Item 9 Annex 01

First Draft for comment

retrofitGM

Accelerating Retrofit for GM

Contents

Forward by the Mayor to be drafted

Executive Summary

In order for Greater Manchester to meet our carbon neutral target by 2038, and not exhaust our carbon budget, immediate action is required. As a region we have already used next year's carbon budget and at the current rate our entire budget will be expended in 6yrs. While action is required on every source of greenhouse gas emission, we need to prioritise the decarbonisation of heat which, after transport, is our single biggest source of carbon emissions. Within this the domestic sector is the largest single source and has the potential to realise the most benefit, particularly for those residents who live in one of the 157,000 Greater Manchester households that are in fuel poverty. The at scale retrofit of our homes is critical in levelling up our society to ensure no one is left behind as we move mover into our zero-carbon future.

These carbon emissions come at an economic, social and environmental price, so reducing them will result in significant gains across this spectrum, as well as reducing the risks from future energy price shocks and supply constraints. To move forward it is critical that we recognise these wider benefits and not simply view building retrofit and onsite energy generation through the myopic monocle of financial payback, which acts as a deterrent for investment.

It will be seven years before all new homes in GM will be zero carbon, and over three quarters of our existing homes, some 887,000 will need to be improved, requiring the development of an annual domestic retrofit market of between £610m-£830m. This market is in its infancy, suffering from multiple market failures including a lack of market demand, supply chain capacity and capability, a suitably skilled workforce and the financial products and services needed to fund the measures.

While retrofit generally does not require new trades, there is a significant need to upskill and retrain existing tradespeople within the construction sector, to meet the expected future demand, as well as the need to recruit 1,000 apprentices and 3,000 Further Education learners, a year. This is in addition to the 5,000 new entrants the sector needs before retrofit is factored in. Due to the multiple market failures which exist it will be necessary to implement a systemic approach to building the skilled workforce we need, requiring all parts of the value chain to work together to ensure all parties have the necessary level of assurances they need to release the investments required.

To enable this suitably skilled and scaled market to emerge, those who can, whether in the public, private or 3rd sector need to lead by example, put their own houses in order and use the powers afforded to them to enable and support building retrofit of all tenures.

While some retrofit activity is ongoing, it has focused mainly on the worst performing properties, so excluding 75% of those GM homes that need to be improved. Grant funded programmes are helpful, however, more market-based delivery and finance mechanisms will need to be developed to enable the necessary scale of deployment to occur. These mechanisms include, Local climate bond, Property linked finance, Green rental agreements and Green mortgages.

The development of such mechanisms will need to be done in tandem with employers and skills providers to ensure the supply chain demand can be met in the long term for year-on-year exponential growth.

To help catalyse the 31% of GM homeowners who are willing to undertake some form of retrofit in the next 5 years, the GMCA is developing a customer centric delivery vehicle which aims to give buyers the confidence and assurance they need to retrofit their homes. This is in addition to the 7,200 socially rented properties and wider planned commercial, public, and academic building retrofit measures. Collectively these will help retain some of the £5bn currently spent on energy which leaves the GM economy every year.

Retrofitting buildings and the associated transition to the electrification of heat, will increase the demand for electricity, which is already increasing due to our move to electric vehicles. Meeting this demand through local onsite generation has multiple benefits, including:

- reducing the ongoing cost of heating the building
- reducing exposure to future energy price shocks
- reducing the need to reinforce the electricity grid (which has embedded carbon)
- reducing unemployment by generating local high skilled jobs

Through the Greater Manchester Spatial Framework, standards for new buildings and developments will be set, but we still need to increase renewable energy generation and low carbon heating in existing homes and buildings. To achieve this, residents, businesses and stakeholders will need support to help make the right decisions, making sure everyone can benefit from these changes in order to ensure a fair and just transition

Our Challenge

At circa 3,560 kCO_2e per annum, the carbon emissions associated with heating our buildings are after transport the largest source of the region's greenhouse gas emissions. In order to meet our 2038 carbon neutral target, and more importantly stay within our carbon budget we need to urgently address this. Due to the poor thermal efficiency of our UK's buildings, the majority need to be upgraded to make using renewable heating financially viable for the household. This retrofitting of buildings needs to happen rapidly and at scale, from almost a standing start, in a market which is not fit for purpose lacking capacity, capability, financial products and services, a skilled present and future workforce and quality assurance.

