Coordinator role "should be independent and provide oversight of the project including post-completion evaluation".

4.18 Sustainable Energy Association agreed with "the recommendation from the Construction Industry Training Board that a Clerk of Works role should be explored, responsible for overall quality of the retrofit, over and above the retrofit coordinator role". It added that "while it's the responsibility of each role to ensure quality, the Clerk of Works is responsible for all quality and the interaction between the roles. They oversee the duties such as performing regular inspections and comparing completed work with original designs. This additional level of oversight is key for successful delivery of Energy Efficient Scotland".

Retrofit Assessor

4.19 A common theme was that it was important to put in place processes to make certain "installation quality is ensured". Here, the role of Retrofit Assessor was welcomed, as it would play a "key role in conducting assessments and providing the Retrofit Coordinator with the data required to inform decision-making", and could "provide a further incentive for high quality installations".

4.20 Further, Kingspan Insulation Ltd commented that the Retrofit Assessor would be essential for ensuring that quality is "not lost across the skills matrix, and that installers and training providers are held accountable to the standards". They elaborated further, as outlined below.

> "We would emphasise that all buildings must be assessed individually, and the assessor should have an in-depth knowledge of building design regarding materials, age, use etc. so they can make the most effective assessment and gather sufficiently detailed information to allow a designer to develop appropriate proposals for improvement.

> The output will be an Assessment Report which will provide a Retrofit Designer with sufficient information to be able to develop recommendations for immediate action and for a medium-term improvement plan as required by PAS 2035 that reflects the Householders' / occupants' / landlords wishes and any identified constraints and that can allow for improvement option evaluation. It is important that an assessment does not just generate lots of data, but that it is targeted, usable, and useful for a designer, with the assessment process focused on the information that might be needed by a designer including identifying defects, design challenges and considering what might be required to be captured for the purposes of assessing the potential for future improvements".
>
> Kingspan Insulation Ltd

4.21 Risk was commonly mentioned – for example "it is logical to specify competency requirements dependent upon the risk grade of the project". In particular, "an underestimation of the risk could lead to individuals on site lacking key competencies which could have implications for installation quality, whilst an overestimation of risk could lead to projects being over resourced, with excessive project costs".

4.22 Further, it was considered "reasonable and necessary" that special consideration was given to the competency requirements required for the assessment of retrofit protected buildings. For example, "there is a need to consider how unintended consequences are managed and mitigated against, as traditional methods may not be appropriate". Related points are reflected in respondent quotes below.

> "The problem arises with additional qualification associated with protected buildings which require supplementary qualifications in "Energy efficiency measures for older and traditional buildings" which is no longer available in Scotland. It may be possible to obtain the English equivalent qualification assuming it is fully transferable for use on listed/traditional Scottish building construction".
>
> Individual

> "It is encouraging to see....the need for specialised training when working with Older and Traditional Buildings. Many rural properties fall within this category, and many contractors do not have the required training or knowledge to ensure all installations are sympathetic to the building's needs. The requirement for contractors to hold a qualification specifically tailored to these properties will help to resolve this issue".
>
> Scottish Land and Estates

> "It is clearly very important for heritage buildings that everyone dealing with them has the necessary skills to fit them for a greener tomorrow. It seems unlikely that the Scottish Government has got there yet. We recommend greater collaboration with Historic Environment Scotland".
>
> The Architectural Heritage Society of Scotland

4.23 There was acknowledgement that “for retrofit there are multiple issues that have to be considered from technical and operational parameters of technology to the structural engineering and building fabric specialists”. This was further reflected on as follows.

> “…we suggest that retrofit assessor recommendations should not be based on the recommendations of an energy advisor but by a team that includes an advisor, engineer and architectural technician. Therefore, the structure forwarded in the consultation would be more effective if the retrofit coordinator and energy advisor were the same individual. As things stand in the proposals the energy advisor will merely deliver the poor advice generated by the EPC process…. the Scottish Government have already recognised the shortcomings of EPCs and, as a minimum, the need to revise the model used, if not the whole system”.
>
> The joint response from The Energy Poverty Research Initiative, Common Weal, The Built Environment Asset Management Centre, Glasgow Caledonian University

Retrofit Designer

4.24 Feedback also highlighted the specialist knowledge that a Retrofit Designer would require, and that the role would be “critical to the delivery of high-quality installations and ensuring that unintended consequences are minimised through appropriate specification and design detailing”.

> “This role is of the upmost importance as a retrofit designer will need to have specialised knowledge of all aspects of building pathology and of low carbon technologies, in order to be able to assess each building individually and decide upon possible pathways for that building - not all properties will be appropriate for all interventions, particularly where traditional buildings might have issues of construction or heritage and as such, appropriateness of interventions must be carefully considered”.
>
> Kingspan Insulation Ltd

4.25 For example, there was feedback that the Retrofit Designer would require to be aware of the following:

- The range of low carbon solutions available to decide on the best integrations of technologies for homes individually.
- The current state of play in the low carbon market.
- Available financial support mechanisms.
- Ancillary and advisory services.
- Qualified installers.

4.26 Build Environment Forum Scotland commented on the wording used in the Consultation Document in relation to the Retrofit Designer role for properties of Risk Grade C, and noted that it is inconsistent with the previous categories and also the requirements PAS 2035, which requires a progressive increase in qualification through each grade of risk. Alternative wording was suggested:

> "There is a danger that the current wording will result in a reduction in standards, and will result in a significant increase in inappropriate retrofit measures and failures. The current wording suggest that conservation expertise is optional for high-risk buildings.
>
> This should therefore be changed to reflect the actual requirements of PAS 2035, and the wording as it currently appears "Risk grade C – same as risk B but for traditionally constructed buildings can also include:…Should be changed to: "For projects assessed as risk grade C, and to which the requirements of Path C apply, and the building to be improved (or any part of it) is traditionally constructed or protected, the Retrofit Designer shall also be accredited or certified in building conservation…"

4.27 SELECT (and others) made reference to competent person registration/schemes (e.g. the competence for Retrofit Designer lists holding competent person registration for oil heating), as elaborated further below.

> "Competent Person Schemes are not applicable in Scotland. While some organisations may offer registration with such schemes, this is for work carried out in England & Wales only. The requirement for MCS registration for microgeneration installations is also not needed. The Requirements for the UK Smart Export Guarantee states: "applicants will be asked to demonstrate that their installation and installer are suitably certified. You may have an installation certificate to demonstrate this. This may be a Microgeneration Certification Scheme (MCS) certificate, but the SEG also recognises that other schemes may be equivalent to MCS. If you do not have an MCS certificate, your installation and installer should be accredited in accordance with EN 45011 or EN ISO/IEC 17065:2012. You should speak to your chosen SEG licensee to understand exactly what information they need from you." The requirements for retrofit microgeneration designs should match that of the Smart Export Guarantee".

SELECT

> "…the PAS 2035 does not ensure that individuals are competent and given the levels of risk to assets, there is also a need for understanding the different levels of competency. One way to address this is through competency schemes which help provide a future model for the robustness needed in demonstrating competency in retrofitting and we believe this should be incorporated into these role requirements. The Chartered Institute of Building have been working to address competency standards for sustainability and energy efficiency through a Building Conservation Certification Scheme. Applicants are required to demonstrate their competence against the International Council on Monuments and Sites Training and Education Guidelines based on their experience and qualifications.

There are three levels of competence to provide individuals at every level the opportunity of furthering their career in building conservation, these are: Registered, Proficient and Certified. Those at the 'certified' level are recognised by a growing number of organisations that require certified experts in conservation. For traditional buildings, such as listed buildings, we feel that individuals should be at the 'certified' level in order to demonstrate competence. Additionally, those providing training concerning traditional buildings should be certified as well".

The Chartered Institute of Building

4.28 An individual respondent commented that a key consideration would be "the availability of suitably qualified people in Scotland to undertake the Retrofit Designer role especially where designer also requires to be an accredited member of a recognised building conservation body sponsored by recognised organisation". It went on to add that "there would be limited qualified people in the UK to undertake this role, and fewer in Scotland".

Retrofit Evaluator

4.29 The Retrofit Evaluator was also considered an important role in the retrofit process, for example it was noted that they:

- Would be able to assess the effectiveness of a project and gather numerical, quantifiable data to validate the chosen approach – "Proper evaluation allows for development of new knowledge and understanding of building performance and can help to improve future recommendations".

- Could cover a variety of purposes, including considering: the health and wellbeing of occupants and building fabric (e.g. indoor air quality, temperature, structural moisture); the environmental performance of the building in use (e.g. energy consumption and operational CO2 emissions); the utilisation of the building (e.g. access to guidance and explanation of controls and operation, future maintenance needs); the cost of operation/occupancy (e.g. performance of the envelope and the services installed); and any differences between intended and delivered performance.

- Must have the skills required to understand why a project has not been delivered as expected in the event that a basic assessment indicates that a project does not meet required standards.

- Must be aware of standards and initiatives that drive greater performance. One such standard is EnerPHit and the Passivhaus approach that aims to reduce the demand for heating, by improving the efficiency of the building fabric, such that the same level of thermal comfort can be attained with reduced heating provision.

4.30 Some wider points noted included:

- Tighean Innse Gall posed a question around why the Retrofit Evaluator role would require to also hold the Scottish Level 6 Award in Energy Efficiency Measures for Older And Traditional Buildings if they are "only working on stock that is post-1919".

- An individual noted that the evaluator role "should be more independent, creating better checks and balances".

Retrofit Advisor

4.31 Retrofit Advisors were considered important given the role they would play in the "delivery of independent advice to homeowners".

> "…we welcome inclusion of the City and Guilds Energy Awareness Training as this aligns with the requirements upon advisors working for Home Energy Scotland".
>
> National Insulation Association

4.32 Kingspan Insulation Ltd highlighted that there was a "significant difference between general advice and targeted advice". Further, given the relatively low level of awareness among the general public towards low carbon technologies and confidence in how these work, the organisation also emphasised the essential role the Retrofit Advisor would play in "education and ensuring confidence from customers in their choices for a low carbon option". The importance of "softer" skills such as customer engagement and communication was emphasised.

> "Understanding of heat pump technologies and the opportunity for installation is low amongst the general public and even across some parts of the sector. There are many myths about heat pumps which need to be addressed. There is therefore a need to ensure that those advising homeowners are literate on this subject and able to provide high quality, independent advice to consumers. Knowledge transfer between the above job types will therefore be important".

4.33 The National Trust for Scotland commented that those who deliver advice on retrofitting and energy efficiency should be "trained to a minimum standard on the characteristics of pre-1919 buildings so they can offer clients efficacious advice on products and techniques".

4.34 Built Environment Forum Scotland noted "serious concerns" relating to current narrative on the role of the Retrofit Advisor, and considered this to be the "least well-regulated step in the chain". It went on to add that:

> "This could lead to a poor outcomes for clients as initial advice vs. co-ordination/action roles could be at odds. Advice role also appears to include no current understanding of advice in relation to traditional buildings. There is mention of that happening "as PAS2035 develops". Given the scale of the pre-1919 estate in Scotland (19% of building stock), this needs to be included from the start, not bolted-on at a later date. As advice may well be the first step for many, the steps within this plan do not build confidence and clarity for home-owners and could fail to support high levels of consumer confidence".

4.35 More widely, both The Royal Incorporation of Architects in Scotland and The Architectural Heritage Society of Scotland commented that:

> "It would be preferable for the Scottish Government to develop its own set of standards and make them available without charge on their own website, (as Historic Environment Scotland has done with their own Technical Standards and guidance). British Standards Institution publications are expensive and we are concerned that small and medium sized businesses do not have access to them".

5. Heat Networks

Context

5.1 The Heat Networks (Scotland) Act was passed unanimously by the Scottish Parliament and received Royal Assent on 30 March 2021. It is the first legislation of this kind in UK, and forms part of the Scottish Government's response to the global climate emergency. The Act will stimulate the deployment of heat networks in Scotland by introducing supportive regulation, which will increase investor, consumer and supply chain certainty and confidence. A significant package of regulation must now be brought forward to implement the legislative framework provided for in the Heat Networks (Scotland) Act.

5.2 The Heat Networks Act sets statutory heat network deployment targets, requiring 2.6 terawatt hours of output by 2027 and 6 terawatt hours by 2030. Heat networks in Scotland are expected to create new demands on the supply chains needed to design, install, and commission and maintain these networks. To understand this better, the Scottish Government commissioned research through Energy Saving Trust to identify skills gaps and training needs within the sector. The Heat Network Skills in Scotland Report was published in May 2020.

