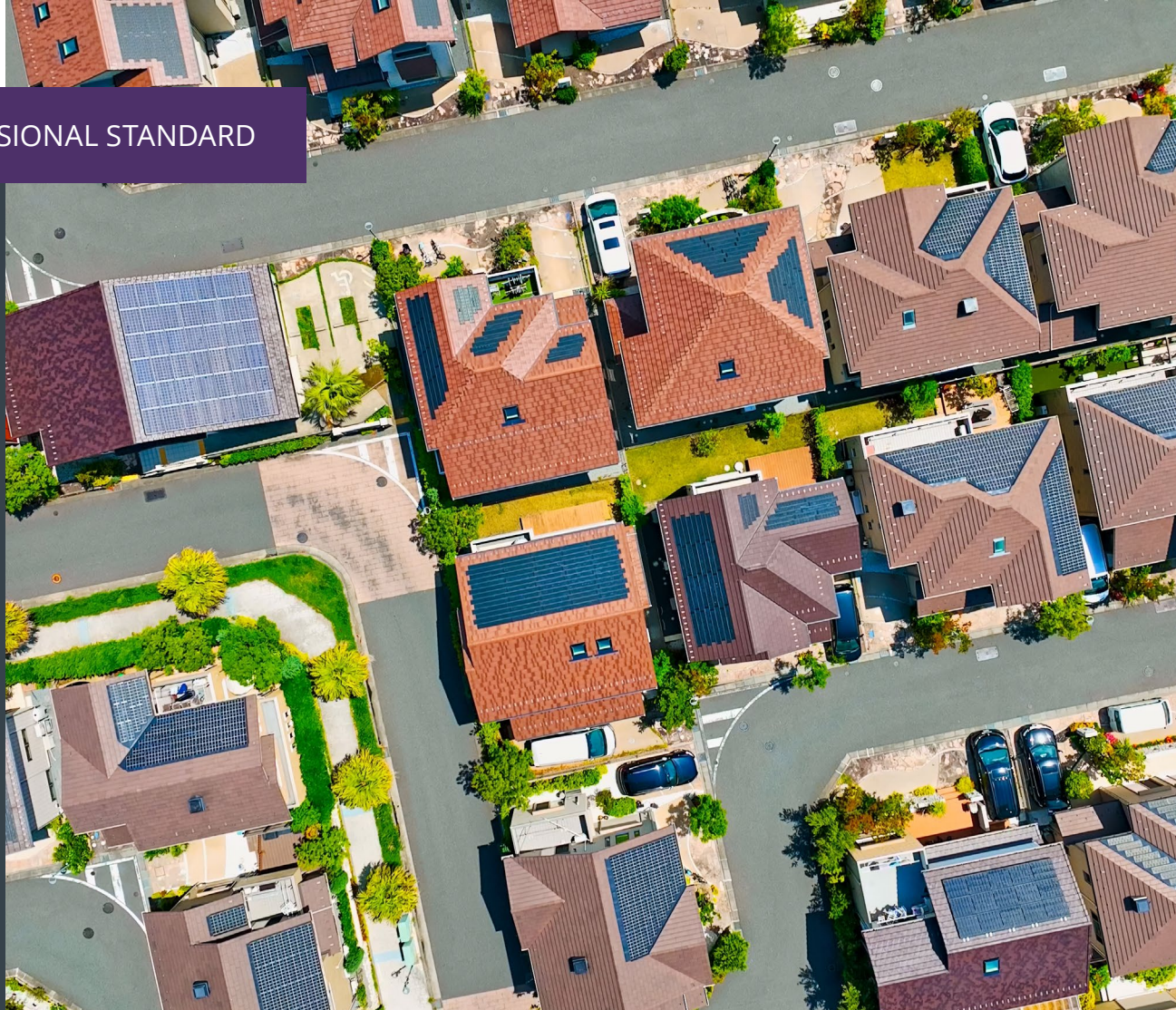


RICS PROFESSIONAL STANDARD



Residential retrofit standard

UK

1st edition, March 2024

Effective from 31 October 2024



Residential retrofit standard

RICS professional standard, UK

1st edition, March 2024

Effective from 31 October 2024

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This document applies to the UK and Crown Dependencies. If any of the requirements contained in this document conflict with regional legal requirements, those regional legal requirements take precedence and must be applied.

Acknowledgements

Technical author

Larry Russen FRICS (Russen & Turner)

Expert working group

Chair: Antony Parkinson MRICS (JLL)

Charles Adams MRICS (Countrywide Surveyors)

Matthew Allcock MRICS (Baily Garner)

Alexandra Anderson (Reynolds Porter Chamberlain)

Philip Aston MRICS (Kinleigh Folkard & Hayward)

Louise Avery MRICS (Avery & Co)

Jonathan Bourke (Harvey Donaldson & Gibson)

Phillipa Burgin MRICS (Earl Kendrick)

Kate Charrington FRICS (Projekt 3)

Ashley Crawford MRICS (Crawford & Co Surveyors)

Professor John Edwards FRICS (Edwards Hart)

Professor Richard Fitton MRICS (Salford University)

Emma Fletcher MRICS (Octopus Energy)

Peter Foulds MRICS (Allied Surveyors)

Julian Furnell MRICS (Connells)

Jim Gibson FRICS (Harvey Donaldson & Gibson)

Corrina Jones MRICS (e.surv)

Mark McPolin (UK Finance)

Richard Pegman MRICS (Cardoe Martin)

Dr. Rokia Raslan (University College London)

Hannah Reynolds (Historic England)

Nicholas Robbins MRICS (Valuation)

Giles Smith MRICS (SDL Surveying)

Graham Tonner MRICS (Graham & Sibbald)

Fallon Warren AssocRICS (Longhurst Group)

Trudy Woolf FRICS (e.surv)

RICS professional practice lead

Paul Bagust

RICS project manager

Helvi Cranfield

RICS editor

Megan Reed

Contents

Acknowledgements	ii
RICS standards framework	1
Document definitions	2
Glossary	3
1 Introduction	10
1.1 General	10
1.2 Professional background	10
1.3 Scope and application	11
1.4 Recommended documents and other necessary guidance	12
1.5 Residential retrofit Services in different parts of the UK	13
1.6 Effective date	13
2 Setting up the Service	14
2.1 General	14
2.2 Conflicts of interest and referral fees	14
2.3 Qualifications and experience	15
2.4 Knowledge of locality and nature of property	15
2.5 Client liaison	16
2.6 Service Roles	17
2.7 Terms of engagement	23
2.8 Leaseholds and other properties with shared facilities	24
3 Carrying out the residential retrofit Service	26
3.1 General	26
3.2 Locality	27
3.3 Information from client, property occupier or others	28
3.4 Equipment	29
4 The retrofit Service	32
4.1 General principles	32
4.2 Content of the Service	33
4.3 Service-specific requirements	33
4.4 Risks to occupants	38
4.5 Legal matters	39
4.6 Energy matters	41

4.7	Providing building and EEM installation cost advice	41
4.8	Further investigations	42
4.9	Client liaison during the Service	42
4.10	Service completion	43
4.11	Software and products	43
4.12	Documentation storage and retention	44
Appendix A: Technical considerations for residential property retrofit		
	Services	45
Appendix B: Knowledge of general environmental issues in a locality		
		66
Appendix C: Minimum requirements for all terms of engagement		
		67
Appendix D: Risks to occupants – typical personal safety hazards in a		
	residential property	69
Appendix E: Legal matters – other features and issues		
		76

RICS standards framework

RICS' standards setting is governed and overseen by the Standards and Regulation Board (SRB). The SRB's aims are to operate in the public interest, and to develop the technical and ethical competence of the profession and its ability to deliver ethical practice to high standards globally.

The [RICS Rules of Conduct](#) set high-level professional requirements for the global chartered surveying profession. These are supported by more detailed standards and information relating to professional conduct and technical competency.

The SRB focuses on the conduct and competence of RICS members, to set standards that are proportionate, in the public interest and based on risk. Its approach is to foster a supportive atmosphere that encourages a strong, diverse, inclusive, effective and sustainable surveying profession.

As well as developing its own standards, RICS works collaboratively with other bodies at a national and international level to develop documents relevant to professional practice, such as cross-sector guidance, codes and standards. The application of these collaborative documents by RICS members will be defined either within the document itself or in associated RICS-published documents.

Document definitions

Document type	Definition
RICS professional standards	<p>Set requirements or expectations for RICS members and regulated firms about how they provide services or the outcomes of their actions.</p> <p>RICS professional standards are principles-based and focused on outcomes and good practice. Any requirements included set a baseline expectation for competent delivery or ethical behaviour.</p> <p>They include practices and behaviours intended to protect clients and other stakeholders, as well as ensuring their reasonable expectations of ethics, integrity, technical competence and diligence are met. Members must comply with an RICS professional standard. They may include:</p> <ul style="list-style-type: none"> • mandatory requirements, which use the word ‘must’ and must be complied with, and/or • recommended best practice, which uses the word ‘should’. It is recognised that there may be acceptable alternatives to best practice that achieve the same or a better outcome. <p>In regulatory or disciplinary proceedings, RICS will take into account relevant professional standards when deciding whether an RICS member or regulated firm acted appropriately and with reasonable competence. It is also likely that during any legal proceedings a judge, adjudicator or equivalent will take RICS professional standards into account.</p>
RICS practice information	<p>Information to support the practice, knowledge and performance of RICS members and regulated firms, and the demand for professional services.</p> <p>Practice information includes definitions, processes, toolkits, checklists, insights, research and technical information or advice. It also includes documents that aim to provide common benchmarks or approaches across a sector to help build efficient and consistent practice.</p> <p>This information is not mandatory and does not set requirements for RICS members or make explicit recommendations.</p>

Glossary

Term	Definition
Accessible	Part of a property that can be easily reached, exposed or entered without undue effort as long as it is safe.
Building Regulations	A document or series of documents that specify how approvals under Building Regulations may be complied with; known as 'Approved Documents' in England and Wales 'Building Standards' in Scotland and 'Technical Booklet' in Northern Ireland.
CDM	<i>Construction Design and Management Regulations 2015.</i>
Chancel matters	This is an historic financial liability imposed on landowners to fund repairs to medieval churches. Although few homeowners have to pay this charge, it can affect the cost of ownership of property.
CIBSE	Chartered Institution of Building Services Engineers.
Client	Customer or consumer, the party who has commissioned the Service.
Competent person scheme	A government-approved scheme for an individual qualified to a standard to satisfactorily inspect, test, assess, self-certify and report on any part of a property, e.g. Air Tightness Test and Measurement Association (ATTMA) or Cavity Insulation Guarantee Agency Limited (CIGA). Members of such schemes are known as 'approved certifiers' in Scotland.
Complex properties	Dwellings that consist of many different and connected parts. Typical examples include properties that have been extensively altered and extended and/or are built using several different distinct construction methods and/or materials.
Conventional properties	Dwellings designed and built using construction methods and materials that are considered typical, usual and/or ordinary for that type, region and age.

Term	Definition
DEA	Member of an approved and accredited Domestic Energy Assessor scheme, trained in preparing energy assessments using the RdSAP methodology. Qualification as a DEA is required under many retrofit schemes.
Dwelling	A residential property or building, including a house, bungalow, tenement or flat.
EEM(s)	Energy efficiency measure – a single product or material, or combination of products and materials together with any related installation method, equipment requirements and performance objectives, for installation in existing buildings for the purpose of enhancing the energy efficiency of those buildings; e.g. heating and/or cooling systems or insulation.
EPC	Energy Performance Certificate – must be conducted by an accredited assessor who is qualified to prepare an EPC as a member of an accreditation scheme.
HHSRS	Housing Health and Safety Rating System (England and Wales only) – a risk-based evaluation tool to help local authorities identify and protect against potential risks and hazards to health and safety from any deficiencies identified in dwellings.
Historic building	A building or structure that is ‘listed’ and/or valued because of its historic, archaeological, architectural or artistic interest and/or is situated in a conservation or similar area.
Home Report Scotland	Comprises a property questionnaire, a ‘Single Survey’ and an energy report. These requirements are as a result of provisions contained in Part 3 of the <i>Housing (Scotland) Act 2006</i> and associated regulations.
HSS	RICS’ Home survey standard .
IAQ	Internal air quality (of the dwelling or part of the dwelling).

Term	Definition
Inspection	A careful visual examination of the inside and outside of an existing residential property and all permanent outbuildings or parts thereof as may be necessary to provide a retrofit Service. For example, to assess and establish the technical feasibility of providing retrofit Services and/or for preparing design drawings and other relevant information, such as specifications and/or for administering the contract for the installation of EEMs during building works and/or for evaluating the efficiency and efficacy of the final retrofit installation(s).
Locality	The neighbourhood, district and/or region in which the subject property is located.
LZC	Low and zero carbon technologies.
MCS	Microgeneration Certification Scheme.
MMC	Modern methods of construction – a method of building a residential property that uses a variety of new and innovative building techniques and materials. In some cases, whole parts of the residential property can be made in a factory and transported to the building site.
NCM	The government-approved National Calculation Methodology for calculating the energy performance of buildings, including methods for calculating the ‘asset’ and ‘operational ratings’ of buildings.
Neglected (condition)	A description of a property, or any part(s) thereof, identifying it having fallen into disrepair due to a failure to maintain any part or parts (e.g. the roof covering and/or a service installation) in an appropriate manner consistent with the property’s age, type, location and character.
Non-traditional (property)	A property type that was usually built as part of a government-funded housing scheme after one of the two world wars, intended to provide relatively temporary ‘homes fit for heroes’, although some types were also built privately. Designed and constructed using prefabricated methods such as reinforced concrete, steel or timber frame; such ‘types’ include ‘BISF’, ‘Trusteel’ ‘Laing Easiform’ or ‘Airey’. Thirty types were designated ‘defective’ in the 1980s.

Term	Definition
PAS	Publicly Available Specification – a standardisation document that defines good practice for a product, service installation or process.
PHPP	Passive House Planning Package – a domestic energy assessment model.
Post-retrofit inspector	The appropriately qualified and competent professional with responsibility for carrying out the evaluation of the completed project.
Protected building or property	A building or property that is or is part of a World Heritage Site, a scheduled monument, listed building, protected wreck site, registered park or garden, registered battlefield, in a conservation area – and/or other locally 'listed' assets.
Property	A building's total external and internal structure and fabric including any party wall structures, all fixed plant and services, such as electricity and water installations, heating and cooling systems, foul and surface water drainage and permanent outbuildings and/or other parts that may reasonably require consideration in connection with the provision of retrofit Services.
RdSAP	Reduced Data Standard Assessment Procedure; domestic energy assessment model, based on reduced data collection, as compared with 'full' SAP.
Recommended documents	The documents listed in section 1.4 of this professional standard. .
Referral fee	An amount of money that is paid by one organisation to another for being recommended to a client or customer.
Repairing covenants	Terms in an agreement that usually result in an annual sum paid to the landlord or freeholder that contributes towards the repair and maintenance of shared parts and facilities at a property (for example, roof coverings, walls, retrofit installations such as 'renewable' systems, shared gardens, hallways and lifts, typically at a block of tenements or flats).
Residential property survey	This comprises an inspection (also called 'assessment'), report and advice on the condition of a residential property, e.g. a 'level 3' or 'level 2' survey completed in accordance with the RICS HSS.