These challenges are compounded by an energy taxation policy which favours more carbon intensive gas over electricity, making the economics of the transition harder. Most people do not know we need to heat our homes, offices and schools differently, and those that do face a plethora of inaccurate information on the efficacy and cost of renewable heating. As such buyers are not informed, so the consumer demand needed to fix the market is not present, creating a vicious circle which needs to be broken.

While the scale of this challenge means action is need across all building tenures, whether domestic, commercial and industrial and public, the barriers faced are difference and will require specific interventions. By sequencing these interventions towards those sectors/individuals who recognise the urgency we face, it will be possible to create the necessary demand to stimulate the provision of skills and the enabling financial products and services. This market stimulation needs to be done in concert to avoid bottle necks which could stall progress.

In addition to stimulating demand, we need to develop a suitably skilled and scaled supply chain, while this will generate new jobs much of the work will be done by the existing workforce who will need to be upskilled.

The Challenge in Numbers

Number of properties which need to be upgraded

- 887,000 homes, of which 138,000 are in the Social Rented Sector
- 700 Local Authority controlled schools
- 2,700 Public Sector Buildings
- Every commercially let property which has an EPC of less than C by 2030
- 80,000 construction workers need to be upskilled
- 1,000 apprenticeship and 3,000 FE leaner per annum until 2030
- Create a GM retrofit market of £600m - £800m pa

As long as the construction sector has a strong pipeline of non-retrofit work employers are unlikely to release staff to train in 'retrofit skills' on their own. As retrofit competes with more traditional projects for labour, it is necessary to demonstrate a long-term pipeline to give employers, employees and colleges the confidence they need to enter the market. The market will also require employers to acquire new third-party accreditations such as Trustmark and Microgeneration Certification Scheme (MCS); which will cost time and money.

Unlike most other building and all domestic home improvements projects, retrofit measures are all too often viewed only through the lens of payback, which when viewed in simple financial terms can be drawn out. As the cost of retrofitting a property (including new doors, windows, plumbing, insulation and decorating) and installing a Heat Pump can be between £10,000-£15,000, most people will need to borrow money over a number of years, as such the interest charged can have a significant impact on the overall cost the retrofit and restricts the market to those who can secure credit or pay for it outright. What is needed is long terms patient (low interest) capital which recognises that the duration of the loan may well be longer than resident lives in the property.

This transition to the electrification of heat, in parallel with the move to electric vehicles will significantly increased the demand for electricity requiring a whole system approach to the energy challenge. By installing local renewable energy generation and storage it will be possible to generate long term revenue streams, reducing our risk to future energy price shocks and security of supply.

Where are we?

Greater Manchester is not on track to be carbon neutral by 2038, and has not been for some time, we have already emitted next year's emissions, and at the current rate our entire budget to 2100 will be expended in 6 years. While action is required on every source of greenhouse gas emissions, we need to prioritise the decarbonisation of heat which, after transport, is our single biggest source of carbon emissions.

Whilst there is an array of renewable heating systems available, the poor thermal efficiency of our housing and commercial building stock means that, for many residents, they are not an affordable option. To make renewable carbon heating affordable we need to both increase the thermal efficiency of our buildings, by installing retrofit measures and, where feasible, generate more renewable energy on site. This onsite generation helps reduce ongoing energy cost offsetting the upfront capital investment.

While the current retrofit market is in its infancy, it is clear it suffers from multiple market failures which need to be simultaneously addressed if we are to stand any chance of achieving a fair transition to a zero-carbon society.

The Current market will not deliver the number of retrofits which are needed, because:

- Most people do not know they need to heat their homes differently
- Most people are unaware of what they can do to make renewable heating an affordable reality
- The current supply chain is too small, with the majority of potential suppliers having a limited or an incorrect understanding of what can be achieved.
- Due to a lack of demand, the unit costs are too high, and we are lacking a suitably sized and skilled workforce
- The current financial products are not well suited for long duration loans where benefits are split between present and future property owners or tenant landlord
- Due to the failings of past initiatives, the supply chain has limited confidence that the market will take off, so they are now prepared to invest in the new skills needed
- As there is very limited demand for 'retrofit skills' training providers are reluctant to invest or run course they are not confident they can fill
- Changing heating systems is not a priority for most people and is often an emergency purchase. As such, little thought is given to the options available.

As these challenges and all intrinsically linked, with overall progresses constrained by any one of them, it therefore requires a systemic intervention into the marketplace. The systemic nature of this intervention will also have wider implications, supporting the adoption of zero carbon technologies and renewable energy generation outside of the building retrofit as outlined below.