5.3 The research identified the skills gaps in the Scottish heat network supply chain and compiled a list of colleges/universities with an interest in, and the potential to, expand their curriculum content on heat networks to begin to address the identified skills gaps:

- Project management of heat networks, delivery and operation (e.g. understanding of heat network design, how to procure contractors, stakeholder engagement).
- Heat network design (e.g. most efficient design of pipe routes, low temperature networks, design for retrofit of networks into older buildings)
- Installation and optimisations of heat networks (e.g. extrusion welding for steel pipes, ability to install heat interface units, training on understanding design principles).
- Technical operation and maintenance (e.g. maintaining heat interface units, understanding of building energy management systems, calibrating internals with flow return requirements with different pressures).

5.4 In addition, there is ongoing work to develop technical standards for heat networks which will form a core part of the regulatory regime so that the Scottish Government can design out early on any inefficiencies and consumer detriment arising when networks are poorly specified. Technical standards are also expected to help develop new supply chains in Scotland and drive down costs.

5.5 In partnership with the UK Department for Business, Energy and Industrial Strategy (BEIS), the Scottish Government are investigating options for developing a common standard that would apply across Great Britain. The long term intention

is to develop technical standards which can be certified against which will provide further opportunities for further qualifications in Scotland.

Question 5

What are your views on our plans for developing heat network skills? For example, are there any gaps in heat network skills that we have not identified?

5.6 Over half of respondents provided a response to the two separate points asked at Question 5 (56%). A relatively large proportion either left the question blank, had no comment to make, did not have a "strong opinion", or did not consider there to be any gaps in heat network skills over and above those identified in the Consultation Document (44%).

Broad support for the proposals for developing network skills

5.7 There was broad support expressed across consultation responses for the proposals covering heat network skills in Scotland.

5.8 Here, there was recognition: of the "significant" role and contribution of heat networks "on the path to decarbonisation"; that heat networks are a "fundamental part of the solution to reaching net zero"; and that "with a strategic objective of increasing heat networks across Scotland, the identified skills gap must be rectified".

5.9 There was acknowledgement that there was not a clear training route currently in place, and that this resulted in a lack of consistency of provision and limited specialised qualifications and heat network training.

> "...there is no current specific and recognised certification route into heat networks", and that training in heat network specific knowledge is usually "developed on the job".
>
> NIBE Energy Systems UK

5.10 There was wide "endorsement" of the use of the Energy Savings Trust's 2020 report to help guide and inform plans for developing heat network skills. This included a variety of comments that confirmed that Scottish Government plans "reflect the main skills gaps identified in the Energy Saving Trust report".

5.11 Tighean Innse Gall did, however, note that "these are not the priority for the Outer Hebrides. We have the most dispersed community anywhere in Scotland, with 9 people per square kilometre in homes not always appropriate for heat networks".

5.12 Sustainable Energy Association made wider reference to, and was supportive of, the UK Government Green Jobs Taskforce (recently established to set the direction for the job market as part of the transition to a high-skill, low carbon economy) which outlined three levels of specialist skills required for a heat network project:

- Design: project management, design engineering and supporting professions (legal, financial, commercial).
- Build: project management, construction and commissioning.

- Operate and Maintenance: project management, engineering, operator and technician skills.

5.13 The collaboration between the Scottish Government and BEIS to work with the BSI to scope out the possibility of developing a common standard that would apply across Great Britain was also widely welcomed.

5.14 Wider feedback in support of the Scottish Government proposals for developing heat network skills are reflected in the extract of respondent quotes below:

- The proposals are "sensible and necessary"…. "It is vital that these skills are available locally to help reduce operational costs and maintain security of supply for end users". (Energy Saving Trust).

- The proposed plans appear to be "well developed" (Perth and Kinross Council Housing Improvements).

- The development of technical standards "should help develop new supply chains in Scotland and drive down costs". (Warmworks Scotland).

- "We fully support the plans to develop skills requirement for heat networks. These are missing from the industry and will be essential to set standards". (NAPIT Registration).

- "The ADE is supportive of the proposals covering heat network skills in Scotland, and endorses the use of the Energy Savings Trust's 2020 report as guidance". (The Association for Decentralised Energy).

- "The plans reflect the main skills gaps identified in the Energy Saving Trust report and we don't think that there are any gaps" (Glasgow City Council).

- "Solar Energy Scotland applauds Scottish Government on putting together a comprehensive development plan that meets demand and covers the skills needed for delivering heat networks". The organisation also noted that "certain renewable technologies have been excluded or marginalised in the development of heat network designs. Solar Thermal, for example, which operates at a lower temperature than most existing networks currently require for initial feed-in sources. In future, it is imperative new Heat Networks should be designed with renewable sources of heat in mind and skills requirements amended accordingly".

Institutions to support the development of heat network skills

5.15 A common theme that emerged across consultation responses related to the list of colleges and universities identified with an interest in, and the potential to, expand their curriculum content on heat networks to begin to address the identified skills gaps (as identified in the Energy Saving Trust report):

- Colleges - Glasgow Kelvin College, West College Scotland, Edinburgh College, and South Lanarkshire College.

- Universities - Glasgow Caledonian University and Heriot-Watt University.

5.16 There was general agreement that “working in partnership with the six institutions outlined in the Consultation Document should allow successful development of appropriate training courses”, and that these colleges and universities “represent a good way for developing heat network skills” in Scotland.

5.17 Wider issues were raised regarding institutions that could help address the known skills gaps (e.g. by Glasgow City Council, Scottish Land and Estates, Solar Energy Scotland, The Association for Decentralised Energy). The points raised have been grouped as follows:

- That it would also be important to consider identifying other institutions given that “most (of the six identified) institutions lie in the central belt”.
- Linked to the point above, it was considered important that “opportunities are available for those living and working in rural communities to be able to take advantage of the proposed courses”. Further, that “contractors living in other areas of Scotland, particularly the North East and Highlands and Islands regions should have the opportunity to undertake these courses at a facility close to them”.
- That there would need to be an “adequate” number of institutions offering courses to keep up with the expected increase in demand for skilled workers within the heat network industry.
- That additional “skills bases should be scoped though zoning/LHEES in areas where heat networks are identified as the most cost-effective decarbonisation solution in a given area”.

Gaps in heat network skills not identified in the Consultation Document

5.18 Circa half of respondents that answered Question 5 either raised general points or explicitly identified gaps in heat network skills not identified in the Consultation Document. The main themes, rather than individual points, have been grouped and reported on below.

Review wider evidence base and take stock of ongoing discussions elsewhere to help identify any wider skills gaps of relevance in a Scottish context

5.19 There was reference to the BEIS Heat Network Skills Review (2020) (e.g. by MCS Charitable Foundation and MCS Service Company Ltd, Scottish Power, The Association for Decentralised Energy). More specifically, it was suggested that the Scottish Government could review the BEIS report to identify additional skills gaps in the heat networks sector of relevance in a Scottish context, namely:

- Limited recruitment pool due to being a less visible sector and roles being less clear.
- Lack of skilled senior roles.
- The breadth of skills required for some roles within the heat networks sector make it challenging to find individuals with the right blend of experience.

- The project management skills gap extends to specific gaps across finance, legal, planning and architecture roles.

- The construction and design skills gap extends to specific gaps across pipe layers, welders, and IT.

- Software and IT skills: with many heat networks now being controlled digitally, data scientists and software engineers will be required to build the machine learning algorithms and develop the platforms that process customer payments and monitor the efficiency of networks.

5.20 Tweeddale Energy Efficiency Supply Chain Development Project (c/o Southern Upland Partnership) added that plans to develop heat neatwork skills should include "the legal and financial aspects of establishing heat networks, especially in the context of local/community operated systems and/or ESCOs[1]".

5.21 Further, Worcester Bosch highlighted that early discussions were taking place in England around Heat Assurance that might identify other skills gaps, as reflected in the company's quote below:

> "These providers would need to be highly skilled and it is of particular concern that there may only be a very small number of such providers currently. If Scotland adopts similar schemes in the future, this skills gap would also need to be addressed. We believe there could be a role for manufacturers to support installer training and there are some initial exploratory discussions with Building Engineering Services Association about this".

5.22 There was recognition that heat networks is a "dynamic area", and that as the industry grows, the skills required would likely change and evolve. The point raised was that new skills (and a greater range of skills) might be required to be "be added in line with the learning curve" and go "beyond what are thought of as traditional heat network skills". This was further expanded on by The Association for Decentralised Energy.

> "Both development of new and retrofit of existing heat networks will require knowledge of emerging, low carbon generation technologies (for example, ground/water source heat pumps and geothermal), as well as more advanced network monitoring and efficiency solutions. The Scottish Government should keep this in mind when considering the skills and supply chain ramp up required to deliver on the ambition set out in the Heat in Buildings Strategy".
>
> The Association for Decentralised Energy

[1] European Skills, Competences, Qualifications and Occupations.

The role of local government in delivering District Heating Schemes

5.23 There were a few comments that highlighted specific points on the role of local authorities, and more specifically on the resources within local government (e.g. skills, knowledge, expertise) to support the development of heat networks. Aligned to this, was acknowledgement of the new duties placed on local authorities to deliver and operate District Heating Schemes (DHS). The points raised are reflected in the organisation quotes below.

> "The lack of skills and resources within local authorities, housing associations and developers have been barriers to successful deployment which needs to be addressed".
>
> Scottish Power

> "There is no acknowledgement in the skills gaps to recognise the new duties placed on local authorities, the expectations from their finance and management in delivering DHS and in the operation of DHS. It is essential that the Scottish Government addresses this…..local authorities have not yet been informed of their options in this respect and therefore are not in a position to make informed decisions at a corporate level. Without explaining these options local authorities are more likely to stumble towards an end goal they do not fully understand and in that process, there will be many mistakes made and opportunities missed".
>
> The joint response from The Energy Poverty Research Initiative, Common Weal The Built Environment Asset Management Centre, Glasgow Caledonian University

> "…few planning authorities feel they have the resources, in terms of skills, knowledge and expertise to support development of heat networks; especially when it comes to assessing district heating feasibility proposals. This may lead to outsourcing work to external consultancies, which can result in higher resourcing pressures. There is also a need to provide elected remember training in regards to this matter. This needs to be understood in the wider context of diminishing resources for planning departments, which across Scotland have suffered disproportionately from budget cuts".
>
> RTPI Scotland

Understanding the next generation of Heat Networks

5.24 There were a couple of specific references to the importance of having clear definitions and a shared understanding of the next generation of heat networks, as illustrated in the respondent quotes on the next page.

> "Consultants are currently producing reports which use terms freely due to lack of clear definitions such as first, second, third, fourth and fifth generation DHS. The Scottish Government should urgently issue, through their planning process, clear definitions of fourth and fifth generation DHS".
>
> The joint response from The Energy Poverty Research Initiative, Common Weal The Built Environment Asset Management Centre, Glasgow Caledonian University

> "There are significant gaps in the plans for heat network skills. Currently, training refers to high temperature heat networks only, and it must be amended to include training in Ambient Heat Networks and 5th Generation Heat Networks. The Scottish Government risks training a generation of designers unable to understand the next generation of Heat Networks".
>
> The Kensa Group

6. Potential Impact of Skills Requirements

Context

6.1 The consultation also sought views to further develop the Partial Business and Regulatory Impact Assessment, in particular the impact that the proposals will have on the energy efficiency, microgeneration and heat networks sector, particularly for remote rural and island areas.

6.2 More specifically, the consultation sought views on the use of digital technologies for training provision and more generally views on what support (if any) is required to support ambitions for a highly skilled workforce (see also **Section 8**).

Question 6a

What impact do you think our skills requirements will have on the energy efficiency, microgeneration and heat networks sector in remote rural and island communities?

6.3 A vast majority of respondents answered Question 6a on the impact of skills requirements on the energy efficiency, microgeneration and heat networks sector in remote rural and island communities (79%). The remainder left the question unanswered (21%).

Remote, rural and island communities face particular issues and challenges

6.4 Two-thirds of respondents who provided a response identified a range of factors or challenges which could have a negative impact on remote rural and Island communities if not addressed going forward. These challenges have been grouped as follows:

- Training.
- Supply chain and skills shortages.
- Financial.

6.5 While a relatively large proportion of respondents highlighted how the proposals could have a potentially negative impact on remote rural and island communities, there was some optimism that the issues could be overcome if mitigating action was taken. For example: applying a consistent standard across Scotland, provision of tailored support, ongoing consultation and engagement with remote, rural and Island communities, and monitoring of supply chains).

