

Guidance

Energy Company Obligation (ECO3): Explanatory notes for monitoring (version 1.1)

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As per the Energy Efficiency Directive¹, Ofgem have been given direction to continue carrying out monitoring under ECO3. In accordance with this letter, obligated energy companies are required to monitor the quality of installations and the accuracy of scores (technical and score monitoring, respectively). Energy companies must instruct suitably qualified independent agents to carry out technical monitoring and score monitoring on a sample of ECO3 measures that they have installed.

Please see Chapter 8 of our ECO3 Guidance: Delivery² for details of the requirements for technical monitoring and score monitoring³.

The ECO3 Technical and Score Monitoring Question Set v1.1⁴ should be used for all ECO3 technical monitoring and score monitoring conducted on measures installed from 1 January 2019. From 1 February 2019, this will be replaced by the ECO3 Technical and Score Monitoring Question Set v1.2⁵ in which a few errors have been rectified. This document provides explanatory notes for these questions. Ofgem has developed the questions through consultation with industry and obligated energy companies. Measures installed from 1 October 2018 to 31 December 2018 were subject to the ECO2t Technical and Score Monitoring Question Set⁶.

¹ <https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive>

² <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

³ The legal basis and rationale for the technical monitoring undertaken during ECO3, is explained in a letter of direction from the Secretary of State to the Gas and Electricity Markets Authority dated 11 January 2019.

⁴ <https://www.ofgem.gov.uk/publications-and-updates/eco3-monitoring>

⁵ <https://www.ofgem.gov.uk/publications-and-updates/eco3-monitoring>

⁶ <https://www.ofgem.gov.uk/publications-and-updates/eco2t-monitoring>

This document applies to all inspections conducted on measures installed from 1 January 2019 and replaces the previous document Energy Company Obligation (ECO2t): Explanatory notes for monitoring (Version 2.2).

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Contents

1. General note on monitoring questions	4
Monitoring agent independence	4
2. Technical monitoring	6
Mid-installation and post-installation inspections.....	6
Installing measures in accordance with the Publically Available Specification 2030 (PAS 2030)	7
Consumer Refusal	7
Standards to which RIRI must be installed	8
Standards to which EWI must be installed.....	8
Park Home External Wall Insulation Systems	8
Air Source Heat Pumps, Ground Source Heat Pumps and Biomass Boilers	9
Guidance for individual questions.....	9
What to do if an agent records a measure as a technical monitoring “fail”	14
Where there is a ‘Fail’ against a mid-installation question.....	15
Remote re-inspections	15
3. Score monitoring	17
Guidance for individual questions.....	17
4. Innovation	24
Monitoring agent independence	24
Monitoring of innovation measures.....	24
5. Recording a fail	26
What to do if an agent records a measure as a monitoring ‘fail’	26
Disputing a fail	26
What to do if an agent finds that a notified measure has not been installed.....	26
6. Consumer contribution research	27
Guidance on using the consumer contribution questions	27
7. Appendix 1	29

1. General note on monitoring questions

- 1.1. The technical and score monitoring questions available on our website must be used for all ECO3 technical and score monitoring conducted on measures installed from 1 January 2019. Suppliers may produce their own version of the monitoring question forms by adding additional monitoring questions if they wish. However, any bespoke monitoring forms must include all of our published technical and score monitoring questions. Where all Ofgem monitoring questions are not included in a bespoke form, any monitoring conducted using this form will not be accepted.
- 1.2. The most current version of the question set can be found on the ECO3 monitoring webpage⁷. The relevant version of the question set at the time of publication of these explanatory notes is the ECO3 Technical and Score Monitoring Question Set v1.1, however the ECO3 Technical and Score Monitoring Question Set v1.2 will be published and take effect from 1 February 2019.
- 1.3. Responses to additional questions added by the supplier should not be submitted to Ofgem. Where a measure fails a question which is not included in our published technical and score monitoring questions, we would not consider this to be a technical or score monitoring fail and we would not expect the results of these additional questions to be reported to us.

Monitoring agent independence

- 1.4. Monitoring inspections must be conducted by a suitably qualified monitoring agent who is independent from:
 - a) the supplier,
 - b) the installer,
 - c) any party involved in the installation of the measure,
 - d) any party involved in the assessment of the measure, and
 - e) any party that has control or ownership of the premises.
- 1.5. We will be satisfied that a monitoring agent is independent if they are not an employee of any of the parties listed above.
- 1.6. We appreciate there are some scenarios where it may not be immediately clear whether a monitoring agent is independent of the parties listed above. We have outlined below three such scenarios reported to Ofgem as reasonably common, and in each case have explained our position to help the industry understand our expectations in relation to the independence of monitoring agents.

Example 1

- 1.7. An installer commissions a monitoring agent to undertake quality checks on a percentage of their installations (which could be up to 100% of their work) prior to notification of those measures. An obligated energy supplier commissions the same monitoring agent to visit and conduct further post-installation inspections on the same measures. In this situation,

⁷ <https://www.ofgem.gov.uk/publications-and-updates/eco3-monitoring>

it is acceptable for the same monitoring agent to undertake this activity, as long as the monitoring agent remains independent of the installer and the energy supplier in all other respects.

- 1.8. If the quality checks commissioned by the installer are done using the Ofgem monitoring questions, the results of these inspections should be submitted to Ofgem as part of the monitoring results, provided they meet all other relevant requirements.

Example 2

- 1.9. A monitoring agent completes a **mid-installation** inspection for an installer. The monitoring agent is subsequently commissioned to complete a **post-installation** inspection on the same measure in the same property by an obligated energy supplier. In this situation the monitoring agent can complete this subsequent inspection as long as the monitoring agent remains independent of the installer and the supplier in all other respects. Both inspections should be reported to Ofgem as part of the supplier's monitoring submission.

Example 3

- 1.10. A monitoring agent provides pre-installation surveys covering the technical requirements of the installation of a measure to an installer. The monitoring agent is contracted to an obligated energy supplier that subsequently asks the monitoring agent to complete independent inspections on the quality of the work. In this situation the monitoring agent can complete this subsequent inspection as long as the monitoring agent remains independent of the installer and the supplier in all other respects.

2. Technical monitoring

2.1. Technical monitoring is intended to ensure that a measure has been installed in accordance with the relevant standards defined in our guidance⁸.

