
PAS 2035 Retrofit Coordinator Scheme Requirements

2022 Edition

Document Control

Change History

Version Number	Author	Description of Change	Date
1.0	R Cartwright	Initial version for formal issue	7 th September 2020
1.1	R Cartwright	Various revisions, including: <ul style="list-style-type: none"> • Working Group membership • Additional qualifications matrix • Additional surveillance/auditing for manual data warehouse lodgements 	Nov 2020
1.2	R Cartwright	Inclusion of the following to align with Assessor Scheme requirements document: <ul style="list-style-type: none"> • Failed audit process • Suspension/Strike-off process • 	

Approval History

Name	Role	Organisations	Date	Version
R Cartwright	Retrofit Coordinator Scheme Working Group Chair		07/09/2020	1.0
R Cartwright	Retrofit Coordinator Scheme Working Group Chair		15/01/2021	1.1

Distribution List

Name	Organisation	Version	Date	Reason for issue
Retrofit Coordinator Scheme Working Group	Various	1.0	07/09/2020	A
Retrofit Coordinator Scheme Working Group	Various	1.1	14/01/2021	A

Code	Reason for Issue:
-	Not issued.

I	For information only – no action required.
R	For review – comments to be directed to the Project Manager.
S	For sign-off approval.
A	Approved for issue (electronic approval via e-mail or meeting minutes)

This document outlines the Scheme Requirements for TrustMark Approved Retrofit Coordinator Schemes to register Retrofit Coordinators to meet the requirements of PAS 2035:2019.

This document has been written by the Retrofit Coordinator Scheme Working Group for the use of all TrustMark applicant or approved Retrofit Coordinator Scheme Providers whether or not they are a member of the Working Group.

Ownership

This document is managed on behalf of Scheme Providers by the PAS 2035 Retrofit Coordinator Working Group.

The working group (WG) will:

- review the Scheme Requirements document and consider any updates that may be required, and
- be made up of all participating Retrofit Coordinator Schemes, TrustMark representatives and other industry representatives as required, and will have a rotating nominated chair.

Membership of the WG consists of:

- TrustMark
- All TrustMark approved scheme providers
- Aspirational scheme providers for a time period agreed by the WG
- Other SMEs the WG deems relevant

Oversight

The working group will provide management oversight for the Scheme Requirements document. TrustMark will be stakeholders in the overseeing of the document.

TrustMark is the 'key' stakeholder for the Scheme Requirements document and have the 'Golden Vote'. This means that TrustMark can stop any proposed amendment they deem inappropriate or unacceptable and with justification.

As key stakeholders TrustMark are invited to all working group meetings and will be party to all correspondence. All proposed changes to the Scheme Requirements will be clearly flagged and highlighted to TrustMark. The working group will apply version control and effective go live dates to the document; this is to ensure that all stakeholders are always aware of the latest version.

Definitions

A **Retrofit Coordinator** is an individual who project manages a retrofit project on a dwelling and in doing so oversees its assessment, the identification and specification and evaluation of energy measures for installation and their subsequent monitoring and evaluation. For any PAS 2035 project, whether or not that results in the installation of a measure, the Retrofit Coordinator will be personally responsible for the Risk Assessment and creation of a Medium-Term Improvement Plan.

Authority to Operate a Retrofit Coordinator Scheme

All Scheme Providers will be Bodies approved by TrustMark for the Evaluation, Surveillance and Registration of Retrofit Coordinators, and the application of the requirements of this document in so doing.

As Scheme Providers are required to be approved by TrustMark and are independently audited it is considered that there are adequate safeguards already in place to be assured that Scheme Providers have sufficient controls for Financial and Operational stability. Other aspects of the scheme management system will need to be extended;

Management systems

- To be extended to include the requirements of this Scheme Document

Insurance

- Self-insurance is not to be allowed, only insurance through a regulated insurer is acceptable. A defined minimum level of cover is £250k PI & PL per property, or as required by the client
- Changes in insurance circumstances of a Retrofit Coordinator are to be notified to their Scheme Provider
- Full details of insurance cover will be recorded as a part of the audit process

Record retention

- Retrofit Coordinators shall retain all records as specified by PAS 2035, for the durations specified in the PAS and in compliance with Data Protection legislation. Copies of all documents will be provided to the Client as specified by PAS 2035.
- TrustMark mandates the minimum information and records to be lodged in the Data Warehouse by a Retrofit Coordinator against a Retrofit Project, as reviewed from time to time. Schemes must have processes in place to ensure that members meet these requirements.
- Schemes shall maintain a register of current and former members and their insurers and maintain records of all applicable works and activities for the greater of 10 years or the length of any associated financial protection. The records will include any disciplinary actions/sanctions by the Scheme. All Scheme records will be in accordance with Data Protection legislation.