6.6 On the whole, these respondents reported that addressing these challenges would help to ensure that the Scottish Government proposals regarding skills requirements could have a net positive impact on energy efficiency, microgeneration and heat networks sector in remote rural and island communities.

> “With the correct support in place, remote rural and island communities should be able to participate fully.”
>
> Third Sector Organisation

6.7 On the other hand, almost one-third of respondents specified how the proposals could positively impact on remote rural and island communities.

Strong view that standards should be applied consistently across Scotland

6.8 There was a strong view expressed that standards must be applied consistently across Scotland, and that “it cannot be the case that a lower standard applies” to remote rural and island communities. The public sector body, United Kingdom Accreditation Service, used the example of an unqualified doctor not being acceptable to reinforce this view:

> “Inevitably, a 'new' and arguably 'higher' set of requirements will make it more difficult to find suitably certified installers in remote communities. This is unfortunate but it does not justify having some kind of two-tier system where the requirements are lower in remote locations. For instance, we would not allow an unqualified person to call themselves a doctor on a remote island, simply because there was not a qualified doctor living in the community. There are more suitable financial measures (e.g. grants or subsidies) to overcome these logistical issues.”
>
> United Kingdom Accreditation Service

6.9 Consultation responses identified various ways that adapting the standard for remote, rural and island communities could have a negative impact on these areas. These included “comprising installation quality and consumer protection aspirations and, ultimately, devaluing the whole ethos of the proposals”. With regards to consumer protection, Energy Saving Trust highlighted that there is a particular preference in remote, rural and island communities to use local and trusted contractors which can lead to lower consumer protection:

> “As a result, some householders end up “using local, non-certified businesses to complete their installations”. This has meant that where systems have not been signed off as MCS compliant then it has not been possible to claim the RHI or a Scottish Government loan and in such cases systems will have been installed without government support and without the same level of quality oversight and consumer protection.”
>
> Energy Saving Trust

6.10 It was considered essential to apply the standard consistently across Scotland to ensure installation quality and consumer protection.

6.11 For many respondents, such as NIBE Energy Systems UK, offering support, or "island-proofing the approach", would be essential to ensure remote, rural and island communities can fully meet the demands of, and benefit from, the proposed skills requirements.

6.12 The most common type of support identified was financial support (e.g. grants and subsidies for training and accommodation costs and/or to cover lost or delayed earnings from not being able to work while attending training).

6.13 The Southern Upland Partnership "reviewed data from the MCS on the 78,000 registered micro-renewable installations since 2012, which demonstrated the carbon reduction of systems in rural areas was significantly more than the average (3.6 x for our project area), which emphasised the significant contribution renewables in rural areas can make to climate change targets."

Delivery of training

6.14 Another common theme was that the geography and remoteness of rural and island communities' poses challenges in terms of accessing training, and that this acts as a barrier to upskilling within the sector. For example, some respondents noted how training providers either require to travel to these areas or participants require to travel to more central locations which often necessitates overnight stays.

6.15 This places additional costs and financial burden on SMEs which dominate the sector in these communities - both in terms of the cost of training and lost or delayed earnings from not working while undertaking training.

> "One of the key challenges for remote rural and island communities will be that some local colleges simply won't be able to deliver the necessary training courses which means that installers and those wishing to train for the other roles discussed in the consultation would need to go to the mainland/to a more populated area for training – with associated travel and accommodation costs. This would put an additional burden onto installers (and those wishing to train for other roles) living and working in these areas which could act to deter them from undertaking training and/or force them to increase the price of their work to recover these costs. And we already know that the cost of undertaking work and availability of suitably qualified/certified tradespeople are key issues for remote rural and island areas – so these skills requirements, if not accompanied by appropriate financial support packages could act to exacerbate both of these issues."
>
> Energy Saving Trust

6.16 While online, remote and/or simulation training was considered a useful tool, and had an important role to play in improving accessibility of sector training in remote rural and island areas, the importance and value of maintaining access to practical and hands-on training was considered critical. To this end, it was felt that practical training should not be bypassed in remote rural and island areas for convenience in order to rollout the skills requirements.

6.17 As noted by Kingspan Insulation Ltd, “it is important that being classed as ‘rural’ does not inhibit access to training and learning.” This fed into wider feedback that there should not be lower or adapted standards for skills requirements in remote rural and island communities compared to the rest of Scotland.

6.18 The general consensus was that “rural and island communities may need geographically specific support in order to develop the required resource pool for those areas, and to deal with their unique challenges, as it can be costly to reply on mainland support.”

6.19 Common solutions suggested by respondents to help overcome geographic barriers to accessing training can be themed as follows:

- Financial support (e.g. grants, subsidies) to compensate for the additional costs of attending training and lost or delayed work. This could include training and accommodation costs. As OFTEC stated, “perhaps funding of courses may help take up and lessen the burden of being off the road (and not earning) while training is undertaken.”

- Consultation with employers, training providers and local authorities to “understand local contexts and the best ways to deliver training”. This point was largely raised by membership or professional bodies such as The Association for Decentralised Energy and SELECT.

- Blended delivery models – having the option of virtual, online, remote, simulation training to increase accessibility for remote rural and island communities, while recognising the importance and value of improving and maintaining access to practical and hands-on training.

“Previous attempts to ease the burden of enhanced standards and requirements on those who live in remote locations include co-ordinating groups of installers who require training or on-site technical assessments to improve efficiencies. Any financial support could be front-loaded to support those in rural communities as they are likely to be ones who benefits a lot from energy efficiency, microgeneration and heat networks. It definitely cannot be the case that a lower standard applies in these areas. Some aspects of training could be undertaken virtually to assist with training in remote areas, although a lot of the training required will need to be hands on.”

NAPIT Registration

6.20 The Association for Decentralised Energy expanded on its view regarding the importance of ongoing consultation and collaboration with key stakeholders in remote rural and island communities, as illustrated in its quote on the next page.

> "Access to training and development may be more challenging in these areas of the country, which may in turn make installations more challenging. LHEES should identify the most suitable decarbonisation and technology pathways in these areas of the country. The Scottish Government should then work with Local Authorities and communities in this area to identify existing opportunities and barriers to training and skills, as well as to understand local contexts and the best ways of delivering training. The Scottish Government should also consider the best ways to retain skills/expertise in these areas, rather than the workforce migrating to areas of Scotland perceived as offering greater opportunities. Sharing learning and case studies should be facilitated wherever possible, and long term funding made available to resource skills initiatives."
>
> The Association for Decentralised Energy

Supply chain and skills shortages

6.21 Similar concerns around capacity within the supply chain and skills shortages (see Question 2) were reiterated. On the whole, feedback was that this could be more pronounced in remote, rural and island communities. For example, it was noted that the sector in these communities is largely dominated by micro businesses and SMEs, and there might also be a lack of workers to upskill and/or retrain.

6.22 According to the Scottish Island Federation, there is currently a "skills shortage on many islands which often involves mainland contractors visiting to undertake particular activities involving a significant surcharge on costs for any given project, reflecting additional transport, travel and DB&B expenses."

6.23 Further, members of the Scottish Island Federation identified a "need for certification of skills for particular activities which can preclude island-based trades folk from taking up contracts which they could be better placed to deliver more cost effectively, but for their access to formal qualifications and registered supplier requirements."

6.24 NIBE Energy Systems UK identified lessons learned from elsewhere in UK - "the introduction of the Green Homes Grant in England and the TrustMark scheme highlighted a lack of registered installers, particularly in rural areas. It is important that rural communities are adequately serviced by low carbon heating and energy efficiency professionals as well as advisory services."

6.25 As such, some respondents including Energy Saving Trust suggested that ongoing consultation as well as allowing sufficient time to better understand, address and develop these skills and training gaps would be necessary to ensure there is not a detrimental effect on the sector in the short term.

> "It will also be important to ensure that the supply chain is given sufficient time to meet the proposed skills requirements – not doing so could have a negative impact on programme delivery."
>
> Energy Saving Trust

6.26 The general consensus was that the proposed skills requirements present a valuable opportunity to support skills development and green job creation in remote, rural and island communities. This could be aided by greater clarity and ongoing communication on the skills pathway.

6.27 Although there was some feedback that skilled workers from outwith remote, rural and island communities could be encouraged to move to the area (i.e. talent attraction), the main view was that this should be limited/avoided to maximise the benefits for remote rural and island communities. For example, some respondents highlighted the demographic context of remote rural and island communities which are prone to population loss, particularly among young people (e.g. move out of the area to access further and higher education and employment opportunities). It was felt that adopting an approach which prioritises local skills development and job creation could contribute to both skills retention and mitigating population loss in these communities (i.e. ensuring that remote rural and island communities are not disadvantaged and are not left behind).

6.28 Further, Historic Environment Scotland noted that skills and enterprise agencies have an increasing role to play in the delivery and rollout of skills requirements.

> "Accessing specialist training in remote areas is already an issue and these requirements will create a barrier unless consideration is given to the skills ecosystem and infrastructure that supports these requirements particularly in rural areas. The rural skills investment plans and enterprise agencies have a role to play here and provision needs to be mainstreamed into existing provision."
>
> Historic Environment Scotland

6.29 Skills shortages and a lack of capacity within supply chains in remote, rural and island communities was disputed by a few respondents. For example, SELECT reported that "in our experience, remote rural and island communities are very well served for skills locally. SELECT has a number of members located across the rural and island communities that could undertake this type of work now."

6.30 MCS Charitable Foundation and MCS Service Company Ltd noted how Orkney was highlighted as "one of the leading areas in the UK for renewable installations" in its recent report – Renewing Britain.

6.31 Further, Warmworks Scotland reported that, under Warmer Homes Scotland, they have worked with "installers in remote rural and island communities who are already obtaining the necessary qualifications to ensure they can deliver high quality installations". This has also resulted in extra local apprenticeships:

> "For example,….. a sub-contractor under Warmer Homes Scotland that covers the Western Isles. This is a challenging area geographically and often includes complex installations given the make-up of the housing stock. Despite facing these challenges, the (subcontractor) has been able to increase their skillset with regards to installing renewable energy systems, such as air source heat pumps.

Furthermore, as part of their commitment to the wider community, they have also taken on six apprentices since the scheme began and last year, provided three work placements for young people, which means that the future generation is also gaining the required skills and experience in this area too."

Warmworks Scotland

Financial burden particularly for smaller contractors in remote, rural and island communities

6.32 A common theme was that the proposals could place a disproportionate financial burden on remote rural and island communities. As noted earlier, this centred on the higher costs associated with both attending training and with installation.

6.33 Tighean Innse Gall highlighted "if the skills requirements are mandatory before training and recognised prior learning routes are in place in the islands, then most if not all energy efficiency installations will cease in remote rural and island communities".

6.34 In terms of increased costs for consumers and installers, the response from Energy Saving Trust detailed the current challenging financial context for heat pump installers. Additional consumer costs were also firmly placed in the context of fuel poverty being a distinct challenge for remote and rural island communities:

> "We also have feedback from Home Energy Scotland staff working in remote rural and island areas. So, for example, if work was to be carried out on the Isle of Arran a team of installers would need to stay overnight and this would be reflected on the customer's quote along with the cost of transportation. The Home Energy Scotland specialist advisors have suggested that a typical air source heat pump installation on the island would typically cost at least £1,000 more than the same installation on the mainland. If there were local qualified installers who were supported to grow with the local heat pump markets these costs could be avoided and rural economies could be strengthened."

Energy Saving Trust

> "If you impose costs on a small but very able practice which they cannot offset by an increase in income then you are beggaring an already impoverished part of the profession. The simple cost calculation is something like £200 per copy of PAS, plus the cost of its undoubtedly many revisions. Add the cost of the academy training per person at around £1500 plus expenses. Then add the cost of the WUFI software and the WUFI training and the new hardware as WUFI is only available on a single platform. Then take the larger and less apparent cost of the time extracted from the turnover of the practice; imagine how this will impact on the survival of a rural micro practice which might already have been applying good project-specific practice and possibly advancing the cause of net zero while rewarded with a minimum wage and a twelve-hour working day."

Individual

6.35 Another point raised was that there have been recent challenges with local installers being unable to access Scottish Government schemes that are linked to ECO. It was noted that this had restricted access to another source of funding for installers in remote, rural and islands communities.

