**SCHEDULE 1**

**SECTION D**

**TECHNICAL SPECIFICATION**

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| MIS 3005 – Heat Pumps |

**Chapter 1. Scope**

The Delivery Organisation must be able to provide all the measures in accordance with the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Date / Event** | **Energy Efficiency Measures** | **Category** | **Certification**  **Required** |
| **On the Commencement Date the Delivery Organisation must be able to deliver the following measures:** | A1 – Smoke Detector |  | No |
| A2 – Carbon Monoxide detector |  | No |
| A3 – Replacement LED bulbs |  | No |
| A4 - Loft hatch new |  | No |
| A5 - Loft hatch alteration to increase |  | No |
| A6 - Loft clearance |  | No |
| A7 - Loft platform (3mx3m) |  | No |
| A8 - Cavity Wall extraction |  | No |
| C5 - Additional Radiator (Each) |  | No |
| B1 - Cavity wall insulation and Party Wall Insulation | **Highly Recommended** | Certification required at tender submission. |
| B2 - Draught proofing | **Highly Recommended** |
| B3 - Energy efficient glazing, doors, and secondary glazing |  |
| B4 – External wall insulation |  |
| B5 - Flat roof insulation |  |
| B6 - Floor insulation |  |
| B7 - Hybrid wall insulation |  |
| B8 - Internal wall insulation |  |
| B9 - Loft insulation | **Highly Recommended** |
| B10 – Pitched roof insulation |  |
| B13 – Park Homes |  |
| C4 - Heating system insulation (ducting, pipes, and cylinders) | **Highly Recommended** |
| C5 – Heating, hot water system, air conditioning or ventilation controls and components | **Highly Recommended** |
| C6 – Hot Water Systems |  |
| C8 – Mechanical Ventilation Heat Recovery (MVHR) |  |
| V1 - Decentralised Mechanical Ventilation (single and multi-room systems) | **Highly Recommended** |
| D1 – High Heat Retention Electric Heaters |  |
| MIS 3001 – Solar Thermal |  |
| MIS 3002 – Solar PV |  |
| MIS 3003 – Biomass Boilers |  |
| MIS 3005 - Heat pumps |  |

Measures marked as highly recommended are simple and cheap measures, these really should be installed before the Customer is offered any other measures.

Where appropriate, the Delivery Organisation shall discuss with Customers the need to switch to a more appropriate energy supply tariff. This must be carried out and recorded where the installation of new or improved Measures will materially vary the Customer's energy consumption, for example where the Customer moves from oil/gas to heat pump, has electric high heat storage heaters installed or where Solar PV is installed.

**Chapter 2. General Requirements and Limitations**

1. **Compliance with PAS 2035 standards**
   1. As from June 2021 the new PAS2035 standards will come into effect. The standards and processes detailed in PAS2035 are required for this project.
   2. The Delivery Organisation must ensure that ALL suppliers contracted or sub-contracted on this project are certified to the required standards, have the appropriate accreditations (PAS2030:2019 / MCS) and memberships (Trust Mark) and are following the procedures laid out in the PAS.
2. **Compliance with PAS 2030:2019 standards**
   1. The Delivery Organisation must ensure that all work is undertaken in accordance with PAS 2030:2019, particularly in terms of the competencies.
   2. For the avoidance of doubt, all installers are required to be certified to PAS2030:2019 standards unless the MCS accreditation is the required and appropriate accreditation for measures being installed. In which case refer to section 2.3 below. It is the responsibility of the Delivery Organisation to ensure that Installers have the required certification for every measure they are installing through this scheme.
   3. For the avoidance of doubt compliance with PAS 2030 does not in itself confer immunity from legal obligations.
   4. For the avoidance of doubt the Building Regulations 2019 shall apply to all works carried out within this agreement. For the avoidance of doubt the Building Regulations Approved Documents[[1]](#footnote-2) shall apply to all works carried out within this agreement.
3. **Compliance with the Micro-generation Certification Scheme (MCS)**
   1. The Micro-generation Certification Scheme (MCS) is an internationally recognised quality assurance scheme, supported by the Department of Business, Energy, and Industrial Strategy. MCS certifies micro generation technologies used to produce electricity and heat from renewable sources. The embedded Quality Management System in MCS equates to that incorporated into PAS 2030 and MCS 023 provides additional requirements for MCS Contractors to demonstrate PAS2030 equivalence for the Installation of Microgeneration technologies. The Delivery Organisation must ensure that all relevant work is undertaken in accordance with MCS.
   2. The MCS integrated methodology offers comparable status to that of PAS 2030, Common Minimum Technical Competence Annexes via the Installers of Micro generation Systems who are certificated in accordance with the MCS Scheme requirements.
   3. The design of the MCS scheme has intentionally been underpinned by the requirements of BS EN 45011:1998 (General requirements for bodies operating product certification systems) to allow a company to demonstrate its compliance with the scheme requirements.
   4. This guidance identifies a number of key “roles” that a company will need to fulfil in order to meet with the requirements of the Scheme. It is important to clarify that this list of key “roles” is not exhaustive. Other positions may exist within a company; however, these roles have been selected to provide guidance on individual competency requirements.
   5. This certification scheme provides an on-going, independent, third party assessment of installers of micro-generation systems and technologies to ensure that the requirements of the appropriate standards are met and maintained.
   6. The scope of this scheme covers the requirements for companies undertaking the supply, design, installation, set to work, commissioning and handover of the following micro-generation technologies:

* Solar domestic hot water
* Solar PV
* Biomass
* Heat Pumps

1. **Statement as to certification and core competencies** 
   1. The tenderer shall provide a statement to the effect that they will be able to deliver the certification and core competencies for those measures that are required at (A) tender submission and (B) within the mobilisation period.
   2. The scheme will be delivered under the PAS2035 certification programme. Delivery Organisations must familiarise themselves with the PAS and ensure that their processes align with the PAS.
   3. All Assessors shall be registered as a Retrofit Assessor and shall be a current member of one of the certification bodies. These are individuals who have the Domestic Energy Assessor Qualification and have undertaken additional training in the PAS2035 process (PAS2035 page 34).
   4. All Retrofit Coordinators shall hold a current qualification as a Retrofit Coordinator and be a current member of Trustmark (PAS2035 page 34).
   5. Retrofit Designers are identified as anyone with the following qualifications:
      * AChartered Architectural Technologist (MCIAT).
      * An architect registered with the Architects Registration Board (ARB).
      * Professional member of the Chartered Institute of Building Services Engineers (CIBSE).
      * Professional member of the Chartered Institute of Building (MCIOB or FCIOB); or
      * Chartered Building Surveyor (MRICS or FRICS).

and preferably should also be qualified as Retrofit Coordinators. Currently there is no certification for a Retrofit Designer (PAS2035 page 35).

* 1. Certification means that Delivery Organisation and Installers will be certified to the requirements of Clauses 1 to 8 of PAS 2030:2019, plus the relevant measure’s certification together with relevant Micro-generation Certification Scheme and Installation Standards.