Benefits of Acting Now

The UK housing market is on the cusp of a retrofit revolution, as we look to heat our homes with renewable energy, and undertake the necessary upgrades needed to enable these properties to be fit for the future. Left to market forces alone, only those who have the necessary knowledge and resources will be able to benefit from this revolution, leaving many, especially those who find themselves in vulnerable circumstances, increasingly left behind. This will further entrench inequality, becoming steadily worse, as the socialised energy network costs currently paid by all, will be paid by an ever-reducing number of customers, as those with the means can avoid these charges.

Early public intervention into the market is needed to catalyse the market, making it cheaper and easier to adopt these changes, and so support a fair and just transition to zero carbon heating. This structured intervention will deliver multiple benefits to Greater Manchester residents and businesses including, for:

- **People:** For residents' health, education, jobs, income, and productivity.
- **Economy:** Improved productivity and the potential for the creation of new jobs and new skills as well as reduced pressures on public finances.
- **Environment:** making a significant contribution to reducing CO_2 emissions.

These benefits are outlines in more detail below.

Benefits for Greater Manchester's residents

Reducing energy demand by improving a building's fabric offers substantial health and economic benefits to GM residents. This is of particular importance in Greater Manchester, where an estimated 157,000 households (c.13%) are classified as being in fuel poverty, this number as increase for the last 3 years. Cold or poorly ventilated homes exacerbate existing respiratory conditions such COPD and have a significant impact on mental health, particularly for those in vulnerable circumstance. It can double the risk for children getting asthma or bronchitis, and result in someone being 50% more likely to suffer from depression and anxiety.

Reducing the proportion of income spent on energy positively impacts food poverty (heat or eat) and household relationships due to reduced financial stress and health inequalities, resulting in fewer GP visits. This in turn has implications for school attendance and attainment helping to address structural inequality and social mobility.

Cold homes cost the NHS an estimated £600m-£2.5bn (depending on the method used), circa 1.7% of total NHS spending (as of 2016/17 figures). Investing £1 in retrofit is estimated to save £0.42 in direct health costs alone. There is therefore the potential to make significant savings in public health costs by retrofitting homes.

The 2016 Warm Homes Oldham project aimed at households with poor health due to fuel poverty noted:[1]

- It was predicted that 75% of participants would move out of fuel poverty as a result of the initiative
- 60 per cent of respondents with a physical health problem felt that the initiative had a positive impact on their health
- 80% reported that the project had a positive impact on their general health and wellbeing
- 96% of those who self-reported as being at 'high risk' of mental illness on completion of the General Health Questionnaire moved to 'low risk' following the initiative
- 96% of respondents agreed that their home was easier to heat as a result of their involvement in the project; and 84% agreed that they now spend less on their heating

Based on the assumption that the benefits had immediate effect but only last for one year, the assessment of the NHS savings from impact on the numbers of individuals with a Common Mental Disorder (CMD), estimated at 128 adults within the sample of 885 adults. These were:

- £2,500 of reduced medication costs
- £21,600 of reduced counselling costs
- £11,000 of reduced GP costs
- £2,800 of reduced outpatient costs
- £7,100 of reduced inpatient costs.

The combined impact of savings in these areas was £45,000 across the 885 adults in the evaluation sample.

[1] 427 respondents from 176 householders took part, around one third of the participants, the report by Sheffield Hallam University states "From analysis of this dataset, the general picture is one of statistically significant change in almost all key change variables"

The employment, output and fiscal savings from impact on numbers of individuals with a CMD was also calculated. This led to:

- £178,000 of extra GDP due to higher employment rates
- £37,700 of extra GDP due to reductions in sickness absence
- £137,300 of fiscal savings to exchequer due to reductions in benefit claim.

Benefits for Greater Manchester's Economy

The benefits to GMs economy from retrofitting our buildings arise in three ways:

- Reduce our current £5bn energy bill, keeping more of our money in GM, enabling us to spend or invest it in more productive ways, this will range from buy food to discretional R&D investment
- Creation of the estimated 90,000 new retrofit required and safeguard thousands more by growing the local retrofit market
- Increasing our energy security both from future energy prices shocks and security of supply.