6.36 As highlighted, the general consensus among respondents was that financial support, in the form of grants and subsidies, would be required to address and mitigate these barriers. This support could incentivise greater uptake of training and upskilling of local supply chains while ensuring the financial burden is eased for employers. Financial support would be crucial to maintaining a consistent high standard across Scotland and ensuring that the remote, rural and island communities were "not left behind".

Addressing fuel poverty in remote rural and island communities

6.37 Several respondents, including Kingspan Insulation Ltd and the joint response from The Energy Poverty Research Initiative, Common Weal, The Built Environment Asset Management Centre, Glasgow Caledonian University, made reference to the pronounced challenge of fuel poverty in remote rural and island communities. There was recognition that Scottish Government proposals had the potential to make a significant contribution to address fuel poverty, as reflected in the quotes below:

> "Almost half of households in remote rural areas are classed as 'fuel poor', while nearly a third of households in accessible rural areas are in fuel poverty. Improving the energy efficiency of UK homes is an effective way to bring down energy bills and offers a long-term solution to fuel poverty. Addressing the building fabric and reducing demand is the best way to lower energy bills and make homes warmer and more comfortable. Accelerating the pace of an energy efficient Scotland will reduce emissions from buildings faster helping to combat climate change and lift people out of fuel poverty across the whole of Scotland. The Skills Matrix Implementation will speed up the rate of energy efficient installations as it will provide certainty and confidence in the industry and ensure long term investment in energy efficient measures… As we switch from fossil fuels to lower carbon solutions, it is particularly important to consider the potential for fuel poverty and the impact of higher running costs that might occur if heat demands are not adequately addressed alongside that transition."
>
> Kingspan Insulation Ltd

> "Overall, if the situation in islands is recognised within the proposals, we believe there is a good opportunity within the sector to grow good, skilled jobs and career paths, contributing to island sustainability and population growth, and creating a more circular island economy. Investing in local skills and capacity within islands, will also increase access to energy efficiency measures and national support initiatives for island households, which currently suffer the highest levels fuel poverty in Scotland but have difficulty accessing support due to a number of barriers including a lack of registered contractors."
>
> Scottish Islands Federation

> "The high rates of fuel poverty and poor energy efficiency means that it is of paramount importance that where energy efficiency improvements are installed, they are installed to a high standard. It is hoped that the proposed skills requirements will have a positive impact on installation quality. However, there is a risk that placing additional requirements on energy efficiency installers, without sufficient support could have the unintended consequence of a decline in installer numbers due to cost or administrative burden, which could have a detrimental effect on fuel poverty."
>
> National Insulation Association

6.38 Some respondents noted that the building stock in remote and rural island areas would require a greater focus on retrofit work rather than new build, and that this might bring further costs for these communities.

> "The geographical spread of specialist skills for pre-1919 buildings is uneven, and it may be more difficult and/or more costly for those living in rural and island communities to access advisory services and engage specialist companies. Requiring specific qualifications for those working and advising on energy efficiency measures for pre-1919 buildings may further compound these issues, which could lead increased costs for work."
>
> The National Trust for Scotland

6.39 The emphasis in the proposals on retrofit skills was welcomed by a couple of respondents particularly given the context of older traditional building stock in remote rural and island areas. It was noted that the building stock would require a greater proportion of retrofit work by installers than other areas of Scotland. There was wider recognition that local supply chains would therefore need further developed and upskilled to meet the demand for retrofit work in remote rural and island communities.

Question 6b

What impact do you think our skills requirements will have on the energy efficiency, microgeneration and heat networks sector in Scotland more generally?

6.40 A vast majority of respondents answered Question 6b on the impact of skills requirements on the energy efficiency, microgeneration and heat networks sector in Scotland more generally (79%). The remainder left the question unanswered (21%).

6.41 Around two-thirds of those that provided a response were of the view that the skills requirements could have a positive impact on the sector in Scotland. As highlighted elsewhere, there was a call for appropriate and sufficient support to maximise impact and positive outcomes.

6.42 Where there was explicit reference, far fewer respondents felt that the skills requirements could have a more negative, mixed or no impact on the sector in Scotland (around 14%).

Driving an improvement in standards

6.43 A common theme expressed was that the proposed skills requirements could improve and enhance professionalism and standards within the sector in Scotland. Compared to the other organisation types, a higher proportion of public sector organisations reported this type of positive impact.

6.44 These respondents, including Construction Industry Training Board and Snipef Ltd, also noted that the skills requirements could help ensure that only the "correctly skilled people" carried out installations.

> "It will ensure that the people involved in this important area of work are trained, skilled and initially competent through the achievement of specific, assessed qualifications. The routes taken to achieve those qualifications may well differ (new entrant, apprentice, skilled worker (RPL) etc, but the achievement of a competence qualification is the overall aim. This will also go some way in ensuring that works are only carried out by competent persons."
>
> Construction Industry Training Board

6.45 There was wider feedback that a skilled and competent workforce could "enhance the quality of product offered" and "ensure consistency of service" such that "no matter where customers live, they can be assured of a high standard of workmanship".

6.46 It was noted that making the skills requirements mandatory provides a clear purpose and incentive for the sector to upskill and improve standards.

> "From a non-technical perspective, any regulations which organisations know they will need to meet, enables skills providers and organisations to plan for the future. Enabling them to put steps in place to attract, train, and deliver the skills required. Without these requirements providers and individuals cannot take steps along appropriate career pathways. A lack of requirement is a blockage in the skills pipeline."
>
> Built Environment Forum Scotland

6.47 Historic Environment Scotland also stated that "requiring more in terms of skills should increase the lifespan of measures and make them more effective, bringing about an increase in carbon reductions per measure installed." This leads to other benefits such as increased confidence for both consumers/homeowners, who know "properly qualified people are working in their properties", and confidence within the sector to encourage investment – "this new skills matrix could provide confidence in the sector to drive investment in upskilling".

6.48 As noted at Question 6a, the unique and specific challenges and issues faced by remote, rural and island communities, was reiterated here. The need for tailored support was again emphasised as vitally important to ensure consistency of approach, and that the sector as a whole benefitted positively from the skills requirements.

6.49 Several respondents, including United Kingdom Accreditation Service and The Association for Decentralised Energy, highlighted that the skills requirements presented an opportunity for the sector to develop and grow a skilled workforce.

> "A consistent approach backed by government will help to provide confidence for the heating sector to invest in upskilling, training and further recruitment. We welcome this approach which will support the growth of a qualified and competent workforce.
>
> NIBE Energy Systems UK

> "A consistent approach, that will be enabled by the introduction of the skills matrix, backed by government will help to provide confidence for manufacturers and installers to invest in upskilling, training and further recruitment in low carbon and energy efficiency. Kingspan welcome this approach, which will increase confidence, growth and support the growth of a qualified and competent workforce skilled in energy efficiency and low carbon installations."
>
> Kingspan Insulation Ltd

6.50 Further, it was noted that the skills requirements could lead to increased demand, resulting from an improved quality of product and increased confidence, and therefore support the reduction of emissions and the transition to net-zero.

> "It will have a positive impact. It is essential we have correctly skilled people to carry out technical work such as the installation of renewable technology. The skills matrix identifies the use of correctly qualified job roles that can provide a high quality work. Skill levels are closely associated to quality, and quality will create long-term consumer confidence, which then creates a demand. The long-term demand will then encourage businesses to commit to providing renewable energy services then going on to meet the net zero targets."
>
> Snipef Management Ltd

Supporting the development of a clear skills pathway

6.51 A related theme was that the skills requirements could help support the development and promotion of a clear skills pathway for the existing and future workforce to achieve the required skills and qualifications.

6.52 Here, there was feedback that the skills requirements "should drive training, upskilling and job creation across the low carbon energy sector in Scotland", and that a coherent skills pathway could support talent attraction and retention.

> "The development of a clear skills pathway that young people can engage with and understand may in fact encourage new entrants to the sector, which could have a positive impact. It also makes the learning routes clearer and the consistent approach across the sector may make it easier for new entrants to progress and move between roles / organisations. With the correct mechanisms put in place to raise awareness surrounding the proposed skill requirements and support installers in the transition, the skill requirements will have a net positive impact."
>
> BCA Insulation Limited

6.53 There was wider acknowledgement that Scottish Government proposals would need to be "supported by effective skills ecosystem and infrastructure". For example, "correct mechanisms (would need) put in place to raise awareness surrounding the proposed skill requirements and support installers in the transition". Others, such as Historic Environment Scotland and BCA Insulation Ltd, noted that the skills system was "fragmented".

> "The skills framework, if supported by effective skills ecosystem and infrastructure, should have the impact it is hoping for by bringing focus and clarity to a fragmented skills system, improving the quality of work and the effectiveness of the measures themselves".
>
> Historic Environment Scotland

An opportunity for the heat networks sector

6.54 Another common theme was that the skills requirements present a real and significant opportunity for growth of the heat networks sector, as reflected in the quotes on the next page.

"Research from Energy Savings Trust shows that there are currently many gaps in heat networks in Scotland and therefore a need for specialist heat network training centres. This new skills matrix could provide confidence in the sector to drive investment in upskilling. The skills matrix will make the pathway to becoming a heat pump installer clearer and will help to understand the commitment that is needed for the role. If supportive wider policy is put in place with a firm commitment to end fossil-fuel heating, the number of installers will increase which will help to drive down prices, introduce greater competition and increase uptake of heat pump solutions".

NIBE Energy Systems UK

6.55 Further, it was reported that the skills requirements could grow the heat networks sector in a number of ways, including:

- Increased demand for products from heat networks sectors.
- Job creation and recruitment supported by a clearer skills pathway with easier understanding of the available job roles and responsibilities.
- Growth of the sector aligns with wider ambitions to achieve net-zero. With supportive policy, such as the skills requirements, this will likely result in increased demand for products and services from the sector. Growing the sector will also allow greater affordability to consumers.

"The HPA believed that the skills matrix will make the pathway to becoming a heat pump installer clearer if integrated with the HPA's new qualification route by helping to understand the commitment that is needed for the role. This in turn will help to increase the number of installers if wider supportive policy is put in place with a firm commitment to end fossil fuel heating greater installer numbers will help to drive down prices and increase uptake of heat pumps, currently installed costs represent around 50% of total heat pump cost to install and so this could potentially make a great difference to the price which consumers have to pay."

Heat Pump Association

"In the heat networks sector, skills requirements should have a positive impact on the sector, and should present opportunities to provide much needed jobs for new entrants to the sector, as well as those transitioning from higher carbon industries. However, careful consideration and collaboration across Government, private and public sectors will be required to ensure that training needs are met, and jobs are creating in the most relevant geographical areas."

The Association for Decentralised Energy

"Assuming that heat networks have an important role to play in achieving 'net zero', then the setting of these requirements is a major step forward towards creating the ability and capacity to install heat networks."

United Kingdom Accreditation Service

Reasons for reporting negative impact of skills requirements on the sector

6.56 Similar to points raised at Question 2 and Question 6a, the main reasons for a minority of respondents expressing a view that the skills requirements could have a negative (or mixed) impact on the sector were largely due to concerns about increased costs, followed by capacity concerns.

Financial concerns

6.57 As noted throughout the report, financial concerns such as the impact of the skills requirements on increased supplier and installation costs and training costs were most commonly reported. Points raised are reflected in the organisation quotes below.

> "There is the potential to improve the quality of the supply chain and skills capacity in the sector making it more able to respond to demand and changes in technology as the sector grows. However, there are risks for suppliers; higher quality throughout the supply chain may lead to higher costs at least in the short term. If quality is assured through a robust framework such as TrustMark this may mitigate the increased costs for householders. As more players enter the sector there may be a reduction on costs for installations. Continued work with the supply chain regarding risks – minimising, mitigating and sharing risk will help the sector develop. However, the quality standards, accreditation and assessment processes may put new players off because of higher costs."
>
> Glasgow City Council

> "The scale of work required indicates a massive upscaling of current construction activity. Using a figure of £26k per house to achieve net-zero by 2045 that represents a 50% increase of all current housing construction, repair and upgrade works in the industry. We think the quoted figure of £10 billion over the lifetime significantly understates the costs involved."
>
> Southern Upland Partnership

Supply chain capacity concerns

6.58 Supporting sufficient growth of the sector's supply chain in order to meet need increased demand was another area of concern, including within a rural context. Points raised are reflected in the quotes below and on the next page.