1. **CE Marking: Specific requirements**
   1. Where a product or system is covered by a harmonised European Standard (hEN) or European Technical Assessment (ETA) it must be CE marked.
2. **CE Marking: Alternative** 
   1. If a product or system does not fall within the scope of a hEN or ETA the product or system must be tested and certified by a UKAS-accredited certification body, or an equivalent certification body with the relevant scope of accreditation for those products or systems.
3. **Certification schemes: Compliance**
   1. Products or systems that are covered by existing Government-backed domestic certification schemes, such as the Micro-generation Certification Scheme, must comply with the requirements of those schemes.
4. **Requirements relating to External Wall Insulation** **Systems** 
   1. External Wall Insulation Systems with a render finish, must be either –
5. CE Marked against the relevant hEN or ETA and subject to separate confirmation by a suitably qualified body that the system characteristics and installation methods enable it to meet UK requirements and regulations; or
6. be the subject of a UKAS-accredited certification body, or an equivalent certification body technical approval and certification against UK requirements and regulations issued to the system supplier
   1. External Wall Insulation Systems excluding render finishes, must be either:
7. CE Marked against the relevant hEN or ETA; or
8. Harmonised Standard and subject to separate confirmation by a suitably qualified body that the system characteristics and installation methods enable it to meet UK requirements and regulations.
9. **Heating: BRE Domestic Heating Design Guidance** 
   1. Heating system design shall comply with the guidance contained in BRE FB 59 – “Design of low-temperature domestic heating systems - A guide for system designers and installers” and all references contained within it.
   2. The heat loss calculation should use a method that complies with the UK National Annex to BS EN 12831:2003[4] and the assumptions under the sub-headings below. The calculation can follow the guidance used in the latest edition of the Chartered Institution of Building Services Engineers’ (CIBSE) Domestic heating design guide, London, 2013.
   3. Specific reference is drawn to the following key criteria in the design process:

* Design room temperatures
* Design ventilation rates
* Design external temperature
  1. The design room temperatures in the above guidance are subordinate to the requirements in paragraph 2.10 below.

1. **Heating: satisfactory heating regime**
   1. The installation must be capable of providing a satisfactory heating regime and the discussion of running costs with the Customer (as per the Customer Journey) must make clear the costs of providing a satisfactory heating regime after the installation:

|  |  |  |
| --- | --- | --- |
|  | **Ordinary households** | **Vulnerable households** |
| **Heating pattern** |  |  |
| Weekdays | 9 hours | 16 hours |
| Weekends | 16 hours | 16 hours |
| **Demand temperature** |  |  |
| Primary living zone | 21 ºC | 23 ºC |
| Secondary living zone | 18 ºC | 18 ºC |

* 1. The following definitions apply:
* **Vulnerable Households** - those who have members aged 60 or over and/or with a long-term sickness or disability.
* **Primary living zone** – means the living room (or another room which the customer treats as the living room)
* **Secondary living zone** – means all other rooms in the Dwelling other than the primary living zone. Where the installation does not extend to all other rooms in the Dwelling then, for the purposes of the agreement, the secondary living zone includes only those rooms to which the installation extends (e.g., into which heating units are placed).

1. **Specification of Measures**
   1. The Measures specified for the property should be appropriate for the property, as identified as an Eligible Measure by the Retrofit Coordinator.
   2. Where multiple Measures are recommended, the Delivery Organisation should endeavour to install all Measures recommended by the Retrofit Coordinator within the grant funding limits.
   3. The purposes of this project is to increase the SAP ratings of properties, with a fabric first approach. It is not intended to be a ‘single’ Measure scheme.
   4. Some Eligible Measures are low cost (for example, pipe insulation, immersion tank insulation, thermostatic radiator valves, timer/programmers) and can only be installed with another substantive measure. A Delivery Organisation Management Fee will not be paid if one of these measures is installed without another substantive Measure.
2. **Cosmetic / Making Good** 
   1. The installation of new measures should leave the dwelling in no worse a condition than it was before. The Delivery Organisation must make good disturbed, damaged, and altered internal finishes and fittings where these are substantially part of the main fabric of the dwelling. Well-designed and thought-out installations will require some remedial work. The installer shall fully plan and review so that the property gains optimum advantage from the recommended energy efficiency measures.
   2. In the case of installing under floor insulation, internal wall insulation or other such intrusive work, the contract will leave all new or repaired junctions between wall and ceilings etc. primed, sealed and painted with two full coats of emulsion ready for any added value decoration the householder may wish to apply. Otherwise, the same principle shall apply. Where high value wall finishes, floor coverings or overlay floor systems exist, clear agreement or reasonable making good to competent trades standards or material and workmanship should be the norm. All works for making good should be discussed with the customer and agreed in writing for the avoidance of doubt and disagreement.
   3. Lifting, repairing, or replacing solid hardwood strip, boarded or parquet flooring or laminate installations does not form part of the agreement, these works should be designed out of the scheme solution. Where it is a rental property and the landlord agrees to a Customer Contribution the works can proceed, or the Delivery Organisation can refer the Customer to appoint their own specialist contractors to attend to these works outside of this agreement.
   4. For the avoidance of doubt: where, as an example, an old boiler in a kitchen is taken down and an allowance for a new heat pump installation, this may require Ancillary Works to leave a functional kitchen. “The Work Package” shall include carrying out agreed making good to leave a functional kitchen that is no worse than it was prior to the work commencing.
3. **Measure size/percentage requirements**
   1. The Delivery Organisation must, for the avoidance of doubt, install 100 per cent of a Measure at a premise unless there are reasonable grounds for not doing so. For clarity, below are some examples of what this means for different measures:

* For loft insulation, 100 per cent of the Measure will be the insulation of the entire loft, including the hatch.
* For glazing or draught proofing of windows and doors in premises, 100 per cent of the Measure will be the treatment of all windows and doors in the premises, rather than the treatment of a single window or door. For internal wall insulation, 100 per cent of the measure will be the insulation of the internal face of all exterior walls in the premises. A hybrid option is available within the pricing schedule where planning conditions or decorative features may render full internal or external wall insulation impossible.
  1. Exceptions to this rule are where:
     + Planning restrictions;
     + Inability to gain access to necessary work areas;
     + lack of consent from the householder (or landlord as appropriate) of the Dwelling; or
     + where there has been a partial installation under a previous scheme, and this would provide 100% coverage[[2]](#footnote-3).
  2. Reasons relating to the cost of installing the measure alone will not be accepted as reasonable grounds for the Delivery Organisation not installing 100 per cent of a measure[[3]](#footnote-4).
  3. Where lack of consent from the householder (or landlord as appropriate) of the Dwelling is the reason why 100 per cent of a Measure cannot be installed, the Delivery Organisation must collect and hold on file a signed declaration stating this.
  4. Where this applies to either internal or external wall insulation, this declaration must clearly state any risks associated with thermal bridging or where the building physics has been altered that can lead to an increase risk of condensation and mould growth in untreated areas.
  5. It is vital that, where less than 100 per cent of a Measure is installed, the Delivery Organisation ensure that the saving attributed to the Measure is reduced accordingly.