Term	Definition
Retrofit assessor	The appropriately qualified and competent professional with responsibility for carrying out the survey inspection, design and/or other technical assessment of the property chosen for retrofit, e.g. an associate, member or fellow of RICS.
Retrofit contract administrator	The appropriately qualified and competent professional with responsibility for monitoring the construction and/or fitting of the retrofit installation(s) and associated building works, such as repairs prior to installation of EEMs at the property chosen for retrofit, e.g. an RICS member, engineer, architect or similar.
Retrofit coordinator	The appropriately qualified and competent professional with responsibility for end-to-end coordination of a residential retrofit project, e.g. the lead professional, project manager or similar.
Retrofit designer	The appropriately qualified and competent professional with responsibility for design and specification of a retrofit project, e.g. an architect, chartered building surveyor or similar.
Retrofit installer	Person or organisation responsible for undertaking and supervising the physical placement of an EEM in an existing building, together with any other associated repairs and other works, usually a building contractor.
Retrofit lead professional	The appropriately qualified and competent professional with responsibility for end-to-end coordination of a retrofit project, e.g. a retrofit coordinator, project manager or similar.
RP	Registered provider of social housing, formerly known as 'Housing Association'.
SAP	Standard Assessment Procedure, domestic energy assessment model, based on enhanced data collection as compared with limited data collection for RdSAP.
Service(s)	The professional retrofit Service including advice provided by the RICS member in connection with installation of the EEM(s) and other matters associated with improving energy efficiency, reducing carbon emissions, protecting the building's fabric and contributing to occupants' well-being in the dwelling.

Term	Definition
Service Role	A role performed by a suitably qualified professional to provide the Service in accordance with the terms of engagement agreed with the client(s), e.g. a retrofit assessor or post-retrofit inspector.
Software package	A set of computer-based software that fulfils a particular function. A typical example would be a computer-based building design, specification and contract management package used by building designers, or inspection and reporting package used by some residential surveyors.
Special Property	A property, dwelling or building that is protected, historic, traditional, complex, non-traditional or in a neglected condition; and by implication therefore very likely to require higher than usual levels of technical knowledge, understanding and competence when it is the subject of a retrofit, or any other, professional Service.
Tests	Specific and targeted measures to check, analyse, monitor and/or confirm the quality, performance or reliability of parts of the property. For example, tests relating to the construction of a building like taking samples of the building fabric (plaster, brick and concrete) for laboratory analysis of those materials or checking the performance of a service system (such as checking the safety, performance or efficiency of an installed EEM, heating or cooling appliances, electrical systems or other 'renewable' installations). Other types of tests include those a post-retrofit inspector would carry out. The RICS member will generally only carry out such testing when suitably qualified and competent. Testing of service installations (especially 'services that could kill') should be carried out by a member of a competent person scheme or other qualified person. The use of a moisture meter, for example, to help diagnose the presence of condensation and other moisture, and the opening and closing of windows and doors are not 'tests'.
Terms of engagement	The document, describing in an easily understood manner, what has been agreed the RICS member will provide for the client, i.e. the Service.

Term	Definition
Traditional property, building or dwelling	Building constructed of vapour-permeable materials that absorb moisture and readily allow its evaporation, for example, solid brick, earthen or stone external walls bedded and surrounded in a true lime mortar, or old (typically pre-1919) timber-framed walls with infill or early cavity walls.
VOC	Volatile organic compound.

Notes:

For brevity, the Roles described with the prefix 'retrofit', e.g. 'retrofit designer' are usually referred to in this professional standard by omitting the prefix; thus, 'retrofit designer' may be described as 'designer'.

The descriptions 'dwelling', 'building' and 'property' are interchangeable in this professional standard.

1 Introduction

1.1 General

RICS has been setting standards for RICS members and RICS-regulated firms practicing in residential property for over 35 years. During this time, the scale of social, economic, political, technological and now climate change has been without precedent. The urgent need to adapt residential (and other) buildings to mitigate and manage global climate change, reduce carbon emissions, increase energy efficiency, help achieve energy security for the UK and protect the well-being of the occupiers of dwellings in the UK, will require RICS members to adapt to even more changes and the pace of change is likely to become increasingly urgent.

This professional standard provides a clear, flexible framework within which RICS members can provide high-quality residential retrofit Services that the public can recognise and trust and are consistent with the high standards expected by RICS.

This professional standard sets out a series of concise mandatory and recommended requirements. These establish 'benchmarks' around which RICS members can deliver retrofit Services that meet their client's needs in a changing environment. It also provides information that the public and their advisers will find useful.

The purpose of this professional standard is to:

- establish a clear framework that sets minimum requirements to maintain consistent, high-quality standards for residential property retrofit advice in respect of provision of retrofit installations; including project management, survey inspection, technical assessment, design, specification, contract administration and project evaluation Services that RICS members provide
- provide mandatory requirements for RICS members in the UK who deliver retrofit Services
- where an RICS member or RICS-regulated firm acts in part of, one or more of the Service Roles described, require them to take reasonable steps to ensure that the work they are undertaking is based on appropriate advice and investigation and is in the best interests of the client.

This professional standard will form the basis of any assessment by RICS Regulation of those RICS members who deliver or are involved with residential property retrofit Services.

1.2 Professional background

RICS members discharge their duties in a profession, with a duty of care consistent with acting in the best interests of their client and in the wider public interest. The actions and/

or omissions of RICS members when carrying out their professional roles and/or complying with their obligations affect people's lives.

RICS members have obligations, including to their clients and the wider public interest. This is consistent with:

- doing their best for every client undergoing a retrofit Service
- improving the resilience and energy performance of the dwelling
- enhancing and improving the lives and well-being of the occupiers and visitors to the dwelling and
- helping to mitigate and manage the effects of climate change.

In this regard, RICS members should recognise that the project stages and advice in the retrofit Service described in section 1.4, represent some of the best practice for property professionals and the construction industry (see also Appendix A).

1.3 Scope and application

This professional standard covers residential property retrofit Services for any and/or all Service Roles likely to be undertaken by RICS members and for clients likely to commission such Services in the UK. The primary purpose of such a Service is to ensure any retrofit of a dwelling is appropriate for the property (especially if the subject of the Service is a special property) and the client, who is likely (but not necessarily) the owner and/or the occupier. Clients who require retrofit Services will vary from owners of large housing estates and blocks of flats and tenements to single-home owners – millions of dwellings in the UK require the provision of retrofit installations. Some of the work may be publicly funded, some will be privately funded, possibly with the assistance of a mortgage lender. In all cases, RICS members **must** consider and comply with their professional standards, especially ethical standards. If a client requires that PAS 2035 is adopted for the retrofit project, RICS members should note they will need to comply with additional requirements.

This professional standard provides:

- the mandatory requirements (indicated by use of the word 'must' in **bold**) to which all residential retrofit Services offered by RICS members and RICS-regulated firms **must** conform and
- best practice advice that outlines how satisfactory compliance with the mandatory requirements may be achieved, including:
 - process of confirming the scope and nature of the Service(s) to be provided
 - type(s) of Service to which this document applies
 - nature of the pre-inspection preparation and research required
 - project management, careful consideration of current energy performance, property survey inspection and assessment, project design, specification, contract

administration of retrofit and/or building works, project evaluation and completion process associated with each type of Service

- post-project liaison with the client and all other interested parties, e.g. the lender
- Service closure activities.

This professional standard considers each requirement in turn and provides information on the nature and extent of each type of Service(s) to be provided.

This professional standard is intended to cover retrofit services only. It is likely that other professionals and/or services may be required, depending on the type and size of the project and the client's instructions, for example but not limited to, a reinstatement cost assessment.

1.4 Recommended documents and other necessary guidance

In providing residential retrofit Services, RICS members who offer such Services should have sufficient and up-to-date knowledge of the required guidance and legislation relevant to the dwelling type, which may include any of the following:

- [PAS 2030:2023 Installation of energy efficiency measures in existing dwellings. Specification](#)
- [PAS 2035:2023 Retrofitting dwellings for improved energy efficiency – Specification and guidance](#)
- [PAS 2038:2021 Retrofitting non-domestic buildings for improved energy efficiency – Specification](#) (included in this list since while it refers to non-domestic buildings, contains good guidance on residential-style properties)
- [BS 7913:2013 Guide to the conservation of historic buildings](#)
- [BS 40101:2022 Building Performance Evaluation](#)
- BS 40104 (to be published) 'Retrofit Assessment of Dwellings for Retrofit'
- [BS 5250: 2021 Management of moisture in buildings](#)
- [Investigation of moisture and its effects on traditional buildings](#), Joint position statement, 1st edition, September 2022 (RICS, Historic England and PCA)
- [BS EN 16883:2017 Conservation of cultural heritage – guidelines for improving the energy performance of historic buildings](#)
- other guidance referenced in some of the above documents, e.g. the HSS and appropriate TrustMark guidance
- guidance that may relate to retrofit installations that are partly or fully publicly funded – such work may involve organisations such as OFGEM, TrustMark or similar, with specific requirements for accreditation, competence and monitoring
- any other guidance that may be reasonably and appropriately required for the dwelling type and/or location

- guidance that may become necessary to providing competent residential retrofit Services in due course, given the speed of technological change and alterations in knowledge and/or amendments to the above documents, e.g. concerning whole life carbon targets, flood resilience and fire precautions and
- other relevant guidance and legislation that applies in different parts of the UK.

In providing residential retrofit Services, the necessary levels of technical knowledge, understanding and competence required by RICS members should be higher if the subject of the retrofit Service is a special property.

1.5 Residential retrofit Services in different parts of the UK

UK emission targets are currently set for achievement by 2050, but by 2045 in Scotland. Emission targets may vary in other parts of the UK in the future. RICS members **must** provide retrofit Services that are appropriate for the relevant part of the UK where the property, which is the subject of retrofit, is located.

This professional standard applies to all residential retrofit Services offered by RICS members in Scotland and other parts of the UK. However, Scottish and/or other national legislation in different parts of the UK takes precedence over all other requirements in this professional standard.

1.6 Effective date

This professional standard is effective from 31 October 2024.

2 Setting up the Service

2.1 General

In carrying out any residential retrofit Service(s), RICS members and RICS-regulated firms **must**:

- have a clear understanding of client needs including their method of funding the project (especially if publicly funded) and budget
- have the appropriate knowledge (especially of the property type and locality), understanding, competence, skills and experience to provide the agreed Service
- ensure potential clients understand the nature of and differences between the Service and Service Roles offered so they can make an informed choice and
- ensure that full details of the terms of engagement have been agreed with the client before the Service is delivered.

2.2 Conflicts of interest and referral fees

RICS members and RICS-regulated firms **must** declare any potential conflicts and how these are managed in accordance with the current editions of RICS' [Rules of Conduct](#) and [Conflicts of interest](#). They **must** ensure that any advice is correct, impartial and appropriate for the client, occupier and property and is unaffected by any financial inducement, in accordance with RICS' [Rules of Conduct](#).

RICS members and RICS-regulated firms **must** be transparent and open with their clients or potential clients by acknowledging that they have offered or received a referral fee or other inducement prior and relating to taking the instruction, if such applies.

If the RICS member or RICS-regulated firm has offered or received a referral fee or other inducement, they **must** provide clients or potential clients with a written statement (which should be included in the terms of engagement) stating one of the following, depending on which applies:

- that the RICS member or RICS-regulated firm does not pay a referral fee or equivalent to any party who may have recommended them or
- that a payment has been or may be made, either individually or as part of a third-party commercial relationship.

2.3 Qualifications and experience

RICS members **must** be qualified AssocRICS, MRICS or FRICS members and possess the relevant qualifications, experience and ability to undertake any of the Service Role(s) set out in this professional standard.

To ensure clients receive, and professionals provide, a high level of Service, any RICS member **must** be qualified, experienced and able to deliver the Service Role(s) required by the client and fulfil the mandatory requirements of each Service Role(s). This is especially important if the property is a special property. Such requirements are consistent with RICS members being part of a self-regulating profession. The requisite Service level may be achieved by:

- demonstrating competence, for example, by obtaining a relevant, appropriate and/or suitable qualification such as TrustMark registration, becoming an appropriately qualified member of a retrofit coordinator scheme, qualifying as a DEA, or as may be required by a particular client, or as otherwise may be required in connection with a specific retrofit PAS, or relating to a particular EEM type
- having knowledge and understanding of the tasks to be undertaken and the risks involved, especially to the long-term performance of the building and the well-being of the building occupier(s)
- possessing the skills, competence, experience and ability to carry out their duties in relation to the appropriate level of Service and
- identifying their limitations and taking appropriate action where their ability to provide a high level of Service is found to be inadequate, for example, by engaging in regular, appropriate, relevant and structured life-long learning (continuing professional development).

RICS-regulated firms **must** ensure that services are provided by individuals who are suitably qualified and have the experience, skills and knowledge to provide the relevant Service level.

RICS members should recognise that every home is different and, therefore, maximising the energy efficiency potential requires an understanding of fundamental energy efficiency principles and practices, combined with client and or occupant needs, and design and condition of the property.

2.4 Knowledge of locality and nature of property

RICS members **must** be familiar with the nature and complexity of the subject property type, the region in which it is situated and relevance to the subject instruction, including:

- common and uncommon housing styles, materials and construction techniques. This is particularly important where retrofit and associated Services are offered for special properties, where understanding the interaction of different building materials and techniques, for example, 'vapour-permeable' lime renders and mortars or the potential for corrosion of embedded metal reinforcement or steel frames in general, is essential in diagnosing defects and/or deficiencies in the property and the extent to which provision

of retrofit installations is appropriate and/or may require variation to accommodate the special needs of the client, occupier and property

- current advice and guidance relating to asbestos, including the current edition of RICS' [Asbestos: legal requirements and best practice for property professionals and clients](#), and other common potentially hazardous and/or deleterious materials
- an awareness of the main principles of modern (modular or off-site) methods of construction
- site-specific information such as property position, exposure, shading, orientation and local climate including wind direction(s)
- environmental issues including local ecology, geology, topography, publicly available information (see Appendix B for further details)
- the location of locally or nationally listed buildings, designated heritage assets, planning areas such as conservation areas and their constraints on building works, historic centres; including the implications of these designations, especially in relation to legislation that affects repair, improvement work and provision of retrofit installations and Services
- a basic understanding of the type of tenure for the subject property – where the property is held on a leasehold basis, the RICS member **must** meet the requirements set out in section 2.8 of this standard
- relevant requirements specified by local and regional government organisations and structures and
- awareness of the social and industrial heritage pertinent to the instruction.