> "The supply and demand relationship must be balanced. Adequately 'deep' retrofit requires specialist assessment and installation skills which are lacking in many in the construction industry, however funding must be made available for businesses to up-skill their employees, and for sole traders to be able to compete in this ever growing market. I am concerned as an Architect that simply requiring one to be an ARB registered architect does not necessarily equip an individual to take on their role in this process. without additional training many mistakes could be made."
>
> Individual

“Recently Energy Action Scotland sent a paper to government, which suggested: Scotland in general and in the rural areas particularly, the retrofit industry has insufficient skills capacity to meet the requirement of the of the new PAS 2030/2035 standards for retrofit, currently required to deliver measures through ECO3. With Scottish Government Schemes linked to the Energy Company Obligation (ECO) this is immediately threatening the viability of installers, whom if lost, reduces Scotland’s ability to improve homes to the standards required. We believe that the additional roles, processes and associated costs of compliance with the new standards will add significantly to the costs of measures resulting in a reduction in the quantity of homes improved which will either require additional investment or Scotland will miss strategic targets.

In addition, while some companies may have achieved the new PAS standards their capacity to deliver completions at the same rate as previously will be impacted due to the process, the small number of certified operatives and limited pool of professional resource to fulfil the PAS requirements. Thus having the PAS accreditation is no guarantee that the PAS process will be able to be implemented at a rate which meets the demand.”

Tighean Innse Gall

7. Potential Impact on Competition

Question 7

What impact do you think our skills requirements will have on competition including training provision, quality, availability or price of any goods or services in a market?

7.1 Three-quarters of respondents provided a response to Question 7 on the impact of skills requirements on competition including training provision, quality, availability or price of any goods or services in a market.

Skills requirements will have an impact on competition within sector

7.2 Of the respondents who answered the question, the vast majority reported that the proposed skills requirements would have an impact on competition within the sector (34, 87%). The remainder reported that there would be little impact (two), were unsure or unclear of what the impact would be (two) or felt that there would be no impact at all (one).

Increasing costs and high demand for training

7.3 In terms of competition, the most commonly reported impacts were reported as increased prices/costs and an increased demand for training.

7.4 Some respondents highlighted that there is currently a lack of competition in specific sectors and areas, particularly in remote, rural and island communities. For example, Elmhurst Energy noted that “some qualifications have only one training provider; no competition is present in the market place”. As the proposals set out a minimum requirement, the introduction of the skills requirements could result in an increased demand for training.

7.5 Respondents noted that the combination of these factors – a lack of competition and a high demand for training – could create a monopoly in the market with some concerned that there would be “risk of a premium” being placed on goods and services. Most respondents reported that prices would increase and that this would most likely occur in the initial stages of the skills requirements as the capacity (and content) of training providers is developed. For example, a concern raised was that training providers “(not further education or tertiary) will regard this as a cash cow and attempt to milk it with relatively minimal return for the end user (consumer)”.

7.6 To this end, Sustainable Energy Association stated that “training providers must look to develop their services in line with the requirements, ensuring a high quality of service”. The clarity of the skills matrix and newly developed training would “provide a clearer picture as to what is needed and accepted to be a competent heat pump installer”.

7.7 A wider point raised was that further education colleges will "require significant support" to deliver the content and "key costs…may include the purchase of technology on site, financial support for training providers to develop the courses and the costs of training additional trainers."

7.8 The following quote is reflective of many responses and summarises the impact of the skills requirements across various aspects of competition in the market, and how this may change over time:

> "It is expected that the impact on training provision will mean that it will raise the standard of training providers. Improved training requirements will likely lead to costs being passed on to the customers. Price will be high initially if there are limited spaces on training courses and limited trainers. The high cost of training might hopefully deter the unscrupulous/poor standard installers from entering the market. There may potentially be higher costs from installers who meet the skills requirements. It is anticipated that higher demand may lead to higher costs where demand outstrips supply. However, as the skills requirements improve it may ensure that costs are then driven down by increased skilled and qualified installers. Bringing our skills up to an improved standard means we would be able to compete more competitively with other sectors for the benefit of the economy and the end users."
>
> Perth & Kinross Council Housing Improvements

Increased costs passed onto consumers

7.9 Several respondents, such as Glasgow City Council and Construction Industry Training Board, commented that any increased costs for employers to meet the skills requirements were likely to be passed onto consumers and homeowners at the very least in the short term.

> "There will be additional costs placed on employers to achieve a fully qualified workforce in this area. If the Scottish Government does not incentivise this then I suspect some of these costs may be passed on to consumers, which in turn would lead to a lower uptake of systems to be installed by the consumer/householder due to rising costs."
>
> Construction Industry Training Board

7.10 As training providers adapt and deliver new content aligned to the skills requirements and more workers become qualified and able to offer goods and services at the required standards, it was felt that the greater competition in the market could help to reduce costs and make goods and services more affordable:

> "Clearly increase costs will be passed on to owners/consumers so increased competition would help provide a dampening factor here by keeping costs affordable for owners/consumers."
>
> Glasgow City Council

> "The skills requirement will stimulate the market, increasing competition, which should eventually drive down prices".

7.11 Some respondents noted that increased competition of suppliers would be the only way that “market price levels will not attract a premium”.

7.12 Some respondents, including private sector organisations such as Kingspan Insulation Ltd and NIBE Energy Systems UK, emphasised that the “most vulnerable” individuals should not be priced out of access to low carbon technologies and solutions at any stage. Both respondents highlighted the importance of financial support to remove barriers through schemes such as the Clean Heat Grant.

> “If the cost of delivery does increase, it is essential that support is available for the most vulnerable to adopt low carbon solutions. Therefore, Kingspan fully support schemes that provide upfront capital, such as the Clean Heat Grant, to ensure that the availability of capital is not an inhibitor to the low carbon transition.”
>
> Kingspan Insulation Ltd

> “However, crucially, those less able to pay must be protected from additional cost burdens associated with the installation of energy efficiency improvements. Therefore financial support for retrofit projects should be targeted towards those less able to pay.”
>
> National Insulation Association

Greater quality of product and better value for money

7.13 Given that the fundamental nature of the skills requirements is to set a minimum standard for qualifications within the sector, feedback strongly suggested that it would improve the quality of goods and services by:

- Ensuring the workforce receives a higher quality of training aligned to the skills requirements.
- Upskilling the workforce to improve the quality and consistency of installations.
- Ensuring that competent people work in the sector.

> “We think that the skills requirements are a necessary 'raising of the bar', with all that this implies i.e. standards will rise, some installers will drop out, others will move in, prices may rise but so will quality, assurance and value for money.”
>
> United Kingdom Accreditation Service (UKAS)

7.14 As noted earlier, it was acknowledged that an improvement in the quality of product could lead to (at least an initial) increase in prices which would most likely be passed onto consumers. Although some, mainly public sector bodies, reported that the increase in quality (e.g. by increasing the lifespan of products) would lead to better value for money for consumers.

7.15 National Insulation Association agreed with the "view outlined within the Impact Assessment that slightly higher installation costs are acceptable if this ensures a higher quality installation which lasts the expected lifetime of the measure".

7.16 As more of the workforce are upskilled to meet the skills requirements and the increased availability of suppliers leads to increased competition, a few respondents stated that it would be important that a high quality of installations are maintained. It was considered important that standards were maintained as opposed to a "race to the bottom" for prices and quality of installations in order to secure more work:

> "…we must be careful to ensure that there is proper oversight over the quality of work; qualified installers may rush jobs in order to serve more customers – creating the potential that we end up with poorly delivered services."
>
> Warmworks Scotland

Some contractors will leave the market which may improve quality

7.17 Another consequence of increased costs for employers to meet the minimum skills requirements could be a reduction of available installers as they might be priced out of the market:

> "The additional skills requirement could increase the cost of projects, as the investment by contractors will need to be funded. There is a risk that the introduction of more onerous criteria could drive out some contractors from the sector. As a result, less completion could drive up costs. However, the introduction of a minimal skill requirement can only improve the quality of the sector and the projects delivered."
>
> Falkirk Council

7.18 In the absence of a sufficient transition period for the skills requirements to become mandatory, it was suggested that the limited availability of installers could have an impact on the availability of labour and inflate prices.

> "There is a risk that the proposed requirements could lead to a reduction in the availability of installers and therefore an increase in the price of installations. If installers are given insufficient time to prepare for the change and there is a risk that a cliff-edge in installations could be created whereby installers are unable to operate within Scottish Government's Heat in Buildings Programme, due to not possessing the formal skills requirements. If a limited number of installers have the skills required, they would be able to charge a premium for their services thus leading to an increase in installation costs."
>
> National Insulation Association

7.19 More specifically, concerns were raised about the impact of the skills requirements on smaller companies who might face challenges in terms of ability to pay for required upskilling and training.

> "Industry will struggle to demonstrate that they meet the necessary standards and importantly some will leave the market as the move to whole house retrofit increases the need for compliance and broader skills. The industry is currently based on an SME model and the future under whole house retrofit will lend itself more to a main contractor sub-contractor model - if the structure and pricing of work does not reflect this change then industry will take some time to decide on the most appropriate delivery model with some leaving the industry for good."
>
> The Insulation Assurance Authority

7.20 Views were relatively mixed on whether the reduction in available suppliers would be positive or negative for the sector, although slightly more respondents reported that it would be positive.

7.21 The impact of some contractors leaving the market was not viewed universally as a negative by respondents, most of whom noted that it may be necessary to 'weed out' any 'cowboys or rogue traders':

> "With more stringent and ambitious training and skills requirements and the involvement of additional roles within a retrofit project, there is a risk that the costs of delivery may increase. It is therefore important that a consistent approach is adopted to drive up quality across the whole of the sector, removing the ability for rogue / cowboy installers to operate at sub-market rates."
>
> NIBE Energy Systems UK

7.22 This would ensure that the purpose of the skills requirements – to improve and enhance standards throughout the sector – could be achieved. To this end, Historic Environment Scotland stated that the skills requirements would improve the quality of installations by making competition fairer:

> "By increasing demand for training, capacity should expand, competition increase and quality and value for money see a commensurate increase. In terms of competition within the industry increasing the requirement for qualifications should have the effect of ensuring all companies are working at the same level, making competition fairer, reducing the risk of unqualified providers undercutting skilled providers."
>
> Historic Environment Scotland

7.23 On the other hand, a few respondents, including an individual respondent, felt that quality of installations may be compromised as a result of contractors leaving the market due to increased costs. For example, it was reported that there could be less availability of suppliers meaning fewer options for goods and services.

7.24 It was considered vital that smaller contractors were supported to be able to meet skilled requirements:

> "Some parts of the industry, particularly smaller installers, may struggle to demonstrate that they meet the required standards and to adapt their business models to methods/technology that align with a net zero pathway. As such, industry will require clear timelines and support to help them adapt. It is vital that Scottish Government support SMEs across the sector to adapt to the low carbon transition to ensure that the sector is not dominated by fewer, potentially larger installers. This will also help to ensure that costs to consumers do not become unreasonable."
>
> The Association for Decentralised Energy

Wider points raised by respondents

7.25 Albeit to a much lesser extent, wider points raised by respondents included the following:

- Signposting and making the skills requirements as clear as possible across the sector (e.g. explaining the "why they need to change" question for installers) was considered important.
- The importance of considering the skills requirements through a rural lens.
- That the skills requirements and matrix could take greater consideration of the fossil fuel sector.

8. Role of Digital Technology

Question 8

What suggestions do you have for how digital technology could be used effectively to meet our skills requirements?

8.1 The vast majority of respondents provided suggestions for how digital technology could be used effectively to meet the Scottish Government's skills requirements (83%).

Digital technology is one of a number of useful tools

8.2 The general consensus was that digital technology was one of a number of useful and valued "tools" and mechanisms that could be used to help meet the Scottish Government's skills requirements.

8.3 There was broad acknowledgement across consultation responses that "there is a place for digital technology in the development of skills", and that it would be an important part of the "overall mix" of provision. In this regard, digital technology was widely considered to have a "vital role to play in meeting the Scottish Government's skills requirements".

8.4 Some organisations, including SELECT and Warmworks Scotland, pointed to how they have expanded their training delivery towards greater digital/online learning environments in response to the growth of digital technology and/or by adapting in direct response to the COVID-19 pandemic. Further, the Association for Decentralised Energy noted that "many heat network companies, including a number of ADE members, are already using digital technology to deliver assurance testing on heat networks".

8.5 Others, such as Building Engineering Services Association, noted that "online training is undoubtedly the way forward". There was further explicit reference to the pandemic, and the resulting shift in emphasis towards online/remote learning, as reflected in the organisation quotes below.