Our work with the Energy Systems Catapult identified that around 30% of GM residents were willing to undertake some level of home improvement retrofit in the next 5 years, a market worth between £3bn and £5.4bn Investment of this scale and the forward buying messages this would send to the market would not only act as a cost reducer, but it would also be an attractive proposition for inward investors looking to use GM as a springboard into the wider UK market. The current capacity constraints also provide an opportunity for other companies to diversify into the sector and for product manufacturers and distributors to relocate to region. By engaging these employers through existing initiatives, such as The Good Employment Charter, it provides an opportunity to create high quality jobs for GM residents.

The Greater Manchester Good Employment Charter

Is a voluntary membership and assessment scheme that aims to raise employment standards across the city-region, for all organisations of any size, sector or geography. The Charter describes seven key characteristics of good employment: secure work, flexible work, real living wage, engagement and voice, recruitment, people management, and health and wellbeing. It is closely linked with the campaign to make Greater Manchester a real Living Wage City Region. The development of a Good Employment Charter for Greater Manchester was first proposed in Andy Burnham's manifesto for the 2017 Greater Manchester mayoral election. Following extensive consultation, the Charter was introduced in July 2019, with the launch of the Supporter tier. (January 2020 with the announcement of the first six members).

The charter has three levels in which any organisation that employs people can get involved: – Supporters have made a commitment to improving practice in all characteristics of good employment; Members have made the Supporter Commitment and meet the membership criteria in all characteristics of the Charter; and Advocates excel in characteristics of good employment and share their expertise with others. The Charter is committed to creating a community of likeminded businesses and organisations who can work with one another to share good practice and influence peers within their sector. The Charter Unit deliver networking events and webinars throughout the year to highlight and disseminate best practice, in addition to recording a popular podcast series with high profile guests from across Greater Manchester.

The Charter has been operational for over a year and has engaged over 400 employers across the city region, covering over 200,000 employees. This includes 16 property and construction employers signed up as supporters and 6 full members.

Benefits for Greater Manchester's Environment

By improving energy efficiency and through the introduction of renewable heating systems, in the first instance with heat pumps, the Region will reduce the CO_2 emissions resulting from heating our homes and buildings. It will also reduce NOx emissions improving both indoor and outdoor air quality. Reducing overall growth in demand for electricity will also reduce the need to reinforce the electricity distribution network further reducing the emission on greenhouse gases and reduce the demand on finite resources.

Priority Action Areas

The retrofitGM: Accelerating Retrofit for GM Action Plan has identified the 3 priority areas required to both meet the challenge we face as a region and to realise the identified wider benefits. namely:

a) Delivery
b) Skills
c) Funding and Finance

These 3 priority areas are fundamental to realising the objective of an average 61,000 domestic retrofits a year and all non domestic buildings reaching DEC/EPC C by 2030. However, each will face their own individual challenges and result in differing wider benefits.

Skills

Where are we now?

Retrofit generally does not require new trades, however, there is significant need to upskill and retrain trades within the construction sector to meet the expected future demand. This presents a variety of challenges, including:

- Addressing the pre-existing shortage of skilled trades across GM estimated to be between 5,000-6,000 before any growth in retrofit activity.
- Address the age profile of the sector by attracting younger workers who currently do not view it as an occupation of choice.
- The use of multi-level subcontracting reduces the profits available to those who actually deliver the works; making it easier to let staff go when markets turn downwards (not all return). As such skills are often bought in though subcontractors / self-employed and not developed within the labour force.
- Commissioners buy to a budget not the specification of what is needed to achieve our carbon neutral targets, often omitting more sustainable options, even when they are specified there are often "value engineered" out to hit a budget.
- Many employers in GM are SMEs, which adds complexity for at-scale upskilling and training.

Retrofit projects of all sizes require trades and construction professionals to operate differently. This will require new skills and competencies, which see greater interaction across different trades, better planning and understanding of a whole building approach and, in the future, the wider system.

However, as market demand for these skills is currently limited, and confidence that the skills will be needed in the short term remains low, there are few training providers offering the necessary courses. There are also challenges around current qualifications containing the required content to meet the retrofit quality standards required, even if they exist at all.

At face value there appears to be a good spread of skills provision for occupations related to construction and therefore retrofit, however, there is a lack of integration and understanding amongst providers and other stakeholders of the ability and process for current curriculums to deliver a cohesive retrofit training package.

It is envisaged that there will be a training need for current tutors and assessors of skills in GM. The understandably cautious approach of employers to investing in upskilling and reskilling for low-carbon homes means that this will be a niche market until it is driven by regulation and even then, employers will generally only upskill to the standard stipulated.