Although an RICS member with this knowledge, understanding and competence may be able to provide all levels of retrofit Services, those who provide such Services on special properties will require a broader and deeper technical knowledge. The RICS member and RICS-regulated firm **must** decline the instruction if the subject property type is beyond their knowledge, understanding, experience, competence and skill level.

2.5 Client liaison

RICS members and RICS-regulated firms **must** take all reasonable steps, which **must** be appropriately documented and recorded, to ensure that clients:

- understand the differences between the types of residential retrofit Services and roles, including the extent and limitations of each option
- are advised of the range of options the RICS member can offer, together with the key features and benefits of each
- are aware of the fee that will be charged for the Service
- agree with the terms of engagement
- agree with the Service format and method of delivery and

- explain the intended future use of the property (for example, to be altered from commercial to residential, to be 'buy to let' or currently let).

Clients may need to become more familiar with the range of residential retrofit Services available and will require advice on which type of Service(s) best suits their needs. The RICS member should ensure that the client can access appropriate information before any contract is formed.

Where instructions have been received from a third party (for example, from another property professional), the RICS member should ensure that the instruction is best suited to both the property and the client's needs.

Where the RICS member or RICS-regulated firm finds the instruction unsuitable, the client should be given the reasons why and advised on the appropriate Service.

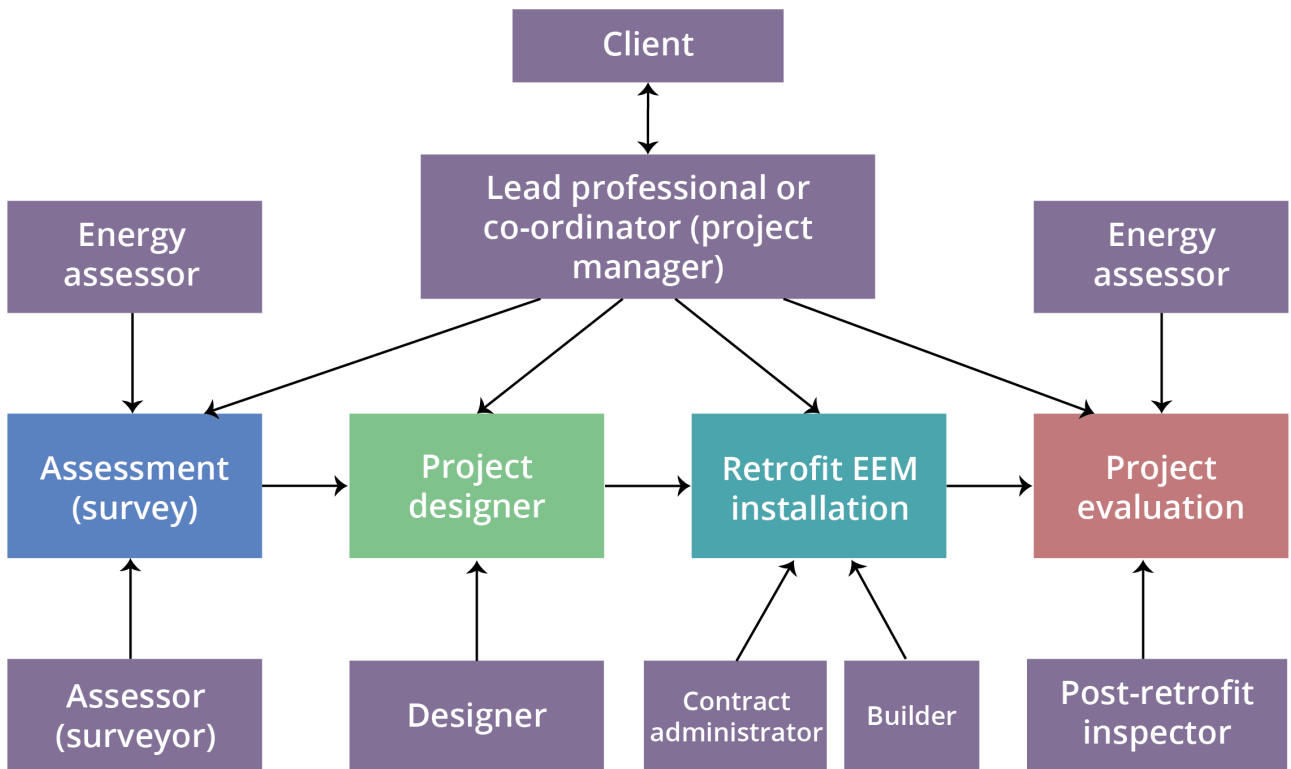
2.6 Service Roles

The assessment (survey) Service Role will be critical for any retrofit service. As such, RICS members and RICS-regulated firms **must** satisfy themselves that a competent assessment of the property has been carried out before they act in a Service Role that does not include an assessment.

Other Service Roles are optional depending on the client's requirements.

RICS members **must** ensure their Service is clearly 'benchmarked', documented and recorded against the Service Role, as much of the Service Role, or those elements of the Service Role, that have been required by and agreed with the client(s) in the terms of engagement. RICS members are likely to be involved in all professional roles required in the installation of residential retrofit improvements, given the fact RICS members have wide experience in land, property and construction. Some RICS members may only act in one Service Role, others in several. They should be mindful that they owe a duty of care to their client(s).

The fundamental requirements needed to satisfactorily tackle climate change in existing buildings are to assess, design, install and evaluate measures appropriate to each individual property and/or client. Table 1 summarises a typical 'retrofit process' that is likely to be encountered by an RICS member. See section 4.3 for more specific detail on project stages and Service Roles.



RICS members can be involved at any stage of the process

Figure 1: Retrofit process – individuals involved

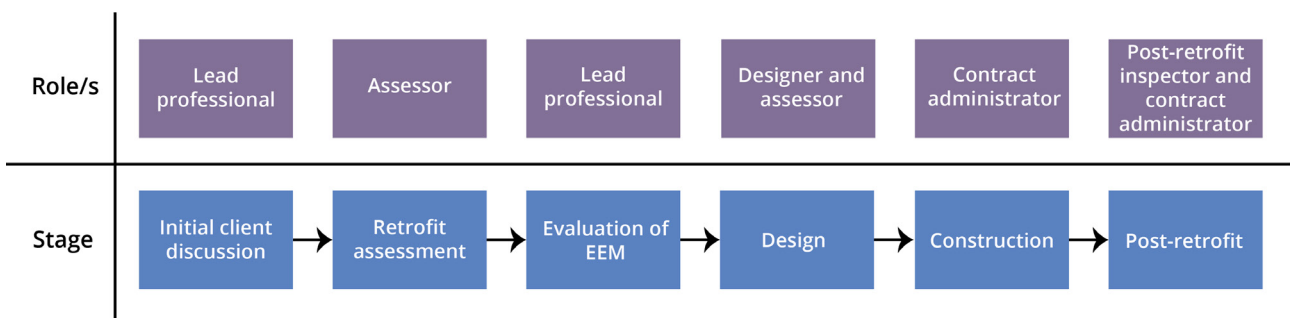


Figure 2: Retrofit process – roles by stage

Retrofit project stages and Service Roles	Professional and project team member most likely involved
<ul style="list-style-type: none"> • initial discussions with the client • consideration of client requirements • site inspection and/or desktop appraisal considering local and regional context • appointment of a project team and agreement of an initial brief, including agreeing and signing terms of engagement confirming extent, length and requirements of project and fees. 	Lead professional
<ul style="list-style-type: none"> • detailed risk-based assessment of the existing building, including providing the client with an appropriate report considering context, condition, defects, suitability of previously-installed EEMs, current EPC rating, recording all necessary information including preparation of plans, sketches and photographs, etc., assess occupancy (current, anticipated or intended) and performance, including current ventilation systems • carry out any necessary detailed technical assessment, including consideration of thermal-bridging (especially if a special property, e.g. inappropriate cement-based repairs over original lime bedding and pointing) and any further investigation • identify those issues that require attention before installation of likely EEMs • assess changes in occupancy that may be a reason for current problems • assess the heritage values of a traditional and/or protected building. 	Assessor

Retrofit project stages and Service Roles	Professional and project team member most likely involved
<p>Evaluation of EEM and building improvement options to identify works are phased appropriately and implemented in the correct order so as not to be abortive (e.g. installing new windows and then installing external wall insulation), such as: improving levels of insulation in a property-specific way upgrading/improving and altering existing ventilation arrangements, especially where the installation of one or more EEM will improve air tightness and thereby increase the risk of interstitial and/or surface condensation, especially in special properties, taking into consideration the results of the building assessment.</p>	<p>Lead professional, designer and assessor (where required)</p>
<p>Agreement of intended outcomes of the project with the client and/or occupier, including consideration of likely timeframes, initial calculation of 'payback period' if required by the client (subject to later detailed calculation), and any necessary phasing due to special considerations such as funding, allowing for specific performance targets for the property and the EEMs and including consideration of occupier and/or client requirements.</p>	<p>Lead professional and designer</p>
<p>Preparation (including agreement with the client) of an improvement plan for the building, including 'pre-construction' health and safety plan, any necessary repairs, possibly to be implemented in stages – some projects may be relatively simple and be managed over months, whereas others may take many years.</p>	<p>Designer</p>
<p>Design and specification of the work based on the improvement plan, comprising preparation of planning drawings, full working drawings, including for Building Regulations purposes, specification, bills of quantities, calculation of detailed 'payback period' (if required by client), including CDM – some relatively simple projects may not require preparation of complicated documents.</p> <p>Manage an appropriate procurement process such as tendering, designing and building, turnkey and negotiating a recognised building contract with suitably qualified and competent contractors with experience, knowledge and understanding of the particular building type, especially if a special property.</p>	<p>Designer</p>

Retrofit project stages and Service Roles	Professional and project team member most likely involved
<p>Obtaining statutory approvals such as change of use, planning, listed building consent and conservation area consent if applicable, Building Regulations and satisfactorily resolve (before works begin on site) any associated matters, such as liaison with occupiers who may remain in the property during the works, dealing with any neighbour, party wall and other legal issues and arranging a suitable building contract.</p>	Designer
<p>Oversee the works including monitoring repair works that may be required before the retrofit work (installing EEMs), dealing with unforeseen issues found during opening-up (the risk of such a requirement increases for a special property) including variations to the work (and therefore possibly the price), defective workmanship and/or materials, interim valuations, release of retentions as appropriate and issuing completion certificates.</p>	Contract administrator
<p>Overseeing and/or arranging all necessary and appropriate final testing and commissioning, considering and evaluating possible thermal bridging including possible use of thermal-imaging equipment, especially of newly-fitted service installations and handover of the retrofitted building, including obtaining necessary competent persons or completion certificates and any associated warranties and guarantees.</p>	Contract administrator and designer
<p>Monitoring as-built and installed EEMs and retrofitted building performance to meet the intended targets, including occupier and client liaison and associated Services.</p>	Post-retrofit inspector
<p>Evaluation of the project to confirm outcomes, including:</p> <ul style="list-style-type: none"> • occupier and client liaison • identify any unintended consequences, e.g. identifying any thermal bridging in the property • compare project outcomes with issues identified in the initial assessment and ascertain if they have been satisfactorily addressed (e.g. comparison of 'payback' calculations with actual data) and specify any necessary remedial works, including arranging for such work, overseeing the work and final sign-off. 	Post-retrofit inspector and contract administrator

Notes:

1. In PAS 2035 and PAS 2038, Service Roles are given designations or terms that approximate to roles more usually known in the professions and construction industry as follows:

- 'lead professional' – more commonly known as project manager
- 'assessor' – surveyor or property inspector
- 'designer' – architect, designer, architectural technician, specifier
- 'contract administrator' or 'retrofit coordinator' – the professional responsible for carrying out regular inspections of the retrofit works to monitor conformance with the design and/or good building practice and
- 'evaluator' – post-retrofit inspector, the project team member who confirms the efficiency and/or efficacy of the installed EEMs.

2. The relevant project team members (usually the designer and contract administrator) **must** ensure the contractor who carries out the retrofit works is aware that they are responsible for supervision of their work people and building works on site to ensure satisfactory installation and completion of the EEMs.

3. The lead professional, client and/or occupier are likely to be involved at most or all stages, dependant on the project type.

4. There may be crossover of Service Roles depending on the project type and size and the client's instructions.

5. This professional standard specifies that some mandatory requirements (indicated by use of the word 'must' in **bold**) apply only to specific Service Role(s). The RICS member or RICS-regulated firm **must** define which Service Roles are being undertaken in their instructions.

Table 1: Typical retrofit project stages and Service Roles

RICS members should be aware that for large retrofit projects, the lead professional will be involved at all stages, acting as liaison with the client(s). Whereas, for smaller projects, it is more likely that the client may decide to coordinate certain roles themselves. RICS members **must** advise the client appropriately and allow for any variations necessary and required by each individual project and client. RICS members will require good communication skills in all projects and **must** keep the client(s) updated at all required relevant stages.

Some clients may not be in a position (for example, due to financial constraints) to undertake all recommended EEMs as soon as might ideally be required. In these cases, the RICS member should advise the client on an appropriately phased approach, possibly over many years; including any potential implications such as risks to the property and occupiers that might arise from such phasing.

Whichever Service Role(s) is or are undertaken, the RICS member and/or RICS-regulated firm **must** take reasonable steps and make appropriate enquiries to establish the appropriateness of any work undertaken or advice given by other Service Role providers involved in the project (who may or may not be RICS members and/or an RICS-regulated firm). The RICS member and/or RICS-regulated firm should satisfy themselves that such work carried out by others in relation to the project has been undertaken to a reasonably satisfactory standard. This requirement includes identifying and alerting clients to circumstances where a Service Role necessary and or required for the project, in their opinion, may not have been carried out at all.

