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Newham London

How to Retrofit

A Landlord's Guide

How to Retrofit for Landlords

Contents

How to use this Guide

The guide will walk through the basics of improving the energy efficiency of your property and will go into detail on some of the options available. This guide is not designed to be read cover to cover, but instead to use the contents to direct your attention to the sections which are most relevant to you and your properties. This guide is not an exhaustive list of all of the options that might be available to you and should be used in conjunction with your own research and advice from relevant experts.

To find the most up-to-date information on grants and schemes available visit the Newham Website - Stay Warm in Newham – Energy and sustainability – Newham Council

If you have any more questions or would like further support contact the team on EPC@newham.gov.uk

Background

Approximately 60% of energy usage by the average household is from space heating, this correlates to highest expense for the occupants and often the largest contributor to emissions.

Heat Loses in a Home

Figure 1- Image shows the common breakdown on heat losses in an average home (Comfort Joy, 2022)

What is Energy Efficiency?

Energy Efficiency is doing the same task while using less energy and therefore less money on fuel bills.

Using EPC

When considering making Energy Efficiency improvements to a property the EPC for that property is a good place to start. The EPC for your property can be found by searching your postcode here: What is the postcode? – Find an energy certificate – GOV.UK (find-energy-certificate.service.gov.uk)

EPC simply means Energy Performance Certificate and it gives an idea of the energy efficiency of your property and how this can be improved. The EPC will give an indication of where improvements are needed, and in what areas, according to priority. As well as the recommendations at the bottom of the

certificate it also has a table which breaks down the features of the property and gives an indication of how “good” they are. Below is an example of such a table:

Feature	Description	Rating
Wall	Solid brick, as built, no insulation (assumed)	Very poor
Roof	Pitched, 150 mm loft insulation	Good
Roof	Pitched, no insulation (assumed)	Very poor
Window	Fully double glazed	Average
Main heating	Boiler and radiators, mains gas	Good
Main heating control	Room thermostat only	Poor
Hot water	From main system	Average
Lighting	Low energy lighting in 50% of fixed outlets	Good
Floor	Suspended, no insulation (assumed)	N/A
Floor	Solid, no insulation (assumed)	N/A
Secondary heating	None	N/A

As you can see from this example, the features that have “bad” ratings are the solid walls, and part of the roof with no insulation (the two roofs here show that there is an extension). This could indicate that these areas could be a good place to start when considering improving the Energy Efficiency and thermal comfort of the property.

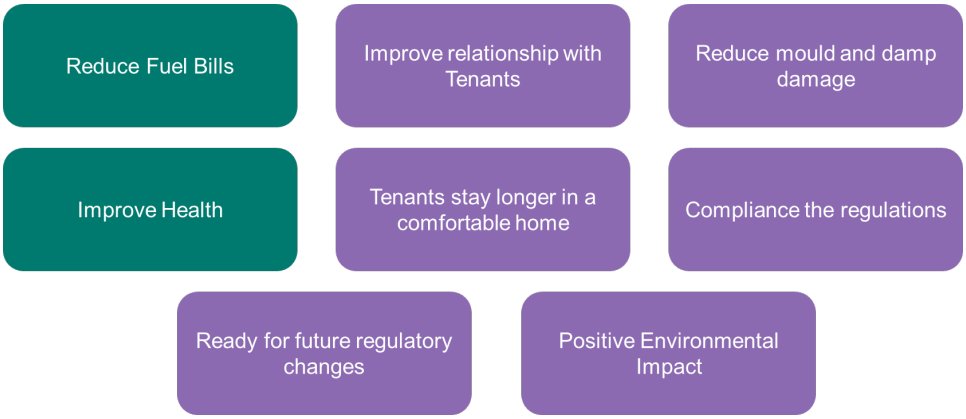
An EPC gives a rating from 1 to 100, where 1 is very poor energy efficiency, lots of energy wasted, and 100 is an extremely energy efficient property where no energy is wasted. These numerical scores are then broken down into bands from A-G, where G is the worst (1-20) and A is the best (+92).Each property is given an actual score and a potential score if they were to make all the recommended improvements. EPC D (60 points) is the UK average.