1. **Heating: removal and disposal of redundant fittings and waste**
   1. Where an inoperable, obsolete or irreparable heating system is replaced under this scheme, the redundant parts of the old system, and any waste associated with the removal or the installation of a new heating system, are to be removed and properly disposed of by the Delivery Organisation. These parts include the redundant boiler, hot water cylinders or radiators or storage radiators, and any redundant controls, as well as any pipes or cables above the level of the floor or attached to the walls or ceiling.
   2. All redundant pipes, grilles, ducts, or cables below and above floor level, or embedded in the walls or other parts of the fabric of the building (particularly any electrical wires even if disconnected) should be removed.
   3. Redundant cold-water storage tank in the loft space, once drained, disconnected and made safe, can be left in situ.
   4. An allowance does not extend to repairing, replacing, or matching decorations or internal finishes. This condition needs to be explained to the householder, and their signed agreement obtained prior to work starting on site.
   5. The cost of making good the fabric of the Dwelling because of the removal of the redundant parts of the heating system will be included in the price.
   6. An allowance for the cost of removing and disposing of the redundant parts where an inoperable, obsolete, or irreparable heating system is replaced with an alternative heating system under this scheme will be included in the price.
   7. These redundant parts are to be disposed of properly at a site officially designated by the relevant local authority. Where the relevant local authority makes a charge for the disposal of builders’ waste, this charge will be allowed for in the price.
   8. ANY illegal dumping, or fly tipping, of redundant parts of a system or associated waste by a contractor under this agreement is sufficient grounds for being struck off the list of the approved contractors by the Delivery Organisation.
2. **Heating: gas safety** 
   1. Where a gas heating system is being removed and replaced with an alternative, e.g., heat pumps, the removal of the existing gas heating system and pipes must be compliant with current Gas Safety provisions.
   2. Gas Safe registration is a legal requirement for anyone carrying out gas working the United Kingdom, Isle of Man and Guernsey under the Gas Safety (Installation and Use) Regulations 1998 IN17. All works related to gas should be undertaken in strict accordance with the relevant requirements.
3. **Asbestos**
   1. Through the installation or removal of central heating systems, installers may encounter asbestos.
   2. The Delivery Organisation must produce guidance for installers and other contractors working on this program on the procedures regarding asbestos.
   3. The Delivery Organisation must produce procedures relating to the removal of storage heaters containing asbestos and their subsequent safe disposal.
   4. This guidance and the procedures will take into account the Delivery Organisation’s obligations under Health and Safety Legislation and good practice.
4. **Ancillary Measures**
   1. Ancillary measures are not included in the capital spend but are allocated as detailed in the Lot Area values.
   2. Ancillary measures include smoke and carbon monoxide detectors, LED replacement lightbulbs, alterations and installation of new loft hatches, loft clearance and loft platforms, new radiators, and cavity wall extraction.
   3. Ancillary measures will not incur a Delivery Organisation Fee unless a fabric, heating, ventilation, or renewable energy upgrade is installed.
   4. Ancillary measures must be installed to the requirements of building regulations and any reference British Standards.
   5. Energy Performance Certificates and Retrofit Assessor fees are also to be included in Ancillary Measures costs.
5. **Loft ancillary measures**
   1. This paragraph has been included so that loft spaces that would normally be excluded under other funding approaches can be improved.
   2. This agreement will limit the time allocation required to remove stored materials that must be removed to adequately clear an attic, roof space or other void in preparation for the installation of insulation or other associated energy efficiency measures. The pricing approach allows for this by the cubic meter and therefore this will need to be calculated on a Dwelling-by-Dwelling basis within the limitations of the funding.
   3. The Delivery Organisation shall review individual cases with the provision that the work in clearing such a space should be commensurate with the work required to install the energy efficiency measure.
   4. The decision should also reflect the ability of the Customer to clear a loft space themselves to enable installation of any energy efficiency measures. If their ability is impaired and the works would significantly improve the thermal efficiency of the Dwelling, the Delivery Organisation should consider this before dismissing the installation. Where this occurs the Delivery Organisation should clearly state the additional cost of removal on the invoice and supporting documentation.
   5. Where the loft has not been insulated due to the size of the loft hatch, and that is the only limitation to an energy efficiency upgrade, the Delivery Organisation should offer the Customer the opportunity to have the loft hatch increased to enable the installation. All loft hatches must be insulated and have draught-proofing installed.
   6. Where the loft has not been insulated due to lack of loft hatch, if suitable, the Delivery Organisation can provide a new opening and install a loft hatch to enable the installation of loft insulation.
   7. Where the Customer refuses to have loft insulation installed because they wish to use the loft for storage, the Delivery Organisation can offer the following:
      * Owner occupiers – a proprietary loft storage platform can be offered as a package with the loft insulation to allow the installation to go ahead as long as the works can be completed within the grant funding limitations. This must be itemised on the invoice with corresponding materials and labour costs.
      * Landlords – a proprietary loft storage platform can be offered at a cost to the landlord to enable to the energy efficiency works to proceed. This will be itemised on the invoice to the Authority as nil cost, and the Delivery Organisation will seek recompense from the Landlord.
6. **Maintaining Existing Services**
   1. If the supply of existing service is disrupted through the installation of measures (either at the time of installation or subsequent to the installation) due to the existing services having insufficient capacity and robustness to accommodate the additional demands of the new measures installed, then the Delivery Organisation will be responsible for, and liable for the cost, organising and undertaking the works required to reinstate the supply of all services.
7. **Dwelling type and standard sizes**
   1. The Assessor must categorise the Customer’s Dwelling into one of the six Dwelling types (see below) which, in their professional opinion, it most closely resembles. The following table sets out the standard sizes for each of the Dwelling types:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | A | B | C | D | E | F | G | H | I |
| REF | **PROPERTY TYPE** | **Foot- print** | **Floor area (m2)[[4]](#footnote-5)** | **Vol m3** | **Ceiling Height** | **External Wall area** | **Attic/Loft Area** | **Habitable Room** | **Percentage window** | **Solar Thermal** |
|  |  | **m2** | **m2** | **m3** | **m** | **m2** | **m2** | **N** | **%[[5]](#footnote-6)** | **m2** |
| 1 | **Flat** | 70m2 | 70m2 | 150m3 | 2.4 | 29m2 | 70m2 | 3 | 43% (12.5m2) | 2.5m2 & 150l cylinder |
| 2 | **Terraced House** | 45m2 | 90m2 | 300m3 | 2.4 | 90m2 | 45m2 | 5 | 19% (17m2) | 5m2 and 250ml cylinder |
| 3 | **Semi Detached House** | 45m2 | 90m2 | 300m3 | 2.4 | 115m2 | 45m2 | 5 | 19% (22m2) | 5m2 and 250ml cylinder |
| 4 | **Detached House** | 75m2 | 120m2 | 400m3 | 2.4 | 180m2 | 75m2 | 6 | 22.5% (40.5m2) | 5m2 and 250ml cylinder |
| 5 | **Bungalow** | 60m2 | 60m2 | 140m3 | 2.4 | 45m2 | 60m2 | 4 | 42% (19m2) | 5m2 and 250ml cylinder |
| 6 | **Park Home** | 78m2 | 78m2 | 187m3 | 2.4 | 88m2 | 78m2 | 5 | 15% (13m2) | 5m2 and 250ml cylinder |

1. **Minimum Package: heating measures**
   1. The boiler appliance outputs are limited as follows:
   2. Solid biofuel heating product output rating not more than 20 kW. A maximum of 10 radiators will be provided in a Dwelling.
   3. A maximum of 10 heating units will be provided in a Dwelling heated by an electric heating system subject to a load check (where required) by a qualified electrician.
   4. A maximum of one central heating system and one method of heating hot water can be installed in any one Dwelling as part of an installation. Any measure must only provide heat and/or hot water to the Customer’s Dwelling. For the avoidance of doubt, a measure may not provide heat or hot water to an adjacent Dwelling.
2. **Minimum Package: micro-generation measures**
   1. The maximum measure outputs are limited as follows:

* solar thermal output rating not more than 45kW
* solar PV output rating not more than 50kW
* air or ground source heat pump output rating not more than 45kW
  1. The Delivery Organisation may charge private or social rental landlords an additional amount (likely to be in the form of a customer contribution) in any case where a measure with an output rating in excess of this is required by the Customer.
  2. Minimum solar PV system 2.5kW.
  3. Minimum solar Thermal system 150l hot water cylinder and 2.5m2 flat plate surface area, subject to space allowance within the Dwelling.