In discharging this duty, the RICS member or RICS-regulated firm should consider their instructions and any other relevant and or reasonably foreseeable matter, such as the nature of the property or the occupier. The RICS member and/or RICS-regulated firm **must** explain to the client relevant concerns they may have and **must** refuse the instruction where an appropriate level of Service consistent with this professional standard, RICS' [Rules of Conduct](#) and/or other professional requirements cannot, in their opinion, be achieved. Examples of such instances (which are not exhaustive) might include circumstances where, when acting:

- as a lead professional, inappropriate Service Role providers are proposed by the client or others, or the budget is inadequate for the project
- as assessor, instructions are given by the client or others involved to prepare the assessment based on an inadequate or inappropriate level of inspection, or recommended further investigations are not satisfactorily implemented
- as designer, an inadequate, inappropriate or no assessment (survey) of the property has been carried out, or the contractor proposed by others is believed inappropriate for the project
- as contract administrator, contract documents such as drawings and/or specification documents are inadequate for their purpose, or an inadequate inspection regime is proposed by others and
- as post-retrofit inspector, there is a lack of available testing information, or inadequate records of inspection of the works to satisfactorily discharge their professional obligations in their Service Role.

2.7 Terms of engagement

RICS members and RICS-regulated firms **must** satisfy themselves that the client has received an up-to-date terms of engagement that describes the specific instruction. These are likely to be standard documents amended to take account of the property type and intended future use and any specific client requirements, either in terms of content or format.

Standard documents may also be appropriate for most special properties; but careful consideration should be given to whether any variation such as additional Services are required for the specific instruction. Where these are varied, these **must** be clearly described and explained by the RICS member during the pre-inspection discussions with the client.

The terms of engagement should be issued by the RICS member and agreed by the client before any advice is given or the inspection is carried out and **must** be agreed before the delivery of the Service.

RICS members supplying professional Services to clients **must** be aware of applicable legislation including the *Consumer Contracts (Information, Cancellation and Additional Charges) Regulations 2013*. These Regulations contain essential provisions and the RICS member should take legal advice to ensure that the contract letter, engagement procedures and related materials being used are compliant with all current legislation in these respects, to ensure contracts are enforceable.

The terms of engagement **must** point out that the residential retrofit Service does not include an asbestos inspection and it falls outside *The Control of Asbestos Regulations 2012* and subsequent Regulations and associated legislation. However, the Service should emphasise the suspected presence of asbestos-containing materials and any personal hazards arising if any assessment or inspection identifies that possibility or it is reasonable to suspect its presence, for example, in post-1945 'non-traditional' construction.

The terms of engagement **must** clearly set out the Service Role(s) being undertaken by the RICS member and RICS-regulated firm and the extent of the Service in relation to the relevant Role(s).

Minimum requirements for terms of engagement have been included in Appendix C.

See also the current edition of RICS' [Risk, liability and insurance](#).

Note that variations may apply in different parts of the UK, especially Scotland.

2.8 Leaseholds and other properties with shared facilities

Any residential retrofit Service for a leasehold residential property raises separate and additional factors arising from shared responsibilities and the wide variety of repairing covenants in common use. Additionally, where the leasehold property is a tenement or flat, the Service is usually restricted to the subject property and the accessible common parts and grounds (unless instructions have been received to provide the Service for the entire estate or block(s) in the estate). Onerous repairing liabilities may exist independently from the property, for example, where the lease imposes a liability on the property owner or occupier to pay a proportion of the total estate or block repair costs.

The RICS member **must** take reasonable steps to obtain and review a copy of the current lease for the subject property to understand the extent of the demise and potential barriers and/or limitations when providing advice to clients of leasehold properties. RICS members and RICS-regulated firms **must** provide clear property-specific advice and **must not** provide generic recommendations that may not be viable for the subject property, particularly if dealing with a special property. The RICS member should set out the limitations of any advice given, such as stating that no due diligence has taken place in relation to the true legal effect of the lease – this is exclusively the responsibility of the client's legal advisers.

The RICS member may need to obtain legal advice regarding these (and other) legal matters to help protect the client's interests – see section 4.5 and Appendix E.

RICS members and RICS-regulated firms should be aware that legal advisers do not usually inspect the property and so the RICS member should:

- act as the 'eyes and ears' of the legal adviser and liaise with the legal adviser and client as required
- have adequate and sufficient knowledge and understanding of, and competence in relation to, legal issues that typically arise with properties held under leasehold tenures
- identify any obvious and relevant matters that may affect the client's responsibility for carrying out repairs and liability to pay towards their cost and
- consider recommending that the client obtains independent legal advice on the terms and interpretation of the lease and any issues arising, particularly relating to ground rents, future maintenance and service charge obligations.

The RICS member should be aware that these issues can also affect freehold properties. A property held under a freehold tenure can also have common or shared repairing and/or other rights and liabilities, sometimes onerous.

Note that variations are likely to apply in different parts of the UK, especially Scotland.

3 Carrying out the residential retrofit Service

3.1 General

In performing the Service Roles and Service agreed in the terms of engagement, the RICS member and RICS-regulated firm **must**, as appropriate:

- where it is part of the Role being provided, project manage all the professional tasks consistent with the Service Role(s) agreed to achieve the retrofit installation(s) discussed and required by the client(s) and agreed in the terms of engagement, ensuring compliance at all times with RICS' [Rules of Conduct](#)
- comply with all relevant RICS professional standards, especially mandatory requirements
- undertake and be aware of appropriate pre-inspection research as required by the specific project to support the Service (see Appendix B)
- be familiar with the type of property to be inspected and the area that it is situated, especially if the project is for a special property
- inspect, measure and otherwise document the property at all relevant stages of the retrofit project in accordance with the required Service agreed
- produce an accurate and comprehensive record of the property at each time of inspection, e.g. for assessment, design, specification, contract management or evaluation purposes, to allow professional reflection
- only recommend justifiable further investigation, e.g. where only a 'competent person' is qualified to confirm condition, safety and efficiency of a service installation
- be clear during the Service about the scope of inspections of the property, including limitations, caveats and consequent possible actions available to the client, where appropriate, in line with the Service Role being undertaken
- deliver property-specific and clearly understandable information to the client(s) in whatever format has been agreed (electronic, hard copy, verbal, etc.), e.g. project brief, property assessment inspection report, design drawings, specification, contract management and evaluation report(s), properly and accurately reflecting the acquired information, from whatever source
- deliver advice that is client-specific and appropriately specific to the property (particularly if a special property), bearing in mind the location, exposure, construction and intended occupation

- prepare designs, including specifications, (where part of the Service Role(s) being provided) for proposed retrofit installations that comply with the terms of engagement in all respects, paying special attention to detailing that will help prevent effects such as thermal-bridging, water penetration, moisture accumulation, reduction of internal air quality, poor ventilation, overheating and unnecessary heat loss
- oversee, certify and sign-off the retrofit installation works (where part of the Service Role(s) being provided) diligently and regularly so as to ensure that the completed works comply with the intended outcomes, design, specification, Building Regulations and good building practice, especially if the project is for a special property
- monitor, evaluate and report on the retrofit installation works (where part of the Service Role(s) being provided) in a manner that is easily understandable by all the involved parties, especially the client(s)
- offer to discuss with the client(s) any aspects of the Service being provided, such as project coordination, property assessment report, proposals including design, specification and contract management and project evaluation at any reasonable time
- ensure any software, technology and system used to deliver the Service is compliant with this professional-standard and
- properly and adequately document the Service and ensure there is a complete record, which **must** be securely stored and accessible in compliance with current data protection legislation and regulations.

Note that variations may apply in different parts of the UK, especially Scotland.

3.2 Locality

RICS members **must** be familiar with the type of property to be inspected and the area, especially the immediate surroundings, in which it is situated. Research about the locality and property should be carried out in accordance with section 2.4.

The depth and breadth of the research will depend on a range of factors including the RICS member's knowledge and experience, the locality and the client's specific requirements. Research for retrofit Services on a special property is likely to be more extensive. The level of research should be appropriate and proportionate to the project and the RICS member's role.

The research will depend on circumstances and may vary over time as additional property-based information becomes publicly available. Desktop research should include information about the general environment, neighbourhood and subject property as described in Appendix B.

3.3 Information from client, property occupier or others

Where relevant and practical, the client, including the owner and/or tenant or their agent should be asked to provide appropriate information, including details of:

- installation of previous EEMs, e.g. roof or wall insulation or new boiler, including all project assessment, design, specification, installation and evaluation information
- previous alteration, repair and improvement work to the property
- occupant appraisal
- the current EPC based on RdSAP, plus SAP or other energy or assessment model results if available
- air-permeability test results (and any information regarding internal air quality, if available)
- copies of or access to actual energy or other similar costs and bills;
- planning permissions and similar consents
- Building Regulation approvals including any 'completion certificate' and/or similar information provided by a member of a 'competent persons scheme', e.g. for service installations such as electrical, heating, cooling and mechanical systems
- any relevant guarantees and warranties
- evidence of service agreements and
- confirmation of property ownership information including any onerous restrictions and any lease details.

It will also be appropriate to ask whether, to their knowledge, any building's insurance claims have been made and if the property (or neighbouring properties) has been flooded or has been the subject of any matter that might complicate or hinder the retrofit Service, for example, the presence of a protected species such as bats or an invasive species such as Japanese knotweed. Other matters should include ownership of boundaries, existence of any neighbour disputes (especially if the property is attached in any way), rights of way in favour of the property or enjoyed by other properties over the subject property and so on.

Some organisations, for example, RPs, may provide a range of information about the property at an early stage in the retrofit project. The RICS member should carefully evaluate this information before incorporating it into the project advice given.

Where information is offered by the client, occupier or others, the RICS member should evaluate the information provided and keep a clear record of it.

3.4 Equipment

For all retrofit Services, RICS members should have access to suitable equipment required to complete the Service. The RICS member **must** use such equipment and interpret results obtained in accordance with all available guidance such as manufacturers' instructions. The equipment and other necessary technology will vary depending on the Service provided, but may include (dependent on the role and Service Role being carried out):

- **Information-recording equipment:** methods of recording information will vary. RICS members **must** produce an accurate and comprehensive record of the property at the time of inspection to allow reflection during any report or Service production stage and before any advice is delivered.
- **Measuring equipment:** RICS members **must** measure in accordance with the current edition of [RICS property measurement](#) (where part of the Service Role(s) being provided) or for the particular purpose as required by the guidance appropriate for the agreed Service. RICS members should collect appropriate dimensions and other property characteristics to a suitable level of accuracy.
- **Testing and monitoring equipment:** (where part of the Service Roles being provided) for testing air-permeability of the property envelope, measuring internal air quality in the dwelling, measuring and monitoring accumulated moisture or condensation or relative humidity levels in the dwelling, assessing the location(s) of cold-bridges with thermal imaging devices and/or similar.
- **Access equipment:** RICS members **must** have appropriate tools and equipment available that will enable reasonably safe inspection of all reasonably accessible parts of the property (depending on the nature of Service).
- **Safety equipment:** RICS members should carry out all parts of the Service safely. This covers work done in the office, travelling to and from the property, and during all inspections involved in the Service. RICS members and RICS-regulated firms should have appropriate health and safety procedures and policies in place, including access to appropriate health and safety related equipment. For more information see the current edition of RICS' [Surveying safely](#).

RICS members should be aware that measurement protocols vary across different methodologies, for example, measurements for RdSAP compared with for insurance reinstatement purposes, use of external compared with internal measurements and exclusion of unheated spaces such as porches and integral garages.

The RICS member is responsible for carefully inspecting the property at the different stages of the retrofit project in accordance with the nature and type of Service, the terms of engagement and client needs.

3.5.1 Specific inspection details

The extent of an inspection will depend on a range of circumstances (including health and safety considerations). Several critical aspects are identified in the recommended documents (see section 1.4), and these differentiate the levels of inspection appropriate for each Service and role.

RICS members should ask the owner or occupier to open any traps and hatches that provide access to parts of the structure and move furniture and possessions where these prevent an appropriate level of inspection (where practicable). Where this is not done, RICS members should inform the client, including confirming where any lack of inspection increases the risk that the agreed Service might be materially and adversely affected and a recommendation that the part(s) hitherto uninspected should be inspected to ensure a satisfactory Service is provided.

3.5.2 Personal safety during the inspection

The RICS member **must** be able to safely undertake the tasks involved or manage others undertaking those same tasks. This is particularly important in relation to gaining access to voids that may be present in the property and in relation to the occupier and others who may come to harm because of acts and omissions by the RICS member when performing their Service Role.

The RICS member and RICS-regulated firm should consider any reasonably foreseeable personal health and safety aspects including:

- keeping a record of their appointment either at the office or at home
- letting someone know their expected return time
- carrying a personal alarm
- carrying a mobile phone
- completing and recording, when legally required, a formal personal safety risk assessment at the property and
- using ladders and other equipment safely.

The RICS member should be familiar with the current edition of RICS' [Surveying safely](#).

3.5.3 Recording information

The RICS member or RICS-regulated firm **must** keep a record of every inspection of the property that is the subject of the retrofit Service in strict accordance with section 4.12, and in accordance with PAS 2035 if appropriate. The nature and extent of inspection will vary depending on the Role undertaken and agreed terms of engagement, but might include:

- the construction, insulation, types of service installations, retrofit installations previously fitted, condition and circumstances of inspection (including any limitations)

- the checks made to the fabric and structure and what was found
- appropriate dimensions and diagrams, sketch plans and any images captured during the inspection and
- the results of any tests that have been carried out, whether by the RICS member or by others.

It is likely, if not inevitable, that for a special property; the retrofit Service will include more detailed and technical assessments of the building, and the amount of recorded information will be greater. In many such cases, depending on the particular circumstances, specific reference should be made to BS 7913:2013 *Guide to the conservation of historic buildings* and the current edition of RICS' [Investigation of moisture and its effects on traditional buildings](#).

4 The retrofit Service

4.1 General principles

The RICS member's overriding duty in retrofit projects is to improve the energy efficiency of dwellings by undertaking their professional duties to the required standard. Included in the duties of the RICS member is to help improve the well-being of the client and/or occupier of the property. Retrofit improvements (EEMs) in dwellings will likely include the following (this list is not exhaustive and the nature of EEMs is likely to change over time due to technological advances):

- identifying defects (especially if the project is for a special property) that require attention before installation of EEMs and arranging for their satisfactory repair
- improving levels of insulation, air tightness, the supply of ventilation (controlled and uncontrolled) in the dwelling, IAQ and managing hazards such as VOCs
- managing moisture in the dwelling, including preventing weather resistance
- installing efficient heating and cooling systems and reducing the risks of overheating
- provision of efficient water heating and lighting systems and other equipment and appliances
- installing efficient energy control, metering and monitoring systems and LZC technologies.