Mid-installation and post-installation inspections

2.2. Technical monitoring inspections should take place at either:

- **Mid-installation:** Mid-installation inspections are required for the following measure types:
 - o External Wall Insulation (EWI)⁹
 - o Internal Wall Insulation (IWI)
 - o Flat Roof Insulation (FRI)
 - o Party Cavity Wall Insulation (PCWI)
 - o Room-in-Roof Insulation (RIRI)
 - o Under Floor Insulation (UFI)
 - o Partial Cavity Wall Insulation (CWI)
 - o Solar Photovoltaics (PHV)
 - o First Time Central Heating (FCH).
- **Post-installation:** Post-installation inspections are required for all measure types that are included in Technical Monitoring.

2.3. For measure types subject to both mid-installation and post-installation inspections, monitoring must be conducted according to the following requirements:

- A minimum of two percentage points of the 5% minimum monitoring requirement for each relevant measure type are composed of mid-installation inspections, and
- A minimum of two percentage points of the 5% minimum monitoring requirement for each relevant measure type are composed of post-installation inspections.

2.4. The remaining percentage point, and any monitoring conducted in addition to the minimum 5% monitoring requirement, can be composed of mid-installation inspections, post-installation inspections, or a combination of the two.

Example:

2.5. A supplier has notified 1,000 RIRI measures in a quarter. The supplier has monitored 80 measures (8%). Of these, at least 20 (2%) must be mid-installation inspections and 20 (2%) must be post-installation inspections. The remaining 40 inspections can be split

⁸ <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

⁹ Where a finishing layer (eg render) is applied to a solid wall insulation measure, mid-installation inspections should take place after the insulation has been fitted but before the finishing layer has been applied

between mid-installation and post-installation inspections in whatever way the supplier deems appropriate.

- 2.6. Where the number of measures notified for a particular measure type for which both mid-installation and post-installation questions apply is fewer than 100 in any particular quarter, the minimum monitoring requirement is a single inspection and this can be conducted at mid-installation or post-installation stage.
- 2.7. The question we have introduced for Partial Cavity Wall Insulation for ECO3 (CWI.9) has not been assigned its own measure type. Instead any inspections conducted using this question should be counted towards the monitoring requirement for Cavity Wall Insulation (CWI).
- 2.8. We would expect suppliers to conduct mid-installation inspections for CWI where applicable but appreciate not all CWI measures will be cases of partial fill and that some suppliers may choose not to treat such properties at all. We therefore haven't specified a minimum monitoring requirement for mid-installation inspections for CWI. We will, however, monitor inspection results and may investigate instances where no inspections have been conducted at mid-installation stage for CWI.

Installing measures in accordance with the Publicly Available Specification 2030 (PAS 2030)

- 2.9. All measures referenced in PAS 2030 need to be installed in accordance with the relevant PAS 2030 measure annex. The monitoring agent should be making these checks for all relevant measures when performing a technical inspection. This includes ensuring the measure has been installed in accordance with the energy efficient measure (EEM) design.
- 2.10. In addition, a number of technical monitoring questions refer specifically to PAS 2030. This is the case for questions verifying the competency of the operatives completing the installation, or where an aspect of the installation is specifically referred to in PAS 2030. A measure must be checked against the version of PAS 2030 that was in force at the time of installation. The list of PAS 2030 versions and the time they were in force is shown in Table 1 below.

Table 1: PAS 2030 versions and the dates they were in force

Start Date	End Date	PAS Version
01 January 2014	31 May 2017	PAS 2030:2014 (Edition 1)
01 February 2017	To present	PAS 2030:2017 (Edition 1)

- 2.11. The questions in the ECO3 monitoring question set which refer specifically to PAS are EWI.1, EWI. 2, IWI.1, LI.4, LI.5 and RIRI.8.

Consumer Refusal

- 2.12. Suppliers and installers should be aware that if a consumer refuses to have part of a measure installed this may result in a "fail" at inspection. This is because consumer refusal could result in the measure not being PAS 2030 compliant and the property being at greater risk of future problems such as condensation and damp. Monitoring agents will still mark the inspection as a "fail" even if the only reason for the fail was customer refusal and was

outwith the supplier or installer’s control. There may be exceptions to this (eg installing part of a measure would result in a health or safety risk).

- 2.13. To mitigate the likelihood of this situation arising, suppliers or installers should ensure, in advance of the installation, that the consumer is happy to have *all* aspects of the measure installed prior to going ahead with the installation. If the consumer refuses, then the supplier and installer reserves the right to not fund/install the measure.

Standards to which RIRI must be installed

- 2.14. Room-in-roof insulation measures must be installed in accordance with the relevant measure specific annex in PAS 2030. To aid with this determination, RIRI guidance provided by the NIA and ATMA can be used¹⁰. This should be read in conjunction with questions RIRI.1, RIRI.2, RIRI.3, RIRI.4, RIRI.5, RIRI.6, RIRI.7, RIRI.8, RIRI.9 and SMQ.13.
- 2.15. In addition, when conducting inspections on RIRI measures, we would expect questions IWI.1 to IWI.10, and questions LI.1 to LI.7, to be applied where relevant. The N/A option can be used for these questions where they are being applied to a RIRI measure and they are not applicable, even if the N/A option is unavailable when these questions are applied to standard IWI measures and LI measures respectively.

Standards to which EWI must be installed

- 2.16. External wall insulation measures must be installed in accordance with the relevant measure specific annex in PAS 2030. To aid with this determination guidance provided by the NIA and ATMA can be used¹¹. This should be read in conjunction with questions EWI.1 through to EWI.20.

Park Home External Wall Insulation Systems

- 2.17. The Park Home Insulation measure type used under ECO2t has been split into three distinct measure types for ECO3: Park Home Insulation – Wall (PHI–Wall), Park Home Insulation – Roof (PHI–Roof), and Park Home Insulation – Floor (PHI–Floor). Based upon delivery volumes of Park Home Insulation under ECO2t, we do not anticipate many of these measures will be installed under ECO3. Therefore the monitoring requirements for each park home measure type should be applied as follows:
- PHI – Wall will be considered as part of External Wall Insulation (EWI) and not subject to a separate 5% monitoring requirement
 - PHI – Roof will be considered as part of Flat Roof Insulation (FRI) and Loft Insulation (LI) and not subject to a separate 5% monitoring requirement
 - PHI – Floor will be considered as part of Under Floor Insulation (UFI) and not subject to a separate 5% monitoring requirement.