1. **Minimum Package: fabric measures**
   1. The wall area included within the Minimum Package for cavity, internal and external wall insulation is as per column E of the table of standard Dwelling sizes at paragraph 2.19.
   2. The loft area included within the Minimum Package for loft insulation is per column F of the table of standard Dwelling sizes at paragraph 2.19.
2. **Buildings: Listed and Traditional buildings**
   1. In PAS2035, pathway C refers to Traditional and Listed buildings, and whole house retrofits.
   2. Where works are clearly allocated to pathway C, or the Retrofit Coordinator determines that the works should be identified in pathway C, a Retrofit Designer will need to be employed to design any interventions proposed.
   3. Where a Retrofit Designer is required, it would be pertinent to ensure the contracted architect, architectural technologist, surveyor etc. have suitable knowledge of retrofit to undertake the necessary processes to assess the requirements of the Dwelling and the measures proposed for it.
3. **Buildings: Specific Technical Issues** 
   1. Where the Retrofit Coordinator identifies a building risk that may need further investigation, for example undertaking a structural survey, the Delivery Organisation can appoint the appropriate qualified building professional to provide additional information.
   2. Where an unusual construction type is identified, and may require further bespoke investigation, a Retrofit Designer or Building Surveyor can be appointed to assess how best to treat the Dwelling and provide technical assistance and specification.
   3. Use of specialist professional services is to be allocated to Ancillary Costs and will be reviewed on a Dwelling-by-Dwelling basis.
4. **Buildings: Statutory Compliance** 
   1. The Delivery Organisation must ensure compliance with current building standards, planning permission, listed building consent and conservation area consent as efficiently and effectively as possible.

The Delivery Organisation should aim to obtain necessary consents and resolve technical issues within the following time periods:

|  |  |
| --- | --- |
| Planning Consent, Listed Building Consent or Conservation Area Consent | Twelve working weeks |
| Building Control Approval | Eight working weeks |
| Technical Issues – surveyor assessments, reports and technical proposals. | Four working weeks |
| Non-Traditional Buildings – Retrofit Designer assessments, reports and technical proposals. | Four working weeks |

1. **Buildings: Building Control**
   1. Agreed building standards for properties in England are managed by the Ministry for Housing, Communities and Local Government (MHCLG). These are expressed in Approved Documents – A-R and set out the standards required for compliance. The Approved Documents can be viewed via this link <https://www.gov.uk/government/collections/approved-documents>
   2. Where works are subject to Building Control Consent, an application must be made to the Local Authority prior to works commencing (unless contractors are using the Competent Persons Scheme – see below).
   3. On completion of work that requires a building control certificate, this must be submitted for approval and inspection to the local Building Control service – either Local Authority or Approved Inspector.
   4. A copy of the Building Control Certificate must be provided to the householder/ landlord for their records.
   5. Where an installation does not require Building Control approval, it will still need to meet the minimum requirements of the Building Regulations.
   6. It is the responsibility of the Delivery Organisation to identify when Building Control approval is required and to support the Customer in obtaining it.
2. **Competent Persons Scheme**
   * 1. Competent Person Schemes (CPS) were introduced by the UK Government to allow individuals and enterprises to self-certify that their work complies with the Building Regulations as an alternative to submitting a building notice or using an approved inspector.

A Competent Person must be registered with a scheme that has been approved by MHCLG (Ministry of Housing, Communities & Local Government). Schemes authorised by the MHCLG are listed on its website at [http://www.communities.gov.uk](http://www.communities.gov.uk/planningandbuilding/buildingregulations/competentpersonsschemes/existingcompetentperson/)

* 1. Approved Certifier of Design Schemes is in place for building structure and the energy section of both domestic buildings.
  2. Approved Certifier of Construction Schemes are in place for electrical work and drainage, heating and plumbing work including low carbon heating and renewable technologies. A list of the Competent Person Scheme Certifiers can be found [Competent person scheme - current schemes and how schemes are authorised - GOV.UK (www.gov.uk)](https://www.gov.uk/guidance/competent-person-scheme-current-schemes-and-how-schemes-are-authorised#current-schemes)
  3. The individuals must be employed by a firm, public body or other organisation which must be an Approved Body under the scheme[[6]](#footnote-7). Both individuals and firms, public bodies or such organisations must meet and maintain a number of eligibility criteria to operate as Approved Certifiers / Approved Bodies.

**Chapter 3. Specification of Measures**

**3.1 Ancillary Measures**

Measures listed under Ancillary Measures are not Capital Expenditure for the purposes of this project and must form part of the 10.5% allocation. Measures identified in this section are to be installed only in conjunction with another listed Measure from the following sections B, C, D and MIS. A Delivery Organisation Fee will not be payable if an Ancillary Measure is installed without a more substantive measure at the same time. However, the Measure being installed does not need to be related to the Ancillary Measures listed below. For example, a loft hatch may be required for loft insulation to be installed, however the Dwelling may also benefit from a smoke detector and CO detector if there is an existing heating system that may provide increased risk to the residents.

**Retrofit Assessors / EPCs**

A pre and post installation is required on each property. If the current EPC is less than 2 years old and is a correct assessment of the property, (no other improvements or substantial changes have been made since the issuance of the EPC) it may be used in place of undertaking a new EPC prior to any works commencing. If the existing EPC is older than two years, or is not an accurate assessment of the property, either because other works have subsequently taken place or it was an inaccurate assessment at the time the assessment took place, this is not allowable.

An EPC must be undertaken after any measure improvements have been installed under this scheme.

**A1 - Smoke Detectors**

The Approved Document B: Fire Safety states that every home should have a smoke detection alarm. The general provisions are highlighted in Section 1 – General Provision. Where the building may house multiple dwelling houses, either as purpose built or converted properties, these should be compliant with the relevant sections within the Approved Document. Where properties are rented the Delivery Organisation is referred to The Smoke and Carbon Monoxide Alarm (England) Regulations 2015 to ensure compliance.

**A2 - Carbon Monoxide (CO) Detector**

Carbon Monoxide detectors should be installed in each home where there is a combustible appliance – whether that appliance has been installed during under this funding or previously. This is particularly important where improvements are being made to the fabric of the building that may increase the airtightness. For example, replacement windows and doors, wall and floor insulation; reducing background ventilation will impact the ingress and egress of fresh and stale air.

Approved Document J provides minimum standards for air supply for combustible appliances, as well as detailing where CO detectors should be located.