Where undertaken as part of the Service Role(s), the project coordination, desktop research, assessment, design, specification, contract management and evaluation of the Service **must** be property- and client-specific and:

- be clearly presented and follow a logical structure so clients can quickly find the required information
- be factual and unambiguous, and clearly separate fact from the RICS member's opinion
- use non-technical terms where possible, although given the technical nature of the Service and involvement of many property professionals and contractors, technical terms will be required
- when technical terms are used, the client may find a layperson's explanation helpful.

4.2 Content of the Service

The retrofit Service **must** conform to the agreed terms of engagement including the recommended documents, where appropriate, good practice in document production and to the following principles:

- clearly explain the Service and Roles, what the client can expect from the retrofit Service and encourage the client to ask questions of the RICS member and
- structured in a way that enables the client to understand and locate required information easily and take the appropriate actions.

4.3 Service-specific requirements

4.3.1 General

The nature and content of the Service to be provided by the RICS member will vary dependant on the property-specific risk assessment process for each project and on the client's requirements. The general nature of each Service is described in the following subsections. Some clients may require projects to be carried out in strict accordance with published guidance such as a PAS, others may require a more bespoke, enhanced or restricted Service. The RICS member should note that the list below is not exhaustive and **must** be familiar with their Service Role as agreed with the client in their terms of engagement, described in the recommended documents and any other relevant and/or necessary documentation appropriate to the client's requirements.

4.3.2 Retrofit Service(s) that may be provided during any project

As a result of the terms of engagement agreed with the client, the RICS member may include some or all of the following types of professional advice in connection with the provision of projects involving residential retrofit Services:

Project management or coordination – lead professional

- coordinate the overall retrofit Service from start to finish
- ensure the client's and public's interests are protected at all times
- ensure the client is aware of the Service to be provided by the RICS member and RICS-regulated firm and terms of engagement have been agreed
- carefully consider, evaluate and review the property's current energy performance including the EPC and other appropriate and recognised energy assessment of the property
- ensure that intended outcomes are discussed and agreed with the client including all matters identified in the recommended documents, such as reductions in energy use, improving internal comfort including internal air quality, elimination of condensation

(e.g. by reducing thermal bridging) and issues arising, sustainability, flood risk resilience, fire protection and protection of architectural and historical heritage and features

- engage, by agreement with the client, the services of other professionals (such as a structural engineer) and others as may reasonably be required to ensure a satisfactory Service is provided in accordance with the terms of engagement
- liaise with the client, occupier, all other members of the project team and other interested parties as required to satisfactorily complete the project and comply with the terms of engagement and the RICS member's professional obligations
- ensure retrofit advice is provided to occupiers at certain intervals as necessary and appropriate to the Service Role(s) being undertaken, which may include:
 - on initial engagement
 - at inception of the project
 - on completion of the improvement option evaluation
 - on completion of design
 - around the time of completion of the retrofit installation and
 - during project evaluation

(all of which advice should ensure full and appropriate information (e.g. at completion stage: planning constraints, proposed external appearance (especially for protected properties), costs and fuel savings, priorities and recommendations) is given to the end-user)
- ensure all necessary and associated legal documentation is obtained from the relevant parties (where agreed and appropriate as part of the Service Role(s) being undertaken), such as: building contractors and designers, including:
 - Building Regulation approvals and completion certificates
 - other certificates from competent persons
 - planning approvals, including consents relating to protected and heritage buildings
 - test certificates, such as for air-permeability and IAQ
 - service of Notices under the *Party Wall etc. Act* 1996, including any required appointment(s) of surveyors under the Act and preparation of any necessary Awards arising (in England and Wales)
 - documentation in respect of any similar legislation in other parts of the UK
 - revised and new energy assessments, such as EPCs
 - confirmation of adequate professional indemnity insurance from all professionals involved in the project
 - manufacturer's information and
 - warranties and guarantees.

- Ensure all such documentation is passed to the client and/or occupier.

Property inspection and assessment – surveyor or assessor

- before a retrofit assessment, collect, consider and review all available and necessary data regarding the property, e.g. by conducting a desktop study of online and other available information in accordance with the HSS amended as necessary, including existing energy assessments such as the EPC
- assess and safely inspect the condition of the property to identify defects, such as:
 - structural movement
 - inappropriate previous repairs (e.g. use of cement-based pointing or render over lime), condensation
 - excessive levels of moisture including condensation, water penetration and rising damp
 - leaks
 - fungal decay
 - wood-boring insect attacks
 - mould and inadequate ventilation systems and
 - preparing a photographic record of the property's features including defects
- report on the property based on the data collected, including categorising defects in terms of urgency (those requiring attention before retrofit works can be installed, and those recommended but not so required), and considering all relevant factors, such as:
 - property history
 - location
 - local environment
 - occupier safety
 - risks to the property, including those arising from climate change and
 - legal matters
- prepare a detailed property assessment to sufficiently establish:
 - U-values (for special properties, RdSAP default values may be inappropriate – see BR443 *Conventions for U-value calculations*) and moisture properties of the main building elements (exposed floors, walls and roofs)
 - a detailed measured survey of critical dimensions (including windows and doors)
 - identification of site constraints, including legal and other relevant matters and adjoining properties
 - identification of service installations
 - appraisal of occupiers, including any special requirements for vulnerable persons

- a more detailed assessment of ventilation systems including any condensation and mould growth and
- an approved estimation of annual fuel use costs and CO₂ emissions.

Design and specification – designer

- prior to preparing the retrofit design, carry out an improvement option evaluation to identify the appropriate EEMs to be installed, including pay-back calculations (making appropriate allowance for actual occupancy of the property) and assess the ventilation systems
- design and specify the proposed EEMs in the retrofit installations in accordance with the recommended documents, considering any appropriate requirements of professional testing and measuring bodies, such as CIBSE or ATTMA (e.g. air permeability testing), paying attention to the results of the retrofit assessment, using materials and techniques appropriate to the building type and making allowance for any risks associated with the property type (especially if a special property) and/or the sequencing or phasing of works, including for CDM requirements, ensuring continuity of insulation (and ventilation) to help prevent thermal-bridging (especially at corners, junctions and edges of the property envelope), specifying repairs to remedy structural and other defects, providing for resilience against moisture including rainwater penetration and flooding, designing in satisfactory and adequate supply of ventilation, arrangements to secure adequate internal air quality and appropriately allowing for fire safety, future maintenance, occupier safety and all relevant legal matters
- consider guidance (such as [Investigation of moisture and its effects on traditional buildings](#)), paying particular attention to management of moisture in the property, to help prevent damage to the property and condensation
- in designing and specifying the EEMs in the retrofit installations, include measures to inhibit overheating, ensure the sequence of EEM installation is specified to ensure the resilience of the EEMs is not adversely affected and include any necessary improvements to the ventilation systems
- in circumstances where the property is protected, historic or traditional, at all stages of the process pay attention to the recommendations in BS 7913:2013 *Guide to the conservation of historic buildings* including:
 - carrying out an ‘assessment of significance’ where required (if the property is ‘traditional’),
 - adopting a ‘holistic’ approach regarding condition, EEMs and building performance and considering matters such as cultural and architectural heritage,
 - any proposed retrofit design that could cause harm to the significance of the historic building should be avoided where possible
- commissioning any necessary and appropriate report by a structural engineer or other suitably qualified person

- in preparing the design and specification of the retrofit installation where EEMs include improvements to the building fabric, include allowance in the contract documents for an appropriately-approved air tightness test following completion of the work.

Contract monitoring – contract administrator

- monitor the installation of the retrofit design during the contract administration process to ensure the works comply with the retrofit design and good building practice, including all necessary and appropriate testing and commissioning of EEMs, reviewing the performance of the installed EEMs, including consideration of feedback from occupiers; where EEMs and associated building works are incorrectly installed, defective and/or ineffective, arranging for 'snagging' works (in extreme circumstances allow for complete removal of defective works and appropriate remedial works) and provide retrofit installation advice that is customised to the occupiers' needs
- issue any necessary variation orders and other contract instructions relating to the works to the contractor, e.g. as a result of discovering unforeseen defects during opening-up of the building, carry out all roles usually undertaken by a quantity surveyor, such as agreeing interim and penultimate valuations of the works and the final contract sum with the contractor or the contractor's representative
- hand over the completed works to the client(s) (especially the occupier) in an appropriate manner including explaining function, safe and efficient operation, the importance of ventilation, care and maintenance of the retrofit systems, provision of test, etc. and other certificates, including provision of a new EPC as appropriate
- carry out an air permeability test and IAQ test including identifying key air leakage locations, carrying out any other tests on site
- where requested, provide 'toolbox talks' to retrofit installers, but always include this requirement in certain circumstances, such as:
 - use of new or unusual materials
 - where the property is a special property
 - where the type of installation has not been installed before by the installer or
 - the design is especially challenging.

Project evaluation – post-retrofit inspector

- at the appropriate time(s), monitor and evaluate the project and undertake all reasonable steps, including a structured liaison and feedback process with the client and/or occupier, including checking and testing of parts of the project as required and testing internal air quality
- review actual against predicted energy use,
- review property performance to determine whether the intended outcomes of the retrofit project have been achieved,

- take action where required to understand and resolve any discrepancy between predicted performance and actual outcome performance
- use inspection and test plans (ITPs), as in PAS 2038, to manage quality.

See also Table 1 in section 2.6 for more general detail on project stages and Service Roles.

Every retrofit project will be different, and the Service Roles will vary depending on the circumstances of each project, such as the property type and the client's needs.

4.3.3 Inspection and reporting levels for retrofit assessment (survey) purposes

The RICS member and RICS-regulated firm **must** advise the client regarding the appropriate type and level of inspection, assessment and report (Service) for each dwelling. The type of Service will depend on factors including the circumstances of each property, the Service being provided, each individual case, client needs, the competence of the assessor and the agreed terms of engagement. Special properties require a deeper technical assessment and consideration, therefore, such properties will require a 'level 3' type Service suitably amended for a retrofit project. For some properties, only a 'level 3' type Service will be appropriate, for example, historic monuments and Grade I listed buildings. Whereas other properties might be assessed using a 'level 2' type (also suitably amended) Service. 'Level 1' assessments are unlikely to be appropriate for a retrofit Service.

Surveys should be conducted in accordance with the current edition of RICS' [Home survey standard](#).

Note that variations to may apply in different parts of the UK, especially Scotland.

4.4 Risks to occupants

RICS members are required to consider personal safety hazards that the property may present to occupiers and/or visitors when providing professional services including inspection, design and contract management. Examples of incidents that have raised public awareness and prompted alterations to Building Regulations include Ronan Point (1968), Fishwick (2013) and Grenfell Tower (2017). Residential property retrofit Services and surveys do not include a formal assessment of statutory health and safety risks, for example, a Housing Health and Safety Rating System (HHSRS) process. However, matters that an RICS member is aware of that present a personal hazard or safety risk to occupants and/or visitors, or could be reasonably anticipated in the future, for example, as a result of changes in the property arising from the retrofit installation, **must** be described in the Service. Where the likelihood and severity of the hazard is significant, advice regarding how the hazard can be reduced or completely removed should be included in the Service. RICS members should consider concisely listing the risks in a separate section of their assessment report with appropriate cross-referencing to where they appear in the report or at some other appropriate time during the project.

As these matters will reflect current Building Regulations in the different parts of the UK, HSE guidance and other research and regulation, they will change over time.

The range of identified matters and appropriate action will be the same for all retrofit Services.

Where the retrofit Service is for a property that is currently let or is anticipated to be let, for example, by a private landlord or an RP, the RICS member should adjust the scope of the Service so the client can be properly advised on statutory risks and hazards to health and safety of occupants and others who may be harmed by the identified hazard.

An indicative, but not exhaustive, list of safety hazards has been included in Appendix D.

Note that alternative practices and procedures are likely to apply in different parts of the UK.

4.5 Legal matters

4.5.1 General

It is important to remember that buildings do not exist in a vacuum. Provision of any retrofit Service will likely involve consideration of the legal interest in the property and in some cases, of the rights of adjoining owners, for example, party wall issues where external wall insulation is to be fixed on the wall between attached properties. The client's legal adviser may, therefore, be responsible for checking relevant legal documents but will not be familiar with the property. The RICS member will be the 'eyes and ears' of the client's legal adviser and should identify apparent and specific items and features that have possible legal implications. It is unlikely the legal adviser will read all retrofit documents, such as assessments, designs, specifications or evaluation reports; therefore, the RICS member **must** clearly highlight the relevant legal matters at the appropriate stages of the project and in an appropriate and timely manner. A separate legal section in the assessment report is an effective way of achieving this.

Where appropriate, if the situation noted can be physically resolved, the RICS member will:

- **at the property retrofit assessment (survey) stage:** describe what needs to be done (for example, removing or improving unauthorised work)
- **at the property retrofit design and specification stage:** make appropriate alterations and allowance for the legal matters
- **during building works and on contract completion:** note any legal matters brought to their attention and make appropriate recommendations and
- **during any project evaluation stage:** make reasonable efforts to ensure all relevant parties are properly and fully informed.

At all stages of the project, the professionals carrying out the Service Roles should ensure appropriate discussions take place and items recorded regarding relevant legal matters between all interested parties. In all cases it is likely the client and/or occupier will likely need

to be involved and informed. The main point of contact will likely be the lead professional (where appointed). This will enable the client's legal adviser to explain to the client and/or others who may be affected in greater detail how these matters may affect obligations, rights, liabilities and ownership of the property.

4.5.2 Regulations

Regulatory matters will typically include:

- designated heritage assets status of the building itself or within its context, including land or sites; listed buildings, conservation areas (especially Article 4 designation), scheduled monuments, World Heritage Sites, registered parks and gardens, registered battlefields or protected wreck sites, ANOBs, national parks, SSSIs and need for appropriate consents
- non-designated heritage assets; locally-identified buildings, monuments, sites, places, areas or landscapes identified by plan-making bodies as having a degree of heritage significance but do not meet the criteria for designated heritage assets and the need for appropriate consents
- work done or to be done under the various 'competent persons' schemes
- statutory approvals; planning permissions and Building Regulation approvals for the proposed retrofit works, any associated alterations and repairs and any indemnity insurance policies for non-compliance (if known), smoke control zones (e.g. in connection with biomass EEMs), tree preservation orders (TPOs) or presence of protected species and need for appropriate consents/licences
- environmental matters, such as radon, presence of protected species and the need for appropriate consents/licences or remediation certificates for previously contaminated sites and whether a mining report is required
- use of adjacent, significant public or private developments.