If you don’t have an EPC or would like an updated EPC, find an EPC assessor on the government website What is the property’s postcode? – Get a new energy certificate – GOV.UK (getting-new-energy-certificate.service.gov.uk). Once you have chosen a local assessor a date for the assessment will be booked, and access to the property including the loft will be required for this. The assessment usually takes around an hour and the certificate will be sent and uploaded to the website within about 2 weeks.

It is important to ensure that your EPC assessor is registered and accredited. This can be checked on the government website What is the assessor’s name? – Get a new energy certificate – GOV.UK (getting-new-energy-certificate.service.gov.uk)

Why Improve Energy Efficiency?

The image below shows some of the main benefits of improving the Energy Efficiency of your property.



Green – improvements that will benefit the Tenant

Purple – Improvements that will benefit the Landlord

Discount on your Rented Property Licence

Newham offer a £50 discount on the price of a property licence for properties with an EPC C or higher. Find out more here - https://www.newham.gov.uk/housing-homes-homelessness/rented-property-licensing/9

Complying with the Law

Another reason to improve the Energy Efficiency of a property is to ensure that your properties are complying with the current and upcoming regulation changes to ensure you don't end up with expensive penalty charges.

Current Regulations – Properties with an EPC F and G cannot be rented out on new or existing tenancies unless a valid exemption has been lodged (more information on exemptions can be found here - Guidance on PRS exemptions and Exemptions Register evidence requirements - GOV.UK (www.gov.uk)). The maximum Penalty for this is £5,000.

In addition the Housing Health & Safety Rating System, under the Housing Act 2004, could potentially assess your property as having a Category 1 hazard for Excess Cold where the Energy Efficiency of the property is poor. The council can serve an Improvement Notice to require improvements and you could face a fine of up to £30,000 or prosecution for failing to comply.

Grants

Small Measures

What is Retrofit?

Retrofit is the term that is given to any improvements made to a property that improve its Energy Efficiency, therefore making it cheaper to heat and more comfortable to live in. The key principle of retrofit is that the needs of every property are different and therefore each property needs to be considered individually. There is no "one size fits all retrofit". When researching and talking to retrofit professionals two terms will likely come up a lot, "Fabric-First" and "Whole House" these are explained below.

Fabric First - Looking first at the condition of the building and repair any issues or damage, then look at insulating the property as much as possible. This means that the heating losses are reduced as much as possible and therefore the heat required to adequately heat the property is as low as possible. By looking at improvements this way, the money and energy savings are maximised as there is no point wasting money on a new heating system when most of the heat produced is lost out of the property.

Whole House - This is the approach that includes looking at the building fabric (walls, roofs etc), building services (heating, plumbing, ventilation) and renewable energy systems (e.g. solar panels) of a property together. It is vital all of these are considered when retrofitting as they often interact, for example a property with a high level of insulation (improved building fabric) will need less heating and therefore can have a smaller heating system (building services).

Key principles of Retrofit

- All around and consistent insulation to floors, walls and roofs to maintain an even temperature on internal surfaces. (Moisture will land on the coldest surface as condensation and this is where damp and mould problems arise)
- Airtight building envelope – Ensuring there are no gaps that allow for uncontrolled air leakage and draughts
- Consideration for solar gains and the potential need for shading to reduce overheating

When to Retrofit

If you are already planning on doing improvement works, such as roof repairs or even a new kitchen this could be a good time to consider retrofitting your property as there is already disruption and this can lead to savings such as reduced scaffolding costs.

Another good opportunity for retrofit could be between tenancies as the property being empty would usually make the work quicker and more straight forward.

Where to start

Assessment

The first stage in any retrofit project should be a retrofit professional visiting the property and investigating its current state. This assessment will include looking at the property, talking to the current residents and getting a better idea of the aims of the landlord. For a privately funded Retrofit an assessment is not required but it is strongly recommended to ensure the measures installed are

appropriate for the property. A Retrofit Assessment usually costs between £120 - £240 but the price can vary depending on the size and complexity of the property, it may also be possible to get a deal if assessments are being conducted on multiple properties.