¹⁰ <http://www.nia-uk.org/consumer/news/new-room-in-roof-insulation-and-external-wall-insulation-industry-documents/>

¹¹ <http://www.nia-uk.org/consumer/news/new-room-in-roof-insulation-and-external-wall-insulation-industry-documents/>

- 2.18. When performing an inspection on PHI-Wall the monitoring agent should, for technical monitoring, complete all current External Wall Insulation questions with the exception of EWI.9. This is because this question concerns cavity walls, which PHI-Wall measures would not be installed to. In response to EWI.9 the monitoring agent should use the 'N/A' option.
- 2.19. When performing an inspection on PHI-Roof the monitoring agent should, for technical monitoring, complete all current Loft Insulation and Flat Roof Insulation questions.
- 2.20. When performing an inspection on PHI-Floor the monitoring agent should, for technical monitoring, complete all current Under Floor Insulation questions.
- 2.21. For score monitoring the monitoring agent should complete the "All Measures" questions (SMQ.1 through to SMQ.5) and the Park Homes only question (SMQ.9).

Air Source Heat Pumps, Ground Source Heat Pumps and Biomass Boilers

- 2.22. There are no monitoring questions designed specifically for the following measure types:
- Air source heat pumps (ASHP)
 - Ground source heat pumps (GSHP)
 - Biomass boilers (BB)
- 2.23. This is because the above measure types, when notified to Ofgem, are notified as boiler measures or district heating systems, rather than as individual measure types. For technical monitoring purposes these measures should be considered either Boiler Repairs, Boiler Replacements, District Heating Systems or First Time Central Heating, depending on the circumstances. As such the relevant questions should be completed for the above measure types, and the 'N/A' option used where applicable. For score monitoring the monitoring agent should complete the "All Measures" questions only (SMQ.1 through to SMQ.5). For Core Monitoring purposes the monitoring results for the above measure types should be incorporated into Boiler Repairs, Boiler Replacements, District Heating Systems or First Time Central Heating as appropriate.
- 2.24. Although there is no requirement to monitor or report 5% of ASHP, GSHP or BB separately, the Monitoring Agent should be made aware in advance of the type of Boiler or Heat Pump that is to be inspected. This is to ensure that the Monitoring Agent sent to undertake the inspection is qualified to do so. When notifying a measure, suppliers should ensure the *post main heating source* field is completed as this will identify the type of boiler or heat pump. This information should be provided to the Monitoring Agent prior to any inspections so they are aware of the measure type that they are inspecting.

Guidance for individual questions

Boilers

BR.1/NB.1: Where pipework has either been replaced, exposed, or been made accessible as part of the work within an unheated space within the building envelope, has this been insulated?"

- 2.25. Where the pipework passes through a heated space it does not need to be insulated and the monitoring agent should answer “Pass” in response to BR.1/NB.1. If the space, however, is unheated then insulation is required to pass these questions.

Cavity Wall Insulation

CWI.1: Is the insulation material suitable for use with the property’s exposure level to wind driven rain?

- 2.26. Cavity wall insulation may not be suitable for installation in all premises of cavity wall construction, for example for premises with high exposure to wind driven rain. Monitoring agents should determine the suitability of a measure considering the premises to which it has been installed alongside the insulation product used, and should refer to the manufacturer’s specifications.
- 2.27. We appreciate that it may not always be possible to determine the specific product used. In such cases the monitoring agent should identify whether the product is composed of bead, foam or mineral fibre, and make a determination based on this as to whether the material is suitable given the property’s level of exposure to wind driven rain.
- 2.28. Where it is not possible to determine the specific product or whether the product is a bead, foam or mineral fibre product, the monitoring agent should record ‘Unable to validate’. We do not expect monitoring agents to perform intrusive inspections, such as borescope surveys.

CWI.2: Does the form of the construction of the property suggest that it was suitable for the material that has been installed?

- 2.29. The monitoring agent will need to assess using the manufacturer’s specifications whether there is any reason why the material used is not suitable considering the construction of the property. Considerations could include whether the material used is suitable given the level and state of the damp proof course, and whether it is suitable given the frame type (e.g. timber/metal). Please note that these examples are not exhaustive.

CWI.3: Does the current condition of the property suggest that it was suitable for the material that has been installed?

- 2.30. This question is about the general condition of the property. When answering this question, the monitoring agent should make an assessment using the manufacturer’s specifications as to whether there was any reason why the material used was not appropriate. For example, are there signs that water could penetrate the cavity?

CWI.4/PWI.1: Does the drilling pattern conform to the appropriate material’s compliance certificate?

- 2.31. This question should be applied where standard drilling or lancing methods have been used.

CWI.9: If the cavity wall contains pre-existing insulation, is the additional insulation to be added compatible with the pre-existing insulation as demonstrated by the product certificate?

- 2.32. As explained earlier in this document, this question only relates to the treatment of cavities that are already partially filled. This type of measure has not been assigned its own measure type. Instead any inspections conducted using this question should be counted towards the monitoring requirement for Cavity Wall Insulation (CWI).
- 2.33. This question should be asked during an inspection that is conducted before an already partially filled cavity is treated.

Note: The 'N/A' option will be enabled for this question in the ECO3 Technical and Score Monitoring Question Set v1.2. This should only be used for inspections of CWI where the cavity was not already partially filled and therefore CWI.9 does not apply.

- 2.34. **Please note from 1 February 2019 the treatment of already partially filled cavities will not be an eligible ECO measure.** CWI delivered to partial fill cavities with a completion and handover date up until 31 January 2019 can be notified with the existing CWI score. Any partial fill CWI installations notified with the existing CWI score and a completion date of 1 February 2019 onwards will be rejected. Suppliers should hold evidence to show that CWI measures completed and handed over from 1st February 2019 are delivered to empty cavities. We intend to develop a new measure type and associated score specifically for partial fill cavities, and we will provide updates in due course. There are likely to be additional requirements for this measure type.

Internal Wall Insulation

IWI.2: If the measure is being installed, is it being installed as specified in the appropriate product certificate and/or system designer's instructions?

If the measure is installed, was it installed as specified in the appropriate product certificate and/or system designer's instructions?

- 2.35. Based on feedback to the ECO3 Technical and Score Monitoring question set consultation¹², we have updated the wording for IWI.2 so that the question can be applied at both mid- and post-installation.

IWI.4: Has insulation been applied to the inter-floor void?

- 2.36. The inter-floor void is the void between the ceiling of the ground floor and the floor of the first floor. Here there would be a junction between components of the internal wall insulation system that could act as a thermal bridge. For certain IWI systems this will need to be treated to reduce the risk of thermal bridging and resulting condensation.
- 2.37. This question only applies where the product specification requires the product is installed to the inter-floor void. The 'N/A' option should be used where this is not required.

¹² <https://www.ofgem.gov.uk/publications-and-updates/eco3-technical-and-score-monitoring-question-set-consultation>

District Heating Systems

DHS.1: Is 50% or more of all roof areas or exterior facing walls insulated?