For clarity whilst the agreement does not allow the installation of new fossil fuel heating systems, where works are taking place to improve a property without changing a fossil fuel heating system, if no Carbon Monoxide detector is installed this is allowable through this agreement.

**A3 – LED lightbulbs**

Approved Document L1b provides minimum standards for improving fixed light fittings – ‘controlled Services’.

The Domestic Building Services Compliance Guide: 2013 edition incorporating 2018 amendments provides guidance on replacing light bulbs in fixed appliances – Section 12: Lighting. In particular, the ‘lamps with a luminous efficacy greater than 45 lamp lumens per circuit-watt and a total output greater than 400 lamp lumens.

**A4-A5 – Loft Hatch new / alteration**

Any alterations to a property must be carried out in line with the Building Regulations Approved Documents. Approved document A deals with structural issues. Further guidance on insulating loft hatches can be found in the PAS under the Annex's A-G, specifically B9.

It is assumed a new hatch or alteration to increase the size of the hatch will have a finished size of 750 x 550mm.

**A6 – Loft Clearance**

Loft clearance is only allowable on properties that are having loft insulation installed and where the customer meets the vulnerability criteria laid out in paragraph 2.10.2 which would otherwise make it impossible for them to clear the loft themselves.

There is no standard for removal of items from a loft, however the Delivery Organisation is responsible for ensuring any health and safety requirements are followed to protect the welfare of householder and operative.

**A7 – Loft platforms**

Proprietary loft platforms are readily available, lifting the storage space clear of the insulated material to ensure that the integrity of the insulation is maintained. A loft platform can only be installed alongside loft insulation and will be the deciding factor for the customer between signing up to have loft insulation or maintaining their status quo with no or minimal (100mm or less) insulation.

If there is any doubt, the Delivery Organisation must ensure that the roof joists are sufficiently robust to take any potential loadings of the storage platform and how this is transferred through to the roof joists. Approved Document A details loading compliance requirements.

**A8 – Cavity Wall Extraction**

Cavity Wall Extraction is listed as an ancillary measure as it does not improve the SAP rating of the property. However, it is recognised that failed cavity wall insulation can reduce the performance of an existing wall and therefore extraction is allowable but only where the customer either agrees to a more appropriately specified replacement or where other fabric measure improvements at least retain the SAP rating.

The Delivery Organisation must provide a Chartered Surveyors report that states that cavity wall extraction is the required course of action prior to any works being undertaken and this will be provided to the Authority with the submission of invoicing data.

For pricing the assumption is a 75mm cavity.

**C5 – Additional Radiators**

Additional radiators may be required to improve the property, for example if only 2 habitable rooms in a property with 4 habitable rooms have radiators and the other rooms are at risk of condensation and black mould growth. Otherwise, this would only apply to new heat pump installations.

Please refer to PAS2030 section C5 for compliance details.

It is assumed for the purposes of pricing for an additional radiator that it is sized as 400 x 1200mm.

**Professional Services**

For the purposes of this contract Professional Services refer to any building professional that may need to be consulted in connection with enabling a Measure to be installed. For example, but not limited to, this could include: Structural Engineer, Architect, Architectural Technologist, Building Surveyor.

**Asbestos Surveys**

Where the Assessor, Retrofit Coordinator, Surveyor or Installer believes there is a risk of the Dwelling containing Asbestos, or contains Asbestos in the location where the Measure is likely to be installed, an Asbestos Survey should be undertaken before any installation works take place.

**3.2 Building Fabric Measures (PAS 2030 Annex B)**

**The references in this section refer to the equivalent in the PAS2030: 2019 documentation. Everything within the corresponding guidance document applies. Measure specific information is also provided in the referenced tables. Some sections will make specific reference to PAS2035 where appropriate for further information.**

**B1 Measure BFM.1 Cavity wall insulation including that installed in party walls**

For measure specific requirements for cavity wall insulation (BFM.1) refer to **Table B1** of PAS2030:2019 Annexes A-G.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

The Delivery Organisation shall ensure that a guarantee is provided to the householder, from the Cavity Insulation Guarantee Agency (CIGA) or equal and approved scheme.

Trust Mark Registered contractors are required to offer their customers guarantees for products and workmanship. As this is a government funded project, the rules pertaining to ECO funded projects also apply. This means that contractors must provide customers with guarantees in line with the requirements under ECO3.

It is mandatory under this scheme to provide a 25-year guarantee for all the measures listed below:

* External wall insulation
* Internal wall insulation
* Cavity wall insulation
* Hybrid wall insulation
* Park Home insulation
* Underfloor insulation

For more information on appropriate guarantees [www.trustmark.org.uk/ourservices/Financial Protection (trustmark.org.uk)](https://www.trustmark.org.uk/ourservices/financial-protection)

Due consideration must be taken by the Retrofit Coordinator whether the property is likely to be exposed to severe or very severe exposure or wind driven rain and that the property could be detrimentally affected by the installation of CWI, or the type of insulation used to treat cavities.

The attached pdf map outlines the four weather zones for the UK, much of the South West Energy Hub area falls into zones 3 and 4, experiencing some degree of wind driven rain.

This map is provided and reproduced here from the joint BRE / HMSO publication BR262 “Thermal insulation – Avoiding risks”, 1994.



**Cavity Wall – Hard to Treat Cavities**

For the avoidance of doubt the undernoted cavity wall types are to be included with the Scheme.

* **Hard to Treat Cavity** is a cavity wall which a Chartered Building Surveyor has surveyed, assessed and reported on to determine if is:

1. Is not suitable to insulate with standard insulation materials or techniques
2. Is not suitable to insulate without substantial remedial works
3. Is an uneven cavity formed in walls constructed of natural stone

Please refer to Chapter 5 of the Ofgem ECO guidance for suppliers on the Ofgem website for further information on the definition of, and evidence requirements for, hard-to-treat cavities in ECO.

A Chartered RICS Surveyor is required to confirm the status of the hard-to-treat property.

* **A cavity found in homes of prefabricated concrete construction** or with metal frame (steel frame cavity) cavity walls.
* **An uneven cavity** formed in walls constructed of natural stone or from natural stone outer leaf and block or brick inner leaf.
* **A cavity less than 50mm wide.**
* **Cavity construction, to a dwelling, in buildings of 3 or more storeys.**

**Note:**

“As a guideline, remedial works should be considered ‘substantial’ where they involve an additional four hours work or more per premises treated. The determination as to whether the remedial works are substantial can be made on a per premises basis, e.g., where all four walls of a property require remedial works, the aggregated hours of the remedial works for all four walls must be four hours or more (and not 16 hours). However, each wall of a property must require remedial works for that particular wall to be considered hard to treat under this category.”

The PAS 2030 covers the preparatory technical and implementation processes required. Contractors should set out how the following issues would be approached and addressed before installing HTT Cavity Wall Insulation.

Form of construction and site conditions;

* Condition of the cavity;
* Extent of cavity to be filled;
* Nature and condition of the outer leaf;
* Nature and condition of the inner leaf;
* What extent of remedial works need to be done;
* Services within the cavity;
* Ventilation through the cavity

**Cavity Wall Insulation - Party Walls**

The same standards apply to the application of party wall insulation and are outlined in B1 of the PAS2030:2019.

The Delivery Organisation is responsible for obtaining the necessary party wall agreements for the properties where the installation is between them.