Assessing suitability

To become a Registered Retrofit Coordinator and maintain Registration, the Retrofit Coordinator must be able to demonstrate the competence to meet the requirements of Appendix 2.

- Scheme Rules – the Retrofit Coordinator must comply with their Scheme’s Rules or Terms and Conditions of Evaluation and Registration.
- Code of Conduct -The Retrofit Coordinator must adhere to their Scheme’s Code of Conduct.
- Additional qualifications may be required in certain scenarios. Reference should be made to the TrustMark PAS 2035:2019 – Overview to Roles and Qualifications matrix published on their website¹

Continuing professional development

- Retrofit Coordinators must undertake at least twenty-five hours of evidence based CPD (excluding compulsory CPD enforced by Scheme) per annum to ensure that their knowledge remains current.
- Schemes will require evidence of a structured programme of CPD for the first year of membership to incorporate at a minimum the likes of:
 - PAS 2035 Processes, for example:
 - Developing a medium-term improvement plan / improvement option evaluation
 - Managing moisture risks in retrofit
 - Managing overheating risks in retrofit
 - Decarbonising space heating and hot water
 - Retrofitting traditional buildings
 - Occupancy assessments
 - Achieving standards and targets
 - Social Housing strategies
 - Whole house retrofit events and seminars
 - Other approved whole house retrofit training resources
 - PAS 2030 Process and Products
- An annual Personal Development Plan will be required to be maintained by Retrofit Coordinators and reviewed at membership renewal with their Scheme Provider.

Disciplinary action

- Schemes must have processes in place to discipline members that do not meet the Scheme Rules or Code of Practice

Surveillance

- TrustMark Technical Monitoring results will be fed into the Schemes’ risk model & vice versa
- Scheme Auditors must be competent & qualified Retrofit Coordinators
- Schemes will ensure that where a Retrofit Coordinator is fulfilling multiple roles on a project, or where a conflict of interest exists, this has been declared to the client as per PAS 2035 6.1.5 and resolved appropriately

¹ https://www.trustmark.org.uk/docs/default-source/pas-2035/roles-and-qualifications-v1-2.pdf?sfvrsn=af6c9007_2

What is being audited

The Retrofit Coordination of the Project will be audited as per PAS 2035. This will be dependent on the Risk Path for the project.

Audit calling process

Schemes will audit a minimum of 2% of Retrofit projects per year.

In addition, any new entrants to the scheme must be audited in line with the below;

- The first two projects lodged for each risk path (A, B and C) will be audited
- Each Retrofit Coordinator will be placed on 5% auditing for the first month or a minimum of 5 projects (whichever is achieved first).
- Where the coordinator has achieved 5 successful consecutive audit 'pass' outcomes, they shall be placed on 2% auditing.

Where a Scheme permits registered Retrofit Coordinators to directly lodge to the TrustMark Data Warehouse i.e. they have no direct visibility of lodgement data through their own systems, the audit regime will take account of this by, for example, requiring data/reporting from their member in a timely fashion to control the risk of non-compliant projects and/or lodgements.

Audit Evidence Requirements

The coordinator should supply sufficient evidence for a third party to replicate the tasks required to complete the coordination of the project.

Audit Results

The retrofit project audit will result in a Pass or Fail outcome. The Auditor shall total the number of non-conformities and their type to determine the audit result. An audit shall be marked as a fail where 5 or more single minor non-conformities and/or any single major non-conformity have been identified.

What's is a non-conformity (NC)?

Non-conformities are categorised as follows:

- *Minor Non-compliance*: No significant impact on the customer or other stakeholders associated with the non-compliance. The scheme will inform the member of the nature of the shortcoming and require evidence of action taken to rectify the non-compliance.
- *Major non-compliance*: Compelling evidence that the member has failed to meet the Framework, in a way that has had a major impact on the customer or other stakeholders. The member shall be suspended until the non-compliance is rectified. Major non-compliance shall be counted as a risk trigger against the member.

The scheme will consider the following factors when reviewing the impact of the non-compliance:

- The level of harm which flowed from the non-compliance
- Whether the non-compliance has occurred in other cases
- Whether other bodies have imposed sanctions in relation to the non-compliance
- Whether the member has accepted responsibility for the non-compliance
- Whether the member made a financial benefit from the non-compliance, or intended to make such a gain for themselves or a commercial partner

Audit outcomes

Pass – the audit passes with no feedback

Pass with comments – the audit passes, however feedback is given and this should be read and understood by the coordinator. The project lodgement does not need to be superseded, but errors noted should not be replicated on future projects.