Finding an Assessor

A Retrofit Assessor is a trainer individual who assesses properties for Retrofit projects in line with the PAS 2035 standards.

> PAS 2035 - Is a framework that details the steps, stages and considerations required for a retrofit project. Your Retrofit Assessor will be familiar with these standards.

A Retrofit Assessor will need to be a qualified Domestic Energy Assessor and be an active member of an accreditation scheme, the main accreditation schemes are Elmhurst Energy, ECMK Limited, Stroma, Quidos and Sterling Accreditation. Assessors can be searched on the government website to ensure they are accredited What is the assessor's name? – Get a new energy certificate – GOV.UK (getting-new-energy-certificate.service.gov.uk). If there any concerns about the assessor they should be raised to the relevant accreditation scheme.

Some of the accreditation schemes require the assessor to have additional Retrofit Assessor training. The assessment may also be completed by a Retrofit Coordinator, these individuals have a Level 5 qualification in Retrofit and should be able to provide certification and accreditation to prove they have sufficient training.

Retrofit Assessors and Coordinators can also be found using the "find a local tradesperson" function on the TrustMark website. All contractors found through Trustmark commit to high standards of technical competence, customer service and trading practices as well as providing financial protection for their customers, more can be read in the Trustmark Code of Conduct Why TrustMark? • TrustMark.

Preparing a Whole House Plan

Following the assessment, the retrofit professional will produce a detailed report outlining all the improvements that are suitable for the property. This report will explain what order certain measures need to be completed in and if there are any issues where two measures cannot be installed together. The aim of the report is to outline the roadmap to make the property as energy efficient as possible, all the measures do not need to be completed at once.

The retrofit professional will then walk through the plan with the landlord and current occupant (where appropriate) to get an idea of what works will be priority and what can be achieved within the budget and time constraints. The plan will breakdown each of the improvements and give estimates for cost, payback time and carbon savings. The plan should also highlight any other considerations such as the disruption and any improvement work that needs to be completed prior to insulation works starting. The plan should have lots of graphs and drawings to clearly show the different options and the savings associated with each, if you are unsure about anything in the plan you can discuss this with the Retrofit Coordinator. You may choose to have the retrofit professional to oversee the whole project or to just supply the plan. The Retrofit professional may help collect quotes for installers they have used before or recommend, however there is no obligation to go with any of these quotes.

Finding installers

The standard recommendation when choosing installers is to try and obtain three quotes from different installers to compare their offerings, don't necessarily just go with the cheapest price as this might end up costing more in the long run.

When looking for specific installers for different measures there are a number of accreditation schemes to ensure you get a qualified tradesperson for the job, these are broken down by measure below.

General Accreditation Schemes:

TrustMark and TrustMark Plus – installers can be found here Find trusted tradespeople with quality at heart • TrustMark

Trust mark License Plus – Any retrofit project which is completed using a qualified Retrofit Coordinator (whether that be self-funded or through a government scheme) will be part of the TrustMark Plus license. This provides you as the consumer reassurance that the tradespeople used and the work completed is to the highest standard and is regularly checked and audited. If the retrofit or project is self-funded there is no requirement for a Trustmark Plus process to be followed, but there are other accreditation schemes and licenses that installers can use to provide guarantees and assurances to the customer.

Able to Pay Framework – Under this, sell funded insulation works provided by Installation Assurance Authority IAA members comes with set guarantees. These installers do not need to hold PAS 2035 certification or be TrustMark Registered.