DHS.2: Are any of the following true:

- *One or more parts of the exterior facing walls of the multi-storey building in which the premises is located are of solid wall construction;*
- *All cavity walls have been insulated with cavity wall insulation; or*
- *Any cavity walls which have not been insulated have visible signs to indicate they cannot be insulated with cavity wall insulation.*

2.38. DHS.1 and DHS.2 do not verify the installation quality of the measure itself, but whether the pre-conditions as set out in our guidance¹³ have been met. These pre-conditions only apply to DHS measures installed to premises under Social E, F or G.

2.39. When assessing whether DHS.1 has been met, the agent should make sure that any loft insulation present is of at least 100mm.

2.40. Pre-condition 2 (which relates to premises located in multi-storey buildings not including the top floor of the multi-storey building) is concerned only with exterior facing walls that are of cavity wall construction type. If there are cavity walls that 'cannot be insulated' with cavity wall insulation, for example if there is rubble in the cavity that cannot be removed, it is not necessary to treat these cavity walls with external or internal wall insulation.

DHS.5: Does the DHS measure generate heat completely through fuels other than coal or oil?

2.41. DHS measures fuelled by either coal or oil are not eligible under ECO3. Ineligible fuels are any fuels partly or wholly composed of fossil fuels.

2.42. Where the DHS generates heat from an electric source, the response should be a pass.

External Wall Insulation

EWI.2: Has the pre-installation building inspection been completed fully in accordance with the relevant version of PAS 2030?

2.43. The pre-installation building inspection referred to in this question is the inspection defined in PAS section 6.2, and covers the suitability of the installation method and the energy efficiency measure design.

¹³ <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

Heating Controls

HC.1: Are the heating controls, smart thermostat or TRVs (whichever is applicable) linked to a functioning heating system?

HC.2: Do the heating controls or smart thermostat turn on the domestic heating system?

2.44. For ECO3 we have introduced new measure types for smart thermostat heating controls and have therefore updated questions HC.1 and HC.2 so that they can be applied to smart thermostats. The relevant section of PAS 2030 should be read in conjunction with answering questions HC.1 and HC.2.

2.45. We appreciate that some heating controls can be moved by the homeowner after installation and that this might result in a monitoring fail. Where this happens and the supplier is able to demonstrate to the monitoring agent that the thermostatic controls were correctly positioned upon install, we would expect the monitoring agent to overturn that fail.

First Time Central Heating

FCH.1: Is there no evidence of a current or past central heating system, DHS connection or one or more working and efficient ESH? Additionally, is there no evidence that a central heating system or DHS connection was present in the past?

2.46. In order for the installation of a heating system to be eligible under ECO3 as first time central heating, the premises must at no point prior to the installation have had a central heating system (including renewable central heating), or a connection to a district heating system. Please see Chapter 4 of the ECO3 Guidance: Delivery¹⁴ for more information relating to first time central heating.

2.47. We have introduced FCH.1 at mid-installation stage to check that the property is eligible for first time central heating before the new heating system is installed. The inspection should be conducted at a point during installation at which it is still possible to determine whether the property is eligible for first time central heating.

All Measure Questions

TMQ.1: Is there any evidence of avoidable thermal bridges ie heat loss areas which are not insulated but could have been?

Note: This question will be reworded in the ECO3 Technical and Score Monitoring Question Set v1.2 to the following:

TMQ.1: Have all avoidable thermal bridges/heat loss areas which could have been insulated, been insulated?

¹⁴ <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

- 2.48. This question is purely concerned with identifying uninsulated elements of a property that are likely to cause problems due to thermal bridging but that could have been insulated.

TMQ.2: Has 100% of the measure been installed where possible?

- 2.49. All measures referenced in PAS 2030 should be installed in accordance with PAS 2030. In most cases this means installing a measure to 100% of the treatable area of the property. There are some instances, however, where it is permissible to install a measure to less than 100% of the treatable area of a property. Please see Chapter 2 of the ECO3 Guidance: Delivery¹⁵ for more information about instances where it may be considered acceptable to install a measure to less than 100% of the treatable area of a property.

- 2.50. It should be noted, however, that these instances are not always applicable; the requirement to ensure compliance with PAS 2030 still ultimately applies.

TMQ.3: Has appropriate monitoring equipment been installed into the property?

- 2.51. We have provided more information about answering this question in the Innovation section of this document.

What to do if an agent records a measure as a technical monitoring “fail”

- 2.52. The monitoring agent who completes the monitoring questions for a measure must record whether the measure is a “pass” or “fail”. If the measure is a fail the monitoring agent must also record each question (and its number) against which the measure has failed.

- 2.53. Suppliers must notify us of all measures that fail monitoring, along with their response to each fail. More information on how we expect this information to be submitted to us can be found in the ECO3 Supplementary Guidance for Monitoring¹⁶.

- 2.54. We expect suppliers to remedy the fail and, in doing so, avoid losing savings for the measure. When the supplier undertakes remedial work, the supplier must re-inspect the installation again after the work is completed. More information about this can be found in the ECO3 Supplementary Guidance for Monitoring.

- 2.55. We expect a supplier to make reasonable efforts to contact the occupant to conduct remedial work or a re-inspection. In some instances a supplier may be unable to access premises (termed ‘non-access’).

- 2.56. More details of how a supplier can evidence instances of ‘non-access’ and our response to these instances can be found in our ECO3 Supplementary Guidance for Monitoring.

¹⁵ <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

¹⁶ <https://www.ofgem.gov.uk/publications-and-updates/eco3-monitoring>

Where there is a 'Fail' against a mid-installation question

- 2.57. Suppliers are permitted to remediate a measure at mid-installation (ie before the measure is completed). However, technical monitoring agents do not have the authority to halt work; the onus is upon the supplier to resolve any 'fails'.
- 2.58. If a measure fails at the mid-installation stage and is fixed upon inspection (so it is a pass), this should still be reported as a fail in the first instance but can be marked a remediated and re-inspected. Where a measure fails at the mid-installation stage and cannot be fixed during the inspection, it is permissible to conduct remedial work at a later stage, as long as work has not proceeded beyond a point where the failure cannot be re-inspected.
- 2.59. Where an installation is aborted due to a fail, the inspection must still be reported to Ofgem.