Technical Fail – The audit fails on a technical basis. There will be one or more errors in the project coordination which cause or contribute to a failure. The project or defective part of the project must be rectified by the coordinator in line with the below timescales. All errors must be acknowledged by the coordinator and not replicated in future projects.

Evidence Fail – The audit fails on the basis that the evidence is not supplied, or not sufficient in quality to allow the audit to be completed. This may cover all or part of the project.

- Where evidence is missing/poor quality but available, then this can be supplied by the coordinator following feedback and the audit can be reviewed. This evidence must then be placed on the TrustMark data warehouse where deemed necessary by the scheme following audit completion.
- Where evidence is missing and cannot be supplied, then the audit remains a fail.
- Where evidence is not sufficient in quality and cannot be supplemented by quality evidence then the audit remains a fail.

All evidence errors must be acknowledged by the coordinator and not replicated in future projects.

Timescales

Timescales for submission

- All evidence must be submitted to the scheme within 5 working days of audit notification request.

Timescales for audit completion

- All submitted audits must be completed within a timely fashion and as soon as possible.
- All completed audit feedback must be sent within 2 working days of audit completion.

Timescales for replacement of defective projects or element of a project

- The coordinator must replace and confirm the replacement of the defective project or element via a superseded lodgement within 5 working days.
- Where the assessor fails to replace the project or an element of the project as required, the scheme shall inform TrustMark, so the impacts of these errors can be assessed and correct action taken.

CPD Surveillance

Accreditation Schemes will sample a minimum of 5% of members' CPD records each year to ensure the CPD obligations have been met.

Disciplinary action

Schemes will have appropriate disciplinary procedures in place for any activity that does not meet the requirements of being a Retrofit Coordinator including the likes of Audit Failure, CPD non-compliance and any breach of the Code of Conduct.

Audit failure

- Where any audit fails to meet the quality standards Schemes will take appropriate action which may include:
 - The Scheme will agree with the Member suitable corrective actions to prevent re-occurrence;
 - The Scheme will consider the likelihood that this is a systemic problem that may impact other submissions by that Coordinator. If there is a belief that the member is likely to repeat the error, then the member should be suspended until corrective action has been taken;
 - The Scheme will liaise with the member to consider the implications on other Projects coordinated and the Scheme will identify defective Projects and it is the responsibility of the Retrofit Coordinator to take appropriate action for these;
 - The Scheme will consider preventative action that it can take, in isolation or through the PAS2035 working group, to prevent re-occurrence with other Retrofit Coordinators

Code of Conduct

Schemes will respond to breaches of the Code of Conduct by the member in a proportionate way.

Where there is compelling evidence that a member has not complied with the Code of Conduct and, there is a major impact on stakeholder(s) in the Project, the member will be suspended pending a disciplinary hearing.

Where a member's actions are considered a 'major transgression', the Scheme will immediately suspend the member, pending an investigation which should be carried out in a timely manner.

Repeated instances of less significant breaches may, in combination, be considered a major transgression.

Bringing the Retrofit of Buildings Industry into disrepute

Where a Scheme believe and have strong evidence that the member is bringing the retrofit of buildings industry into disrepute, the member shall be suspended across the industry immediately pending further investigations and if the claims are proven, revoke the membership.

Fraud

If the error indicates fraudulent practices, the member will be suspended across the industry immediately pending a full investigation.

Where a further investigation confirms that fraudulent activity may have taken place the Scheme must report the issue to the relevant authorities. If the Retrofit Coordinator is alleged to have acted in a way that is in breach of the criminal law, then it is a matter for the criminal justice system. Schemes will report complaints, or other information received, that involve apparent criminal activity to the police.

Notification to TrustMark

Schemes shall keep TrustMark informed of any suspected fraudulent or dishonest practice on the part of a member or members. This should be done in line with the requirements set by the latest version of the TrustMark Framework Operating Requirements.

Supplementary conditions

The Scheme will impose appropriate controls to reduce the likelihood of any re-occurrence and to re-establish confidence in the activities of the assessor. Schemes will ensure that any disciplinary measures are proportionate to the breach and are implemented in a timely manner.

The Scheme may take whatever action it deems necessary to enforce the scheme rules. Members who do not comply may be prevented from operating on a temporary or permanent basis.

Where a member fails to adhere to the requirements set out in this document then;

Schemes have the ability to take necessary remedial action to ensure the risk of repetition of the offense is mitigated.