Guarantees apply as above.

**B2 Measure BFM.2 Draught proofing**

For measure-specific requirements for draught proofing (BFM.2) refer to **Table B2-l1** PAS2030:2019 Annexes A-G.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

**B3 Measure BFM.3 – Energy efficient glazing and doors including secondary glazing**

For measure-specific requirements for energy efficient glazing and doors (BFM.3) refer to **Table B3** of PAS2030:2019 Annexes A-G.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

New Double-glazed windows can only be installed when replacing existing single glazed windows. New thermal doors can replace existing wooden doors where it would be beneficial to do so in terms of the conservation of fuel and power.

The agreement assumes minimum specification of upvc double-glazed casement window frames with at least one opening section. To achieve good airtightness and minimise heat loss and draughts, new windows should be appropriately sealed between frame and wall.

For pricing purposes, the documents assume a standard door will fit an aperture of 2100mm ht x 950mm width.

Fixed frame secondary glazing is an allowable solution where Listed Building and Conservation Area restrictions would otherwise restrict upgrades. All proposed upgrades in Conservation Area and Listed Buildings require the specific approvals prior to an installation.

Secondary glazing should not include “removable acrylic/polythene sheets”. The system should be fitted to the existing frame or aperture and allow free access to the existing door or window for cleaning and egress from the building. Secondary system should at least result in the SAP default value for this type of improvement i.e., combined glazing units = 2.4 W/m2K.

**B4 Measure BFM.4 – External wall insulation**

For measure-specific requirements for external wall insulation (BFM.4) refer to **Table B4** of PAS2030:2019 Annexes A-G.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

Approved Document Part L1B encourages a target u value improvement to **0.30 W/m2K**. Please note this is a target, and where appropriate, and in the case of certain traditional buildings, a lower performance will be acceptable (refer to ‘retained thermal elements’ for further details).

This agreement requires verification that any proposed scheme, providing a guarantee, shall offer specification, installation, and functional compliance when during cold and or wet periods of the year. Such capability must be achieved by reference to a BBA Agrément Certificate, or equal certification.

The Delivery Organisation must provide a guarantee to the householder, from the Solid Wall Insulation Guarantee Agency (SWIGA) or equal and approved scheme.

Thermal bridges are limited at any junctions and should achieve a minimum fRsi of 0.75 as required by PAS2035.

Trust Mark Registered contractors are required to offer their customers guarantees for products and workmanship. As this is a government funded project, the rules pertaining to ECO funded projects also apply. This means that contractors must provide customers with guarantees in line with the requirements under ECO3.

It is mandatory under this scheme to provide a 25-year guarantee for all the measures listed below:

* External wall insulation
* Internal wall insulation
* Cavity wall insulation
* Hybrid wall insulation
* Park Home insulation
* Underfloor insulation

For more information on appropriate guarantees [www.trustmark.org.uk/ourservices/Financial Protection (trustmark.org.uk)](https://www.trustmark.org.uk/ourservices/financial-protection)

The Delivery Organisation and/or Retrofit Coordinator must undertake such interim inspections during the progress of the works as will record, manage, and control the works in accordance with the technical specifications and, make readily available when requested such record photographs and site inspection records as will verify that the works are being executed in accordance with this contract.

**B5 Measure BFM.5 Flat roof insulation**

For measure-specific requirements for flat roof insulation (BFM.5) refer to **Table B5** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

For pricing purposes, a single Unit item refers to a 3m x 3m roof.

**B6 Measure BFM.6 Floor insulation**

For measure-specific requirements for floor insulation (BFM.6) refer to **Table B6** of PAS2030:2019 Annexes A-G.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

The installer should also adhere to the guidance and process set out in Retrofit Insulation for suspended timber floors: best practice[[7]](#footnote-8).

**Additional Contract Requirements**

In those properties constructed or created before 1992 the installation of under floor insulation of suspended timber floors should be to a standard as approved by the Local Authority. Those created or built after this date should satisfy the targeted U-value.

Other floor types that should be considered may occur in flats or in traditional buildings e.g., fully exposed floors and floors over unheated spaces. Manual adjustment of the rdSAP EPC may be required to reflect specific circumstances.

Trust Mark Registered contractors are required to offer their customers guarantees for products and workmanship. As this is a government funded project, the rules pertaining to ECO funded projects also apply. This means that contractors must provide customers with guarantees in line with the requirements under ECO3.

It is mandatory under this scheme to provide a 25-year guarantee for all the measures listed below:

* External wall insulation
* Internal wall insulation
* Cavity wall insulation
* Hybrid wall insulation
* Park Home insulation
* Underfloor insulation

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**B7 Measure BFM 7 Hybrid wall insulation**

For measure-specific requirements for hybrid wall insulation (BFM.7) refer to **Table B7** of PAS2030:2019 Annexes A-G.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

Hybrid wall insulation should be considered in the following circumstances to achieve 100% coverage of the exterior walls:

* Where planning restricts the use of external wall insulation on certain elevations
* Where external decorative finishes would impact the ability of the application to achieve a good and consistent finish, or would be detrimental to the value of the property if removed
* To reduce the risk of using internal wall insulation in high moisture areas of the house where external wall insulation is easier
* Where the construction of the property combines solid and cavity walls.
* Thermal bridges are limited at any junctions and should achieve a minimum fRsi of 0.75 as required by PAS2035.

**Where external wall insulation is to be considered the Delivery Organisation must ensure there is no local requirement to submit a planning application prior to installation.**

Trust Mark Registered contractors are required to offer their customers guarantees for products and workmanship. As this is a government funded project, the rules pertaining to ECO funded projects also apply. This means that contractors must provide customers with guarantees in line with the requirements under ECO3.

It is mandatory under this scheme to provide a 25-year guarantee for all the measures listed below:

* External wall insulation
* Internal wall insulation
* Cavity wall insulation
* Hybrid wall insulation
* Park Home insulation
* Underfloor insulation

For more information on appropriate guarantees [www.trustmark.org.uk/ourservices/Financial Protection (trustmark.org.uk)](https://www.trustmark.org.uk/ourservices/financial-protection)

**B8 Measure BFM.8 Internal wall insulation**

For measure-specific requirements for internal wall insulation (BFM.8) refer to **Table B8** of PAS2030:2019 Annexes A-G.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

The Delivery Organisation shall ensure that the following issues are given due consideration when installing IWI:

1. **Internal wall moisture issues:** The internal wall surface must be free of all moisture before it can be insulated internally; this includes damp issues such as those caused by inadequate ventilation or rain penetration.
2. **External wall moisture issues:** If a property suffers from problems such as rising damp or rain penetration, these must be dealt with before internal wall insulation is applied.
3. **Ventilation:** Increasing the airtightness through solid wall insulation can increase the risk of condensation unless adequate ventilation is provided. PAS2035 specifically states a need to assess whether there is adequate ventilation within the property – refer to Annex C.
4. **Condensation:** To prevent condensation issues, it may be necessary to ensure that the same U-value is achieved throughout the property, particularly at points where timber joints meet external walls as the build-up of moisture could cause wet rot.
5. Ensuring that there is no food value in the materials used to avoid infestation of insects or vermin.
6. Thermal bridges are limited at any junctions and should achieve a minimum fRsi of 0.75 as required by PAS2035.

