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ECO2 Technical Requirements Consultation

Consultation Response Document

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Contact: ECO Team
Team: Energy Efficiency and Social Programmes
Email: eco@ofgem.gov.uk

Overview:

We recently consulted on two areas of scheme delivery within ECO2: lifetimes for wall insulation measures without an appropriate guarantee and technical monitoring re-inspection requirements.

This document summarises the responses to our consultation and, having reviewed all responses, details our final policy on the areas that we consulted on. Where relevant, we also explain where we were unable to incorporate suggestions and how we arrived at our final position.

The new policies outlined for wall insulation measures in this document will apply to all ECO2 measures. The new guidelines set out for remote re-inspections in this document will take effect from the date of publication.

Associated documents

Ofgem Guidance

Energy Company Obligation (ECO2) Guidance: Administration:

https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2015-17-eco2-guidance-administration.

Energy Company Obligation (ECO2) Guidance: Delivery:

https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2015-17-eco2-guidance-delivery.

Energy Company Obligation (ECO2): Explanatory notes for monitoring:

https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-monitoring.

Energy Company Obligation: Best Practice Monitoring Questions

https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-monitoring.

Legislation

The Electricity and Gas (Energy Company Obligation) Order 2014:

http://www.legislation.gov.uk/uksi/2014/3219/contents/made.

Ofgem consultation documents

ECO2 Technical Requirements Consultation:

https://www.ofgem.gov.uk/publications-and-updates/eco2-technical-requirements-consultation.

ECO2 Appropriate Guarantees

https://www.ofgem.gov.uk/publications-and-updates/eco2-appropriate-guarantees.

Other

Guidance on Ofgem's approach to Consultation

http://www.ofgem.gov.uk/About%20us/BetterReg/Pages/BetterReg.aspx.

Contents

Context

The consultation covered two main areas:

1. **Lifetimes for wall insulation measures without an appropriate guarantee**

Measures installed under ECO have an expected 'standard' lifetime which is used to calculate the carbon or cost savings that will be achieved by that measure. Wall insulation measures are expected to deliver savings for up to 42 years. To provide assurance that standard lifetime savings will be achieved for wall insulation measures they must be accompanied by an appropriate 25-year guarantee.

At the end of ECO1, we developed an approach to deal with wall insulation measures that did not have an appropriate guarantee in place, and committed to consulting stakeholders on the approach we will take in ECO2.

This consultation proposed that such measures in ECO2 should be given a zero year lifetime unless alternative assurance of the measure lifetime is available.

2. **Technical monitoring re-inspections**

Technical monitoring verifies whether a measure has been installed to the relevant installation standards by a person of appropriate qualification and expertise, and whether it complies with the eligibility criteria.

Independent monitoring agents visit dwellings during and/or after the installation of ECO measures to ensure that works have been carried out to the expected standard. If measures fail these inspections, the energy company is required to undertake remedial works which must be re-inspected on site by a suitably qualified technical monitoring agent.

Prior to this consultation, several stakeholders had suggested that the introduction of remote re-inspections would help reduce costs to the supply chain and improve the customer journey. Our consultation therefore proposed 18 technical monitoring questions that were deemed suitable for

remote re-inspections on the basis that appropriate evidence was provided to, and reviewed by, a qualified technical monitoring agent.

This document summarises the responses to our consultation and having reviewed all responses, details our final policy on the areas that we consulted on. Where relevant, we also set out where we were unable to incorporate suggestions made and explain how and why we arrived at our final position.

Consultation overview

We have published an updated version of the Energy Company Obligation (ECO2): Explanatory notes for monitoring and core monitoring questions alongside this consultation response document. These documents contain the policy decisions and changes discussed in this document relating to remote re-inspections. The policy decision relating to the zero-year lifetime for wall insulation measures without an appropriate guarantee is contained in this document and will not be published separately. This policy will, however, be included in the ECO2 Guidance: Delivery when it is next updated.

We received 18 responses to the consultation: six from energy companies, four from certification and guarantee bodies, four from manufacturers, three from technical monitoring companies and one from a local authority.

We remain committed to working with stakeholders to administer ECO as effectively as possible. Where we can, we will inform and consult when making significant changes to the scheme's administration and guidance.

The following chapters consider each consultation question in turn. A summary of the responses for each question is given, plus any other pertinent points raised, followed by our response. Our final policy decision is then outlined, including any changes we made to our proposed policies as a result of the information we received in responses.

In developing our final policies, we carefully considered all of the points raised by respondents, even if they are not specifically mentioned in this document. All 18 responses to our consultation can be viewed on our website.

1. Decision

1.1. This chapter summarises our policy approach following consideration of the responses to our consultation. Summaries of the submitted responses and our responses to them can be found in the chapters 2-8.

Lifetimes for wall insulation measures without an appropriate guarantee

1.2. Our final decision below refers to, and is based around, the 4 scenarios displayed in Table 1. The following approach will be used for ECO2 wall insulation measures which are installed without an appropriate guarantee. It will apply to all cases which are notified subsequent to this decision.

1.3. These scenarios are in place to help improve consumer protection and ensure that measures deliver lifetime savings.

Table 1. Scenarios where a wall insulation measure is not supported by a guarantee

	Scenario	Details	ECO2 approach
1	Not eligible ECO measure	• The installer is not PAS 2030-certified • There is no evidence the measure has been installed in accordance with building regulations • Other core ECO eligibility criteria are not met	This is not an eligible ECO measure. To be rejected through our standard rejections process.
2	Limited assurance that standard lifetime savings will be achieved	• The installer conceals lack of guarantee from energy company • Guarantee was applied for but not issued due to concerns about quality and/or suitability of the installation • Guarantee was applied for but not issued as no system certificate was valid for the measure and no equivalent assurance provided • Guarantee not issued as applied for retrospectively	We have limited assurance regarding the quality of installation of the measure. These measures will receive the default lifetime of zero years and receive no ECO savings. Where these measures fail, this lifetime would allow potential for them to be replaced under future schemes, although this cannot be guaranteed.
3	Some assurance that standard lifetime savings will be achieved	• Proactive discussions pre-installation to find alternative route to supporting lifetime • Guarantee quality assurance rules were followed but guarantee was not issued and installer now ceased to trade	There is some assurance regarding the quality of installation of the measure. There *may* be sufficient assurance for these measures to have up to the applicable standard lifetime. Measures will be assessed on a case-by-case basis.

4	No guarantee available	• It is not possible to obtain a guarantee for this measure type as no appropriate guarantee is available *[Note: we are not currently aware of any wall insulation measure types where a guarantee is not available]*	Ofgem to engage guarantee companies to anticipate such cases in advance. If presented, identify whether a measure could receive a guarantee either in this instance or in future. If not, consider whether additional assurance is available for this measure type. Award up to the applicable standard lifetime for the measure, subject to no other concerns. Measures will be assessed on a case-by-case basis

1.4. We expect these scenarios will be limited to a very small proportion of ECO2 wall insulation measures. These measures may be identified retrospectively through energy company compliance checks and/or Ofgem audits.

Ofgem requirements

1.5. The following requirements will apply to all ECO2 wall insulation measures notified without an appropriate guarantee, following this decision:

1. Wall insulation measures delivered in accordance with the ECO2 Guidance must be accompanied by an appropriate guarantee.

2. Wall insulation measures notified *without* an appropriate guarantee or alternative assurance, will be awarded a default lifetime of zero years (see scenario 2). These measures will receive no carbon or cost savings.

3. Where alternative assurance is available for wall insulation measures without an appropriate guarantee, we will determine the measure lifetime through a case-by-case assessment of the evidence available. The lifetime awarded could range from zero up to the applicable standard lifetime for the measure type (see scenario 3).

4. Where no guarantee is available within industry for a particular type of wall insulation measure, we will determine the measure lifetime through a case-by-case assessment of the evidence available (see scenario 4). This lifetime could range from zero up to the applicable standard lifetime for the measure type.