Example suitable remedial action could include (but not limited to);

- Corrective action to mitigate the risk

- Further surveillance such as;
 - Follow on auditing
 - Professional interview
 - Witnessed assessment
- Further training or retraining

Failure or repeated failure by the member to meet this remedial action may be prevented from operating on a temporary or permanent basis;

- Scheme only temporary suspension
- Industry wide temporary suspension
- Scheme only permanent revocation of membership
- Industry wide permanent revocation of membership

Temporary suspension can be applied in appropriate circumstances, this can be scheme only, or industry wide. The duration of any suspension and the criteria for reinstatement shall be determined by Schemes based on their assessment of the nature of the error after a thorough investigation. A member will normally be suspended until they complete the activities identified by the Scheme.

Permanent removal (revocation) of membership can be applied in appropriate circumstances, this can be scheme only, or industry wide.

Complaints

- The scheme shall operate a complaints process to manage complaints about the activities of a Retrofit Coordinator.
- Schemes must give consumers access to an Alternative Dispute Resolution Service, as an alternative to the courts, in cases where a complaint cannot be resolved to the satisfaction of both parties.

Appeals

- The scheme shall operate an appeal process to handle complaints by Retrofit Coordinators in relation to any Scheme decisions.
- Retrofit Coordinators can appeal revocation of their membership to a Third Party Appeals panel.

Support

- Support to the public: Schemes will provide general information to the general public and stakeholders concerning Retrofit Coordination activity undertaken by members.
- Support to Members: Schemes will provide a helpdesk for members that incorporates provision of technical support in relation to PAS 2035.

Appendix 1 Project Coordination Process

- A PAS 2035 retrofit project coordinator shall adhere to the requirements of PAS 2035.

Additional considerations

- Rejection of project elements that result in audit failure, i.e. cannot be remediated, should be notified to TrustMark and other relevant organisations:
 - Retrofit Assessment – their Retrofit Assessment Scheme Provider
 - Retrofit Designer – their competent persons schemes or Professional organisation
 - Retrofit Installer – their PAS 2030 Certification Body
 - Retrofit Advisor – their relevant Scheme Provider when such bodies exist
 - Retrofit Evaluator – their relevant Scheme Provider when such bodies exist

Appendix 2 – Competence Requirements

A Retrofit Coordinator must demonstrate the following competencies.

Note; if a particular function is subcontracted, in whole or part, to an accredited Retrofit Assessor, Retrofit Designer or PAS 2030 installer then the level of competence required by the Retrofit Coordinator is reduced to that of “general understanding” however first line responsibility is retained by the Retrofit Coordinator.

Module	Ability to understand the importance, role and/or management of;	Scope
Introduction		
	PAS2035	Overview of PAS2035, the other roles involved, link to PAS2030
	TrustMark	Overview, including data warehouse
	Risk Assessment,	Have the ability to identify, assess and manage risks, which include assessing risks of working with different archetypes, construction types, and combination of measures.
	Energy Efficiency Advice	Covered by all roles in PAS2035 – see separate Annex for more detail for Retrofit Coordinators
	Deep retrofit	What is deep retrofit and why whole house assessments are required.
	Scheme code of conduct	Retrofit coordinators must understand and adhere to their scheme’s code of conduct
Building Physics		Retrofit coordinators need an understanding of the following;
	U-values	Understanding thermal transmittances (<i>U</i> values) of building elements (i.e. floors, walls and roofs, etc.) from data on the thermal conductivities (λ values) of building materials. What makes good U values, and what makes poor U values

	Condensation risk	Understanding the risk of interstitial condensation within the construction of a building element, using data on internal and external temperature and humidity and on material moisture contents and vapour pressures
	Linear Thermal Bridging	Understanding linear thermal transmittances (ψ values) and critical temperature factors (f_{Rsi}) at the corners, junctions and edges of building envelopes that are identified as “thermal bridges”, i.e. places where the envelope of insulation is either thinner or discontinuous;
	Heat Gains	An understanding of overall heat gains in a dwelling from occupants, cooking, hot water, lighting, the use of appliances and solar gains through glazed openings
	Ventilation	Understanding of the whole-dwelling ventilation rate required to maintain good IAQ and minimize the risk of condensation and mould growth
	Mould	Understanding of the risk of surface condensation and mould growth using temperature factors and data on internal and external temperature and relative humidity to calculate vapour pressure differentials
	Moisture	Understanding dynamic moisture equilibrium through a building element
	Solar gain	Understanding of internal daylight levels from data about the sizes, locations and orientations of windows,

		and any local shading, and therefore requirements for artificial lighting.
	RdSAP, SAP and/or PHPP	Familiarity with RdSAP, SAP and PHPP principals and models and differences of each
Testing and Investigation Techniques	Retrofit Coordinators need to be able to understand the significance of and evaluate:	
	Heat loss	Measuring heat losses through individual building elements
		Measuring heat loss through the whole building envelope
	Air tightness	Assessing the air-tightness (or “air permeability”) of a building envelope
		Identifying the air infiltration and air leakage points
		Monitoring IAQ (e.g. carbon dioxide concentration) using sensors and loggers
	Moisture	Measuring the vapour permeability’s of building materials; and
		Assessing the moisture content of building fabric
		Monitoring internal relative humidity, using sensors and loggers;
	Energy Use	Monitoring overall energy use in dwellings, from utility meters
		Monitoring the energy use of individual systems, using sub-meters
	Temperature changes	Monitoring internal temperatures, using sensors and loggers