4.5.3 Guarantees

Although guarantees or warranties may be known at the beginning of the project, the RICS member should ask the client or occupier whether any guarantees or warranties are available for any repair and alteration work previously carried out, where practical. The RICS member should record relevant details. It is the legal adviser's role to confirm the validity or transferability of these documents; however, known or suspected discrepancies identified by the RICS member should be highlighted. The following examples are considered especially relevant:

- past extensions, 'room in the roof', previous retrofit installations, significant refurbishment of the property
- structural work, such as underpinning, removal of structural elements, lateral restraint and chimney stabilisation works
- timber and damp treatments

- wall ties and cavity wall tie replacement work
- new windows and doors
- cavity wall insulation
- installation and repair of service installations, e.g. MCS installation certificates and
- Japanese knotweed management plan and any associated warranty or guarantee.

Where the certification of a new build or converted property is available, the RICS member should try to establish the parts of the property to which this applies and verify the age of the property or conversion.

4.5.4 Other matters

The RICS member should report to the client's legal adviser other features and issues that may have an impact on the property and require further investigation by the legal adviser. This will include a broad range of issues noted during the coordination process, assessment survey, at the design and specification stage, during the retrofit installation works, during project evaluation or through the RICS member's knowledge of the locality. See Appendix B for a list of these features and issues.

4.6 Energy matters

Concerns over climate change and legislative and commercial changes in the energy sector have created a demand for clear and objective guidance on energy matters. Consequently, accurate energy advice is of great value to clients and is fundamental to the retrofit process. The nature of this Service will be influenced by a range of factors that may change over time, for example, global, regional and national legislation and practice, the nature of the subject property and the competence and technical knowledge of the RICS member.

For all retrofit Services, RICS members **must** be able to identify and advise on defects and deficiencies caused by inappropriate energy efficiency measures implemented at the subject property and advise on the energy assessment of the dwelling (using RdSAP, full SAP, PHPP, EnerPhit and other methodologies as required by the client in the agreed terms of engagement and/or the recommended documents).

In circumstances where the property is a special property, RICS members and RICS-regulated firms **must** have the level of competence and technical knowledge to deliver the energy and associated advice required.

4.7 Providing building and EEM installation cost advice

It may be a requirement of the Service provided to produce a cost estimate of recommended repair, improvement and proposed retrofit works, prior to and/or during the works. Where this optional Service has been offered, the RICS member **must** have the level of competence and technical knowledge to deliver it. They should clearly state all appropriate reservations

and limitations associated with this function during the initial client enquiry and in the original terms of engagement.

For example, the RICS member should explain the methodology used to calculate the estimates and tell the client the figures are for guidance only. The RICS member should tell the client to get formal, written quotations from appropriately qualified contractors and carry out other due diligence, such as engaging the services of a chartered quantity surveyor or other suitably qualified professionals to negotiate a contract price and carry out associated works; all before entering into a building contract.

In circumstances where the Service involves a special property, RICS members **must** have the level of competence and technical knowledge to deliver the advice required.

4.8 Further investigations

The RICS member's knowledge will, at times, lead to a reasonable suspicion that a visible or suspected defect may affect other concealed property elements and could affect the retrofit service, for example, deteriorated mortar joints to the external leaf of a cavity wall possibly affecting inadequately galvanised steel wall ties. In these circumstances, an RICS member **must** recommend that further investigation by a suitably qualified person is undertaken.

However, the RICS member **must not** recommend further investigation just because a given property element is inaccessible. For example, where the covering of one roof slope cannot be seen from any reasonable vantage point, but on inspection there is no evidence of defect or deficiency in the roof void. In such cases, RICS members should inform the client, other professionals and relevant parties of the restriction and advise on the implications. The RICS member should exercise professional judgement and **must not** call for further investigations only to 'cover' themselves against future liabilities.

Where a further investigation is recommended, the RICS member **must** provide the following information at the relevant time to the client, other professionals and relevant parties as part of the retrofit Service and/or report:

- a description of the affected element and why a further investigation is required, including the potential implications if such an investigation is not implemented
- when the further investigation should be carried out and
- a broad indication of who should carry out the further investigation (for example, their qualifications, membership of an appropriate professional institution, trade body or competent person scheme).

4.9 Client liaison during the Service

At all stages of the Service, RICS members **must** set aside adequate time to liaise with the client and discuss any part of the retrofit Service during and/or following delivery.

The amount of time, breadth and depth of the discussions will vary according to the Service being provided, the method of communication and the client's needs.

The RICS member **must**:

- clearly explain the status of the discussion or exchange with the client at the beginning of the process
- not go beyond the scope already described in the agreed terms of engagement and
- keep a record of the exchange, which should be securely stored and accessible in compliance with current data protection legislation and regulations and section 4.12 of this standard.

Note that variations may apply in different parts of the UK.

4.10 Service completion

Once the RICS member or RICS-regulated firm's Service is complete and post-report delivery discussions with the client, other professionals and relevant parties are concluded, the RICS member and RICS-regulated firm **must** make sure the project file is properly closed. Although this will depend on the RICS member or RICS-regulated firm's own quality assurance procedures, it will usually involve assembling and updating all the relevant information and communications (whether hard copy or digital) and archiving in accordance with current practice. These should be securely stored and be available for future inspection if required. For government-funded PAS 2035, other publicly-funded, energy company-funded or other similarly-funded projects, the [TrustMark Data Warehouse online document storage portal](#) should be used in accordance with the funding scheme rules as appropriate and/or as required. A legal liability may extend up to a maximum of 15 years in England and Wales. Refer to the current edition of RICS' [Risk, liability and insurance](#).

Note that variations may apply in different parts of the UK.

4.11 Software and products

RICS members and RICS-regulated firms should satisfy themselves that any software used to provide the retrofit Service and produce reports is in accordance with this professional standard to ensure quality assurance, consistency and transparency. In some cases, such software is required for regulatory or statutory purposes (e.g. Building Regulations).

Until such systems are developed, RICS members and RICS-regulated firms should include a statement, where appropriate, in any evaluation of a property's energy performance, to confirm that while documents provided by existing assessment systems (for example, in line with manufacturers' technical data) may be included in the Service in acknowledgement that they have historically been a method of assessment and are in some cases referenced in the legal system) they may or may not be fully compliant with the above RICS requirement.

Note that variations may apply in different parts of the UK.

4.12 Documentation storage and retention

RICS members and RICS-regulated firms should manage all document storage processes associated with the Service rigorously and **must**:

- keep copies of all relevant information, including:
 - instructions
 - terms of engagement
 - project management discussions
 - records of inspection and further investigations
 - the final reports including any drawings, specifications, contract administration records, including variations, interim and final contract valuations, evaluation reports and recommendations
 - all correspondence (electronic, digital and hard copy) in robust and securely protected backup systems
- keep a record of all verbal discussions with the client, tenant, other professionals and other relevant parties and share a summary of these discussions, subject to privacy legislation, when confirmation is required and
- ensure complete and clear records are retained.

All information collected and stored **must** conform to current data protection legislation and regulations. The file **must** be securely stored and retained for up to 15 years in line with current legislation and the current edition of RICS' [Risk, liability and insurance](#).

Appendix A: Technical considerations for residential property retrofit Services

A professional Service involving the provision and fixing of EEM retrofit installations and associated works in residential properties requires significant knowledge, understanding, skill and competence, especially where the subject of the Service is a special property.

This professional standard and Appendix do not and cannot provide guidance covering all the necessary technical information required to provide such Services. However, it does confirm some of the main issues that **must** be considered during any residential retrofit project provided in accordance with the recommended documents and any other necessary guidance and, therefore, requiring:

- retrofit coordination by a retrofit lead professional
- retrofit assessment by a retrofit assessor
- retrofit design by a retrofit designer
- administering any contract for repairs and the retrofit installation works by a contract administrator and
- retrofit evaluation by a post-retrofit inspector.

The provision of such retrofit installations into existing dwellings will present a significant challenge to the design and surveying professions and the construction industry, given current and anticipated skill levels. Unless careful attention is paid to the necessary detail at all stages of the project, significant, costly and potentially hazardous defects will be built into thousands of UK homes, with resultant negative effects on occupiers' well-being. RICS members should be familiar with Annex A and Annex B of PAS 2030:2023 and BS 7913:2013 *Guide to the conservation of historic buildings*.

Table A.1 lists some of the main technical considerations involved in such installations and some explanatory notes.

No.	Advice and consideration	Reference (note: these may change)	Notes
1.	'The requirements and guidance presented in this PAS are intended to apply to improvement measures in the context of a whole-dwelling approach to retrofit that takes the points listed above into account. The whole-dwelling approach considers the building as a system of elements, interfaces and occupants that interact, and not as a set of elements that are independent of each other or of occupants' practices and lifestyle.'	PAS 2035: 2023, iv	Buildings, especially special properties, are complicated and require careful analysis, taking into account the property construction and the occupiers' needs.
2.	'Retrofit work designed to reduce heat loss from a dwelling, and/or reduce air infiltration and air leakage, to improve energy efficiency, might have unintended consequences for IAQ and for the movement of moisture through the building fabric, particularly in traditionally constructed buildings, and in non-traditional buildings constructed in the 1960s and 1970s.'	PAS 2035: 2023, 4.2.6	Certain building types will require careful inspection, consideration, design, specification and overseeing of retrofit works.

No.	Advice and consideration	Reference (note: these may change)	Notes
3.	<p>'Energy assessment models such as the Standard Assessment Procedure (SAP) and the Passive House Planning Package (PHPP) attempt to simulate whole-dwelling thermal performance, but most versions do not deal with moisture. Such models provide estimates of the energy performance of dwellings, based on limited amounts of data from surveys and assessments, but they inevitably involve a compromise between accuracy and functionality. More detailed and accurate predictions of energy performance require more complex simulation models that use large amounts of data sometimes measured from site, therefore these models should be considered for use on high-value and/or large-scale retrofit projects, or for projects that include bespoke and/or non-standard construction details, where a higher degree of certainty is required.'</p>	PAS 2035: 2023, 4.3.1	RICS members should have a reasonable knowledge of full SAP and RdSAP, but be aware of the limitations of the software, especially regarding management of moisture. More complex thermal and dynamic simulation models and software include IES-VE, Design Builder and WUFI.

No.	Advice and consideration	Reference (note: these may change)	Notes
4.	<p>'It is not appropriate to attempt to achieve the same level of emissions reduction for every domestic building, because the same target applied to every dwelling might result in significant damage to some buildings, rendering them unhealthy to live in or possibly even uninhabitable, and potentially damaging our architectural heritage. An average emissions reduction target might be appropriate, but greater reductions need to be made where they are technically feasible and safe, in order to compensate for the constraints on improvements to traditional buildings. In each case, protecting and improving occupants' health, well-being and comfort should be prioritized, then energy use and emissions should be minimized within the constraints of protecting the building and its heritage values.'</p>	PAS 2035: 2023, 5.2.2	Retrofitting much of UK housing stock presents a significant challenge.
5.	<p>'Identify potential interactions between measures to ensure a whole-dwelling approach is followed and avoid thermal bridging and other unintended consequences.'</p>	PAS 2035: 2023, 8.1.7	Thermal bridging and bypass are one of the major challenges faced in existing dwellings. Structured use of thermal imaging equipment can be of considerable assistance. Special attention is likely to be required where the subject of the retrofit project is an attached property, e.g. a mid-terrace property where insulating an external wall might adversely affect an adjoining property.

No.	Advice and consideration	Reference (note: these may change)	Notes
6.	<p>'Whatever the scale of retrofit, a technically sound and usually cost-effective approach is the one known as "fabric first", which should always be considered when a retrofit plan is formulated. This approach prioritises improvements in five stages.'</p>	<p>PAS 2035: 2023, 5.5.1</p>	<p>'Fabric first' is not always the best approach to adopt, unless referring to new construction or putting an existing building into good repair before considering retrofit. RICS members should note that PAS 2035 indicates that 'fabric first' is not the approach for traditional buildings and that a risk-based approach is more appropriate – indeed, there is no mention of 'fabric first' in PAS 2038.</p> <p>The 'fabric first' approach has potential to cause unintended, adverse, consequences for the building fabric and occupants in traditionally constructed buildings.</p> <p>However, improving insulation levels 'works', the five stages comprising repair to prevent water ingress, implement simple improvements, insulate and plug air gaps to prevent thermal-bridging, install energy-efficient heating, use LZC technologies. Some authorities prefer a 'whole-house' approach to retrofitting over single-measure short-term works.</p> <p>See notes for point 5 regarding use of thermal imaging equipment.</p>

No.	Advice and consideration	Reference (note: these may change)	Notes
7.	<p>'The existing building fabric should be as energy efficient as possible before spending resources on other measures. Subsequently, because insulation measures are generally among the most cost-effective and long-lasting, and thus the best investment, insulation is usually the most appropriate next step. Insulating the fabric first also reduces the required capacity and cost of the heating system. The heating system usually has a shorter life than the improved building fabric (typically 15 years compared with possibly 60 years), so a dwelling might have four heating systems during the life of the installed insulation.'</p>	PAS 2035: 2023, 5.5.2	<p>See notes for item 6 regarding whether 'fabric first' is always an efficient guiding principle, especially if the property is a special property. This comment in PAS 2035 needs to be taken in context and assumes the needs of older buildings have first been considered and remedied, i.e. that necessary and suitable repairs are implemented, and allowance is made for vapour-permeability and other factors.</p> <p>The 'fabric first' approach has a particularly high potential to cause unintended consequences for the building fabric and occupants, particularly in traditionally constructed buildings. It is one of many approaches to retrofit but neglects many related and contributing factors.</p>

No.	Advice and consideration	Reference (note: these may change)	Notes
7.	<p>'LZC systems, such as solar water heating (also known as "solar thermal") and solar photovoltaic systems are the final step because they are relatively expensive (often requiring subsidy), and their capacity is often limited by available space (e.g. on the roof). Most UK dwellings cannot be heated exclusively by renewable energy systems unless they are first insulated and the building services efficiency is improved to reduce the remaining energy demand so that LZCs can make a significant contribution.'</p>		<p>It makes sense to ensure that the existing building fabric is in good repair, dry and that measures have been implemented that are low cost and easy to install (i.e. energy efficient lighting, basic heating controls, better control settings, air infiltration reduction) to ensure that the building is as energy efficient as possible before spending resources on other measures. Subsequently, the requirement for and order of implementation of any appropriate EEM's (be that thermal fabric upgrades, low-carbon heating and/or renewable energy technology) needs to be appraised with a nuanced and pragmatic approach that considers all objective information collected and assimilated during pre-retrofit assessment and design stages.</p>
7.			<p>This includes consideration of the existing and proposed construction and material types, existing and proposed services, their condition, maintenance needs and lifespan, and building and site-specific climate change hazards and risk levels. A risk-based approach to the selection of improvement options is usually always appropriate.</p> <p>See notes for point 5 regarding use of thermal imaging equipment.</p>