5. Where a case-by-case assessment is required (see scenarios 3 and 4), we will engage with energy companies to gather the information

required and work towards a swift conclusion. The process will reference our criteria for the assessment of a non-standard lifetime, included here in Appendix 3.

Technical monitoring remote re-inspections

1.6. The following guidelines will be introduced for remote re-inspections as a result of this consultation. These guidelines are being introduced to reduce the inconvenience to consumers of repeated site visits.

1. Prior to remedial work taking place, the technical monitoring agent must determine if a fail can be re-inspected remotely.

2. The 18 questions marked as 'yes' in Appendix 1 are only suitable for remote re-inspection subject to the discretion of the technical monitoring agent. It is not mandatory to enact remote re-inspections.

3. We do not allow the remote re-inspection of any technical monitoring question that is not listed as suitable in Appendix 1.

4. During the original monitoring inspection, the technical monitoring agent should take a photograph(s) of the aspect(s) of the installation that failed monitoring. The installer conducting the remedial work should take a photograph(s) showing the same view which clearly indicates that the fail has been remedied.

5. All photographs taken by the technical monitoring agent and installer must be captured using a suitably high resolution, record the date on which the photo was taken, location of the premises and the measure being assessed.

6. Where possible, we expect all photographic evidence to be GPS location-stamped.

7. In addition to photographic evidence, the technical monitoring agent may request further evidence and energy companies may implement additional processes to increase the accuracy of remote re-inspections, and enhance consumer protection.

8. Where possible, the remote re-inspection should be conducted by a representative of the same technical monitoring company, and

preferably by the same technical monitoring agent, who conducted the original site audit.

9. If the documentary evidence supplied does not provide sufficient certainty for the technical monitoring agent to determine that the necessary remedial work has or has not been completed to the required standard, a technical monitoring agent must undertake a site audit as a mandatory requirement.

10. We do not require monitoring agents to conduct a minimum percentage of re-inspections on site.

11. Energy Companies must indicate on their technical monitoring reports that a measure has been remotely re-inspected. We will monitor trends in failure rates for all remotely re-inspected measures.

2. Consultation responses to Question 1

Default lifetime for wall insulation measures without appropriate guarantee

Summary of responses

2.1. Fourteen stakeholders responded to question 1.

Question 1

Q1.1) Do you agree that the default lifetime for wall insulation measures without an appropriate guarantee is zero years?

Q1.2) Please give reasons for your answer.

2.2. Respondents supported the proposal to award a zero-year lifetime to wall insulation measures without an appropriate guarantee.

2.3. The vast majority of respondents said that wall insulation measures without an appropriate guarantee should not have carbon or cost savings awarded, irrespective of the circumstances or any alternative assurance, and should be considered ineligible under ECO.

2.4. One respondent requested that obligated energy companies be given the opportunity to rectify the absence of a guarantee and identify and address any procedural failures which stopped the guarantee from being obtained.

2.5. There was also a request that any decision did not set a precedent which assumes a link between a guarantee and a measure lifetime.

2.6. It was suggested by one respondent that wall insulation measures without an appropriate guarantee be rejected as ineligible measures, in order to avoid contributing towards technical monitoring quotas.

2.7. It was widely expressed that a zero year lifetime would, alongside the appropriate guarantee process, have a positive impact on compliance and ensure greater protection for consumers.

Ofgem's response

2.8. Wall insulation measures notified without a guarantee, or further assurance, will be awarded a lifetime of zero years. These measures will receive no carbon or cost savings.

2.9. This default lifetime of zero years will further reinforce the need for an appropriate guarantee, offering greater consumer protection, encouraging high quality installations, and supporting the carbon and cost saving objectives of the scheme.

2.10. It may be possible for an appropriate guarantee to be issued retrospectively. Where it is applied for after the measure has been installed and/or notified, the guarantee company would have to be satisfied that their quality assurance framework had been met in full. It would remain necessary for an installer and manufacturer to hold primary liability for any repair or replacement works in the event of measure failure, in accordance with the standard criteria for an appropriate guarantee.

2.11. It is correct to say that the presence of a guarantee does not determine the length of time that an energy efficiency measure will last. We recognise that there are a number of factors that impact on a measure's lifetime, including the durability of the product, the quality of installation and maintenance needs (see Appendix 3 for a list of the criteria we use to assess non-standard lifetime applications). However, for the purpose of ECO wall insulation measures, we have developed a set of requirements for an appropriate guarantee, which give us confidence that measures are installed to a suitable standard, by competent installers, in premises that are suitable for the installation.

2.12. In the event of problems, there is financial assurance that the measures will be repaired or replaced, thus protecting the lifetime carbon and cost savings and consumers. The quality assurance in our requirements give us confidence that wall insulation measures which are accompanied by an appropriate guarantee will achieve the standard lifetime for the measure.

2.13. Wall insulation measures which are notified without an appropriate guarantee will count towards an energy companies monitoring

requirement. This will be irrespective of whether the measure is found to be non-compliant and ultimately rejected. This is the current approach for all measures.

3. Consultation responses to Question 2

Case-by-case assessment of measure lifetime

Summary of responses

3.1. Fourteen stakeholders responded to question 2.

Question 2

Q2.1) Where there is alternative assurance available in support of the lifetime, do you agree that we should determine the lifetime through a case-by-case assessment of the evidence, up to a maximum of the standard lifetime for that measure type?

Q2.2) Please give reasons for your answer.

3.2. Most respondents disagreed that alternative assurance could be provided to determine a lifetime for wall insulation measures without an appropriate guarantee.

3.3. Many respondents took the view that there wouldn't be any occasions when alternative assurance would suffice. There was concern that this approach would make the process ambiguous, which would be unhelpful and could lead to administrative uncertainty and undermine the guarantee process.

3.4. Further concerns were raised about the standard on which such assurance could be judged; who would provide alternative evidence and what that process was. The importance of an agreed, standard specification was also put forward. This would be difficult to establish for unknown circumstances, beyond the existing requirements of an appropriate guarantee.

3.5. There was opposition to the acceptance of any assurance that could not provide the consumer with recourse in the event of future failings of wall insulation measures. One respondent did not believe that a case-by-case assessment could provide assurance that a measure had been installed correctly. In addition, it wouldn't be clear what this

assurance may look like in different circumstances. Both outcomes were viewed as undesirable.

3.6. It was suggested that any alternative should be more onerous than the appropriate guarantee process, to avoid any disincentive for companies to apply for guarantees.

3.7. Despite disagreeing with the idea of a case-by-case assessment, one stakeholder thought that a lifetime should be taken from the product certificate rather than any review by us.

3.8. Two stakeholders responded supporting a case-by-case assessment of alternative assurance. One emphasised the importance of protecting consumers from poor quality installations, while requesting that any decisions regarding evidence submitted for assessment and the resulting measure lifetime, were made quickly. The point was also made that alternative assurance would provide the time to identify systemic problems within the supply chain, but that assessing such evidence would nevertheless be burdensome.

Ofgem's response

3.9. The majority of responses to this question did not support the acceptance of alternative assurance in place of an appropriate guarantee.

3.10. However, we cannot anticipate all circumstances relating to the quality of installation of a wall insulation measure notified without an appropriate guarantee. There may be scenarios in which measures have been installed correctly and where assurance can be provided to underpin the award of a measure lifetime.

3.11. Alternative assurance will not be standard practice. Energy companies are expected to meet all ECO requirements, including the requirement for wall insulation measures to be accompanied by an appropriate guarantee. However, in exceptional circumstances, such as cases where an appropriate guarantee is not available for a particular measure type, we will consider alternative assurance. Such alternative assurance will be assessed on a case-by-case basis, as was the case during ECO1 closedown.

3.12. If a supplier finds, prior to notification, that a wall insulation measure has been delivered without an appropriate guarantee, an extension may be applied for while a retrospective guarantee application is made or, alternative assurance is being collated.

3.13. Post notification, if an appropriate guarantee is put in place or alternative assurance is accepted, a measure change application can be made to allow for the standard lifetime to be applied. Measures can then be re-scored and savings notified.