Remote re-inspections

- 2.60. Suppliers may choose to remotely re-inspect the 65 questions marked as suitable in the ECO3 Technical and Score Monitoring question set v1.1¹⁷. Where these questions fail a technical monitoring inspection, they can only be re-inspected remotely in cases where it has been deemed possible by the technical monitoring agent during their original site inspection.
- 2.61. For the remaining questions, we would expect on-site re-inspections to be conducted in almost all cases. We appreciate that in very rare circumstances it may be particularly difficult to conduct an on-site re-inspection. In such instances, suppliers should contact Ofgem and explain the situation. Suppliers will need to produce detailed documentation to give us assurance that a remote re-inspection is both appropriate and justified. Please note that there is no guarantee we will accept remote re-inspections for questions not marked in the question set as appropriate for re-inspection. Every case will be treated separately.
- 2.62. Remedial work must be evidenced using photographs taken from the same view as during the original site inspection. All photographs must be captured using a suitably high resolution, and the date on which the photo was taken, location of the premises and the measure being assessed recorded. Where possible, we expect all photographic evidence to be GPS location-stamped.
- 2.63. A supplier does not need to provide this evidence when submitting monitoring results, but should be able to make it available upon request.
- 2.64. **If the documentary evidence provided for remote re-inspection does not provide sufficient certainty for the technical monitoring agent to determine that remedial work has been completed to the required standard, the monitoring agent must undertake a site audit.**

¹⁷ <https://www.ofgem.gov.uk/publications-and-updates/eco3-monitoring>

- 2.65. Suppliers must indicate on their technical monitoring reports that a measure has been remotely re-inspected so that we can monitor trends in failure rates for all remotely re-inspected measures.

- 2.66. 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. The monitoring agent may request further evidence and suppliers may implement additional processes to increase the accuracy of remote re-inspections, or enhance consumer protections.

3. Score monitoring

- 3.1. Score monitoring is intended to ensure that the inputs used to calculate the score of a measure are accurate. The score monitoring questions assess whether the parameters used to select the deemed score are an accurate reflection of the property. There are no score monitoring questions for measures not scored using deemed scores.
- 3.2. Score monitoring inspections should only take place at the post-installation stage. Further details of the score monitoring requirements are available in Chapter 8 of the ECO3 Guidance: Delivery¹⁸.
- 3.3. Score monitoring agents must either be:
 - a) in England and Wales, an accredited Domestic Energy Assessor or a Green Deal Advisor, or
 - b) in Scotland, members of Approved Organisations.
- 3.4. We would also consider the ATMA carded inspector scheme to satisfy our requirements.
- 3.5. Where a supplier would like to use an agent with a different/equivalent qualification (such as the ATMA carded inspector scheme) they should contact us.

Guidance for individual questions

SMQ.2: Does the heating system installed match the notified heating system, or has the appropriate proxy been used where applicable?

- 3.6. All measures scored using the deemed scores methodology are scored in relation to the heating system present at the property. This question therefore applies to all measures scored using the Deemed Scores methodology; not just those where the heating system has changed.
- 3.7. There are eleven standard heating systems with deemed scores under ECO3. Please see the Deemed Scores Matrix¹⁹ for more information on these heating systems. For any heating system that isn't included in this list, we will use Table 2 which identifies the appropriate heating system that can be used as a scoring proxy.

¹⁸ <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

¹⁹ <https://www.ofgem.gov.uk/publications-and-updates/eco3-deemed-scores>

Table 2: Deemed scores proxy heating sources

Pre-main heating source	Proxy
ASHP central heating ^A	Gas room heaters*
Air-oil hybrid heat pump	Gas room heaters*
Biomass district heating system	Gas boiler*
Biomass/wood central heating	Solid fossil fuel boiler*
Biomass/wood room heaters	Solid fossil fuel boiler*
Bottled LPG back boiler to radiators	Electric boiler*
Bottled LPG central heating ^B	Electric boiler*
Bottled LPG fire with back boiler	Electric room heaters*
Bottled LPG range cooker boiler	Electric room heaters*
Bottled LPG room heaters ^B	Electric room heaters*
Electric ceiling heaters	Electric room heaters*
Electric underfloor heating	Electric storage heaters*
Electric warm air system	Electric boiler*
Gas back boiler to radiators ^C	Gas room heaters*
Gas district heating system	Gas boiler*
Gas fire with back boiler ^C	LPG boiler*
Gas range cooker boiler	Gas room heaters*
Gas warm air system	Gas boiler*
GSHP central heating	Gas room heaters*
GSHP district heating system	Gas boiler*
LPG back boiler to radiators	LPG boiler*
LPG boiler - Special Condition 18 ^D	Gas boiler*
LPG district heating system	Gas boiler*
LPG fire with back boiler	Electric room heaters*
LPG range cooker boiler	LPG boiler*
LPG room heaters	LPG boiler*
LPG warm air system	LPG boiler*
No heating present	Electric room heaters*
Oil district heating system	Gas boiler*
Oil range cooker boiler	Gas boiler*
Oil room heaters	Gas room heaters*
Oil warm air system	Oil boiler*
Solid fossil fuel back boiler to radiators	Solid fossil fuel boiler*
Solid fossil fuel fire with back boiler	Solid fossil fuel room heaters*

^Aair-to-water ASHP only

^Bwhere the measure being installed is not a park home insulation measure

^Cwhere the measure being installed is not a heating measure

^DSpecial Condition 18 applies only if the property receives LPG at mains gas prices²⁰

The '' at the end of each proxy name reflects the proxy names that should be used when a proxy is selected as they are in the Deemed Scores Matrix²¹

²⁰ <https://www.ofgem.gov.uk/ofgem-publications/50140/7940-independentnetworksopenletterpdf>

²¹ <https://www.ofgem.gov.uk/publications-and-updates/eco3-deemed-scores>

SMQ.3: Does the property type match the notified property type?

3.8. The list of acceptable property types can be found below:

- a) Semi-detached house
- b) Detached house
- c) End-terrace house
- d) Mid-terrace house
- e) Semi-detached and end-terrace bungalow
- f) Detached bungalow
- g) Mid-terrace bungalow
- h) Flat with two or fewer external walls
- i) Flat with three or more external walls
- j) Maisonette with two or fewer external walls
- k) Maisonette with three or more external walls
- l) Single park home (only for use with park home insulation)
- m) Double park home (only for use with park home insulation)

3.9. Where it is not straightforward to identify the relevant property type, we have provided further guidance and some examples of more unusual situations in Chapter 6 the ECO3 Guidance: Delivery²².

SMQ.4: Does the number of bedrooms match the notified number of bedrooms?

3.10. If there is uncertainty regarding the number of bedrooms in the dwelling, the following definition can be used as a guide.

3.11. All rooms designed to be used as a bedroom, even if they are currently not being used as a bedroom, should be included. For example, rooms built as bedrooms but currently used as offices or living space should still be counted as bedrooms.

3.12. A bedroom also needs to meet all the below criteria;

- a) it meets the SAP definition of a habitable room²³
- b) it can accommodate a standard sized single bed horizontally, and
- c) it is not a conservatory.