No.	Advice and consideration	Reference (note: these may change)	Notes
8.	<p>'Often, architectural heritage considerations limit or rule out many insulation options, some of which are irreversible, leaving scope only for using measures that can be reversed, improving the building services or installing LZCs. In the case of older, traditionally constructed or protected buildings, a risk-based approach to the selection of improvement options is usually appropriate.'</p>	PAS 2035: 2023, 5.5.5	<p>Protected and older dwellings require careful consideration prior to, during and after any retrofit project.</p> <p>A knowledgeable, informed and pragmatic approach is required to any retrofit proposal. The additional requirements of designated heritage assets, along with materiality and functionality of existing and proposed materials needs to be understood and considered when selection EEMs for designated or traditionally constructed buildings.</p>

No.	Advice and consideration	Reference (note: these may change)	Notes
9.	<p>“Concentrate on the interfaces” is a way of approaching retrofit that complements and enhances “fabric first”. It acknowledges that retrofit projects often go wrong because of poor attention to the corners, junctions and edges of building elements (where insulation and air barriers should be continuous) and the interfaces between the building fabric, the building services and the occupants.’</p> <p>‘For example, heating output should be matched to heat loss, ventilation should be matched to the air permeability of the building fabric, and occupants should be able to make efficient use of systems installed in their homes.’</p> <p>“Concentrate on the interfaces” is an approach that focuses the attention of Retrofit Designers and Main Contractors or Retrofit Installers on critical factors. It is the basis of much of the guidance and some of the requirements specified in this PAS.’</p>	PAS 2035: 2023, 5.6.1 and 5.6.2	<p>Attention to detail will be critical, allowing for all considerations, e.g. to help prevent condensation and including occupants’ comfort and well-being.</p> <p>Concentrate on the interfaces’ is an essential aspect of ensuring robustness, quality assurance and thermal continuity of any insulation measures, to mitigate risk of thermal-bridging and resultant condensation, mould growth and negative impact on IAQ and occupant health – see notes for point 5 regarding use of thermal imaging equipment.</p>

No.	Advice and consideration	Reference (note: these may change)	Notes
10.	<p>'Domestic retrofit projects should always include the delivery of retrofit advice to the occupants of the dwelling(s), at appropriate times, by a qualified Retrofit Assessor, Retrofit Coordinator, Retrofit Designer, Main Contractor or Retrofit Installer. There is evidence that where retrofit projects do not include advice, the intended outcomes are often only partially achieved, particularly with respect to fuel cost savings and reductions in the carbon dioxide emissions associated with energy use.'</p> <p>'Retrofit advice should be delivered at several stages of a retrofit project, and the topics covered by advice should be appropriate to the scope of the improvement work and the stage at which it is delivered.'</p>	PAS 2035: 2023, 5.7.1 and 5.7.2	Good advice to occupants (and tradespeople on site) will pay dividends. Appropriate thermal imaging can help to identify problems in this regard. Any 'performance gap' in the project can result in issues that can affect the building's performance in the future and occupants' well-being.

No.	Advice and consideration	Reference (note: these may change)	Notes
11.	<p>'Occupants' comfort, health and safety depend on control and management of the flows of heat, moisture and air through their homes, in order to maintain appropriate dynamic thermal and moisture equilibriums. The dynamic heat balance of a dwelling (i.e. the way in which heat losses are satisfied by heat inputs) is an important element of its energy efficiency. The moisture balance of a home is important to the maintenance of healthy internal conditions and the avoidance of fabric decay.</p> <p>Internal temperature and humidity are critical to comfort, and to managing the risk of internal surface condensation and mould growth. Managing the dynamic moisture equilibrium within and through the building envelope is critical both to maintaining internal air quality (IAQ) and to protecting the building fabric against moisture accumulation, rot, mould growth and decay.'</p>	PAS 2035: 2023, 4.1.2 and 4.2.5	Management of moisture must include consideration of relative humidity and moisture content of different materials. Vapour-permeable materials allow migration of moisture and help prevent interstitial condensation. Moisture accumulation in the fabric of the building increases thermal conductivity and thereby increases the U-value of the affected element, with a consequent possibility of mould (with risks to occupiers' health) and fungal decay (rot), wood-boring insect attacks to timbers (e.g. lintels and ends of joists) and deterioration in masonry and plaster – thereby adversely affecting the fabric of the building.
12.	<p>'Construction details shall be configured to maintain the continuity of the three-dimensional insulated envelope and the integrity of any airtightness barrier in order to eliminate thermal by-pass (i.e. the uncontrolled penetration of cold air to the warm side of any insulation layer), minimize thermal bridging, and maintain an appropriate or specified standard of airtightness.'</p>	PAS 2035: 2023, 8.2.16	Design of the retrofit EEMs should be carefully considered to avoid construction details that promote cold-bridging, which can cause interstitial and surface condensation.

No.	Advice and consideration	Reference (note: these may change)	Notes
13.	<p>'The retrofit design shall also:</p> <p>a) make provisions for ventilation for the purpose of the safe operation of all combustion appliances, in accordance with the manufacturers' instructions and the relevant British Standards;</p> <p>b) provide for resilience against rainwater ingress (including ingress due to the failure of any critical element or construction detail);</p> <p>c) provide for resilience of the installed EEM against flood;</p> <p>d) provide resilience of the installed EEM for increased future rainfall;</p> <p>e) verify that the fire safety of the building is not compromised by the installation of EEMs, and if necessary include an updated fire safety strategy; and</p> <p>f) specify any maintenance requirements necessary to verify the long-term integrity of the installation.'</p>	PAS 2035: 2023, 8.2.21	<p>An alternative form of wording for RICS members to consider, to improve occupational well-being, including safety matters, is:</p> <ul style="list-style-type: none"> • make provision for ventilation for the purpose of maintaining good IAQ, preventing moisture accumulation or overheating, and for the safe operation of all combustion appliances in accordance with the manufacturers' instructions and the relevant British Standards • provide for resilience against water ingress (including ingress due to the failure of any critical element, construction detail, rainwater goods or rainwater disposal system, increased rainfall events which are likely to become more common due to climate changes and/or wind-driven rain)

No.	Advice and consideration	Reference (note: these may change)	Notes
13.			<ul style="list-style-type: none">• provide for resilience of the installed EEM against flood and other climate change hazards, where appropriate• ensure that the fire safety of the building is not compromised by the installation of EEMs, and if necessary, include an updated fire safety strategy and• specify any maintenance requirements necessary to ensure the long-term integrity of the building and any EEM installation.

No.	Advice and consideration	Reference (note: these may change)	Notes
14.	<p>'Since the 1970s the installation of double-glazed, draught-stripped windows, the draught-stripping of external doors and the insulation of lofts and cavity walls have gradually improved energy efficiency but also reduced the air permeability of many homes, reducing infiltration and air leakage. In some cases, this has been compensated for by introducing intermittent extract ventilation fans into "wet" spaces (kitchens and bathrooms) to expel moist stale air and by installing background ventilators (air inlets, commonly known as trickle ventilators) in other spaces to provide balancing supplies of fresh air. However, the existence of a ventilation system is not proof that a building is adequately ventilated, and many existing buildings that have undergone energy efficiency improvements are not adequately ventilated.'</p>	PAS 2035: 2023, C.1	Relatively 'modern' dwellings present a challenge to occupiers' well-being, e.g. black mould, usually associated with condensation.

No.	Advice and consideration	Reference (note: these may change)	Notes
14.	<p>'Improving the airtightness of a dwelling to reduce "adventitious" or uncontrolled wind-driven air infiltration and air leakage, when combined with the provision of adequate controlled ventilation, significantly improves energy efficiency. However, without adequate ventilation, the installation of any additional insulation or airtightness measure anywhere in the building, or the blocking of any existing ventilator, reduces the infiltration and air leakage rate, and increases the risk that there is insufficient ventilation to maintain adequate IAQ. Poor IAQ includes high relative humidity (which carries a risk of condensation and mould growth) and high concentrations of pollutants such as VOCs and dust mites, all of which are associated with serious health risks for occupants as well as potential damage to building finishes, fabric and structure.'</p>		
15.	<p>'The retrofit design shall include construction details for eliminating thermal bypass and minimizing thermal bridging at corners, junctions and edges of insulation layers either occurring because of geometry or resulting from discontinuity of the insulation or from insulation being thinner than in the adjacent area (e.g. at window reveals, around meter boxes).'</p>	PAS 2035: 2023, D.1	Certain elements or parts of elements represent a significantly higher risk of condensation.

No.	Advice and consideration	Reference (note: these may change)	Notes
16.	<p>'Work proposals should be based on an appropriate level of research into the historic building in order to understand its significance, structure, fabric, design, layout, services and other parameters. Where works are proposed to respond to or rectify problems with historic built fabric, the cause of the problems should be determined and the available range of possible solutions should be identified. Solutions should be designed and executed such that they cause minimal harm to the significance of the historic building and avoid unnecessary loss of historic fabric. Generally, this entails the use of materials for repairs that match existing building closely, taking into account relevant issues of performance, durability and longevity. However occasionally alternative approaches might be justified.'</p>	BS 7913, 5.2	Design of any works on a special property and subsequent inspection of the works in progress require careful consideration.

No.	Advice and consideration	Reference (note: these may change)	Notes
17.	<p>'Elements such as walls can be over a third less energy efficient if damp. Some energy efficient measures can have an adverse effect on sustainability ... Sustainable management of historic buildings includes ongoing risk analysis for the hazards of fire and flood ... When the use of a historic building is changed it can result in changes to internal environmental conditions that have an adverse effect. Research commissioned by the government and undertaken by the NHTG has shown that there are declining skills in the heritage sector and the age of the workforce is increasing. This could lead to an inadequate level of labour and skill in traditional craft trades.'</p>	BS 7913, 5.3.1	<p>Damp walls reduce energy efficiency – appropriate management of moisture in a building improves energy efficiency. Traditional building skills appear to be in decline.</p>

No.	Advice and consideration	Reference (note: these may change)	Notes
18.	<p>'The purpose of the inspection is to establish, based on a visual inspection from reasonably accessible points, the following information:</p> <p>a) the general condition of all parts of the historic building, with comparison to the results of earlier inspections</p> <p>b) the progress of repairs carried out since the previous inspection</p> <p>c) the need for further repairs and, where appropriate, other works or separated targeted specialist investigation and</p> <p>d) the urgency and importance of such works, under four degrees of priority.'</p> <p>'Items of work required should be either identified individually or grouped into packages and arranged in four urgency or priority categories:</p>	BS 7913 7913, B.4 and B.5	The 'condition rating' system for traditional buildings in this recommended document differs from the system that has now generally been adopted by the vast majority of RICS members, who when involved in retrofit works on a special property should consider using the condition rating system described in BS 7913, indeed will be required to use it in certain circumstances. Any 'priority for repairs' in a condition or similar report will necessarily flow from the client's instructions, must be appropriate for the property type and be appropriate for the relevant part of the UK.

No.	Advice and consideration	Reference (note: these may change)	Notes
18.	<ul style="list-style-type: none"> • 'Priority 1 – Immediate: Work that should commence without delay for public safety or health and safety reasons, to prevent imminent damage or to arrest rapid deterioration. This can include immediate further investigation. • Priority 2 – Urgent: Work that should be carried out within weeks or months, and within 18 months at most. Failure to do so would be likely to result in significant further damage or deterioration and increased cost. • Priority 3 – Necessary: Work that should be carried out before the next inspection, for which there is time to plan, and which can be integrated with other work. This is work that is due in order to keep the historic building in a state of good repair and to maintain its value and usefulness. Most repair work falls in this category. • Priority 4 – Desirable: Work that is not strictly necessary, but that might improve the functioning or performance of the historic building or enhance its architectural or aesthetic qualities. Alternatively, work that is not due, but is likely to become so before the next inspection and can sensibly be incorporated with other work. Much minor conservation work, such as the reinstatement of suitable windows, should fall in this category.' 		<p>RICS members should familiarise themselves with planning policy, documentation and assessment procedures in the relevant parts of the UK when undertaking any 'assessment of significance' in accordance with BS 7913:2013 <i>Guide to the conservation of historic buildings</i>. In England, planning policy refers to establishing archaeological interest, architectural and artistic interest, and historic interest. RICS members should refer to the NPPF's section the 'historic environment' and <i>Statements of Historic Significance</i> (Historic England Advice Note 12).</p>

Notes:

Manufacturers' technical data may well indicate that a proposed heat pump system will deliver the required levels of comfort and efficiency. However, care should be taken to ensure that the system is installed in a suitable environment, and reasonably comparable to the models on which the technical data is based. This ability should develop rapidly with an increasing number of retrofit evaluations, but, until this is the case, retrofit designers will bear a considerable amount of responsibility, not only in respect of client care, but also to prevent loss of confidence in the retrofitting process.

It has been suggested by some authorities that heat pump bills are only lower because the system is underpowered and the occupiers are cold – and that, if a system were installed with the same capacity as the conventional system being replaced, there would be no saving. This undermines the take-up of retrofitting – any proposed use of a heat pump EEM should be appropriate for the client's instructions (including matters such as the need to de-carbonise) and the specific property.

Current energy assessment models are based on the calculation of energy directly generated and emitted by the heat source in relation to the cost of the fuel that is fed to it. Perimeter heat losses, which are higher when the temperature difference is greater, have been an independent element in this assessment. However, heat pumps, which in many cases will be proposed as replacements for combustion and electric convector systems, work by raising the temperature of a circulating fluid by drawing heat from the outside air (or ground).

The performance of such systems, in comparison with conventional installations, has up until now been assessed by Energy Efficiency Ratio (EER) figures that have generally been provided by heating component and system providers.

Perimeter heat losses, which are higher when the temperature difference is greater, have previously been a separate element. However, where heat pumps are installed, the temperature difference directly affects the actual generation of energy.

RICS members should work towards the development and implementation of new energy assessment methods to demonstrate transparently and from physical principles how, and in what quantity, electrical energy provided to power these systems translates into the generation of heat energy, with a methodology to show how relative outside temperature predictions are incorporated in the assessment.

RdSAP software, even when revised and/or amended (as was occurring when this professional standard was in preparation) is not a design tool and should not be used for such purposes.

There is a need to carefully consider the selection of appropriate EEMs and materials thereof including for any insulation measures with a reasonably balanced and holistic consideration of all relevant matters.