4. Consultation responses to Question 3

Alternative Approaches

Summary of responses

4.1. Fourteen stakeholders responded to question 3.

Q3.1) Do you consider that an alternative approach would be more appropriate in determining the lifetime for wall insulation measures without an appropriate guarantee?

Q3.2) If yes, please provide details.

4.2. This question sought to identify whether there is a different standard approach that should be used for determining the lifetime for a wall insulation measure without an appropriate guarantee, as opposed to the approach set out in the consultation. Three distinct alternative approaches were proposed by respondents:

a) measures without an appropriate guarantee to be deemed ineligible for ECO;

b) the lifetime to be based on the system provider's product lifetime;

c) an independent, laboratory-approved assessment over a case-by-case review by us.

4.3. It was also suggested that the current appropriate guarantees framework was suitable and that alternative approaches would reduce consumer confidence.

Ofgem's response

4.4. We have considered each of the three alternative approaches put forward in response to this consultation.

4.5. We understand that measures which are awarded a zero year lifetime do not receive any cost or carbon savings under the scheme and that, from an administrative perspective, it could be simpler to treat these measures as ineligible under ECO2. However, subject to meeting all other ECO2 requirements, these measures may be technically eligible to be notified as qualifying actions under the ECO2 Order[1]. This means that we cannot adopt proposed approach (a). We will nevertheless be unable, except in exceptional circumstances, to attribute accurate carbon or cost savings to such measures.

4.6. It is not appropriate to award an ECO measure lifetime on the sole basis of the manufacturer's product lifetime (proposed approach (b)), as there are a range of factors which can influence a measure lifetime. Our criteria for the assessment of a non-standard lifetime (see Appendix 3) includes six areas for consideration, of which product durability is one. In assessing the lifetime for a wall insulation measure, it would be necessary to consider each of these six criteria and our core requirements for the quality assurance framework, which underpin an appropriate guarantee. A system providers product lifetime could form part of the evidence submitted for a case by case assessment, where an appropriate guarantee is not available.

4.7. The proposal to award a lifetime for wall insulation measures on the basis of an independent laboratory-approved assessment (proposed approach (c)) is not appropriate for a similar reason to proposed approach (b). This assessment is likely to be based only on the product durability, rather than taking other factors into account. As above, this could form part of a case by case review but alone would not provide the necessary assurance.

4.8. It was valuable to receive feedback that alternative procedures reduce consumer confidence and offered a firm response that an alternative approach would not provide a more appropriate mechanism. While this question invited alternative proposals, we did not propose that any alternative to a case by case assessment would be put in place in the future. The appropriate guarantees framework will remain the route

[1] http://www.legislation.gov.uk/uksi/2014/3219/contents/made.

through which wall insulation measures obtain the standard measure lifetime. Case by case assessments will be exceptionally rare.

4.9. The proposals submitted above could form part of a case by case review, however they do not provide assurance to meet the equivalent requirements of an appropriate guarantee. If submitted alongside further evidence against our non standard lifetime criteria and quality assurance framework, system providers product lifetime and a laboratory assessment could form part of evidence provided.

5. Consultation responses to Question 4

Remote re-inspection of technical monitoring questions.

Summary of responses

5.1. Eighteen stakeholders responded to question 4.

Question 4

Q4.1) Do you agree that in some circumstances, remote re-inspections are appropriate?

Q4.2) Please give reasons for your answer.

5.2. Fifteen respondents agreed that in some circumstances, remote re-inspections are appropriate. This was mainly due to reduced administrative costs and reduced inconvenience for customers. However, five of these stakeholders believed that remote inspections are not appropriate for building fabric measures such as cavity wall insulation (CWI), external wall insulation (EWI) and internal wall insulation (IWI). Stakeholders felt more intrusive levels of inspection for wall insulation measures, such as a thermal imaging survey, was needed to assess the fillability and ensure that there are no voids in the insulation.

5.3. Two stakeholders disagreed that remote re-inspections are appropriate in some circumstances. This was due to concern that the proposed evidence may not capture whether remedial work has been completed in line with specific design requirements or if the correct base materials were used. Some stakeholders were concerned about sending negative signals to consumers about the importance of good workmanship and the performance of measures installed.

5.4. One respondent believed that remote re-inspections are appropriate in all circumstances, subject to the discretion of a competent technical monitoring agent (TMA). It was stated that as all TMAs are required to be suitably qualified for ECO, and independent of the installer and

supplier, that TMAs should be trusted to decide whether the remedial works can be re-inspected remotely.

Ofgem's response

5.5. On balance, the consultation responses indicate that the introduction of remote re-inspections for technical monitoring fails would benefit energy companies, the supply chain and consumers by reducing administrative costs associated with site visits and reducing inconvenience for consumers.

5.6. We believe that the added option to allow measures to be re-inspected remotely will not affect the quality of remedial works. In fact, the option for remote re-inspections could increase customer satisfaction as it reduces the need for multiple visits from TMAs, which are disruptive and inconvenient for consumers. In cases where there are multiple problems which need to be re-inspected, for example, issues of problem cavities, or with complex systems, it is unlikely that the TMA will deem the measure appropriate for a remote re-inspection and a site audit should be arranged as a mandatory requirement.

5.7. Similarly, if the TMA determines that remote evidence would fail to capture if remedial work has been completed in line with specific design requirements, or if the correct base materials were used, a remote re-inspection should not be recommended. In addition, if the TMA conducting the remote re-inspection is in any way unsure of the validity of the evidence supplied, then a site audit should be arranged as a mandatory requirement.

5.8. Although it was suggested a more intrusive level of inspection is required for wall insulation measures, such as a thermal imaging survey, this would exceed our current monitoring requirements. The current monitoring requirements are designed to be deliberately non-intrusive to avoid adding unnecessary complexities to the technical monitoring (TM) process.

6. Consultation responses to Question 5

Remote re-inspection of technical monitoring questions as suggested in Appendix 1

Summary of responses

6.1. Sixteen stakeholders responded to questions 5.1 and 5.2.

Question 5

Q5.1) Do you agree that it may be possible to remotely re-inspect the technical monitoring failure types we suggest in Appendix 1?

Q5.2) Please give reasons for your answer.

6.2. Twelve respondents disagreed that it may be possible to remotely re-inspect the technical monitoring failure types we proposed in the consultation (see Appendix 1).

6.3. Of the 12 respondents that disagreed, all felt it would not be suitable to remotely re-inspect technical monitoring fails for wall insulation measures. Reasons for this include stakeholders viewing the remote re-inspection of drill holes as inadequate to fully determine the quality of workmanship. Some stakeholders do not believe that a clear view of a drilling pattern can be adequately evidenced using photographs, especially for large areas. One stakeholder also emphasised that this process should be optional as there may be instances when it is not possible to capture a clear and suitable photograph.

6.4. Two of the respondents that disagreed, disagreed with the remote re-inspection of all technical monitoring failure types suggested in Appendix 1. They were concerned that the proposed evidence may not capture if a repair has been completed in line with specific design requirements and whether remote re-inspections would send negative signals to consumers about the importance of good workmanship and the performance of measures installed.

6.5. Four respondents agreed that it may be possible to remotely re-inspect the technical monitoring failure types we suggested in Appendix 1. Of those who agreed, one respondent argued that all re-inspections could be completed remotely through a call to the customer or assessment of other appropriate evidence, without always needing a physical re-inspection. This respondent added that this decision is best made by the TMA on the basis of their professional judgement.

Summary of responses

6.6. Sixteen stakeholders responded to question 5.3.

Q5.3) Please identify those questions in Appendix 1 where you disagree with the proposal.

6.7. Responses to specific technical monitoring questions suggested in Appendix 1 are discussed in more detail below.

Boiler measures: BR.1, NB.1 and NB.2.

6.8. Nine stakeholders commented on this measure type.

6.9. Five respondents agreed that re-inspections for questions BR.1 and NB.1 could be conducted remotely, while six agreed that question NB2 could be conducted remotely. Reasons for this included the suggestion that clear photographic evidence could negate the requirement (and expense) of a re-inspection. However, one respondent highlighted that the quality of the photography and resolution would need to be very high.