3.13. For clarity, the following are some examples of rooms that would not be considered as bedrooms:

- a) any room without a window, and
- b) any room that is intended for use as a lounge, kitchen, dining room, kitchen-diner, conservatory, sunroom, utility room, bathroom, en-suite, cloakroom, hallway, stairs, landing or garage, and
- c) living rooms or dining rooms currently being used for sleeping, unless it is a bedsit.

²² <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

²³ SAP 2012, S9.1, pp. 141: http://www.bre.co.uk/filelibrary/SAP/2012/SAP-2012_9-92.pdf

SMQ.5: "Is any of the following true:

- 3.14. Where the full deemed score has been claimed, at least 67% of the property has been treated.
- 3.15. Where less than 67% of the property has been treated, the notified deemed score has been calculated using a percentage of property treated figure that reasonably reflects the actual percentage of property treated? (a tolerance of +/-5% between the claimed POPT and the monitoring agent's assessment is permissible)"
- 3.16. For ECO3 where a measure has been installed to 67% or more of the property, the full deemed score can be claimed for that measure and the POPT should be notified as "67+". Please see Chapter 6 of the ECO3 Guidance: Delivery for more information.
- 3.17. Where less than 67% of the property is treated, suppliers will be required to calculate a more appropriate score using the exact percentage of property treated. We believe a notified POPT that is +/-5% from the monitoring agent's assessment would be a reasonable reflection of the actual percentage of the property treated by the installer. Where the difference is greater than 5 percentage points we would expect the inspection to result in a fail.
- 3.18. We leave it to the expertise of the monitoring agent to make the above judgement.

SMQ.8: Has the correct measure type been selected for the part of the door that is glazed?

- 3.19. There are two types of high performance external doors recognised under ECO3; those with more than 60% of the door surface glazed and those with less than or equal to 60% of the door surface glazed. The monitoring agent should check that the correct type has been selected by calculating the percentage of the door that is glazed.

SMQ.9: Does the park home size match the notified park home size?

- 3.20. This question applies to all park home measure types. The monitoring agent should ensure the park home has been measured and notified accurately.

SMQ.10: Does the type of electric storage heater installed match the type of electric storage heater notified?

- 3.21. Below is a list of the electric storage heater (ESH) types eligible under ECO3:
 - a) High Heat Retention Electric Storage Heater
 - b) Fan Storage Heater
- 3.22. Each of these ESH types provides a different score. The score monitoring agent should verify that the installer has claimed the correct score for the type of ESH that was installed

in the property. Please refer to Chapter 6 of the ECO3 Guidance: Delivery²⁴ for more information relating to these measure types.

SMQ.11: Does the type of boiler installed match the type of boiler notified?

3.23. Below is a list of the boiler types eligible under ECO3:

- a) Gas
- b) Oil (only repairing or replacing a broken oil boiler)
- c) LPG
- d) Electric
- e) Biomass
- f) Air Source Heat Pump
- g) Ground Source Heat Pump

3.24. Each of these boiler types provides a different score. The SMA should verify that the installer has claimed the score appropriate for the type of boiler that was installed in the property. Please refer to our ECO3 Measures Table²⁵ for more information relating to these measure types.

SMQ.14: Does the wall construction type notified match at least 50% of the total external wall area of the property?

3.25. By 'wall construction type' we are referring to whether the wall is of solid wall construction or cavity wall construction.

3.26. This question should be applied to all solid wall insulation measures and all heating measures.

SMQ.16: Is the notified age band a reasonable reflection of the age band of the property?

3.27. When answering this question, the monitoring agent should take a pragmatic approach and consider whether it is conceivable that the property could be fairly assessed as being in the notified age band. This is what we mean by 'reasonable reflection'.

3.28. Please see Table 3 for a list of the different age bands.

²⁴ <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

²⁵ <https://www.ofgem.gov.uk/publications-and-updates/eco3-measures-table>

Table 3: Property age bands variants

Age band (England and Wales)	Age band (Scotland)
A (before 1900)	A (before 1919)
B (1900-1929)	B (1919-1929)
C (1930-1949)	C (1930-1949)
D (1950-1966)	D (1950-1964)
E (1967-1975)	E (1965-1975)
F (1976-1982)	F (1976-1983)
G (1983-1990)	G (1984-1991)
H (1991-1995)	H (1992-1998)
I (1996-2002)	I (1999-2002)
J (2003-2006)	J (2003-2007)
K (2007 onwards)	K (2008 onwards)

SMQ.17: Is the notified thickness of insulation a reasonable reflection of the thickness of the insulation that was installed at the property?

3.29. When answering this question, the monitoring agent should take a pragmatic approach and consider whether it is conceivable that the insulation thickness could be fairly assessed as being the notified thickness. This is what we mean by 'reasonable reflection'.

SMQ.18: Does the installed smart thermostat meet the criteria of the boiler plus standard (ie does it feature automation and optimisation) and does it feature connectivity?

3.30. The SMA should make sure that the smart thermostat meets the criteria set out in the Boiler Plus Standard²⁶. That is, they must incorporate automation and optimisation.

- Automation means a control function which automatically adjusts time and temperature settings based on occupancy detection and/or stored data from user adjustments over time.
- Optimisation means a control function which starts the boiler operation at the optimum time to achieve the setpoint temperature at the start of the occupancy period.

3.31. To be considered a smart thermostat for the purposes of ECO3, products installed must also offer some form of wider connectivity, such that consumers can remotely control their home temperature via a tablet, smartphone or desktop for greater control over the central heating system. Whilst there is no single definition of smart technology, the deemed score for this measure is based on field trials of smart thermostats which have this feature.

SMQ.20: Has the correct orientation and inclination factor been selected to provide the correct overall POPT of the measure? (a tolerance of +/-5% between the claimed POPT and the monitoring agent's assessment is permissible)

²⁶https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/651853/Boiler_Plus_final_policy_and_consultation_response.pdf

3.32. Please refer to Chapter 6 of the ECO3 Guidance: Delivery when answering SMQ.5 for more information about the level of tolerance we expect to be exercised for this question.

3.33. We do not expect monitoring agents to endanger themselves in order to conduct monitoring inspections. If access to the solar PV measure puts a monitoring agent's health and safety at risk then a desk based check can be conducted using the relevant paperwork.

SMQ.21: Has the owner been provided with a warranty meeting the criteria under ECO?

3.34. Under ECO3 all boiler and electric storage heaters must be provided with a warranty of at least one year and this should be provided to the occupier at the time of handover or before.

3.35. Please see Chapters 11 and 12 of the ECO3 Guidance: Delivery²⁷ for more information relating to the requirements for boiler and electric storage heater warranties under ECO3.