The Delivery Organisation shall support the Retrofit Coordinator/Designers approach for either a vapour open or vapour closed approach to internal wall insulation, ensuring that the specification of insulation material is appropriate in either approach.

Trust Mark Registered contractors are required to offer their customers guarantees for products and workmanship. As this is a government funded project, the rules pertaining to ECO funded projects also apply. This means that contractors must provide customers with guarantees in line with the requirements under ECO3.

It is mandatory under this scheme to provide a 25-year guarantee for all the measures listed below:

* External wall insulation
* Internal wall insulation
* Cavity wall insulation
* Hybrid wall insulation
* Park Home insulation
* Underfloor insulation

For more information on appropriate guarantees [www.trustmark.org.uk/ourservices/Financial Protection (trustmark.org.uk)](https://www.trustmark.org.uk/ourservices/financial-protection)

**B9 Measure BFM.9 Loft insulation**

For measure specific requirements for loft insulation (BFM.9) refer to **Table B9** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

The recommended depth for loft insulation is 270 millimeters for glass wool, 250 millimeters for rock wool or 220 millimeters for cellulose.

The pricing specification asks for two rates per property that are intended to represent the main solutions to “Top-Up” and “Virgin” loft insulation measures to create the optimum 270 mm total thickness of insulation.

1. 170 mm of additional loft insulation.
2. 270 mm of all new loft insulation.

Issues which must be accommodated for in relation to loft insulation:

* Storage (clearance of stored items) – Refer to 2.15 for further information
* Creating or enlarging access openings – Refer to 2.15 for further information.

**B10 Measure BFM.10 Pitched roof insulation**

For measure-specific requirements for pitched roof insulation (BFM.10) refer to **Table B10** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

For pricing purposes the assumption is that upgraded lofts would be able to achieve the improvements to existing buildings u value of 0.25.

**B13 Measure BFM.13 Insulation of Existing Park Homes**

For measure-specific requirements for insulation of existing park homes insulation (BFM.13) refer to **Table B13** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

Trust Mark Registered contractors are required to offer their customers guarantees for products and workmanship. As this is a government funded project, the rules pertaining to ECO funded projects also apply. This means that contractors must provide customers with guarantees in line with the requirements under ECO3.

It is mandatory under this scheme to provide a 25-year guarantee for all the measures listed below:

* External wall insulation
* Internal wall insulation
* Cavity wall insulation
* Hybrid wall insulation
* Park Home insulation
* Underfloor insulation

For more information on appropriate guarantees [www.trustmark.org.uk/ourservices/Financial Protection (trustmark.org.uk)](https://www.trustmark.org.uk/ourservices/financial-protection)

**3.3 Building Services Mechanical**

**The references in this section refer to the equivalent in the PAS2030: 2019 documentation. Everything within the corresponding guidance document applies. Measure specific information is also provided in the referenced tables. Some sections will make specific reference to PAS2035 where appropriate for further information.**

**C4 Measure BSM.4: Heating system insulation (ducting, pipes and cylinders)**

For measure-specific requirements for insulation of existing park homes insulation (BSM.4) refer to **Table C4** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

For the circulation system, where the pipework/ducting traverses out with the heated envelope of the dwelling – this should include where pipework is located under uninsulated floors. This is always worth doing on primary pipework between the boiler and the hot water storage tank. It will of course be identified in the full technical system design but is noted here for completeness.

**C5 Measure BSM.5: Heating, hot water system, air conditioning or ventilation controls and components**

For Measure-specific requirements for heating system insulation (including ducting, pipes and cylinders) (BSM.5) refer to **Table C5** of PAS2030:2019 Annexes A-G.

**BSM 5.1 Covers Heating and hot water systems controls**

**BSM 5.2 Covers Air conditioning controls**

**BSM 5.3 Covers Ventilation controls**

**BSM 5.4 Covers low energy circulator pumps**

**BSM 5.5 Covers low temperature radiators and fan convectors**

**Additional Contract Requirements**

For the avoidance of doubt, this agreement does not allow for the installation of new or replacement gas or other fossil fuel heating systems.

The C5 reference provides guidance and technical standards for other items included in this contract and its inclusion is on that basis.

**C6 Measure BSM.6 Hot water systems**

For measure-specific requirements for Heating, hot water system, air conditioning or ventilation controls and components (BSM.6) refer to **Table C6** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

It is assumed that in most instances hot water systems will only be installed as part of a solar thermal or heat pump installation. The MCS provides guidance on what is appropriate for each measure. The PAS references may also be relevant.

There is scope within the contract to install a new hot water system where there is currently no provision and neither a heat pump or solar thermal system is being installed. In these instances the Delivery Organisation will approach the Authority directly to seek consent prior to installation. In seeking approval, the Delivery Organisation will provide sufficient information as to why a new hot water system is required and this cannot or should not be provided via solar thermal or heat pump.

**C7 Measure BSM.7 Mechanical Ventilation with Heat Recovery**

For measure-specific requirements for hot water systems (BSM.7) refer to **Table C7** of PAS2030:2019 Annexes A-G.

The Domestic Ventilation Compliance Guide provides specific advice on ventilation within domestic dwellings and provides guidance on good installation practice and procedures for inspection of d-MEV ventilation systems.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

**C10 Measure BSM.10 Water efficient taps and Showers**

For measure-specific requirements for hot water systems (BSM.7) refer to **Table C10** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

This reference should be referred to where new hot water systems are installed.

Where a new heat pump or solar thermal installation will be providing hot water, the cost of taps and shower furniture should be included in the price of the system installation.

In the exceptional circumstances where a new hot water system is installed that is not attached to a solar thermal or heat pump system, the Delivery Organisation will provide a price for any kitchen or bathroom taps and showers being specified. This will be presented to the Authority for approval prior to any installation taking place.

**V1 – Decentralised Mechanical Extract Ventilation (d-MEV) single unit and multi-room systems**

Approved Document F: Ventilation (2010 incorporating 2010 and 2013 amendments) sets out the minimum standards for ventilation in buildings.

The Domestic Ventilation Compliance Guide provides specific advice on ventilation within domestic dwellings and provides guidance on good installation practice and procedures for inspection of d-MEV ventilation systems.

Adequate ventilation forms the basis of the PAS2035 certification. Annex C provides the requirements for the provision of adequate ventilation.

**Additional Contract Requirements**

Inadequate controlled ventilation can lead to severe condensation issues encouraging the growth of mould; this can exacerbate existing health conditions and bring on new conditions. All properties undergoing assessment under PAS2035 must have a ventilation assessment and strategy put in place. Where building fabric improvements form the basis of improvements under this contract, the ventilation strategy is paramount. Issues highlighted in the ventilation assessment must be addressed with the most appropriate strategy available.

Any requirement to improve the ventilation rates to the building as assessed in the PAS2035 Ventilation Strategy must be installed. Should the Customer not choose to have the improved ventilation then no fabric measures should be undertaken that would adversely affect the indoor air quality by reducing air infiltration (draughts).

A ventilation strategy must be made available to the Authority on request and installations must reflect the findings of that strategy. For the avoidance of doubt, where this does not occur, this will be considered a non-compliant installation, triggering an independent inspection and a requirement to implement the recommendations of any inspection.

It will also impact the Quality: Right first time KPI.