6.10. Three respondents disagreed that re-inspections for questions BR.1, NB.1 and NB.2 could be conducted remotely. This was largely due to concerns over access to areas such as loft spaces or voids where pipe work may be located. One respondent felt that remote re-inspection of these questions could be possible in some circumstances, depending on the location of the pipework. For example, it may not be possible to get a suitable photograph if the pipework is under floor boards.

6.11. One respondent was also concerned about whether more detailed information can be obtained from photographs, for example, inspecting a seal around a flue.

Cavity wall insulation: CWI.4, CWI.5.

6.12. Fifteen stakeholders commented on question CWI.4, while 13 stakeholders commented on question CWI.5.

6.13. Nine respondents disagreed that question CWI.4 could be re-inspected remotely, while six respondents agreed.

6.14. Reasons for respondents' disagreement included concerns regarding photographic evidence being sufficient to evidence large areas in detail, check the quality of workmanship or confirm that work was completed by a technician carded as competent for the CWI system involved. Furthermore, one respondent was unsure whether photographs would reveal whether the drilling pattern conforms to the appropriate materials compliance certificate. It was also raised that filled injection holes could be very difficult to see on a photograph.

6.15. Those who felt question CWI.4 could be re-inspected remotely emphasised the need for reliable evidence in the form of clear and detailed photographs.

6.16. Seven respondents agreed that question CWI.5 could be re-inspected remotely while six respondents disagreed. Of the respondents who agreed, one stakeholder stated that each hole should be photographed individually and must be identifiable. Other stakeholders emphasised the need for clear and detailed photographs from a distance as well as close up.

Internal wall insulation: IWI.7.

6.17. Nine respondents commented on question IWI.7.

6.18. Four respondents disagreed that this question can be re-inspected remotely while four agreed. One stakeholder felt that this would be dependent on the complexity of the system in question.

6.19. Of those that agreed with this statement one commented that a site audit should be made mandatory in instances when the evidence is unclear or insufficient.

6.20. Of those who disagreed, one stakeholder was concerned about whether photographs alone could demonstrate that the insulation is sealed around all adjoining boards, walls, ceilings and floors, particularly for modular systems. A second stakeholder echoed this concern stating that although a photograph may show the fact that a mastic seal is in place, it cannot show if it is fully bonded to the surfaces which is critical to ensure air tightness with IWI systems.

Party wall insulation: PWI.1, PWI.2, PWI.3.

6.21. Ten stakeholders commented on questions PWI.1 and PWI.2 while nine commented on question PWI.3.

6.22. Six stakeholders agreed that questions PWI.1 and PWI.2 can be re-inspected remotely while four disagreed.

6.23. Of those who disagreed, one stakeholder believed photographs alone would not be sufficient to evidence large areas in detail, while a second felt that remote re-inspections would not be appropriate as PWI.1 and PWI.2 is a mid-installation inspection question, therefore it would be difficult to verify with a post installation photograph.

6.24. Five stakeholders agreed that question PWI.3 can be conducted remotely while four disagreed. Of those who disagreed, one stakeholder expressed concerns as to how a photograph could evidence that the cavity wall had been insulated. This stakeholder also suggested that during the first inspection, the TMA should assess whether the failure can be remotely re-inspected by obtaining sufficient photographic evidence. In addition, one stakeholder felt that remote re-inspection would not be appropriate as question PWI.3 is a mid-installation inspection question, therefore it would be difficult to verify with a post-installation photograph.

Window glazing: WG1.

6.25. Eight stakeholders commented on question WG.1.

6.26. Six respondents agreed that question WG.1 can be re-inspected remotely, while two disagreed. No further comments were given for this question.

Loft insulation (Top Up and Virgin)

6.27. Eight stakeholders commented on questions LITU.2; LITU.3; LITU.4; LITU.5; LIV.2; LIV.3; LIV.4; LIV.5.

6.28. Four respondents agreed that LITU.2, LITU.3 LIV.2 and LIV.3 can be re-inspected remotely, while four disagreed.

6.29. Six respondents agreed that LITU.4, LITU.5, LIV.4 and LIV.5 can be re-inspected remotely while two respondents disagreed.

6.30. Of those who disagreed that questions LITU.2, LITU.3, LIV.2 and LIV.3 could be remotely re-inspected, one stakeholder was concerned about whether different properties would be distinguishable from individual photographs. These questions would require multiple close up photographs but the loft would also need to be identifiable in each one. Another supplier also commented that loft insulation failures are not appropriate for remote re-inspections as photographs are often of poor quality and therefore difficult to interpret. This stakeholder also added that there is a risk of failures being remediated by moving insulation around in the loft which can create new failures. For these reasons, it was suggested that a site audit is more appropriate in order to inspect the insulation thoroughly.

Summary of responses

6.31. Thirteen stakeholders responded to question 5.4.

Q5.4) Please identify any other questions where you consider the proposal would be appropriate.

6.32. Of those who responded, six felt that there were no other questions that they would consider appropriate for this proposal, while seven felt other questions could be appropriate for remote re-inspections.

6.33. One respondent felt that all of the questions listed in Appendix 1 could potentially be remotely re-inspected.

6.34. Other questions that one or more respondent suggested could be remotely re-inspected, are shown in Appendix 1. Respondents felt these questions could be suitable for remote re-inspections as TMAs could gain the necessary assurance that each measure had been remediated using photographs or with a phone call to the consumer.

Ofgem's response

6.35. Although respondents highlighted concerns about some of the questions suggested for remote re-inspection in Appendix 1, all 18 questions will have the option to be remotely re-inspected. By giving TMAs the discretion to decide whether to re-inspect remotely, this will ensure that only suitable measures are remotely re-inspected.

6.36. By allowing all 18 questions listed as suitable in Appendix 1 to be remotely re-inspected in cases where a TMA has deemed them appropriate, this will prevent mandatory site audits being made for measures that could in fact be remotely re-inspected. This will result in cost and time savings where a second site audit is avoided, while also removing inconvenience to the consumer associated with repeated inspections.

6.37. For many of the questions suggested in Appendix 1, respondents were concerned about whether photographs could capture details such as seals around flues, filled injection holes and complex drilling patterns. With this in mind we require that, where a technical monitoring agent has deemed the measure as appropriate for remote re-inspection, agents must use suitably high-resolution photographs to evidence that the measure has been remediated effectively.

6.38. Where suitable photographic evidence cannot be obtained we would anticipate that the TMA would not recommend such measures for remote re-inspection and a site audit must be completed instead.

6.39. Although some respondents commented that questions PWI.1 and PWI.2 are mid-installation questions and would therefore be difficult to verify with a post-installation photograph, re-inspections are always

conducted post-installation. Therefore, unless the issue is remediated instantly and the TMA present can re-inspect and report the measure as remediated, a second agent will be required to visit the site to undertake a re-inspection. As a result we do not feel this point devalues the proposal to remotely re-inspect mid-installation questions.

6.40. Issues regarding lack of access were also raised for several of the proposed questions. However, we foresee that in all instances the installer undertaking the remedial work also obtains the photographic evidence on its completion. Therefore, issues of non-access should not apply.

6.41. As only a small percentage of respondents identified other questions that they considered appropriate for remote re-inspection, without providing any reasons that would warrant them being deemed as suitable, no further questions are suggested for remote re-inspection. Consequently, the list of questions proposed for remote re-inspections remains the same as our original proposal (see Appendix 1).

7. Consultation responses to Questions 6

The remote re-inspection process

Summary of responses

7.1. Twelve stakeholders responded to question 6.1.

Q6.1) Do you agree that technical monitoring fails can only be re-inspected remotely in cases where the technical monitoring agent has deemed it possible during their original inspection?

7.2. Ten respondents agree that technical monitoring failures can only be re-inspected remotely in cases where the technical monitoring agent (TMA) has deemed it possible during their original inspection.