SMQ.22: Is the percentage indicated by the third part of the SWMR reference number (SWMR RN: format AAA/N.NN/NNN/NNNNNN) an accurate reflection of the proportion of the property's external walls which are of solid wall construction, whether or not insulated? (a tolerance of +/- 5% between estimates is permissible)

3.36. Under ECO3 it is possible for non solid wall measures to count towards the Solid Wall Minimum Requirement providing certain criteria are met. Such measures would be notified to Ofgem along with a unique SWMR reference number. Please see Chapter 4 of the ECO3 Guidance: Delivery for more information relating to this.

3.37. One of the criteria for non solid wall measures to count towards the solid wall minimum requirement is that the property has at least 50%, by area, of its exterior facing walls as solid walls.

3.38. Please refer to our guidance on answering SMQ.5 for more information about the level of tolerance we expect to be exercised for this question.

²⁷ <https://www.ofgem.gov.uk/publications-and-updates/energy-company-obligation-2018-22-eco3-guidance-delivery>

4. Innovation

- 4.1. We will be publishing guidance on innovation which will outline our administrative approach for managing applications and measures notified under demonstration actions, innovation measures and monitored measures. The guidance will also describe how suppliers can deliver measures under each of the innovation routes.

Monitoring agent independence

- 4.2. The same requirements that apply for technical monitoring agents also apply for any agent intending to carry out an inspection of an innovation measure, ie they must be suitably qualified and independent.

Monitoring of innovation measures

- 4.3. We have introduced one question related specifically to innovation measures which are demonstration actions or monitored measures into the monitoring question set for ECO3. While we expect most demonstration actions and monitored measures to have monitoring equipment installed, in certain circumstance it may not be required. Where monitoring equipment is not required 'N/A' should be selected.
- 4.4. For all innovation measures, all relevant questions should be applied during an inspection, however, because the requirements for that measure to be compliant with the relevant standards of installation still apply.
- 4.5. For example, if the innovation measure is a form of internal wall insulation, all IWI questions and any other relevant questions should be applied.
- 4.6. For certain innovative measures, new monitoring questions may be required, or existing ones amended. Any changes to the monitoring question set must be included in the innovation application, and agreed alongside the approval of the application. We will publish any updates to the monitoring question set as soon as possible after they have been agreed.
- 4.7. Suppliers should contact us where they are unsure which questions should be applied to an innovation measure.
- 4.8. The monitoring of innovation measures will constitute its own measure type for the purpose of Ofgem monitoring. We therefore expect 5% of all innovation measures notified to be monitored.
- 4.9. Where an innovation measure is also inspected at mid-installation stage (as a result of related questions being applicable at mid-installation), we will **not** require two percentage points of the minimum requirement to be composed of mid-installation inspections. We will monitor trends, however, and where we find unsatisfactory levels of monitoring at mid-installation stage for innovation measures we may take appropriate action.

4.10. The question to be introduced specifically for innovation measures is as follows:

TMQ.3: Has monitoring equipment been installed into the property?

- 4.11. For measures which are demonstration actions and/or monitored measures, has monitoring equipment to record the performance and/or collect data in relation to a measure been installed? Examples of monitoring equipment may include data loggers or smart meters.
- 4.12. For demonstration actions and monitored measures, monitoring equipment to measure the performance of the measures must be installed (to all or a proportion of the measures) in order for the measures to be eligible. This question is intended to confirm whether or not a property where a demonstration action or monitored measure has been installed does have monitoring equipment present.

5. Recording a fail

What to do if an agent records a measure as a monitoring 'fail'

- 5.1. We expect measures that fail score monitoring to be re-scored within three months of the last day of the month in which the monitoring agent identified the failure. If a measure is not re-scored within six months of the last day of the month in which the failure was identified by the monitoring agent, we will revoke an earlier decision to attribute savings to the measure or refuse to attribute savings to it.

Disputing a fail

- 5.2. Suppliers may dispute a monitoring agent's findings and wish to correct it rather than take one of the actions described above. If this is the case, suppliers should raise this dispute with the monitoring agent. If the monitoring agent agrees that the measure should not have failed, please mark the fail as an 'Overturn' in the relevant section of the 'Responding to Fails' template. For more information on Overturns, please refer to our Supplementary Guidance for Monitoring.

What to do if an agent finds that a notified measure has not been installed

- 5.3. If a measure has not been installed, the monitoring agent should fail the measure on every question for that measure type. The monitoring agent should also report this measure to the supplier. As well as reporting the measures as a monitoring fail, the supplier should report it to the ECO3 Rejections team as a non-compliant measure. If the supplier suspects the measure has been deliberately misrepresented, it should also report it to the Ofgem Counter Fraud team at Counterfraud@ofgem.gov.uk.
- 5.4. Suppliers and monitoring agents should contact us at eco@ofgem.gov.uk where there is any doubt over the outcome of a question.

6. Consumer contribution research

- 6.1. On 1 August 2017, we introduced a third category of questions to the monitoring questionnaire²⁸. This category contains three questions that we use to gather data on contributions made by consumers to their energy efficient measures.
- 6.2. The consumer contribution research strand is completely separate from both technical and score monitoring. We only use monitoring inspections as a mechanism to collect the consumer contribution data. Use of these questions by suppliers is voluntary, as is the participation of the consumer. There is no minimum monitoring requirement for the consumer contribution questions.
- 6.3. Measures cannot 'fail' on a consumer contribution question, and the results of consumer contribution research do not impact on any of the monitoring processes, including pathways to compliance. Consumer contribution research data is reported to Ofgem separately.
- 6.4. Consumer contribution questions can be asked at both mid-installation and post-installation stage, where feasible. There is not target percentage for either mid-installation or post-installation inspections for the consumer contribution questions.
- 6.5. As the consumer contribution research questions ask for information from the occupant(s) of the premises, participation is restricted to adults. TMAs must ensure that the questions are posed to an adult, and must not ask them of children.

Guidance on using the consumer contribution questions

CC.1: I, the TMA, confirm that I have read the above statement to the consumer and they have confirmed that they consent to take part in the survey.

- 6.6. This question is used to record that the consumer has given their consent to answer the two questions on consumer contributions. The statement that the question refers to is included in our monitoring question set, and reads as follows:

"Ofgem has asked monitoring agents to conduct a short survey as part of ECO monitoring visits to collect data that will be used to evaluate and design the ECO scheme. This research is being conducted on behalf of the Department for Business, Energy and Industrial Strategy (BEIS). Your participation in this survey is voluntary. If you decide to participate you may withdraw at any time. If you decide not to participate in this survey it will not impact anything delivered to you as part of the ECO scheme. If you agree to take part, I will complete the survey on your behalf. The survey will take approximately 2 minutes. The information you provide will be linked to the information that Ofgem already holds regarding your ECO measure. Ofgem will share your survey response data with BEIS. This data will be processed and shared in accordance with Ofgem's privacy policies. In responding to this survey you are confirming that you understand the above information and that you are in a suitable position to respond to the questions. Are you happy to proceed with the survey?"