> "The last 12 months has forced us to work more in a digital way, the lessons learned could be used to make the processes more convenient and easier logistically to upskill. For example, someone from a remote area might join a hybrid training session where some are in the classroom or parts of the curriculum can be delivered totally online. This could be a way of making it more cost effective and hence more take up of candidates".
>
> Worcester Bosch

> "The biggest part of competency is in the doing and whilst technology can aid delivery of knowledge practical skills remain key. Perhaps consideration should be given to mentoring networks across industry alongside blended learning opportunities".
>
> The Insulation Assurance Authority

> "The COVID lockdown has meant remote/digital learning is now embedded in practice and this should be used to our advantage. However construction skills do require some hands-on training and more work needs to be done on how these two training streams can be developed to support better outcomes".
>
> Tweeddale Energy Efficiency Supply Chain Development Project c/o Southern Upland Partnership

8.6 The benefits of online/remote learning were emphasised, including how it could support formal accreditation and on-site assessment. For example, National Insulation Association noted that digital technology could:

- Help to overcome the inherent challenges faced by SMEs that often lack the necessary time and resource to invest in skills development activity.
- Ensure that training provision is accessible to all - particularly if a blended approach to the RPL route is taken, with existing installers required to undertake some level of further training.
- Help to better standardise training provision and prevent the need for several individual sites across Scotland to develop the capacity to deliver the training required.

8.7 Others, including BCA Insulation Limited, NAPIT Registration, and Scottish Islands Federation pointed to the reduced travel time and cost associated with remote learning and/or the benefit of not having to travel to "mainland training centres" to learn new skills and earn accreditation in particular fields of work activity.

8.8 Further, the National Insulation Association pointed to existing research that showed that: e-learning increases information retention rates, e-learning requires 40-60% less time to learn than in a traditional classroom setting; and beyond typical remote learning techniques, augmented reality (AR) may have a role to play in educating new entrants to the energy efficiency sector.

8.9 Further, Historic Environment Scotland noted in its response that the "use of digital portfolios and virtual reality technology to enhance learning could also be explored".

8.10 The Association for Decentralised Energy noted in its response that "digital skills will be most important where the low carbon technology requires mapping and optimisation as part of the design, installation and ongoing maintenance". It suggested that the Scottish Government could "work closely with industry and skills providers" to understand where specific digital skills and software should be included in training programmes. Here, the organisation went on to note that "digital technology may help to facilitate shared learning and make remote learning possible in suitable instances".

8.11 Both Sustainable Energy Association and Scottish Power advocated for the "use of industry recognised digital tools to support the installers to understand consumers' needs and wants". The two organisations suggested that the Scottish Government could consider supporting the development of a digital customer needs assessment so that a householder can complete an on-line survey providing information about their home as the first stage of the customer journey. Sustainable Energy Association further noted that this would "drive the creation of a customer proposition report to inform calculations for heat loss and direct hot water. Utilising digital aides could standardise and optimise assessment options whilst keeping the process simple for installers".

8.12 Perth & Kinross Council Housing Improvements highlighted the important role that digital technology could also play in monitoring the performance of a building before and after works installations (e.g. environmental sensors could provide real-time information). Further, the same local authority noted that heating systems could be monitored to ensure that systems are installed and set up correctly, as well as monitoring tenants' habits and identifying fuel poverty issues. Further, the local authority commented that technology could be used to check on the performance of an installation and remotely adjust any settings in order to ensure that a system is working as efficiently as possible.

8.13 Aligned to these points, Glasgow City Council noted the importance of regarding digital technology as part of the "whole house approach to energy efficiency and low/zero emissions carbon". It further highlighted points around the use of digital technology to support post installation monitoring and modelling.

The importance of blended learning approaches to meet skills requirements

8.14 A key theme that emerged from the consultation responses was that digital technology was particularly useful in terms of facilitating increased knowledge and understanding, and that it could be a "cost-effective" way of delivering skills development activity.

8.15 The general consensus was that online learning should not be "relied on as the only option". The delivery of "blended" or "hybrid" learning opportunities and approaches, including the availability of "hands-on" training to develop "practical skills", was deemed essential to support workforce development in the sector.

> "…online courses may be a way forward for initial education but as installing energy efficient measures require physical effort the examination or assessment of an installers ability has to be done in person either on-site or in a training environment".
>
> OFTEC

> "Whilst e-learning and tools such as AR may be used to support traditional learning methods, we would highlight the importance of practical on-site training that is representative of real-world conditions. Working in the sector alongside undertaking formal qualifications is arguably the best way to train any installer".
>
> National Insulation Association

> “Digital technology is a useful tool to support training but we fully support apprenticeships as learning is 'hands on' which suits the industry. A role for digital technology can be to support and enhance training we already have in place. For example it could be used learn new techniques if manufacturers bring out new technology requiring new methods. It could be used in college training as access to a multitude of renewable technologies may be expensive so tech such as virtual reality may allow learners to experience other types of technology without the college actually investing in it at their centre”.
>
> Snipef Management Ltd

8.16 Related points were that remote learning might lend itself well to certain topic areas, specific “modules of training”, or “theoretical elements”, but that much of the learning and training would still require to be delivered “in person” and in a “physical environment”.

Using digital technology to reach rural, remote and island communities

8.17 There was considered value in the use of digital technology to specifically reach and support the delivery of skills training in rural, remote and island communities. Common points raised were that this would ensure such communities “aren’t left behind”, and that skills and training opportunities are “readily accessible and not restricted due to location”.

8.18 While outwith the scope of the consultation, a related point was the importance of improved and extended access to good broadband coverage and high speed internet connectivity in remote and rural areas to enable digital technology to be used effectively to meet the Scottish Government’s skills requirements.

> “Bandwidth is quite often an issue in the islands so we would prefer a local provider deliver training and assessment of recognised prior learning. This may be supplemented with online resources, but it should not be relied on as the only option, nor should it encourage a non-island solution with remote training that may fail on the day”.
>
> Tighean Innse Gall

> “Technology can also assist with online learning and it should also be considered that the rural and island communities are given access to high speed internet to help them learn the skill sets required for these sectors going forward and encourages them to stay local”.
>
> Perth & Kinross Council Housing Improvements

8.19 NIBE Energy Systems UK noted that online/distance learning would help ensure that the “maximum number of installers are trained to a sufficient standard to adhere to the skills matrix and support the low carbon transition” and suggested that a digital low carbon skills card could be considered.

> "The Heat Pump Association released a report – Building the installer base for net zero heating - with recommendations as to how to grow a sufficient installer base to meet low carbon heating installation targets. Within the report the HPA suggests developing a 'Low Carbon Skills Card' which would be used to demonstrate the credentials of installers to consumers and provide confidence across the UK that installers can be trusted and are certified. This skills card could be digital and therefore easily updated as installers acquire the required skills matrix qualifications or prove to have the relevant RPL".
>
> NIBE Energy Systems UK

8.20 This point was echoed by Heat Pump Association. In its response, the Association noted that a low carbon skills card could be both a digital and physical card provided to those recognised by the scheme, and could help "drive up standards across the heat pump industry" and could be a "signal of quality to the consumer that can be relied upon".

8.21 Similarly, Kingspan Insulation Ltd proposed a "robust vetting and verification process" to achieve the Quality Mark and that all approved suppliers should be listed on a publicly available directory. Further it proposed the use of digital "operative ID cards" that could detail skills, training and competencies achieved.

> "Using digital technology to be able to update installer skills and building specifications should ensure that installations are carried out as effectively as possible with the most up to date information to ensure that the right installer is working on an appropriate building and delivering the right measures to deliver the most appropriate outcomes".
>
> Kingspan Insulation Ltd

8.22 The West of Scotland Housing Association noted that Continuing Professional Development (CPD) requirements could be "logged, maintained centrally or at the very least be held for evidencing" at the procurement stage.

Wider points

8.23 A few wider points were raised, as noted below.

Addressing skills shortages

8.24 There was feedback that digital technology could be used to support the provision of remote learning opportunities to address known skills shortages in the sector. For example, an individual respondent noted that "there is currently a lack of training supplied in Scotland to achieve the design inputs required under PAS 2035", and that remote learning would be important to support "…improvements in all areas that everyone within the associated energy improvement and generation fields are up skilled to meet the current and future needs".

Learning from elsewhere

8.25 In its joint response, The Energy Poverty Research Initiative, Common Weal The Built Environment Asset Management Centre, Glasgow Caledonian University noted that a sensible approach would be for the Scottish Government to engage with, and learn from, the digitalisation consultation and investment currently being undertaken by the energy network and supply companies as part of the RIIO-ED2.

Evaluating competence

8.26 The Building Engineering Services Association, in its response, suggested that online monitoring of installation and commissioning would be possible using digital technology, and enable "assessment of skills post training course for evaluating competence".

The importance of a robust and up-to-date evidence base

8.27 RTPI Scotland raised specific points regarding Local Development Plans (LDPs) that reflect the unique characteristics of the places and communities they cover, and considered there to be a role for the Scottish Government Digital Planning Strategy.

> "Preparation of LDP strategies and policies needs to be informed by a robust and up-to-date evidence base. Therefore in order to support the development of heat networks, clear consideration needs made as to collection, analysis and visualisation of data relevant to achieve their output. To achieve this RTPI Scotland sees a role for the Scottish Government's Digital Planning Strategy. This Strategy aims to unlock the value of planning data, deliver an end-to-end digital planning service experience, create the conditions for digital to flourish, use digital tools to drive collaboration and engagement and embed a culture of digital innovation…
>
> Research by RTPI Scotland has shown large potential economic and societal benefits arising from this digital transformation. For heat network related policy initiatives there is a need to provide a relevant, transparent and robust evidence base and indicators for monitoring purposes, which are continuously kept up to date. Efficiencies that are accrued within the planning system from investment in this digital transformation could free up resources of planning authorities to better support the delivery of heat networks".

9. Other Skills for Consideration

Question 9

Are there any areas of skills we have not covered in this consultation that you think we should consider?

9.1 Around two-thirds of respondents identified areas of skills that had not been covered in the Consultation Document that the Scottish Government could also consider (67%). A relatively large proportion left the question blank or indicated that they had no view on this question (33%).

Developing a clear career pathway

9.2 Developing and promoting a clear career pathway or "route map" as a means of attracting new talent into the sector was highlighted as critical – attracting and training more young people, and for the sector to be seen as an attractive career option (e.g. MCS Charitable Foundation and MCS Service Company Ltd, RTPI Scotland, Sustainable Energy Association, The Association for Decentralised Energy, The Insulation Assurance Authority).

> "…new entrants need to be confident of a full career progression so work needs to be done on supervisory and management level qualifications alongside technical and managerial career paths".
>
> The Association for Decentralised Energy

> "RTPI Scotland believes that developing new opportunities and opening up different entry routes, especially through an apprenticeship scheme, will help support the sector meet the replacement and expansion demand for new talent and address the identified skills shortages".
>
> RTPI Scotland

9.3 Aligned to afore-mentioned point, was a perceived need for "stronger integration" between industry and further and higher education (as well as with professional associations and professionals themselves). The point made was that greater integration could help to:

- Identify gaps in skills and training provision.
- Highlight long-term career opportunities to students.
- Better understand what training professionals are seeking to access.
- Understand how best to enable individuals/companies access suitably accredited training opportunities.
- Support talent retention.

9.4 Both The Association for Decentralised Energy and MCS Charitable Foundation and MCS Service Company Ltd went onto highlight specific examples that the Scottish Government could look at to inform and shape its thinking, namely:

- Stoke on Trent College's District Heat Skills Academy.
- Vital Energi's Heat Network Training Centre in Blackburn.
- The Energy Saving Trust Heat network skills in Scotland report.
- STEM outreach carried out by many colleges and universities.

9.5 The joint response from The Energy Poverty Research Initiative, Common Weal The Built Environment Asset Management Centre, Glasgow Caledonian University noted that the consultation document did not reference the "importance of lifelong learning, and suggested that a "lifelong learning path" be developed for related professions – "these are essentially restricted to the opportunities afforded by a membership or chartered institution". As outlined above, it was noted that this could help identify gaps in provision and the types of training professionals would find most beneficial – "sabbaticals for in-depth training (such as MSc courses and professional doctorates) or as simple as enabling professionals to access 'drop in' learning to gain micro-credentials – which might be by taking individual modules or even individual lectures and seminars".

A mix of skills development activity

9.6 A common theme was that a mix of skills would be required by the current and future workforce. These were commonly framed as spanning technical to traditional skills, and from professional to soft skills - all were considered crucial and should be covered appropriately in the skills matrix.