RICS members should be appropriately aware of the principles of heat loss and heat gains, thermal properties of the existing and proposed materials, and their effect on thermal comfort (thermal conductivity, density and specific heat capacity, thermal diffusivity, thermal effusivity, thermal resistance, thermal mass; decrement factor, decrement delay and thermal buffering), internal and external heat gains and overheating risk, along with a need to balance reduced energy demand in the heating season with reduced cooling demand and mitigation of overheating in Summer, and the building-use and occupancy patterns.

RICS members should note that EPCs are one of the outputs of the National Calculation Methodologies (NCM), SAP and RdSAP reports are a rich data-source collected from the property. Within the calculations, there are significant amounts of information results and recommendations relating to energy, carbon and cost. It is appropriate to encourage use of the calculation data to help make informed choices. SAP and RdSAP can generate a much broader dataset than what is typically simply presented on an EPC. This data can be valuable when exploring retrofit possibilities.

RICS members should further note that residential EPCs prepared for sales and letting purposes have sometimes been the subject of criticism by members of the profession. Perceptions of the alleged and or other failings of the NCM in use should not prevent RICS members making appropriate use of the information available.

Table A.1: Technical considerations and further advice for retrofit lead professionals, assessors, designers, specifiers, contract administrators and post-retrofit inspectors providing residential retrofit Services

Appendix B: Knowledge of general environmental issues in a locality

RICS members and RICS-regulated firms providing a retrofit Service **must** be familiar with the nature and complexity of the locality in which the subject property is situated. This includes general environmental issues where the information is freely available to the public, often online. The nature, quality and accuracy of the data varies between suppliers and so RICS members should treat this information with care. Although the range and nature of these issues will change over time, main considerations currently include:

- flooding (surface, river, groundwater, sea and reservoir), paying attention to the possibility that climate change may increase the propensity for local flash flooding
- radon, especially in relation to habitable rooms in underground spaces
- noise from transportation networks
- typical geological and soil conditions
- well-known but unique local and regional ground conditions
- landfill sites and relevant former industrial activities
- former and current mining and quarrying activities
- future, current or proposed infrastructure schemes and proposals
- planning areas (e.g. conservation areas, areas of outstanding natural beauty and Article 4 direction)
- 'listed' and other protected building status and
- general information about the site including exposure to wind and rain, height above sea level especially in coastal locations, risk of frost attack and unique local features and characteristics that may affect the subject property.

This list is not prescriptive or exhaustive because relevant issues could vary significantly based on location.

See the current edition of RICS' [Environmental risks and global real estate](#).

Note that variations will apply in different parts of the UK.

Appendix C: Minimum requirements for all terms of engagement

Regardless of the agreed Service and Service Role(s), the terms of engagement **must** address the following matters:

- the client's name, address and contact details
- the RICS member's name (where known at the time of instruction), the RICS-regulated firm's name and contact details including address m
- the subject property's address and postcode
- the nature and type(s) of Service being provided and clearly set out the Service Role(s) included
- the nature and intended future use of the property
- the details of any special instructions and/or additional Services
- the likely date when the Service will commence and the anticipated date of completion, including (if more than one Service Role will be performed) the anticipated completion dates of each stage of the project (especially important if the project is likely to last over a period of years)
- the style and delivery format of the Service
- the agreed fee and the fees for any additional work (including VAT)
- details of any referral fees, inducements and potential conflicts of interest
- the payment arrangements, payment period
- cancellation rights
- forewarning of any restrictions due to health and safety implications that may arise during inspection(s) of the property
- evidence that the client has confirmed acceptance of the terms and conditions
- confirmation that an RICS member's files may be subject to monitoring and in such circumstances will need to be provided to RICS on request
- confirmation that any fees taken in advance are not client money and not subject to the RICS Client Money Protection Scheme and
- that the RICS member operates a complaints-handling procedure, details of which are available on request.

The content and nature of these matters will change over time and RICS members **must** ensure the terms of engagement match the current legal requirements of the constituent parts of the UK in all respects.

Note that variations may apply in different parts of the UK.

Appendix D: Risks to occupants – typical personal safety hazards in a residential property

Project management, assessment, inspection, design, specification, installation of retrofit Services and EEMs, contract administration and evaluation at any property in the UK is likely to involve a significant number of properties that are let, many to RPs. Such properties are potentially subject to special personal safety legislation, such as the HHSRS. Owner-occupied property also requires careful consideration for safety hazards that occupiers and visitors may be at risk from. The following three tables list some of the common safety hazards that can be found during an inspection of a residential property; using hazards identified in the editions of the HSS and HHSRS that were current at the time of preparation of this document. A recent UK government review of the HHSRS suggests that the number of potential hazards will be reduced.

This list is not exhaustive; but any hazard the RICS member sees **must** be noted, considered, reported on, and dealt with appropriately; so long as it is reasonable to do so and the hazard is not too remote. References to page numbers refer to the HHSRS. RICS members **must** therefore be aware of the following:

No.	HHSRS hazard	HSS closest equivalent	Notes (page numbers, DCLG, 2006)
Physiological requirements – hygrothermal conditions			
1.	Damp and mould growth – exposure to house dust mites, damp, mould or fungal growths.	-	HSS example of ‘damp’ basements. HHSRS refers to hazards from ‘high humidity’ (p. 22).
2.	Excess cold – exposure to low temperatures.	-	‘healthy indoor temperature ... 21°C ... Below 16°C ... serious health risks for the elderly’ (p. 23).

No.	HHSRS hazard	HSS closest equivalent	Notes (page numbers, DCLG, 2006)
3.	Excess heat – exposure to high temperatures.	-	'smaller dwellings ... more prone ... south facing glazing' (p. 25).
Pollutants (non-microbial)			
4.	Asbestos and MMF – exposure to asbestos fibres or manufactured mineral fibres.	Asbestos and other deleterious materials.	'rockwool ... glass fibre ... during maintenance' (p. 27–28).
5.	Biocides – exposure to chemicals used to treat timber and mould growth.	-	'chemicals ... to treat timber and/or mould growth' (p. 28).
6.	Carbon monoxide and fuel combustion products – exposure to— (a) carbon monoxide (b) nitrogen dioxide (c) sulphur dioxide and smoke.	Gas leaks and carbon monoxide poisoning.	HSS hazard also appears against item 9. 'May impair foetal growth ... can cause ... death ... ventilated lobby between integral garage and living accommodation' (p.30).
7.	Lead – the ingestion of lead.	Lead water pipes and lead paint.	'known to have ... toxic effects on the nervous system and blood production ... a detrimental effect on mental/intellectual development and behavioural problems ... in children ... ' (p. 31).
8.	Radiation – exposure to radiation.	High radon levels. Overhead power lines, which may cause issues relating to electromagnetic fields (EMFs).	'five percent of lung cancers could be traced to residential radon' (p. 31).
9.	Uncombusted fuel gas – exposure to uncombusted fuel gas.	Gas leaks and carbon monoxide poisoning.	'asphyxiation resulting from ... escape of fuel gas' (p. 31).

No.	HHSRS hazard	HSS closest equivalent	Notes (page numbers, DCLG, 2006)
10.	Volatile organic compounds – exposure to volatile organic compounds.	-	'Formaldehyde is included in this hazard' (p. 32).

Table D.1: Comparison of HHSRS and HSS hazards, 'physiological requirements – hygrothermal conditions' and 'pollutants (non-microbial)'. Hazard number in HHSRS Regulations, Schedule 1 in column 1

No.	HHSRS hazard	HSS closest equivalent	Notes
Physiological requirements – space, security, light and noise			
11.	Crowding and space – a lack of adequate space for living and sleeping.	Inappropriate use of accommodation (for example, non-conforming roof space conversion and bedrooms in damp basements).	'linked to psychological distress ... mental disorders ... contagious disease' (p. 33).
12.	Entry by intruders – difficulties in keeping the dwelling or HMO secure against unauthorised entry.	-	'emotional impact after burglary affects more than 75 per cent of victims ... local area ... crime' (p. 33).
13.	Lighting – a lack of adequate lighting.	-	'depression ... lack of window with a view ... artificial external lighting ... convulsive reactions' (p. 35).
14.	Noise – exposure to noise.	-	'lack of sufficient sound insulation ... road traffic ... stress ... (p. 35).
Protection against infection			
Hygiene, sanitation and water supply			

No.	HHSRS hazard	HSS closest equivalent	Notes
15.	Domestic hygiene, pests and refuse (1) Poor design, layout or construction such that the dwelling or HMO cannot readily be kept clean. (2) Exposure to pests. (3) An inadequate provision for the hygienic storage and disposal of household waste.	Animals and vermin (bird droppings, rats, dog waste, etc.)	'gastro-intestinal disease ... infections ... HMOs particularly vulnerable' (p. 37).
16.	Food safety – an inadequate provision of facilities for the storage, preparation and cooking of food.	-	'Fifty per cent of food poisoning ... in the home' (p. 40–41).
17.	Personal hygiene, sanitation and drainage – an inadequate provision of — (a) facilities for maintaining good personal hygiene (b) sanitation and drainage.	-	'skin infections ... dysentery (between 2,000 and 20,000 notified cases per annum) ... cracks/chips ... to ... facilities' (p. 41).
18.	Water supply – an inadequate supply of water free from contamination, for drinking and other domestic purposes.	Legionnaires' disease.	'legionella ... 10 – 15 percent of cases ... fatal' (p. 43).

Table D.2 Comparison of HHSRS and HSS hazards, 'physiological requirements – space, security, light and noise' and 'protection against infection'

No.	HHSRS hazard	HSS closest equivalent	Notes
	Protection against accidents		
	Falls		
19.	Falls associated with baths, etc. – falls associated with toilets, baths, showers or other washing facilities.	-	'Possible death weeks/months after' (p. 45).
20.	Falling on level surfaces, etc. – falling on any level surface or falling between surfaces where the change in level is less than 300 millimetres.	-	'floors/yards/paths ... Following a fall ... elderly person may deteriorate' (p. 45).
21.	Falling on stairs etc – falling on stairs, steps or ramps where the change in level is 300 millimetres or more.	Falls from height, lack of safety rails, steep stairs, and serious and significant tripping hazards.	'Internal ... external steps or ramps ... falls on stairs account for around 25 per cent of all home falls' (p. 45–46).
22.	Falling between levels – falling between levels where the difference in levels is 300 millimetres or more.	-	'balconies ... landing balustrades ... retaining walls ... head/brain/spinal injuries' (p. 47–48).
	Electric shocks, fires, burns and scalds		
23.	Electrical hazards – exposure to electricity.	Dangerous electrics.	'shocks and burns' (p. 49).

No.	HHSRS hazard	HSS closest equivalent	Notes
24.	Fire – exposure to uncontrolled fire and associated smoke.	Lack of emergency escape, inadequate fire precautions and fire protection measures. The implications of external wall systems and their combustibility/incorrect fixing. Referral should be made to competent persons where issues of combustibility and/or incorrect fixing appear to exist.	'burns, deaths ... cookers ... (f)ire stops to cavities ... detectors/smoke alarms ... means of escape' (p. 50–51).
25.	Flames, hot surfaces, etc. – contact with (a) controlled fire or flames (b) hot objects, liquid or vapours.	-	'over 200 people ... die from burn and scald injuries' (p. 52).
Collisions, cuts and strains			
26.	Collision and entrapment – collision with, or entrapment of body parts in, doors, windows or other architectural features.	Absence of safety glass to openings and outbuildings. Automatic gates.	'window injuries ... worse ... piercing by glass' (p. 54).
27.	Explosions – an explosion at the dwelling or HMO.	Absence of test certificates for services/appliances/ private water supply.	'Incidence ... low ... possible scalding if a hot water appliance is involved' (p. 54).

No.	HHSRS hazard	HSS closest equivalent	Notes
28.	Position and operability of amenities, etc. – the position, location and operability of amenities, fittings and equipment.	-	'physical strain associated with functional space' (p. 54).
29.	Structural collapse and falling elements – the collapse of the whole or part of the dwelling or HMO.	Unstable parts of the building, especially at high level. Unsecured fireplace surrounds.	'objects falling ... extremely rare' (p. 55).
30.	-	Unprotected garden ponds and swimming pools.	This HSS hazard is not in the HHSRS.

Table D.3 Comparison of HHSRS and HSS hazards, 'protection against accidents, falls, electric shocks, fires, burns and scalds, collisions, cuts and strains'

In addition, in performing their Service Roles in relation to safety matters (but especially in the assessment, design, specification and contract administration of retrofit installations) RICS members **must** have good working knowledge and awareness of the following:

- Building Regulations
- appropriate publicly available guidance, e.g. Approved Document K in relation to falls from height on stairways, landings and balconies and glazing in critical locations and
- BSI Codes of practice, European Standards and ISO Standards as appropriate.

RICS members should note that guidance, including statutory requirements, on safety in dwellings varies in different parts of the UK.

Appendix E: Legal matters – other features and issues

RICS members and RICS-regulated firms should include other features and issues that may have an impact on the subject property and may require further investigation, discussion and guidance from the legal adviser prior to, during and after a retrofit project. During all retrofit projects, RICS members and RICS-regulated firms should be aware that most legal advisers do not visit the property, therefore, the RICS member **must** clearly highlight all relevant legal matters at the appropriate stages of the project and in an appropriate and timely manner – see below and section 2.8 for further examples. The following list (which is not exhaustive) illustrates possible issues for consideration and legal advice:

- the type of legal tenure (e.g. freehold or leasehold, etc.) and any rights and obligations, especially if onerous
- flying freeholds or submerged freeholds
- evidence of multiple occupation, tenancies (including different types such as 'assured shorthold', 'protected', etc.), holiday lettings and Airbnb
- future use of the property
- evidence of possible trespass and rights of way
- arrangements for private services, Environment Agency General Binding Rules, etc.
- evidence of rights of way and maintenance or repairing liabilities for private access roads and footways, ownership of verges, village greens, etc.
- chancel matters
- other property rights including rights of light, restrictions to occupation, tenancies, easements, servitudes and wayleaves
- boundary problems including poorly defined site boundaries, repairs of and works affecting party walls, party wall agreements and Awards under the *Party Wall etc. Act 1996* and works in progress on the subject property and/or on adjoining owner's land
- details of any building insurance claims
- parking permits
- presence of protected species (e.g. bats, badgers and newts)
- Japanese knotweed and other invasive species and
- previous Green Deal measures, feed-in tariffs and roof leases.

Note that variations may apply in different parts of the UK.

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General enquiries
[**contactrics@rics.org**](mailto:contactrics@rics.org)

Candidate support
[**candidatesupport@rics.org**](mailto:candidatesupport@rics.org)



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