**3.4 Building Services Electrical (PAS 2030: Annex D)**

**The references in this section refer to the equivalent in the PAS2030: 2019 documentation. Everything within the corresponding guidance document applies. Measure specific information is also provided in the referenced tables. Some sections will make specific reference to PAS2035 where appropriate for further information.**

**D1 Measure BSE.1 Electric storage heaters (including electric warm air heating units that incorporate heat storage)**

For measure-specific requirements for Electric storage heaters (BSE.1) refer to **Table D1** of PAS2030:2019 Annexes A-G.

**Additional Contract Requirements**

* **3.5 Renewable Energy**

Installers of low carbon and renewable energy will need to be compliant with all appropriate MCS standards including but not exclusive to:

**MCS 001-1 – The MCS Contractor Standard – Part 1: Requirements for MCS Contractors**

**MCS 001-2 – The MCS Contractor Standard – Part 2: The Certification Process**

**MCS 023 – Additional requirements for MCS Contractors to demonstrate PAS2030 equivalence for the installation of Microgeneration technologies.**

* **Solar thermal - Microgeneration Installation Standard: - MIS 3001 – Requirements for MCS contractors undertaking the supply, design, installation, set to work, commissioning and handover of solar heating microgeneration systems.**
* **C6 Measure BSM.6 Hot water systems**

**Additional Contract Requirements**

Multiple MCS certified solar collectors may be used in a single installation, but the individual output for a single appliance shall not exceed 45 kWth as defined by the MCS product certification scheme document MCS 004.

When pricing for Solar installations, the Delivery Organisation must ensure a focus on quality of components over lowest price to ensure on-going maintenance and replacement component costs are minimised.

The contract assumes a minimum sized system of 1.5kW and 150l hot water twin coil tank. Solar thermal systems must include for all elements required in ensuring an appropriate hot water system, including any pipework, can be provided for the occupants.

This programme is geared at low-income households.

A product and system guarantee will be provided for all renewable energy installations compliant with MCS.

**Solar PV - Microgeneration Installation Standard: MIS 3002**

Solar PV Microgeneration systems shall be designed and installed in accordance with the MCS Standards Document: The Solar PV Standard (Installation) MIS 3002 Issue 4.

**Additional Contract Requirements**

When pricing for Solar PV installations, the Delivery Organisation must ensure a focus on quality of components over lowest price to ensure on-going maintenance and replacement component costs are minimised.

This programme is geared at low-income households.

The minimum specification assumes a 2.4kW system can fit on most roofs, though understand that local design and conditions may vary. Additional modules can be provided where the roof and grant allow increased size installations.

A product and system guarantee will be provided for all renewable energy installations compliant with MCS.

**Biomass boilers - Microgeneration Installation Standard: MIS 3004 - Issue 4.2**

**MIS 3004 Requirements for MCS Contractors undertaking the supply, design, installation, set to work, commissioning and handover of solid biofuel heating systems**

**Additional Contract Requirements**

Multiple MCS certified solid biofuel heating products may be used in a single installation, but the individual output for a single product shall not exceed 45 kWth as defined by the MCS Product Certification Scheme document MCS 008. All products must meet the requirements of MCS 008. For a summary of product categories see MCS 008.

Biomass boilers are not advised in areas already designated as low emission zones, or where they are likely to be designated in the future. The expectation is that biomass boilers would only be specified where properties are off-grid and likely in a remote location and have sufficient storage space for bulk delivery of fuels, and of a housing type that would not be better suited to a heat pump as aligned with the likely direction of future policy support[[8]](#footnote-9).

Biomass boiler proposals will require a property specific report to be shared with the Authority prior to any approvals for installation to proceed.

The provisions of this contracts limit the installation of Biomass boilers to ensure they can satisfy the following:

* Installations will be sustainable for residents to run – this includes potential maintenance and cost of fuels
* Biomass fuel used by RHI participants must meet a lifecycle greenhouse gas emissions target of 34.8g CO2 equivalent per MJ of heat produced, or 60% GHG savings against the EU fossil fuel average
* Are not going to contribute to air quality issues
* Any biofuels intended for use in the boiler meet the Land Criteria[[9]](#footnote-10)

When pricing for Biomass boiler installations, the Delivery Organisation must ensure a focus on quality of components over lowest price to ensure on-going maintenance and replacement component costs are minimised.

This programme is geared at low-income households.

A product and system guarantee will be provided for all renewable energy installations compliant with MCS.

**Ground and air source heat pumps - Microgeneration Installation Standard: MIS 3005 - Issue 5.0**

**MCS 020 – MCS Planning Standards for permitted development installations of wind turbines and air source heat pumps on domestic properties**

Contractors should also be aware of [Domestic Heat Pumps: A Best Practice Guide.](https://mcscertified.com/wp-content/uploads/2020/07/Heat-Pump-Guide.pdf)

C3 of the PAS2030:2019 Installer guidance on low temperature heating systems also apply to heat pumps.

**Additional Contract Requirements**

For the purposes of this MCS Installation Standard, microgeneration heat pump systems are defined as those having a design output that does not exceed 45kW thermal. Any property where the required heat pump would exceed this requires design report for sign-off prior to any installation.

Multiple MCS certified heat pumps may be used in a single installation if there are grid constraints or it is required by 3 phase electrical supply, but the individual output for a single heat pump shall not exceed 45 kWth, as defined by the MCS Product Certification scheme document MCS 007.

All heat pump designs must provide specification of domestic hot water tank, pipe, and radiators, this is particularly important if replacing a gas/oil central heating system with a heat pump as undersized radiators or in appropriate pipework will limit the effectiveness of the system.

When pricing for heat pumps the Delivery Organisation must ensure a focus on quality of components over lowest price to ensure on-going maintenance and replacement component costs are minimised.

This programme is geared at low-income households.

A product and system guarantee will be provided for all renewable energy installations compliant with MCS.

1. https://www.gov.uk/government/collections/approved-documents [↑](#footnote-ref-2)
2. Please refer to the section on combining funding 4.0 Document 4 – Specification Section A – Introduction for how this would work with partial installations under other public funding mechanisms. The Delivery Organisation must ensure that they are compliant with these criteria. [↑](#footnote-ref-3)
3. The allowance for an average spend of £10,000 or £5,000 with customer contribution on rental properties means that in some instances a full installation that exceeds the maximum will be possible. The Delivery Organisation will manage this within the specified criteria. [↑](#footnote-ref-4)
4. Assumes two storey building [↑](#footnote-ref-5)
5. This is based on the amount of window expressed as a percentage of the wall area. [↑](#footnote-ref-6)
6. [Competent Person Schemes Consultation - Authorisation Criteria (publishing.service.gov.uk)](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/512860/CPS_Conditions_final__April_2016.pdf) [↑](#footnote-ref-7)
7. https://www.gov.uk/government/publications/insulating-suspended-timber-floors-best-practice [↑](#footnote-ref-8)
8. [Future support for low carbon heat - GOV.UK (www.gov.uk)](https://www.gov.uk/government/consultations/future-support-for-low-carbon-heat) [↑](#footnote-ref-9)
9. [Wood Heat Association guidance on biomass sustainability](http://www.woodheatassociation.org.uk/why-choose-biomass-heat/industry-regulations/) [↑](#footnote-ref-10)