9.7 A wider point was around the workforce not having "siloised knowledge", given that an essential part of various roles within the sector is the ability to "work effectively with professionals in other fields". Establishing a shared and "common language" across professionals in related fields, including new entrants, was also considered key.

Soft skills

9.8 Some respondents (e.g. Energy Saving Trust, National Insulation Association, The Chartered Institute of Building) emphasised the importance of developing a more formalised approach to the development of soft skills. It was felt that soft skills was an area that could be considered further within the skills matrix and/or further developed as part of training courses.

9.9 These respondents noted that soft skills were becoming increasingly important, and that it would be important to foster the development of the following skills to sit alongside core/technical knowledge:

- Advocacy and engagement skills.

- Effective communication skills (e.g. consumer and stakeholder engagement).
- Ability to work flexibly.
- Numeracy and literacy skills.
- Behavioural skills.

Professional skills and the training and education of professions

9.10 In addition to the development of soft skills, some respondents highlighted that the Scottish Government could also consider how best to support the development of wider professional skills (e.g. Institution of Civil Engineers Scotland, Kingspan Insulation Ltd, MCS Charitable Foundation and MCS Service Company Ltd, The Association for Decentralised Energy).

9.11 The types of professional skills reported in consultation responses included, for example:

- Finance.
- Project management.
- Supervisory and management.
- Legal.
- Business development and growth.
- Software and IT skills.
- Feasibility assessment (e.g. assessing district heating feasibility proposals).

9.12 Historic Environment Scotland commented that "training and education of professions such as Chartered Surveyors, Architects and Engineers has not been covered…and could be explored with the relevant professional bodies".

Technical, specialist and traditional skills

9.13 "Technical occupational skills" were considered essential as they ensure the workforce has the specific knowledge, skills and abilities to carry out different jobs effectively. There was some reference to the important role of the Apprenticeship Family in "providing the skilled people required for this sector", but that the sector could benefit from having more opportunities for "vocational training and qualifications" available.

9.14 A common message was that a continued focus on the development of technical skills would be essential, and at the same time, a stronger focus on the development of wider skills as touched on earlier (i.e. soft and professional skills).

9.15 The joint response from The Energy Poverty Research Initiative, Common Weal The Built Environment Asset Management Centre, Glasgow Caledonian University noted various reasons to help highlight the importance of developing and maintaining "traditional skills" for maintaining and improving the energy efficiency of the existing building stock, particularly tenements, traditional properties in rural and island areas, and historic buildings. An extract from the joint response is provided below.

> "Whilst modern technologies form part of the toolkit that can be deployed to maintain older buildings it is often necessary, or just as effective, to use traditional techniques and materials. Yet there is a real danger of these skills becoming extinct in Scotland unless urgent action is taken to support these industries and encourage young people to join them. Losing such skills would not simply be detrimental to the transition to zero carbon, but also to Scottish culture and architectural traditions".

9.16 While NAPIT Registration posed a question around whether different skills requirements be needed to undertake work in higher-risk buildings (e.g. compartmentalisation and fire safety).

Alignment with existing evidence base and courses

9.17 There was reference to ensuring that the skills matrix takes cognisance of, and aligns closely with, wider skills strategies and plans, as well as with recent/planned developments in training provision.

9.18 Some examples are noted below:

- The Institution of Civil Engineers, Scotland noted that proposals should align with the Skills Investment Plan for Scotland's Construction Sector that covers both professional and trade skills. The same organisation also commented that its members must meet exacting standards in order to be professionally qualified – it considered the current ICE skills and qualification standard appropriate, and proposed that these professional skill sets be recognised within Scottish Government proposals.

- The Heat Pump Association highlighted its newly developed training course for heat pump installers. It noted that it would like to see the skills covered within this new training course, which will be adopted by leading industry manufacturers, to be included within the skills matrix.

- Aligned to the afore-mentioned bullet point, Worcester Bosch posed a question around whether the entry requirements would align with similar qualifications in the rest of the UK? The company also noted that Heat Pump Association would be introducing UK national qualifications for Heat Pumps in the near future.

- The National Trust for Scotland proposed that it would be important to reflect the findings of Historic Environment Scotland's 2011 Traditional Building Skills: A Strategy for Sustaining and Developing Traditional Building Skills in Scotland, and to set out measures to address them.

Reform of Energy Performance Certificate Methodology

9.19 There was reference to the Scottish Government consultation on the draft Heat in Buildings Strategy, and more specifically the proposal to reform the assessment process and metrics underpinning Energy Performance Certificates (EPC) (e.g. by Built Environment Forum Scotland, The Architectural Heritage Society of Scotland, The National Trust for Scotland, The Royal Incorporation of Architects in Scotland).

9.20 A common message was that "certain methodologies are inaccurate", and as part of reforming the EPC methodology, it would be "crucial Scotland has skilled assessors who understand the nuances and particulars of traditional buildings". For example, by including provision to train assessors to specifically calculate EPC ratings and corresponding appropriate intervention for traditional buildings.

9.21 The National Trust for Scotland pointed to a quote from Built Environment Forum Scotland to help demonstrate the scale of investment required in upskilling and training in this particular area.

> "Current EPC assessors are not on the whole qualified to carry out such a detailed technical feasibility assessment. Considerable training will be required if this commitment is to be met with input from specialists in a wide range of measures and building types."

9.22 Built Environment Forum Scotland and The Architectural Heritage Society of Scotland echoed this point in their responses:

> "If we are not starting from an accurate base, the interventions invested in may fail to deliver on economic and ecological targets, as well as potentially being detrimental to occupant health and comfort".
>
> Built Environment Forum Scotland

> The EPCs need to take traditional building qualities and embedded energy into account in a more nuanced way than they do at present, and higher quality training is required for the assessors."
>
> The Architectural Heritage Society of Scotland

9.23 Finally, the joint response from The Energy Poverty Research Initiative Common Weal The Built Environment Asset Management Centre, Glasgow Caledonian University called for "all civil servants and politicians" to be "equipped with some knowledge of why EPC, as they stand, are not a valid mechanism for driving policies to tackle energy efficiency and fuel poverty".

A rural lens

9.24 Similar to other consultation questions, there was specific reference to the importance of both ensuring that people living and working in remote and rural areas have the right skill sets required by industry and have access to opportunities for training and development.

9.25 For example, The National Trust for Scotland noted that “having enough skilled evaluators, assessors, coordinators, designers and advisors is only part of the issue”. The point made was that this workforce “must be located where they can service rural and island communities”, and that this was important as “stock becomes older and demand for retrofitting grows”.

9.26 Tighean Innse Gall suggested that it would be important to increase the supply of trained assessors (e.g. train the trainer) “to ensure local solutions to meet local needs, particularly of island communities”. Further, the same organisation noted that funding would be required to “ensure that local training is given, and that assessors are available in the islands who understand local context and logistics of delivery”.

9.27 Perth and Kinross Council Housing Improvements commented that “wider technologies and the skillsets required for these also should be assessed such as the utilisation of more wave and tidal electrical generation which is likely to benefit the island communities more”.

Whole-house systems and fabric first approaches

9.28 There were a few comments that emphasised the importance of whole-house systems and fabric first approaches, as illustrated by the points below.

> “…new entrants to the sector are educated about the whole house and are able to support a whole house approach to insulation retrofit and it is important that the skill matrix and available training courses reflect this”.
>
> National Insulation Association

9.29 Kingspan Ltd advocated for a “fabric first approach” to heat decarbonisation, and suggested that this could be incorporated in some way into the skills matrix.

10. Sector Support for Skills Requirements

Question 10

What support do you think would help the sector achieve these skills requirements?

10.1 A vast majority of respondents provided suggestions for the type of support required to help the sector achieve these skills requirements (81%).

Financial support for training

10.2 A common theme that emerged from the consultation responses was that a continued package of support for energy efficiency across the supply chain would be vitally important.

10.3 Here, there was strong support for industry-wide investment in skills to help the sector achieve the proposed skills requirements. There was clear and strong feedback that a "long-term commitment" and "long-term certainty of funding" would be key to success.

> "Industry will not invest if it does not have confidence that the scheme is going to run for a period of time sufficient to see a return on investment in terms of both finance and staff resources. Making sure all policies and regulations conform during delivery will encourage industry to invest and benefit Scottish targets to improve the housing stock and reduce carbon emissions.
>
> Elmhurst Energy

> "Feedback that we continually receive from the supply chain through our work with them on the Scottish Government's Sustainable Energy Supply Chain Programme, suggests that the most important thing that can be done to ensure that local supply chains are expanded and up-skilled is for the Scottish Government to provide them with long term certainty – in terms of what the Scottish Government plans to do and how much funding will be allocated. The view from some suppliers is that this time period needs to be at least 5 years. With long term certainty of funding comes long term confidence to invest in training and staff".
>
> Energy Saving Trust

10.4 "Significant" financial support to assist the sector as a whole with training would be required (e.g. through grant and bursary funding depending on the route into training, financial support to people whilst they reskill to avoid the disincentive of a reduced income during the training period, support for the cost of PAS2035 certification, provision of low interest loans), as well as "transparency of the routes to funding".

10.5 A common message was that financial support for upskilling and reskilling would be crucial in the short-term, and as part of a longer-term strategy to support workforce development (e.g. that could include "regular mandatory refresher training").

10.6 There was wider commentary around the need to engage with the sector on skills and to encourage and stimulate demand for workforce development, particularly among micro businesses and SMEs (e.g. where factors such as the cost of training/apprenticeships and time away from work can be barriers to engagement). Financial support was therefore viewed as essential to encourage companies to "train staff beyond the minimum skills requirement".

10.7 More generally, it was considered important to undertake industry facing awareness raising campaigns around the growth opportunities in energy efficiency /microgeneration/heat network, as illustrated in the quote below.

> "…sole traders to large business, need to feel confident that there are long-term business opportunities in these sectors in order to invest in their staff and new talent".
>
> MCS Charitable Foundation and MCS Service Company Ltd

10.8 On the supply side, it was considered important that capital funding for facilities and equipment was also supported (e.g. to enable providers to adapt teaching and assessment practices accordingly).

10.9 The Scottish Government's commitment to support upskilling was therefore welcomed, as was support for this type of activity through other programmes (e.g. Flexible Workforce Development Funding, capital investment for Scottish colleges for equipment to deliver training for energy efficiency).

Promoting the sector as an attractive career opportunity

10.10 An "unprecedented recruitment drive" was called for. For example, it was noted that:

> "For the construction sector, there is a huge opportunity to drive change for net zero. Using data from the Climate Change Committee, modelling suggests an additional 22,500 workers will be needed in Scotland by 2028 in delivering retrofit of buildings, representing an increase of around 9% of the size of the current workforce. The Government must support the construction sector to create new pathways into the market and it will require industry participants to work cross-sector".
>
> Sustainable Energy Association

10.11 There was very strong support for a plan of action to be developed to help inspire and attract young people into the sector, as reflected in a couple of organisation quotes below.

> "The construction sector as a whole is often seen as the employment of last choice for young people". It is hoped that the development of a clear skills pathway that young people can engage with and easily navigate may encourage new entrants to the sector".
>
> National Insulation Association

> "Feedback from industry representatives to the Sustainable Energy Supply Chain Programme has also highlighted that that industry representatives do not believe that their industry is attractive enough to young people and… would welcome Scottish Government interventions to help to remedy this".
>
> Energy Saving Trust

10.12 It was considered crucial that support was aimed at attracting future talent and developing "clear" and "new" skills pathways into and through the sector (e.g. from the apprenticeship pathway to shorter, conversion courses for those coming into the industry from other sectors). Further, targeted campaigns and clear communication and engagement with and between young people, schools, colleges and industry would also be required.

10.13 Supporting growth in the number of installers was considered critical. Parts of the sector were considered by some to have a growing ageing workforce (e.g. installers) – this was therefore identified as an issue that would need to be addressed going forward.

10.14 It was considered vital that action was taken to stimulate demand for people to train to become heat pump installers. Here, it was mentioned that there are existing heating installers who have "many of the skills required for heat pumps currently installing fossil fuel systems". A common theme was that this pool of talent could be tapped into to "help grow the heat pump market" (e.g. this could include "retraining older workers"). It was noted that wider policy support would be required from the Scottish Government to achieve this (see below).