Module	Ability to;	Scope
Risk Assessment	Assess the risk of working on different archetypes and / or combination of measures	The retrofit coordinator shall ensure that a retrofit risk assessment is undertaken for each dwelling or dwelling type with the project that is subject to retrofit
Assessment (occupants and property)	Use established techniques to estimate the energy costs the occupant will incur based upon who lives there and their lifestyle.	An appraisal of occupancy, including the number of occupants and any special considerations such as the presence of vulnerable persons, e.g. children or elderly people or those with disabilities
	Identify issues with the property that may impact on the effectiveness of any energy efficiency measure, In addition	An appraisal of the dwelling's heritage, architectural features, structure, construction and condition and the installed building services (ventilation, heating, hot water and lighting) in sufficient detail to establish the suitability of the dwelling for improvement;
	Identify issues particular to work on heritage buildings	Understand how heritage buildings differ from modern construction and how that impacts upon the recommendation measures and method of installation.
	Identify issues that might impact on the building Structure	Identification of the location and severity of any existing construction defects or structural defects or leaks.
	Identify issues surrounding moisture, mould, condensation and ventilation.	<p>an assessment of the existing ventilation, including:</p> <p>identification of the location and severity of any condensation and/or mould growth in the dwelling;</p> <p>any intermittent extract ventilation fans or passive stack ventilators and where they are located;</p> <p>any background ventilators (air inlets or "trickle</p>

		<p>ventilators”), and where they are located;</p> <p>any other ventilation system and where it is located, including single-room heat recovery ventilators (srHRVs), positive input ventilation (PIV), whole-house mechanical extract ventilation (centralized cMEV or decentralized dMEV), and mechanical ventilation with heat recovery (MVHR);</p> <p>Whether the identified ventilation systems are functional.</p>
	Measure and record property dimensions in a way that can be used for planning and installation	A measured survey to establish the overall dimensions of the dwelling's heat loss envelope (including any basements and attics), the dimensions of all building elements (exposed floors, external walls, roofs, etc) and the dimensions of all window and door openings.
	Understand the need for, and how to obtain planning consents and statutory approvals	Identification of any constraints imposed by the local planning authority (including requirements for planning permission, Listing as of Special Architectural or Historic Interest, Conservation Area constraints, Tree Preservation orders, etc.)
	Identify site constraints	identification of constraints imposed by the site, e.g. elevation and exposure (to sun, wind and rain, major roads and industrial activity) access, party walls, rights of light, consideration of adjoining properties, etc.;
	Identify existing energy efficiency measure(s)	

	Estimate energy use and cost	The data collected shall be sufficient for an estimate of annual fuel use, fuel costs and carbon dioxide emissions, under standard or actual occupancy (as appropriate) to be made by the Retrofit Assessor, Retrofit Coordinator or Retrofit Designer, using a recognized domestic energy model such as the Reduced Data Standard Assessment Procedure (RdSAP), the Standard Assessment Procedure (SAP) or the Passive House Planning Package (PHPP).
	Report on the findings of the assessment	
	Understand when it may be necessary to seek the advice of a protected building specialist	This may include an assessment of the significance of the building as defined in BS7913
	Understand when it may be necessary to seek the advice of a Structural Engineer	A structural engineers report on the structural condition of the building and its suitability for any proposed improvement measures
Establish intended Outcomes	Define and help clients agree the intended outcomes of the project	
Retrofit Design Configuration	Identify constraints of the property	Identify constraints imposed by the history, construction, architectural character and setting for the building and by its pattern of use
	Identify possible measure(s)	Identify the set of improvement measures necessary to achieve an appropriate target improvement in energy efficiency and reduction of the emissions associated with energy use, without compromising the comfort and health and of the occupants or the integrity of the building
	Identify interactions between proposed measures	Identify potential interactions between measures to ensure a whole-house approach is followed and thus avoid thermal bridging and other unintended consequences