These are:

- CWI (Cavity Wall Insulation) - 25 and 10 years
- IWI (Internal Wall Insulation)- 25 and 10 years
- EWI (External Wall Insulation)- 25 and 10 years
- RIRI (Room in Roof Insulation)- 25 and 10 years
- UFI (Under Floor Insulation)- 25 and 10 years
- Flat Roof - 6 years
- Loft - 2 and 6 years

1 in 10 installs are physically inspected by the Installation Assurance Authority,
Installers can be found here - Find your local installer | The IAA

Qualitymark Protection – All installers must pass Qualitymark vetting and certification, including financial security and work competency. All accredited installers provide free financial protection.

Check your installer is Quality Mark protected here - Homeowners | Qualitymark Protection |

External Solid Wall insulation

The Solid Wall Insulation Guarantee provides customers with the guarantee that should there be an issue with installation or a contractor the SWIGA will arrange for any remedial work to be completed to ensure the insulation last the 25 years given in the guarantee.

Read more about the Guarantee here: Home | Solid Wall Insulation Guarantee Agency (swiga.co.uk)

Cavity Wall insulation

The Cavity Insulation Guarantee Agency provides 25-year guarantee for all installations completed by a registered installer. Find installers here CIGA Registered Installers | CIGA

Double/ Triple glazing & Replacement external doors

FENSA – A FENSA certificate should be supplied after installation, and this will prove the work completed complies with building regulations, ensures it is registered with the council, verifies the installers guarantee is insured and shows that your new windows and doors are energy efficient. Find FENSA approved installers here - Find Double Glazing Installers | Window & Door Installers UK (fensa.org.uk)

Boiler replacement

Any worker installing a new gas boiler or working on an existing gas boiler must be Gas Safe registered. Find Gas Safe registered installers here – https://www.gassaferegister.co.uk/find-an-engineer-or-check-the-register/

When looking at new boilers, it is also worth considering the warranty and guarantee.

Air/Ground source heat pump, Solar panels & Solar thermal

The quality assurance for low-carbon heating such as air and ground source heat pumps is the Microgeneration Certification Scheme, both the installer and the heat pump should be accredited by the scheme. Accredited installers must pass quality and safety standards. Accredited systems must pass testing and quality controls. Find a contractor here - https://mcscertified.com/find-an-installer/ .

Starting work

Following the assessment and whole house plan different packages of measures that are appropriate for your property will be presented to you, for you to decide how to best progress. Below are some

examples of the measures that might be recommended for different parts if your property. Please note this is not an exhaustive list.

Vapour open/ Vapour Closed

The first consideration will be whether your property is vapour open or vapour closed design. This simply means whether your property is built to be moisture tight so moisture doesn't enter at all (vapour closed) or allows moisture to pass through the construction in a balanced way (vapour open). All of the measures then installed must be consistent with either the vapour open or vapour closed construction of the property.

Vapour Open Construction:

In vapour open construction, the building materials allow moisture to pass through them easily. This means that any moisture inside the property, whether from cooking, bathing, or other activities, can escape to the outside environment. Vapour open construction typically uses materials like breathable membranes or certain types of insulation that enable moisture to move freely.

The majority of older properties are Vapour open construction.

Vapour Closed Construction:

In vapour closed construction, the building materials are designed to prevent moisture from passing through them. This means that moisture is trapped inside the property, which can lead to issues like mould, mildew, and poor indoor air quality if not properly managed. Vapour closed construction often involves using impermeable materials such as plastic vapor barriers or certain types of foam insulation and must be installed in conjunction with ventilation systems to ensure the moisture is adequately dealt with.

Floors

Solid Floors

For solid ground floors on concrete slabs, laying rigid insulation boards over the floor and covering them with chipboard is common. Adding a Damp-Proof Membrane below the insulation layer helps if none exists. Adjustments to doors and steps may be necessary due to the added insulation thickness.

Interfaces between floor insulation and other elements require attention to prevent thermal bridging. Careful design can minimize the risk, such as adding insulation to the base of external cladding to reduce thermal bridging where it meets the solid floor.