7.3. Of those who agreed, several respondents raised the need for clear guidelines that ensure the surveyor is competent to make the appropriate decision that avoids any bias and that the technical monitoring is robust. It was also suggested that remote re-inspections should only be applicable to measures where there are no other failed questions requiring a site visit for re-inspection.

7.4. Two respondents disagreed that TMAs should determine whether a remote re-inspection is suitable. Respondents who disagreed felt that it is unnecessary for the TMA to stipulate whether the measure can be remotely re-inspected during the original inspection, as the final decision should be made when the evidence is received and reviewed after the remedial work is complete.

Ofgem's response

7.5. Exisiting requirements for technical monitoring state that TMAs must be independent and suitably qualified. TMAs will therefore be relied on to make an informed decision on whether a measure is suitable for remote re-inspection during their original inspection. We would expect this to include consideration of whether robust evidence can be obtained.

7.6. One respondent felt that the decision as to whether a remote re-inspection is suitable should be made when the TMA reviews the evidence demonstrating the remedial work has been completed. However, determining whether a measure is suitable for remote re-inspection at the point of the original inspection will reduce the risk of evidence being insufficient.

7.7. Where a measure has multiple technical monitoring fails, TMAs may only conduct a remote re-inspection if all fails are marked as suitable in Appendix 1. In all other cases, a site audit must be arranged as a mandatory requirement.

Summary of responses

7.8. Fourteen stakeholders responded to question 6.2.

Q6.2) Do you agree that remote re-inspections must be conducted using photographs taken before and after remedial works, and that original photographs must be taken by the monitoring agent during their original inspection?

7.9. All 14 respondents agreed that remote re-inspections must be conducted using photographs taken before and after remedial works, and that the original photographs of the failed measure must be taken by the TMA during their original inspection. Of those who agreed, several respondents stated that this process is already in place to ensure that work is properly remediated. However, several also added that thermal imaging of fillability should also be included alongside photographs to strengthen the evidence for wall insulation measures.

Ofgem's response

7.10. By obtaining photographs of the before case (during the initial inspection of the measure) and the after case, the assessor reviewing should have enough evidence to determine whether a measure has been remediated. Without the before case, there is a risk that the assessor may overlook a potential failure.

7.11. All respondents agreed with this statement and one stated that they already collect photographic evidence of remedial work to support any challenges or disputes they encounter. As such, we believe this should not place any additional administrative burdens on energy companies or TMAs.

Summary of responses

7.12. Fourteen stakeholders responded to question 6.3.

Q6.3) Do you agree that the photographs need to be GPS location-stamped?

7.13. Nine respondents agreed that the photographs need to be GPS location-stamped. Of those who agreed, the majority felt this would support the photographic evidence and would not be an additional burden. One respondent also suggested that it is necessary for this to be used on all photographs.

7.14. Four respondents disagreed that the photographs need to be GPS location-stamped. The majority of those who disagreed felt that this was unnecessary as it would add additional costs to the supply chain. One respondent felt this was unnecessary as the TMAs should take sole responsibility for ensuring that photographic evidence relates to the correct premises. They also argued that adding this requirement would further increase the cost of delivery and may not provide the comfort expected as the stamp could be amended or misreported.

7.15. One respondent highlighted that some photographs will be embedded into a report. Therefore, instead of requiring the individual photographs to be GPS-stamped the whole report could be instead.

Ofgem's response

7.16. For evidence to be identifiable to a specific location we strongly recommend that all photographs are GPS stamped where possible. This will give agents assessing evidence greater assurance that the measure has been remediated, making it less likely that the remote re-inspection will fail and therefore require a site audit. We do however

acknowledge that there may be instances where this is not possible, for example if the GPS technology is unable to retrieve a location signal.

7.17. Where the photograph is not GPS-stamped, the TMA must be satisfied that any photographs of remedial works were taken at the same premises as the 'before' photographs. In cases where there is any doubt that the photographs are of the same premises (whether GPS stamped or not) a site audit must be arranged as a mandatory requirement.

7.18. We would only expect TMAs to be satisfied of the location of close-up photographs where a GPS stamp was present. Without a GPS stamp the true location of each photograph will be unclear, and therefore the TMA may be unable to corroborate the evidence.

7.19. Although we acknowledge that this requirement may impose additional cost throughout the supply chain, we understand that remote re-inspections with GPS-stamped photographs will still result in a net cost reduction. The requirement for GPS marking should not be viewed in isolation, but considered alongside our current requirement for a site visit to re-inspect remedial work.

7.20. It is the TMA's responsibility to ensure that all photographic evidence is identifiable to the location in question. If this is not the case, the TMA should fail the remote re-inspection and conduct a site visit in order to determine whether the measure has been remediated appropriately.

Summary of responses

7.21. Fourteen stakeholders responded to question 6.4.

Q6.4) Do you agree that the technical monitoring agent should be able to request additional evidence to assist with the remote re-inspection? If so, please provide examples of suitable evidence.

7.22. All respondents agreed that the TMA should be able to request additional evidence to assist with the remote re-inspection. Of those

who agreed, common examples given were BBA certificates, competency certificates and signed declarations from customers. One stakeholder felt that there should be a limit to the amount of evidence accepted.

Ofgem's response

7.23. All TMAs will have the option to request additional evidence to ensure that the measure has been remediated appropriately.

7.24. It is at the TMAs discretion to determine what evidence they request, however energy companies must ensure that only evidence directly related to the quality of the remediation of the measure is requested and does not go beyond the requirements for on-site inspections.

7.25. If a TMA is unable to obtain a piece of additional evidence that is needed to support the approval of the remediated measure, a site audit should be arranged as a mandatory requirement. Inability to secure additional evidence that is considered vital to determining whether the measure has been remediated to the required standard, must lead to a measure failing the remote re-inspection.

Summary of responses

7.26. Fourteen stakeholders responded to question 6.5.

Q6.5) Do you agree that the remote re-inspection should be conducted by the same agent who conducted the original site audit?

7.27. Ten respondents agree that the remote re-inspection should be conducted by the same TMA who conducted the original site audition. Of those who agreed, several respondents felt this approach would prevent any differences in opinion and ensure a more consistent and robust customer experience.

7.28. Several respondents also felt that this approach would ensure that the images align with the correct remedial work, as the original agent will have first-hand knowledge of the repairs needed and therefore be best placed to identify any shortfalls.

7.29. Four respondents disagreed that the remote re-inspection should be conducted by the same TMA who conducted the original site audit. Several felt this should not be a mandatory requirement as there may be instances where it is not possible.

7.30. One stakeholder felt that in theory, the evidence provided should allow for any TMA to carry out the re-inspection. Additionally, some technical monitoring companies may allocate remote re-inspections to a specific agent while other agents conduct site audits. For this reason there should be an aspect of flexibility in this approach. Another stakeholder stated that it could be burdensome to ensure that the remote re-inspection is conducted by the same agent and may be restricted by limited access to premises.

7.31. One respondent argued that as long as the remote re-inspection is conducted by an agent that works for the same technical monitoring company, this would allow for situations where the original agent is unavailable or where a company has a dedicated person who is technically capable of carrying out the remote re-inspection.

Ofgem's response

7.32. Where possible, we expect the re-inspection to be conducted by the same agent who conducted the original site audit. By doing so, agents will have a greater understanding of the necessary repairs and therefore be less likely to overlook minor details that a new agent may be less aware of.

7.33. We do however acknowledge that there will be instances when this will not be possible due to each TMA's availability. As such, it is at the discretion of each TM company to decide whether they allow a second TMA to conduct the remote re-inspection.

7.34. Where possible, we expect all re-inspections to be conducted by an agent from the same TM company as the agent who conducted the original site audit. This is to ensure that communication and audit trails are as open as possible between agents, enabling additional evidence or information to be obtained where necessary.

7.35. We are aware that there may be circumstances where it is not possible for the same TM company to conduct the original site audit and the remote re-inspection. For example, if a TM company enters liquidation. In instances such as these it is the responsibility of the supplier to ensure all evidence is transferred to the new TM company in order for the remote re-inspection to be completed.