	Correctly sequence the installation of measures	Identify an appropriate order in which the identified measures should be installed, bearing in mind that some measures are best installed together, and that installation of some measures may preclude the later installation of other measures (or make subsequent installation more difficult)
	Document a medium-term plan and improvement option evaluation in accordance with PAS 2035	
Design	Design of proposed installations	To be able to work with prospective installers to design the installation of measures and to be able to critically appraise proposals so to achieve the intended outcomes and objectives of the Medium-Term Improvement Plan
Installation	Manage and oversee the installation of agreed measures	<p>Capable of identifying installers capable of installing energy efficiency measure(s) that meet the client's requirements.</p> <p>Have awareness of the management of installers and claims of compliance with PAS2030:2019.</p> <p>Must have the ability to design and deliver toolbox talks, to include communicating design intent and key messages.</p>
Project Coordination	Work with the homeowner and all subcontractors to achieve the defined outcomes of the Medium-Term Improvement Plan	<p>Retrofit coordinators need to show competence in dealing with many other professionals and must understand contractual relationships between all parties, and the responsibilities of them. The likes of the following will be used in the retrofit process;</p> <ul style="list-style-type: none"> - Retrofit Assessors - Retrofit Designers - Retrofit Installers - Retrofit Evaluators

		<p>Have an understanding to report to and advise the client throughout the project, including the requirements for handover and energy efficiency advice, such as estimated energy use and costs.</p> <p>Be able to provide suitable advice on technologies, behavioural issues, consumer rights etc.</p>
Testing	Identify appropriate test regimes that can be employed to ensure the installed measures work to achieve the defined outcomes	
Commissioning	Identify commissioning techniques that can be employed to ensure the installed measures have been adjusted to achieve the defined outcomes	
Handover	Handover the project to the homeowner upon completion	Collation of all records, including receipts, manuals and instructions, certificates and consents, to the homeowner
Customer feedback	Understand the need and how to solicit customer feedback at the conclusion of the project	
Monitoring and Evaluation	Understand techniques that can be applied to verify the design achieved its declared outcomes	<p>Conduct of monitoring and evaluation and recording of outcomes in the Data Warehouse.</p> <p>The understanding and competence (where applicable) to undertake monitoring and evaluation, to include heat loss, air tightness, moisture, energy use and temperature changes.</p>

Appendix 3 – Provision of Advice

A Retrofit Coordinator must be able to provide suitable advice, as detailed in the below table.

Element	Scope
Technology	
Fabric (Thermal) Insulation	Understand nature of different parts of the property which can be thermal improved such as walls, roofs, floors; and the generic techniques to achieve better performance
Heating & DHW	Understand current heat and hot water provision and potential alternative retrofit solutions and the impact on energy, warmth, cost and emissions.
Micro Generation	Understanding of current microgeneration solutions available that can be modelled in the methodologies
Household electrical appliances	General understanding of typical household appliances and their impact on energy use
Monitoring consumption	General understanding of how occupants can monitor energy usage and benefits of doing so
Retrofit	
Choice of products/tech	Good advice around energy retrofit measures, based on standard products as defined in SAP, RdSAP and OA outputs. (Independent of manufacturers)
Use of equipment	General advice around use of energy efficient products
Cost and savings of improvements	Using the outputs of SAP, RdSAP and OA software advising consumers on what costs and savings are predicted
Finance	Good knowledge of any grants and finance around energy efficiency measures and where to signpost consumers towards independent advice if required.
Explaining the customer journey through the PAS framework	Good understanding of the other roles within PAS framework and the customer journey.
Behavioural Issues	
Use of heating, DHW and controls	How to use controls effectively to manage energy efficiency in the home
Use of electrical appliances	How to effectively use and manage energy efficiency of the appliances around the home
Use of monitoring equipment	How and why to monitor use of energy in the home, including current bills and smart meter technology etc.
Using Passive Solar and retaining heat	General understanding of passive solar gains in the home and tips surrounding retaining heat in homes
On site renewables	Making the most of any on site renewable technologies
Consumer and Services	
Consumer rights – energy supply, energy efficiency and Micro Generation	Good understanding of consumer rights with regards to supply of energy, the journey through the PAS, and consumer rights under TrustMark and any additional rights in regards to Microgen
Regulations, rights in rental sector	Good Understanding of all current regulations on landlords and tenants e.g. MEES/PRS, in order to help these consumers, make informed choices around the energy efficiency of the home
Choice of suppliers and tariffs (& switching)	General understanding of consumer bills, understanding tariffs and the process of switching supplier(s)