Suspended floors

- A common method is to place mineral fibre insulation below the floorboards and between the joists, securing it with netting or battens. Adding a rigid board under the insulation can improve airtightness, but it raises the risk of mould growth and cold bridges at the joists. To reduce this risk, insulation can be placed under or above the joists, but careful cutting and sealing are necessary to prevent thermal bridging.
- Another option is using a stapled vapour barrier to create pockets between joists for loose insulation, covered by plywood and wooden floors. Insulating joists reduces ventilation, so moisture control is vital. Bearings in external walls pose another thermal bridging risk, which can be addressed by replacing joists with insulating material, although it's costly.

Thermal Bridge - A thermal bridge is a pathway that allows heat to flow more easily between two areas that are at different temperatures. Essentially, it's like a shortcut for heat to move from a warmer area to a cooler one or vice versa. Thermal bridges can lead to energy loss, discomfort, and even structural issues if not addressed properly.

Roofs

Pitched roofs

- When insulating pitched roofs, insulation can usually be added between the rafters but an additional layer of insulation either above or below the rafter will enable better performance and allow for constant coverage and limit the risk of damp and mould issues due to gaps in the insulation. Whether insulation is added above or below the roof structure often depends on the level of other building work being completed (i.e. whether scaffolding is already needed). When insulating from below this tends to be less intrusive however it will reduce the ceiling height in the loft, and this might not always be acceptable. When insulating care is needed to ensure that the insulation does not block the ventilation above the rafters; one option here is to wrap a weatherproof, vapour-permeable membrane around the rafters and then add a second layer of insulation across the rafters.
    - When insulating lofts it is important to ensure insulation has been thoroughly added and there are no “hard to reach” areas which have been missed.
- When externally insulating a pitched roof a new roof above the existing one is constructed, this also allows for the insulation to connect to external wall insulation.
- When insulating flat roofs, the key considerations are achieving better U-Values, maintaining a waterproof membrane and reducing thermal bridging at the junction with external wall insulation.
    - There are two types of flat roofs, a warm deck and a cold deck.
        - A warm deck is where the insulation is on the top of the structure and therefore the risk of condensation on the underside of the roof deck is eliminated. If a warm deck has insulation added on top of the weatherproofing this is called an ‘inverted roof’ and paving or pebbles will be required to hold the insulation down, therefore this is only an option for roofs with sufficient strength to take the additional weight such as concrete roof decks.
        - A cold deck is where the insulation is within or below the structure.

Walls

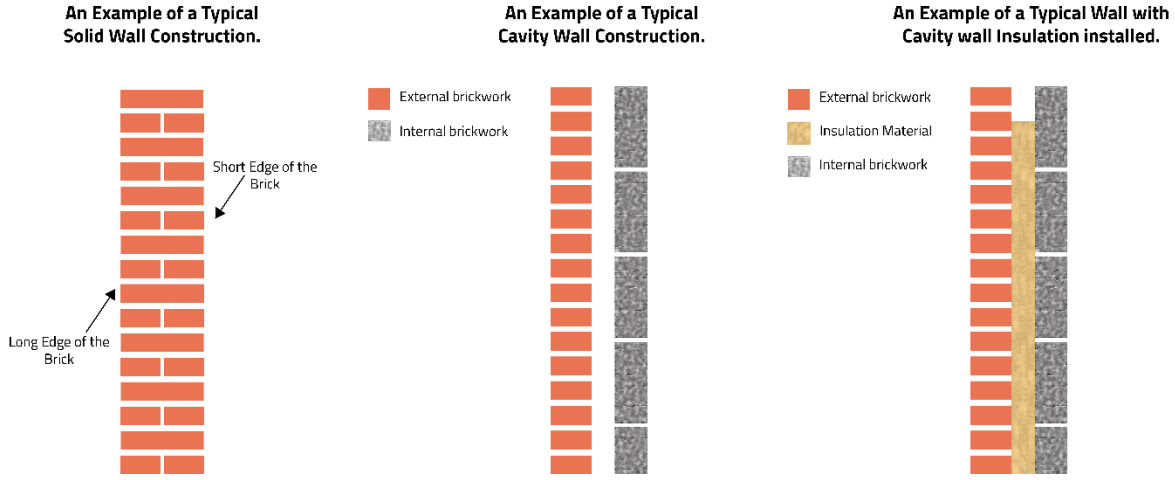


Figure 2 - Image shows different wall constructions (Housing Triage, 2021)