Summary of responses

7.36. Fourteen stakeholders responded to question 6.6.

Q6.6) Do you agree that the technical monitoring agent must conduct a site audit if there is any doubt in the evidence assessed during the remote re-inspection?

7.37. Thirteen respondents agree that the technical monitoring agent (TMA) must conduct a site audit if there is any doubt in the evidence assessed during the remote re-inspection.

7.38. Of those who agreed, one respondent felt this is the only practical solution if installers cannot satisfy the TMA, or there is any doubt, especially with safety failures such as those relating to combustion vents. However, one stakeholder felt that if the photographic evidence is not clear enough, the installer should be given the opportunity to re-supply the evidence to minimise any unnecessary costs.

7.39. Another stakeholder felt that if the TMA is unable to gain access for a site audit, then the outcome should be determined as follows:

- If the evidence in the photograph is unclear and access cannot be gained for a re-inspection then the measure should be retained, and
- If the evidence in the photograph suggests the measure has not been remediated, and access cannot be gained for a re-inspection, then the measure should be rejected.

Ofgem's response

7.40. It is clear that there will be cases where a TMA fails a re-inspection assessment, for some (but not all) of the following reasons:

- Unclear or damaged photographs that result in the TMA doubting whether the remedial work has been completed appropriately.

- Unidentifiable photographs that result in the TMA doubting whether the photographs were taken at the same premises as the 'before' photographs.
- Unsatisfactory evidence, including additional evidence requested by the TMA, which does not capture an aspect of the measure that required remedial work during the original site audit.

7.41. In instances such as these, the only solution is for a TMA to conduct a site audit to ascertain whether the measure can in fact be reported as remediated. Following this, if access cannot be gained, the measure will be marked as remediated and retained if the non-access is sufficiently evidenced.[2] This is our current approach for instances where access cannot be gained to re-inspect remedial works.

Summary of responses

7.42. Fourteen stakeholders responded to question 6.7.

Q6.7) Do you think that monitoring agents should monitor a minimum percentage of re-inspections on site? If so, what is an appropriate percentage?

7.43. Eight respondents agreed that TMAs should monitor a minimum percentage of re-inspections on site. The majority of those who agreed with this statement suggested that 20% would be an appropriate percentage of re-inspections to be monitored on site. Two respondents suggested that a minimum of 5% would be appropriate. It was suggested that a minimum percentage of on site audits would help to ensure the robustness of the remediation process.

[2] For more information on non-access please refer to our ECO2 Technical Monitoring Non-Access Guidance:https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-monitoring

7.44. Six respondents disagreed that monitoring agents should monitor a minimum percentage of re-inspections on site. Of those who disagreed several claimed that by adding a requirement to monitor a certain percentage of re-inspections on site, this would make the monitoring process more costly and complex and negate some of the cost savings offered by remote re-inspections.

Ofgem's response

7.45. On site auditing of a minimum percentage of re-inspections will not be required as we do not want to add further complexity or cost to the existing monitoring regime. As some measures will be deemed unsuitable for remote re-inspection, a percentage of the 18 questions listed as suitable for remote re-inspection will continue to be monitored on site.

7.46. As remote re-inspections are only applicable for 18 of the technical monitoring questions, when deemed appropriate by a suitably qualified TMA, we do not believe that this will affect the robustness of the technical monitoring process.

7.47. Energy companies must indicate on their TM report that a measure has been remotely re-inspected. We will monitor trends in failure rates for remotely re-inspected measures to ensure that the process is robust.

Summary of responses

7.48. Fourteen stakeholders responded to question 6.8.

Q6.8) Please provide any further suggestions for processes that may increase the accuracy of remote re-inspections, or enhance consumer protection.

7.49. Eleven respondents provided further suggestions for processes that may make remote re-inspections more accurate, or enhance consumer protections.

7.50. The responses to this question were varied. Several highlighted the possibility of collecting declarations that are completed and signed by

the installer conducting the remedial work and the consumer. This declaration could confirm that the necessary remedial work has taken place and should be made available to the TMA alongside any photographic evidence. Other suggestions included householder feedback/customer satisfaction surveys and thermal imaging for cavity wall measures.

Ofgem's response

7.51. As the responses to this question were highly varied, we will not introduce any specific requirements for additional processes that may increase the accuracy of remote re-inspections, or enhance consumer protection. However energy companies must ensure that documentary evidence provides sufficient certainty for TMAs to determine whether the necessary remedial work has or has not been completed to the required standard.

7.52. As a significant number of respondents made suggestions in response to this question, we will allow energy companies to implement additional processes that increase the accuracy of remote re-inspections, or enhance consumer protection at their own discretion.

8. Consultation responses to Questions 7

Time savings of remote re-inspections

Summary of responses

8.1. Twelve stakeholders responded to question 7.1.

Q7.1) Please estimate the time that could be saved by these proposals

8.2. Six respondents felt that this proposal would save time while six respondents disagreed that this proposal would result in time savings.

8.3. Of those who felt the time saving would be relatively significant, several believed that around one hour would be saved per inspection. Two respondents emphasised the benefit to consumers by removing the inconvenience of another site inspection as well as cost savings.

8.4. Several respondents felt that the time saved would be relatively low, as very few monitoring questions could be remotely re-inspected. One respondent stated that measures often fail on more than one question, which may mean a site audit is still necessary.

8.5. Furthermore, one respondent raised the issue of increased costs if a requirement for trained inspectors to assess the evidence and complete any necessary reporting requirements was introduced. However, this respondent still estimated time and cost savings of around 10%.

Ofgem's response

8.6. Although opinions were evenly split in response to this question, we believe that by introducing remote re-inspections for questions listed in Appendix 1, this will save TMAs time by removing the need to travel to or from the premises as well as the time spent scheduling and arranging the re-inspections. Given that remediated measures are currently required to be inspected by qualified TMAs, remote re-inspections will not add any additional costs.

8.7. We believe that overall this proposal has the potential to result in considerable time and cost savings for those who choose to conduct remote re-inspections, where they are deemed applicable.

Appendix 1 – Technical monitoring questions for remote re-inspection

The table below outlines the 18 technical monitoring questions that we have deemed as suitable for remote re-inspection. This table also identifies other questions that were suggested as suitable for remote re-inspection in response to question 5.4 of this consultation, none of which have been deemed as suitable by us.

Technical monitoring questions

Ref	Measure Type	Inspection Stage	Question	Suitable for remote re-inspection?	Number of suggestions for remote re – inspection.
BR.1	**Boiler Repair**	**Post-Installation**	Where a boiler and hot water storage vessel have been repaired or replaced, have any associated replacement pipes or pipes that have been exposed as part of the works or are now otherwise accessible been insulated where possible?	**Yes**	**N/A**
BR.2	**Boiler Repair**	**Post-Installation**	Does the boiler produce hot water for the central heating system?	**No**	**2**
BR.3	**Boiler Repair**	**Post-Installation**	If the boiler is designed to produce domestic hot water, is the boiler producing domestic hot water?	**No**	**2**

NB.1	**New Boiler**	**Post-Installation**	Where a boiler and hot water storage vessel have been repaired or replaced, have any associated replacement pipes or pipes that have been exposed as part of the works or are now otherwise accessible been insulated where possible?	**Yes**	**N/A**
NB.2	**New Boiler**	**Post-Installation**	If holes or openings have been made through the fabric of the premises due to the installation of a new boiler, have they been made good? (including condensate pipe, pressure relief valve, gas flue terminals)	**Yes**	**N/A**
NB.3	**New Boiler**	**Post-Installation**	Does the boiler produce hot water for the central heating system?	**No**	**2**
NB.4	**New Boiler**	**Post-Installation**	If the boiler is designed to produce domestic hot water, is the boiler producing domestic hot water?	**No**	**2**
CWI.1	**Cavity Wall Insulation**	**Post-Installation**	Is the insulation material suitable for use with the property's exposure level to wind driven rain?	**No**	**4**
CWI.2	**Cavity Wall Insulation**	**Post-Installation**	Does the form of the construction of the property suggest that it was suitable for the material that has been installed?	**No**	**3**
CWI.3	**Cavity Wall Insulation**	**Post-Installation**	Does the current condition of the property suggest that it was suitable for the material that has been installed?	**No**	**2**
CWI.4	**Cavity Wall Insulation**	**Post-Installation**	Does the drilling pattern conform to the appropriate materials compliance certificate?	**Yes**	**N/A**
CWI.5	**Cavity Wall Insulation**	**Post-Installation**	Have all injection holes been filled?	**Yes**	**N/A**