Awareness of Grants and Funding for energy efficiency measures	Good understanding and awareness of current grants, subsidies and polices in energy efficiency such as FiTS
Understanding energy bills and payment options	Good understanding of reading energy bills and different payment options, with advice around alternative options
Understanding energy usage and costs	Linking the bills to total energy usage and costs within the property including use of heating, hot water, lighting and appliances
Fuel Debt	Understanding of what fuel debt is and how to manage it
Services for vulnerable households	Understanding energy efficiency implications for vulnerable households
Details of impartial advice	Ability to point consumers towards further independent energy advice (retrofit advisors)
Fuel related benefits/grant	Knowledge of any current fuel related benefits or grants available
Redress for energy supply & retrofit	General understanding of redress for energy supply and also for all the component parts of the TrustMark/EHC process
RdSAP & SAP and Occupancy Assessments	
RdSAP Appreciation	Good knowledge of the RdSAP Methodology, with ability to advise consumer's around inputs and calculation results
RdSAP Outputs	Good knowledge on recommendations and all results from RdSAP
OA Appreciation	Good knowledge of the OA Methodology, with ability to advise consumers around inputs and calculation results
OA outputs	Good knowledge on recommendations and all results from Occupancy Assessment
SAP Appreciation	Good understanding of the SAP methodology in order to deal with any queries relating to the methodology or outputs
PHPP Appreciation	Good understanding of the PHPP methodology in order to deal with any queries relating to the methodology or outputs
Related Health Issues	
Health and comfort in relation to the indoor environment	General understanding of health and comfort in the home, adequate temperatures, appropriate ventilation etc (build tight, ventilate right)
Ventilation	Good understanding of ventilation issues and requirements to allow for a healthy home
Avoiding condensation damp and mould growth	Good understanding of techniques for avoiding condensation, damp and mould growth in homes
Affordability of energy services	General understanding of cost and affordability of potential energy efficiency measures
Retrofit Coordinator	
Clients Requirements	Ensuring to thoroughly understand what the client wants (lower energy use, lower fuel bills, less carbon emissions, warmer homes, eliminate mould etc), and being able to liaise with the client in terms of which measure(s) are suitable, in what order and why.
Cost Effectiveness	Explaining to the client the 'simple payback period' of the capital cost v's predicted savings. As well as the 'carbon cost effectiveness' of the measure(s) required. For example, this can be from the Energy Certificate, or in the Medium-Term Improvement Plan.

At Improvement Option evaluation stage	<p>The coordinator shall ensure that the client has been advised on;</p> <ul style="list-style-type: none"> • Any consultations with LA planning Dpt. particularly if listed buildings or conservation area constraints apply • An explanation of the improvement options considered, their compatibilities and incompatibilities and any other associated opportunities or constraints • Identification of the recommended options and priorities include in the medium-term improvement plan • Recommendation of the measure(s) included in the immediate Medium-Term Improvement Plan
Costings	<p>Advising the client on the cost of the measure(s) identified and liaising with the client throughout the lifetime of the project, advocating for the client. Informing the client should the price or funding change.</p>
At Handover	<p>The coordinator shall ensure that the client has been advised on;</p> <ul style="list-style-type: none"> • the measure(s) their operation and protection, and their intended effect on energy efficiency of the home. • Behavioural issues such as using the new installations, and how to get the best out of them and potential of switching them off. • How repair and maintain of the building and the measures can sustain the building moving forwards. • Any applicable quality assurance, audit, inspection process, guarantees and warranties applicable and process of claiming. • Future stages of the project under the MTRP
Monitoring & Evaluation	<p>The coordinator shall advise the client that all retrofit projects are subject to this function, and to advise the client the purpose and benefits of this. The outcomes to be submitted to the TrustMark Data Warehouse.</p>

Appendix 4 – Deliverables

Every PAS 2035 Retrofit Project will have, as a minimum a;

1. Risk assessment
2. Retrofit Assessment
3. Medium-Term Improvement Plan
4. Improvement Option Evaluation

And, dependent upon client wishes and how far the project progresses, may have

5. Location specific Design documentation
6. Handover documentation
7. Monitoring and Evaluation

Risk Assessment

A completed risk assessment which takes account of the building type and combination of possible measures. It should clearly define which risk assessment path (A, B or C) is appropriate for the dwelling.

Retrofit Assessment

Which dependent on the Risk Assessment may be done by the Retrofit Assessor or Retrofit Coordinator which considers the building type, method of construction, constraints to improvement, condition and assessing energy efficiency measures that may influence the Medium-Term Improvement Plan. It will contain RdSAP, SAP or PHPP energy assessment data as well as an energy report, an occupation assessment and report, a condition assessment; and where applicable a simplified conservation of historic buildings assessment (BS 7913).

Medium-Term Improvement Plan

All dwelling(s) proposed for retrofit consideration shall have plan to show how to improve energy and reduce emissions for the dwelling over a period of 25-30 years.

The plan is to guide the staged or phased improvements to a dwelling by identifying the improvements that are needed and an appropriate order for their implementation and highlighted critical interactions between them.