²⁸ <https://www.ofgem.gov.uk/publications-and-updates/eco3-monitoring>

- 6.7. If the consumer consents to participate in the survey, the monitoring agent should record **Yes**. If the consumer does not consent, the monitoring agent should record **No**.

CC.2: Have you or anyone else in the household contributed towards the cost of the measure?

- 6.8. This question only refers to contributions made by occupants of the domestic premises where the measure was installed. The consumer should not provide information on contributions that may have been provided by another party, for instance the landlord. Further, it should be made clear to the consumer that they should only consider any contributions relating to the measure being monitored and not any other upgrades that may have occurred at the same time.

- 6.9. If the consumer does not know if a contribution was made (for instance, because the installation of the ECO3 measure was dealt with by another member of the household), the monitoring agent should record **Don't know**. If the consumer is unsure whether or not their contribution was solely for the ECO3 measure, the monitoring agent should record **Don't know**. If the consumer does not want to say whether or not a contribution was made, the monitoring agent should record **No response**.

*CC.3: If **Yes** to question CC.2: how much has been contributed?*

- 6.10. If the consumer has contributed to their ECO3 measure, the amount should be recorded here. The amount should be recorded rounded to the nearest whole number. No text should be entered into this field.
- 6.11. If the consumer knows that a contribution was made, but does not know the amount (for instance, because the contribution was made by another member of the household), the monitoring agent should record **Don't know**. If the consumer does not want to divulge the information, the monitoring agent should record **No response**.

7. Appendix 1

Table 4: Summary table of monitoring required for each measure type

Measure Type	Monitoring Category ¹	Subject to Technical Monitoring	Subject to Score Monitoring	Mid-installation Questions Apply
Solid wall - External Insulation	EWI	Yes	Yes	Yes
Solid wall - Internal Insulation	IWI	Yes	Yes	Yes
Cavity Wall - External Insulation	EWI	Yes	Yes	Yes
Cavity Wall - Internal Insulation	IWI	Yes	Yes	Yes
Cavity wall insulation (0.040) ²	CWI	Yes	Yes	Yes
Cavity wall insulation (0.033) ²	CWI	Yes	Yes	Yes
Cavity wall insulation (0.027) ²	CWI	Yes	Yes	Yes
Party cavity wall insulation	PWI	Yes	Yes	Yes
Loft insulation where there is greater than 100mm pre-existing insulation	LI	Yes	Yes	
Loft insulation where there is less than or equal to 100mm pre-existing insulation	LI	Yes	Yes	
Flat roof insulation	FRI	Yes	Yes	Yes
Draught proofing	DP	Yes	Yes	
Higher performance external doors with greater than 60% glazing area ²	HPED	Yes	Yes	
Higher performance external doors with less than or equal to 60% glazing area ²	HPED	Yes	Yes	
Park home insulation - floor	UFI	Yes	Yes	Yes

Park home insulation - roof	LI/FRI ³	Yes	Yes	Yes
Park home insulation - wall	EWI	Yes	Yes	Yes
Room-in-roof insulation insulated	RIRI	Yes	Yes	Yes
Room-in-roof insulation uninsulated	RIRI	Yes	Yes	Yes
Under floor insulation	UFI	Yes	Yes	Yes
Window glazing - improved double glazing	WG	Yes	Yes	
Window glazing - single to double	WG	Yes	Yes	
(Boiler) Broken replacement - no pre-existing heating controls	NB ⁴	Yes	Yes	
(Boiler) Broken replacement - pre-existing heating controls	NB ⁴	Yes	Yes	
First time central heating (FTCH)	FCH ⁴	Yes	Yes	Yes
(Boiler) Repair - no pre-existing heating controls	BR ⁴	Yes	Yes	
(Boiler) Repair - pre-existing heating controls	BR ⁴	Yes	Yes	
(Boiler) Upgrade - no pre-existing heating controls	NB ⁴	Yes	Yes	
(Boiler) Upgrade - pre-existing heating controls	NB ⁴	Yes	Yes	
(Electric Storage Heater) Broken replacement - fan storage	NESH	Yes	Yes	
(Electric Storage Heater) Broken replacement - high heat retention	NESH	Yes	Yes	
(Electric Storage Heater) Repair - fan storage	ESHR	Yes	Yes	
(Electric Storage Heater) Repair - high heat retention	ESHR	Yes	Yes	
(Electric Storage Heater) Upgrade - fan storage	NESH	Yes	Yes	

(Electric Storage Heater) Upgrade - high heat retention	NESH	Yes	Yes	
New connection	DHS	Yes		
CHP upgrade	DHS	Yes		
Heat meters	DHS	Yes		
Heating controls	HC	Yes	Yes	
Smart thermostat (pre-existing programmer and room thermostat)	HC	Yes	Yes	
Smart thermostat (no pre-existing programmer and room thermostat)	HC	Yes	Yes	
TRV	HC	Yes	Yes	
Solar PV	PHV	Yes	Yes	Yes
Innovation Measures ⁵		Yes	Yes	Yes

¹ **EWI** – External Wall Insulation, **IWI** – Internal Wall Insulation, **CWI**- Cavity wall Insulation, **PWI** – Party Cavity Wall Insulation, **LI**- Loft Insulation, **FRI**- Flat Roof Insulation, **DP** – Draught Proofing, **HPED** – High Performance External Door, **UFI** – Under Floor Insulation, **RIRI** – Room in Roof Insulation, **WG** – Window glazing, **NB** – New Boiler (replacement boiler), **FCH** – First Time Central Heating, **BR** – Boiler Repair, **NESH** – New Electric Storage Heater, **ESHR** – Electric Storage Heater Repair, **DHS** – District Heating System, **HC** – Heating Controls, **PHV** – Photovoltaic.

² The values alongside the CWI measure names refer to the thermal conductivity of the product.

³ The Loft Insulation and Flat Roof Insulation questions should be applied to Park Home – Roof measures as appropriate.

⁴ Boiler measures also include the following renewable heat sources; air source heating pumps, ground source heating pumps and biomass boilers.

⁵ Although there is only one question specifically for innovation measures, all other relevant questions in the monitoring question set should be applied to an innovation measure. It's therefore possible that Technical Monitoring questions, mid- or post-installation, and score monitoring questions could apply.