DP.1	**Draught Proofing**	**Post-installation**	Has the draught proofing been securely fixed to all doors and windows?	**No**	**3**
DP.2	**Draught Proofing**	**Post-installation**	Are all newly treated windows and doors fully operational?	**No**	**2**
ESHR.1	**Electric Storage Heater Repair**	**Post-installation**	Is the repair to an Electric Storage Heater as opposed to a panel heater or other kind of heater?	**No**	**2**
ESHR.2	**Electric Storage Heater Repair**	**Post-installation**	Does the Electric Storage Heater activate and produce heat?	**No**	**2**
ESHR.3	**Electric Storage Heater Repair**	**Post-installation**	Is the property on an Economy 7 or differential off-peak tariff?	**No**	**3**
ESHR.4	**Electric Storage Heater Repair**	**Post-installation**	Where the property is on a differential off-peak tariff, are the Electric Storage Heaters connected to a separate consumer unit?	**No**	**3**
NESH.1	**New Electric Storage Heater**	**Post-installation**	Is the installation an Electric Storage Heater as opposed to a panel heater or other kind of heater?	**No**	**2**
NESH.2	**New Electric Storage Heater**	**Post-installation**	Does the Electric Storage Heater activate and produce heat?	**No**	**2**
NESH.3	**New Electric Storage**	**Post-installation**	Are all storage heaters fitted with an automatic charge control?	**No**	**3**

	Heater				
NESH.4	**New Electric Storage Heater**	**Post-installation**	Is the fan on fan-assisted storage heater(s) controlled by a thermostat?	**No**	**3**
NESH.5	**New Electric Storage Heater**	**Post-installation**	Is the property on an Economy 7 or differential off-peak tariff?	**No**	**3**
NESH.6	**New Electric Storage Heater**	**Post-Installation**	Where the property is on a differential off-peak tariff, are the Electric Storage Heaters connected to a separate consumer unit?	**No**	**3**
EWI.1	**External Wall Insulation**	**Competency (mid-installation only)**	Is there at least one carded operative that meets the competence requirements for the relevant tasks as specified in B4-l4 of Table B4 of PAS:2030:2014	**No**	**4**
EWI.2	**External Wall Insulation**	**Competency (mid-installation only)**	Has the pre-installation survey been completed fully in accordance to PAS2030:2014?	**No**	**3**
EWI.3	**External Wall Insulation**	**Competency (mid-installation only)**	Is the measure/system being installed as specified in the appropriate product certificate and/or system designer's instructions?	**No**	**2**
EWI.4	**External Wall Insulation**	**Competency (mid-installation only)**	Where telecommunications are affected by the EWI installation, has the relevant telecoms provider been contacted?	**No**	**3**
EWI.5	**External Wall Insulation**	**Mid-Installation**	Are insulation boards tightly butted together in a break bond pattern?	**No**	**4**
EWI.6	**External**	**Mid-Installation**	Are insulation boards cut at right angles to	**No**	

	Wall Insulation		allow tight butting?		**4**
EWI.7	**External Wall Insulation**	**Mid-Installation**	Are only full or half insulation boards fitted in an interlocking pattern?	**No**	**4**
EWI.8	**External Wall Insulation**	**Mid-Installation**	Are all insulation boards undamaged?	**No**	**4**
EWI.9	**External Wall Insulation**	**Mid-Installation**	Have cavities within cavity walls been filled or closed off to prevent an air path behind the insulation board?	**No**	**2**
EWI.10	**External Wall Insulation**	**Mid-Installation**	Have gaps been sealed to prevent an air path between the insulation board and wall?	**No**	**2**
EWI.11	**External Wall Insulation**	**Mid-Installation**	Are the insulation boards appropriately bonded and/or anchored as specified in the system designer's instructions?	**No**	**4**
EWI.12	**External Wall Insulation**	**Mid-Installation**	Is the EWI installation being carried out appropriately without compromising the accessibility, functionality and/or safety of the existing services? (for example gas, electric, water, telephone, etc.)	**No**	**4**
EWI.13	**External Wall Insulation**	**Post-Installation**	Where services have penetrated the insulation board have these been sealed appropriately?	**No**	**5**
EWI.14	**External Wall Insulation**	**Post-Installation**	Are there any visible signs of water penetration?	**No**	**2**
EWI.15	**External Wall Insulation**	**Post-Installation**	Has the render/cladding been fully applied?	**No**	**4**

EWI.16	**External Wall Insulation**	**Post-Installation**	Have window and door reveals been insulated?	**No**	**2**
EWI.17	**External Wall Insulation**	**Post-Installation**	Have all exterior facing wall areas (above DPC) been insulated to reduce the effects of thermal bridging?	**No**	**2**
FRI.1	**Flat Roof Insulation**	**Competency (mid-installation only)**	Is the measure/system being installed as specified in the appropriate product certificate and/or system designer's instructions?	**No**	**2**
FRI.2	**Flat Roof Insulation**	**Mid-Installation**	Are boards butted together with no gaps at abutments?	**No**	**3**
FRI.3	**Flat Roof Insulation**	**Mid-Installation**	Has a 300mm insulation 'Up stand' been installed from the bottom surface of the horizontal layer around the perimeter of the roof on the internal façade of any parapet or penetrating service riser?	**No**	**3**
FRI.4	**Flat Roof Insulation**	**Mid-Installation**	Have existing cavity trays been raised and/or new ones provided at abutment of roof and wall?	**No**	**3**
FRI.6	**Flat Roof Insulation**	**Post-installation**	Has a waterproof membrane been applied over the whole of the insulated area, including 'Up Stands' after the laying of the insulation board?	**No**	**3**
FRI.5	**Flat Roof Insulation**	**Post-installation**	Is there any evidence of water penetration?	**No**	**2**
WG.1	**Window Glazing**	**Post-Installation**	Have all windows and doors in the premises that haven't been treated before now been treated?	**Yes**	**N/A**
HC.1	**Heating Controls**	**Post-Installation**	Are the heating controls linked to a functioning heating system?	**No**	**2**
HC.2	**Heating**	**Post-Installation**	Do the heating controls turn on the domestic	**No**	**2**

	Controls		heating system?		
IWI.1	**Internal Wall Insulation**	**Competency (mid-installation only)**	Is there at least one carded operative that meets the competence requirements as specified in B8.I4 of table B8 of PAS2030:2014	**No**	**4**
IWI.2	**Internal Wall Insulation**	**Competency (mid-installation only)**	Is the measure/system being installed as specified in the appropriate product certificate and/or system designer's instructions?	**No**	**2**
IWI.3	**Internal Wall Insulation**	**Mid-Installation**	Have all gaps behind the new insulation been sealed to prevent the circulation of cold air if applicable?	**No**	**2**
IWI.4	**Internal Wall Insulation**	**Mid-Installation**	Has the insulation been continued into the inter floor void?	**No**	**2**
IWI.5	**Internal Wall Insulation**	**Mid-Installation**	Where services have penetrated the vapour control layer have these been sealed appropriately?	**No**	**2**
IWI.6	**Internal Wall Insulation**	**Mid-Installation**	If the floor is suspended timber, is the insulated dry lining bedded on a strip of pre-compressed expanding foam nailed to the floor?	**No**	**2**
IWI.7	**Internal Wall Insulation**	**Post-installation**	Is the insulation sealed around all adjoining boards, walls, ceilings and floors?	**Yes**	**N/A**
IWI.8	**Internal Wall Insulation**	**Post-installation**	Is the insulation continued 400mm along all party and solid partition walls?	**No**	**2**
LITU.1	**Loft Insulation (Top Up)**	**Post-Installation**	Is the thickness of insulation consistent throughout the loft area?	**No**	**3**
LITU.2	**Loft Insulation**	**Post-Installation**	Has insulation been close butted?	**Yes**	**N/A**