Cavity Wall Insulation – If your property has Cavity Walls, like the image above, the insulation option will likely be to fill the cavity wall with insulation. This is relatively cheap, easy and non-disruptive. Cavity Wall Insulation (CWI) is when insulation, usually blown mineral fibre or polystyrene beads, is added in the cavity (gap) between the two parts of the wall. CWI may be possible on any walls built of masonry, such as bricks, concrete or stone, that have empty cavities with no issues which would mean that CWI would not be appropriate (i.e. existing damp and mould or structural damage). CWI is often an attractive option for improving the energy efficiency of suitable properties as it is relatively low cost, with an average semi-detached house only costing around £500. If it's installed from outside of the property, there is also not much disruption involved, with the typical house only taking around 2 hours.

Free Cavity Wall Insulation – If your property is in council tax band A-D, check your band here http://www.gov.uk/council-tax-bands then you could be eligible for free cavity wall insulation, find out more and apply online https://www.newham.gov.uk/public-health-safety/energy/13 .

Solid Wall

If your property is of a solid wall construction, as shown on the left of the image above, the insulation option is likely to be solid wall insulation this can be installed internally or externally. With both it is important to ensure the insulation is consistent and there are no gaps or areas with less insulation. It is also important to ensure that the insulation used is consistent with the building construction (vapour open or vapour closed).

Internal – This is when the insulation is added to the inside of the walls, this has no impact on the external appearance of the property meaning it might be a better option where the conservation of the external appearance is important. Internal insulation will decrease the internal floor area of the property slightly so this should be considered, especially if the rooms are already near the limit for room sizes.

External – This is when the insulation is added on the outside of the walls. For this to be installed correctly all things that are stuck to the external walls should first be removed (e.g. guttering, TV disks, wiring) then the insulation is added and then carefully replaced. When installing external wall insulation this is a good time to assess whether the rain water goods are in a good condition and whether they are capable of holding enough rainwater (bearing in mind that the amount of rain is only likely to increase in

the coming years due to climate change). When installing external wall insulation, the windows should also be removed and reset in line with the new thicker wall (with the insulation). Ask your installer if they are planning on doing this and if not why. With external wall insulation it is very important that there is a high level of attention to detail and good workship as any inconsistencies can lead to damp and mould issues, but if installed well it can substantially improve the energy efficiency of the property.

Windows

When improving windows, it's vital to adhere to local building regulations, which may dictate the type and size. Accessibility standards and fire regulations should also be considered, as there are rules on how wide windows need to be able to open for primary escape options.

During a retrofit, it is only necessary to replace windows if the frames are aged or damaged. If the frames are of good quality and in good condition, better options would be either to replace the seal if the windows have become draughty or to replace the glazing unit if that is damaged. In the latter case, you usually observe fog or condensation forming on the inside of the two panes. Not replacing perfectly fine window frames or complete windows keeps the cost down.

Ventilation

When adding or changing insulation in a property it is important to consider the impact that will have on the ventilation of the property. In poorly insulated draughty properties there is a constant exchange of air from outside into the property and although this brings in the cold it also allows the moisture in the air (from cooking, showering and breathing) to leave the property. When the property is better insulated this moisture in the air can't leave the property and this is what causes problems with damp and mould. For this reason, additional ventilation, such as trickle vents in windows, additional extractor fans and mechanical ventilation will need to be considered. Make sure to ask your contractors if they have assessed the ventilation requirements and if additional ventilation needs to be added.

Heating

Following making the fabric improvements to your property you may be interested in looking at decarbonising the heating system. The best solution will depend on the individual property. When making these decisions a retrofit professional will help advise you on the best solutions for your property. Some options you might consider could be an air source heat pump, infrared heating, electric boilers or electric radiators. When looking at electric heating the technology has improved a lot from the old 'time of use' electric heaters that were expensive to run and struggled to heat adequately. Consider looking at the cost of running the system and ensure your tenants are fully aware of the best way to use the heating system you decide to install.