10.15 Snipef Management Ltd also made referenced to plumbers recognised through the Scottish and Northern Ireland Joint Industry Board (SVQ level 3 (SCQF 7)). The organisation noted that these plumbers have the "key fundamental skill sets to quickly upskill to be able to deliver renewable technology", and could support "the push to 2025 targets of 64000 heat pump installations a year".

10.16 Further, Scottish Power felt that there was an opportunity to harness and utilise the experience and knowledge of the current workforce "to support learning of new entrants, colleges and trainers".

10.17 Wider feedback was on the requirement to develop a management talent pipeline and providing CPD opportunities to help keep the workforce's experience of industry practice up-to-date and that skills levels are maintained going forward. A suggestions for the latter was that all qualifications could have mandatory in-built CPD stipulations, and that skills levels requirements could be re-evaluated in future years to accommodate new and evolving technologies.

Increased apprenticeship opportunities

10.18 A common theme was that increased support was needed for businesses to take on “new employees and especially apprentices who can push the industry forward through the green transition”. Further, funding would be required to give businesses confidence in employing apprentices.

10.19 Supporting industry, particularly SMEs, to provide apprenticeships, was emphasised. Further, this could focus on providing long-term employment and career paths for new entrants to the sector. It was noted that an increase in apprenticeships would allow industry to develop a “properly trained workforce”.

10.20 Linked to points around attracting future talent, there was some feedback regarding a perceived “lack of attractive low carbon apprenticeships” available to young people when they leave school.

The supply of, and delivery models for, training provision

10.21 A variety of points were raised around the provision of training.

10.22 First, a common theme was, that in addition to addressing the demand side issues described above, there would also need to be work undertaken, and support provided, to ensure “a rapid response from the training sector to deliver the right skills”.

10.23 There was also reference made to the methods used for the delivery of training, and that various approaches might be valuable, including for example:

- Use of contractor or system holder/material supplier to deliver training.
- On-site training.
- On-the-job training.
- Distance learning.
- Increased use of digital technology (e.g. including to reach remote and rural communities).
- RPL and installer experience could be used as methods of achieving/showing accreditation.

10.24 A wider suggestion was that there could be better coordination of training resources, and a “single point of contact for businesses” to help them identify what training is required, where to access training, and how to fund it.

10.25 Historic Environment Scotland raised a wider point around the capacity of the wider skills ecosystem – “skills bodies, public bodies, private training companies and third sector organisations all have a role to play in developing a sustainable skills supply that is appropriate for the local workforce”.

Rurality Issues

10.26 A number of organisations, raised specific points related to rural and remote geographies (e.g. a local authority, Energy Saving Trust, Scottish Lands and Estates, SELECT, The Chartered Institute of Building, Tighean Innse Gall), including:

- That investment to meet the proposed skills requirements should be available to installers across Scotland (i.e. beyond the central belt).
- That training providers need to be available in island, remote and rural communities. It was suggested that the Scottish Government could ensure at least one provider is accredited in each local authority area to deliver recognised prior learning, or SVQ/NVQs for new entrants.
- That there could be increased use of digital technology to support training/accreditation, particularly in remote and rural areas.
- Increased use of digital technology would require improved connectivity in rural areas.
- That rural economies could be strengthened if indigenous SME installers were supported to grow with the local markets (e.g. heat pump markets) rather than additional capacity to satisfy demand being supplied to these markets from larger regional or national installers.
- When assessing skills requirements for energy efficiency it would be important to consider the current knowledge base, the context of the built environment in Scotland and its long-term plans for energy efficiency. The Scottish housing stock is diverse and varies across Scotland and between rural and urban areas.

Wider Support from the Scottish Government

10.27 In addition to financial support and incentives, there was strong feedback that the Scottish Government would have an important role to play in other ways to help ensure the sector can achieve the proposed skill requirements.

10.28 For example, it was considered important that the Scottish Government:

- Ensured a joined-up, coherent and collaborative approach between all stakeholders and partners.
- Strengthened the future relationship between the public sector and the construction industry. Here, there was wider reference to the development of the Scottish Construction Accord.
- Undertook, in partnership with others, targeted information and promotional campaigns (e.g. using a variety of channels and aimed at different stakeholders groups) about the proposed changes, to ensure suppliers are aware of the opportunities, to advertise the package of support available, to incentivise uptake, etc.

- Identified and guaranteed the future pipeline of “green” work in order to allow businesses to be confident in any skills investment they make.

- Continue to develop policies that will deliver “demand certainty as well as a continued need to engage with the supply chain to emphasise the Scottish Government’s commitment to this agenda and the wider work it is doing to support the supply chain, and to encourage consumer demand for energy efficiency and low carbon heat”.

10.29 As outlined earlier at **Section 10.3**, there was strong feedback that a “long-term commitment” and clear direction would be key to success. These points are further reflected in the quotes below.

> “Along with financial incentives, the biggest plea we would like to make it the need to demonstrate to the installer base that the Government do have a long term commitment and that that commitment is real. This will provide confidence to the sector and give them a reason to invest their money and time in the required additional training and certification requirements which they have previously not needed”.
>
> NAPIT Registration

> “We need to see a clear commitment to phase out the use of fossil fuels in heating by a certain date in all buildings alongside strong new build standards. This will signal to all that there is a market shift happening and a limited time frame on being a gas boiler installer – giving a valid reason to retrain/enter the market”.
>
> NIBE Energy Systems UK

> “Specifically, the HPA would like to see a commitment to phase out the use of fossil fuel heating by a certain date in all buildings. This should come in alongside strong new build standards the leave no need for the retrofit of low carbon heating. Doing this will provide a firm commitment and clear direction two installers that there is a market shift happening and the limited time frame on being a fossil fuel installer, this will give them a reason to retrain. Evidence of this has previously been seen in other countries, such as France, where the firm long-term commitment to end the use of oil boilers resulted in installer training numbers doubling between 2019 and 2020. The HPA membership have also seen early signs of such growth following the government commitment to a target of 600,000 heat pumps per year by 2028, but to ensure the success in the long run firm regulatory commitments and policy is needed from the Scottish Government to ensure that this initial opportunity is capitalised on fully”.
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> Heat Pump Association

Appendix A: Organisation Groupings

Table A1: High Level Profile of Organisation Respondents

Organisation Type	
Public Sector	• Argyll and Bute Council • Construction Industry Training Board • Falkirk Council • Glasgow City Council • Historic Environment Scotland • Perth & Kinross Council Housing Improvements • Shetland Islands Council • The Energy Poverty Research Initiative Common Weal The Built Environment Asset Management Centre, Glasgow Caledonian University (joint response) • United Kingdom Accreditation Service
Private Sector	• A.C. Whyte & Co. Limited • BCA Insulation Limited • Kingspan Insulation Ltd • NIBE Energy Systems UK • Scottish Power • Worcester Bosch • The Kensa Group
Third Sector	• Energy Saving Trust • Garve & District Development Company • The Architectural Heritage Society of Scotland • The National Trust for Scotland • Tighean Innse Gall • Tweeddale Energy Efficiency Supply Chain Development Project c/o Southern Upland Partnership • Warmworks Scotland • West of Scotland Housing Association

Table A1: High Level Profile of Organisation Respondents

Organisation Type	
Membership/ Professional Body	• Association of Consultancy & Engineering Scotland • Building Engineering Services Association • Built Environment Forum Scotland • Chartered Institute of Architectural Technologists • Elmhurst Energy • Heat Pump Association • Liquid Gas UK • MCS Charitable Foundation and MCS Service Company Ltd • NAPIT Registration • National Insulation Association (NIA) • OFTEC • RTPI Scotland • Scottish Islands Federation • Scottish Land and Estates • SELECT • Snipef Management Ltd • Solar Energy Scotland • Sustainable Energy Association • The Association for Decentralised Energy • The Chartered Institute of Building • The Institution of Civil Engineers, Scotland • The Insulation Assurance Authority • The Royal Incorporation of Architects in Scotland

Appendix B: Questions Posed at Webinars

11 March 2021 Questions and Points Raised

- Hi, how do retrofit coordinators sit relative to clerk of works? During which part of install projects will they attend site?

- Are you committed to working with Community Groups or other local organisations currently supporting Home Energy improvements and energy efficiency?

- What is proposed to ensure that the district heating skills requirements are met in Scotland given many of the specific skills required are separate to the initiatives for individual solutions John covered here? DH is flagged to have a significant contribution to our net-zero targets and there is a real danger the specific skills required for this market are forgotten about due to the focus only being on individual building-level solutions. This would result in significant opportunities being missed.

- Will any funding be made available for specific Retrofit roles such as Coordinator and Assessor?

- Is the intention for the Heat in Buildings Strategy to use the UK government endorsed TrustMark quality assurance framework to ensure compliance with these standards?

- What policy and financial measures are planned to drive demand for net-zero skills?

- We are due to transition by the latest end of June, however the consultation is not out until May and confirmed in September, is there any guidance on this?

- Learning and training is being discussed in the context of going forward. PAS renewals are happening now. The smaller companies in the supply chain are generally unprepared, particularly in the rural areas. The installer skills requirements are required right now by PAS as the company renews its accreditation in readiness for June 30th, 2021. Thus, if you are working on HEEPS and have to lever ECO then this applies right now. Therefore, the time to transition has effectively gone and Scottish Government Schemes will be impacted immediately due to a lack of NVQ/SVQ qualified installers for insulation. Surely the timing for this has to be reviewed or the risk is the schemes will be seriously impacted?

- How many retrofit co-ordinators currently are registered in Scotland? If there are currently few yet the funding via SG/ECO for many measures demands they be in place at the latest by June 30th, 2021 then will this logistically stack up as currently timetabled?

- When looking at the key dates, is it correct to say then that the Scottish Consultation will be published some 2-3 months after the PAS2030:2019/2035 comes into force?

- As an installer our PAS accreditation runs out on 31st May 2021. The Recognised Prior Learning route is currently not being considered by PAS accrediting bodies (e.g. BBA) and they are applying the qualification route for the pathways. Are they correct to do so? i.e. Does the Scottish working group recommendations for RPL currently hold any sway?

- With much of the industry in Scotland servicing Scottish Government programmes which demand we lever ECO -are the panel not worried that the programmes are about to go off a cliff because the supply chain is not compliant with the SVQ2 standard requirements?

- Without RPL being accepted by accrediting bodies the rural supply chain will really struggle.

- Hello John, given that SQA are not going to be taking the majority of the new pathways in IBT at level 6 forward, will there be support available for colleges to take forward the SVQ qualifications from an alternative awarding body?

15 March 2021 Questions and Points Raised

- When you talk about risk can you elaborate on what risk you are referring to?

- What is the RICS qualification mentioned by Ian which will be required for a retrofit assessor working on risk level B and C projects in addition to the Level 3 SVQ? Did I mishear that?

- Is biomass being considered, last week's webinar did not even though Scotland is a major producer of fuel (wood pellets).

- Which college and what is the likely timescale please?

- Where can students in the islands gain qualifications for external wall insulation funded by NTTF?

- Who has the fund for what you are talking of and what is it?

- With an ageing supply chain a real immediate barrier is the need for NVQ2/SVQ. Recognised Prior Learning is not being assessed by accreditation bodies for PAS. The ones we are in contact with simply are applying the qualifications as a minimum. How can this be addressed in a timescale to prevent the supply chain being lost?

- The 3 to 1 mix of workforce vs carded operatives to satisfy PAS2030:2019, in a small 2-man island businesses doesn't help. The way to achieve the cards means significant time out and via colleges which are central belt located. Would the panel not agree that to professionalise the sector in this manner as stated needs more transition time or it will disengage as they won't be able to survive till those standards are achieved.

- When will Highlands and Islands colleges be ready to offer courses? Each workstream needs its own NVQ2/Scottish equivalent. Our Island college is not yet offering such courses. Accreditation bodies for PAS are looking for the

qualifications now at time of PAS renewal. Thus, will there not be some lengthy hiatus in delivery of programmes where the PAS standards are required

- For most insulation measures our accreditation body for PAS is demanding NVQ2/Scottish equivalent for the workforce. The training courses are estimated at 150-300hrs to achieve these. In small businesses this is extremely difficult to engage with and survive. Can we not find a more efficient way for colleges to translate RPL into an accreditation?

- Most insulation work for the Scottish Government requires us to lever ECO. The mandatory date for the PAS implementation is 30th June 2021. Thus renewals now are based on the current version of PAS -prior to any feedback from the Scottish Government consultation. What will be the process after the consultation response is published to change the PAS standards to accommodate the response recommendations.

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Any enquiries regarding this publication should be sent to us at

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