These plans can be updated over time to respond to changes in standards, or availability of new technologies, and to record improvements as they are made.

The measures identified will come from the full list of appropriate Energy Efficiency Measures (EEMs) identified when preparing the 'Improvement option evaluation'. The evaluation shall make use of RdSAP, SAP or PHPP data provided by the Retrofit Assessment. If RdSAP is used to support a retrofit assessment, then the data should be reviewed carefully, and preferably exported to Full SAP software for use by the Retrofit Coordinator.

It should;

- Agree and record intended outcomes in consultation with the client e.g. warmer home, lower fuel bills, lower carbon emission etc. Mindful of budgets and future intentions of the current client with the property
- Identify constraints imposed by the history, construction, architectural character and setting of the building and by its patterns of use
- Identify the set of improvement measures necessary to achieve an appropriate target improvement in energy efficiency and reduction of emissions associated with the energy use; without compromising the comfort and health of the occupants or the integrity of the building
- Identify potential interactions between measures to ensure a whole-home approach is followed and thus avoid thermal bridging and other unintended consequences
- Identify an appropriate order in which the identified measures are best installed, bearing in mind that some measures are best installed together, and that installation of some measures may preclude the later installation of other measures (or make subsequent installations more difficult).
- Be presented in a format that allows it to be updated in the future, when practical through lodgement of structured data in the Data Warehouse.
- If any building fabric insulation or air tightness measures are included in the proposed EEMs, the RC shall assess the adequacy of the existing ventilation in the dwelling and where necessary include the upgrading of the ventilation of the dwelling(s) and ensure that air permeability tests are carried out if required.
- The Plan shall be created by the RC working in collaboration with the Retrofit Designer and the client for the project.
- Identify any defects that must be rectified prior to any retrofit measure(s).

In some circumstances for 'large scale retrofit programmes' the Medium-Term Improvement Plan can be focussed on dwelling types within an area of interest, rather than individual dwellings, in order to identify generic solutions and economies of scale. (Please note individual retrofit assessments and designs are still necessary)

Improvement Option Evaluation

For every dwelling or dwelling type, before the retrofit design is prepared an 'Improvement option evaluation' shall be created to identify an appropriate package of EEMs. The evaluation shall make use of RdSAP, SAP or PHPP data provided by the Retrofit Assessment. It shall include:

- Document an improvement options evaluation to determine an appropriate package of measures
- Document the recommended measures and the reasons for that decision
- Simple pay-back in years (capital costs divided by estimated fuel savings) for each EEM if installed on its own
- Carbon cost effectiveness of each EEM if installed on its own
- Simple pay back and carbon cost effectiveness of any suggested or proposed package of EEMs.
- The sources of the capital costs, fuel costs and carbon emissions must be from specified sources
- The simple paybacks should also be displayed based on:

- Standardised occupancy patterns &
- Adjusted for occupancy patterns
- Identification of all defects that must be rectified prior to any retrofit measure(s) in the package identified

If the dwelling is traditionally constructed, the identification of applicable EEMs shall be consistent with guidance in PAS2035. Including such items as any constraints from buildings in conservation area or listed building status

If any building fabric insulation or air tightness measures are included in the proposed EEMs, the RC shall assess the adequacy of the existing ventilation in the Improvement Option Evaluation and where necessary include the upgrading of the ventilation of the dwelling(s).

There shall be a tabular summary of the improvement option evaluation and identify a recommended package of EEMs.

Specification information about the package of EEM(s)

Including but not limited to:

- A design for the installation of each measure installed compliant with PAS 2035
- A moisture risk assessment
- Ventilation Requirements
- Managing the interaction between measures
- Document any modifications to the design
- Identify and document the need for any statutory approvals
- Overheating calculations
- Sequence of installation of measure(s)

Handover documentation

Including, but not limited to:

- Building control, listed building, planning consents
- Installation certificates for installed measures, commissioning, testing certificates etc
- Customer feedback
- Monitoring and Evaluation– ensure that every retrofit project is subject to the appropriate monitoring and evaluation to confirm outcomes and identify problems
- Manuals, warranties, guarantees etc
- Recommendation and ideally lodgement of EPC post installation of measures, whilst complying with the requirements of the client and/or legislative and regulatory requirements

Monitoring and Evaluation

Post Installation of measures: depending on the outcome of the monitoring and evaluation ensure the appropriate response, and raise through levels - basic, intermediate or advanced as required.

Monitoring & Evaluation failures – where a project fails the Monitoring & Evaluation survey, it is the responsibility of the Retrofit Coordinator to assign an alternative Retrofit Coordinator to carry out the necessary investigation and follow-on Monitoring and Evaluation on the project