It is also worth looking at the funding that is available to support you, if you are not eligible for all the work being funded through a means-tested grant, like ECO4, there is still support through the Boiler Upgrade Scheme. The Boiler Upgrade scheme offers £7,500 towards an air source heat pump, with the new Octopus Energy heat pump this could make the price of a heat pump and installation as low as £500!

Visit the Energy Saving Trust's website for more specific technical details on the different options https://energysavingtrust.org.uk/collection/exploring-your-options/. If you do change your heating to a low-carbon option, let us know we would love to hear about your experience and allow other landlords to learn from your experience, email the team at EPC@Newham.gov.uk.

Things to be aware of

As the measures that will be needed for each property are different and unique it is not possible to say exactly what measures will work for your property but the information given in this guide should help give you more of an understanding of what questions you should be asking and things to be aware of.

Depending on your unique property the package of measures recommended will also come with a recommended order that they should be installed in. This is because certain measures are likely to interact with each other. An example of the interaction matrix showing this can be found by Googling "retrofit measures interaction matrix."

Depending on the scale of the retrofit and how many measures you are having installed the level of risk of the project might be different. If you are having more than two measures your project is likely to be considered to be high risk, this means it is highly advisable that you have a Retrofit Coordinator that is included throughout the whole project and oversees everything.

Success factors

The best way to have a successful retrofit experience is by ensuring that all the right qualified and accredited people are involved from the start and that you do not set unrealistic time limits on the work as this is likely to lead to the project being rushed, which will lead to problems in the long run. It is also crucial that no assumptions are made and that thorough understanding and testing of the property is undertaken before deciding on what measures are more appropriate. Ensuring that everyone is involved in the retrofit and has clear expectation of the project, including the current occupants of the property as it is vital they at the very least understand how to use everything in the property, especially the importance of ventilation (i.e. use extractor fans, don't block vents).

Finally, a successful retrofit must have a clear and thorough maintenance and repairs procedure, it is vital that your tenant knows how to report any issues as soon as possible and feel comfortable doing so, this will stop problems progressing and becoming more expensive to fix. At the end of the retrofit you might consider installing moisture and internal temperature monitors for the first two years to assess if there are any issues (such as high moisture levels) this way you can pre-empt any problems before they cause expensive damage to the property.

Do I need Planning Permission?

This will depend what measures are being installed and whether your property is, check out the interactive house tool to answer some specific questions and if you are unsure contact the planning team. https://interactive.planningportal.co.uk/ duty.officer@newham.gov.uk .

Other Support Available

- More regularly updated information on Grants and support is available on our website https://www.newham.gov.uk/public-health-safety/energy
- More information on how to find right installers and things to look out for can be found on the Trust Mark website - https://www.trustmark.org.uk/homeowner/information-guidance/retrofit-your-home
- More in depth information on retrofit best practice can be found - https://retrofitacademy.org/knowledge/domestic-retrofit/

- If you would like support around grants and support available, or are interested in a large retrofit project you would like to tell us about email the team at EPC@newham.gov.uk
- IZ Energy are a local installer based in Barking and are currently developing a 'Centre of Excellence' where you can see the different technologies on a model house and get "hands on with the technology". Newham will be advertising this more when it is open, if you are interested in visiting please email EPC@newham.gov.uk .
- If you are a Newham Landlord who has retrofit or installed solar panels on your properties, we would love to hear more about your experience and potentially use you as a case study to show what is possible. Email EPC@Newham.gov.uk

This guide is to be used as a tool as part of your research and is not designed to have all of the answers or to cover every eventuality. Please contact a qualified Retrofit Assessor and designer to get targeted options and advice. Newham Council are not endorsing any installers or approaches nor does it accept any liability in connection with the information provided. You should fully research any installers and measures and chose the options that are best for you and your tenants.