	(Top Up)				
LITU.3	**Loft Insulation (Top Up)**	**Post-Installation**	Has insulation been cross laid to prevent cold bridging?	**Yes**	**N/A**
LITU.4	**Loft Insulation (Top Up)**	**Post-Installation**	Has the loft hatch been insulated as specified in PAS 2030:2014?	**Yes**	**N/A**
LITU.5	**Loft Insulation (Top Up)**	**Post-Installation**	Has the loft hatch been draught proofed as specified in PAS 2030:2014?	**Yes**	**N/A**
LITU.6	**Loft Insulation (Top Up)**	**Post-Installation**	Where down lighters or services have been fitted through the existing ceiling, have any measures been taken to prevent air leakage around down lights into roof void?	**No**	**2**
LIV.1	**Loft Insulation (virgin)**	**Post-Installation**	Is the thickness of insulation consistent throughout the loft area?	**No**	**3**
LIV.2	**Loft Insulation (virgin)**	**Post-Installation**	Has insulation been close butted?	**Yes**	**N/A**
LIV.3	**Loft Insulation (virgin)**	**Post-Installation**	Has insulation been cross laid to prevent cold bridging?	**Yes**	**N/A**
LIV.4	**Loft Insulation (virgin)**	**Post-Installation**	Has the loft hatch been insulated as specified in PAS 2030:2014?	**Yes**	**N/A**
LIV.5	**Loft Insulation (virgin)**	**Post-Installation**	Has the loft hatch been draught proofed as specified in PAS 2030:2014?	**Yes**	**N/A**
LIV.6	**Loft Insulation**	**Post-Installation**	Is a signed and completed virgin loft insulation declaration present in the loft?	**No**	**3**

	(virgin)				
LIV.7	**Loft Insulation (virgin)**	**Post-Installation**	Where down lighters or services have been fitted through the existing ceiling, have any measures been taken to prevent air leakage around down lights into roof void?	**No**	**2**
LIR.2	**Loft Insulation (rafter)**	**Mid-Installation**	Has insulation been installed to all sloping ceilings?	**No**	**2**
LIR.4	**Loft Insulation (rafter)**	**Mid-Installation**	Has insulation been installed to those areas external to the main loft area, but within the roof space?	**No**	**2**
LIR.5	**Loft Insulation (rafter)**	**Mid-Installation**	Where down lighters or services have been fitted through the existing ceiling, have any measures been taken to prevent air leakage around down lights into the roof void?	**No**	**2**
PWI.1	**Party Wall Insulation**	**Mid-Installation**	Does the drilling pattern conform to the appropriate materials compliance certificate?	**Yes**	**N/A**
PWI.2	**Party Wall Insulation**	**Mid-Installation**	Does the lancing pattern conform to the appropriate materials compliance certificate?	**Yes**	**N/A**
PWI.3	**Party Wall Insulation**	**Mid-Installation**	Have all party cavity walls been insulated?	**Yes**	**N/A**
RIRI.1	**Room in Roof**	**Mid-Installation**	Has insulation been installed to all stud walls within the room in the roof?	**No**	**2**
RIRI.2	**Room in Roof**	**Mid-Installation**	Has insulation been installed to all sloping ceilings within the room in the roof?	**No**	**2**
RIRI.3	**Room in Roof**	**Mid-Installation**	Has insulation been installed to the ceiling within the room in the roof?	**No**	**1**

RIRI.4	**Room in Roof**	**Mid-Installation**	Has insulation been installed to those areas external to the room in the roof, but within the roof space?	**No**	**1**
RIRI.5	**Room in Roof**	**Mid-Installation**	Where down lighters or services have been fitted through the existing ceiling, have any measures been taken to prevent air leakage around down lights into the roof void?	**No**	**2**
UFI.1	**UFI**	**Competency (mid-installation only)**	Is there a carded operative at the site that meets the competency requirements for the measure being installed?	**No**	**4**
UFI.2	**UFI**	**Competency (mid-installation only)**	Is the measure/system being installed as specified in the appropriate product certificate and/or system designer's instructions?	**No**	**2**
UFI.3	**UFI**	**Mid-installation**	Has insulation been close butted and laid in a break bond pattern on solid concrete floors?	**No**	**4**
UFI.4	**UFI**	**Mid-installation**	Has the insulation been tightly fixed between joists to avoid gaps?	**No**	**4**
UFI.5	**UFI**	**Mid-installation**	Has the insulation been tightly fixed to the underside of the floor to avoid gaps?	**No**	**2**
UFI.6	**UFI**	**Mid-installation**	Has insulation been installed in the gap between the last joist and external walls?	**No**	**2**
UFI.7	**UFI**	**Mid-installation**	Has insulation been applied to working pipes below the insulation?	**No**	**2**
UFI.8	**UFI**	**Post-Installation**	Have all gaps in the floor around service penetrations been sealed?	**No**	**2**

Appendix 2 – Consultation respondents

We received 18 responses; we have published these on our website, which are available at: https://www.ofgem.gov.uk/publications-and-updates/eco2-technical-requirements-consultation

The 18 responses came from the following stakeholders:

1. Blackburn with Darwen Borough Council
2. British Gas Energy Efficiency
3. EDF Energy
4. E.ON Energy
5. GDR Surveyors
6. Jelf Insurance Brokers Ltd
7. Kirk Natural Stone Developments
8. Llewellyn Smith
9. The Mineral Wool Insulation Manufacturers Association (MIMA)
10. National Blown Bead Association
11. Npower
12. Rockwool Limited
13. Scottish Power
14. SSE Plc
15. The Cavity Insulation Guarantee Agency (CIGA)
16. The Green Deal and ECO Guarantee Company (GDGC)
17. The Solid Wall Insulation Guarantee Agency (SWIGA)
18. THS Inspection Services

Appendix 3 – Criteria for the assessment of a non-standard lifetime

Durability:
How will the product, or its components, degrade over time? How will exposure to extreme ranges in temperature, wind and water, etc affect the lifetime of a measure? How long can the products be expected to operate within design specifications without need for repair?

Ways to demonstrate this include, but are not limited to, testing carried out by a UKAS accredited lab.

Maintenance:
Will the product, or any of its components, require maintenance? Will any of the product's components require replacement? What are the implications of a lack of/improper maintenance?

Ways to demonstrate this include, but are not limited to, manufacturer's technical data, installation manual, user manual, etc.

Warranty/Guarantee:
Does the measure come with a Warranty/Guarantee? What is its duration? What does it cover?

Can be demonstrated by the provision of Warranty/Guarantee.

Obsolescence:
Is the measure likely to become obsolete to the user while it is still in working order and thereby not achieve further carbon or cost savings? For instance, a long-life boiler might become obsolete if a new, more efficient heat source comes onto the market.

Ways to demonstrate this include, but are not limited to, examining measure replacement rates for similar measures.

Customer Behaviour:
To what degree are the benefits of the measure dependent on customer behaviour? For example, a subsequent householder may build an extension to a property thereby replacing the wall to which solid wall insulation had been installed.

Ways to demonstrate this include, but are not limited to, industrial or academic evidence of customer behaviour in relation to a measure or property.

Industry Practice:
How does industry treat this product or measure? Did it receive a lifetime under CERT and CESP? If so, what was it and why was it awarded that lifetime? Does it receive a lifetime under Green Deal? If so, what is it and why was it awarded that lifetime?

Ways to demonstrate this include, but are not limited to, industry good practice and/or supporting data, or reference to previous decisions by Ofgem, DECC, etc.