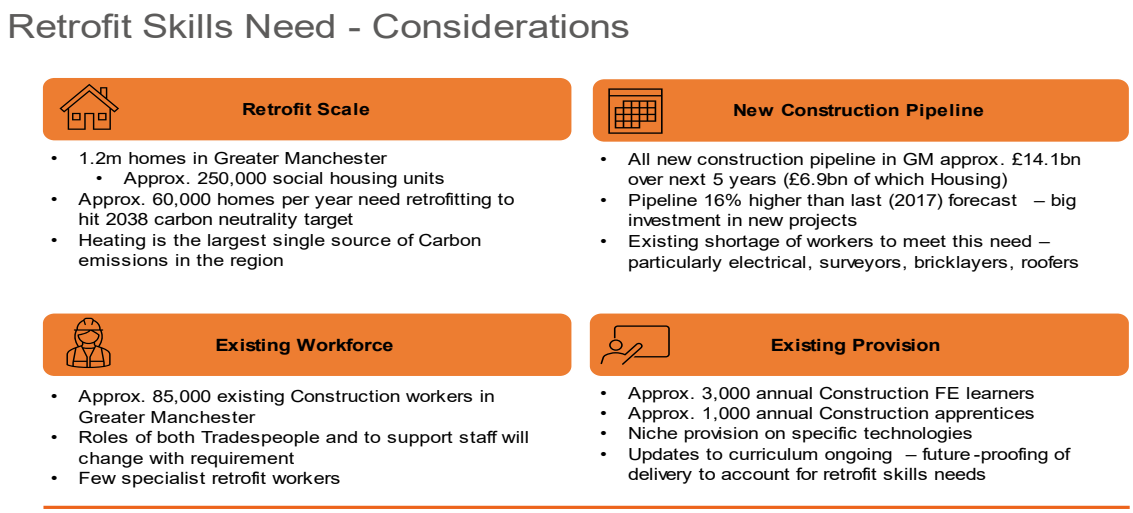


Figure 1: Retrofit Skills Considerations

The market in Greater Manchester, as it stands, is primarily catering for small-to-medium scale retrofit across the social housing sector, with some current projects in the pipeline. There is a small but growing demand for retrofitting private homes. Building retrofit requires commissioners (be that public, commercial or domestic) to become informed clients and requires retrofit assessors and coordinators; individuals who can develop whole house solutions connecting thermal efficiency, heating and ventilation.

This reskilling process is not restricted to the craft trades such as joiners, plumbers, plasterers or electricians. It also needs quantity surveyors, architects' planners and project commissioners. Retrofit advice, assessment and coordination are new skills and do not always require a higher level of educational attainment. Those currently working in the sector, or have recently left, could be re-trained or upskilled. Retrofit training should be largely on-site and the skills acquired will largely depend on the types of retrofit needed. Much of the basic retrofit work has been done so skills provision must involve some entry-level provision, but also higher-level skills for more complex retrofit works.

There has been some hesitance among employers to reskill staff on new retrofit technologies and techniques. This is partly down to historic initiatives which were introduced then withdrawn, and also to low visibility of the pipeline. Tradespeople are already busy, with increasing investment in both new building and the domestic market, while many in the sector are cautious to invest time and energy into reskilling while this is the case.

Where do we need to be?

As this is an emerging market, there is a need to develop and agree suitable standards and protocols to ensure the work undertaken and the technology installed is fit for purpose. This accreditation landscape is becoming increasingly clear, coalescing around the PAS 2035 requirements and registration with Trustmark alongside the MCS. This outlines the approach to retrofit, and the roles needed such as Retrofit Assessor and Retrofit Coordinators. These third-party agents will also enable us to activity track the shape and size of the GM supply chain.

Data shared by Trustmark indicates that around 440 individuals and businesses are registered in Greater Manchester to work on Retrofit projects. Given the full construction workforce in GM numbers around 85,000, the number of Trustmark accredited installers will need to increase in the coming years. Additionally, the data reveals some particular vulnerabilities in the existing Retrofit workforce – low numbers of external wall insulation installers, for example. This workforce will need to be both expanded and upskilled to ensure that the Skills supply meets the demands of the region.

Trades	Supervisor and specialist roles
Existing trades affected: • Heating engineers (especially higher-level upskilling) • Electrical trade and installations • Plumbers • Joiners • Roofers • Plasterers	**Existing trades affected:** • Architects • Project managers • Site supervisors • Planners • Designers
New roles: • Multi-skilled trade (Retrofit designers and advisors)	**New roles:** • Retrofit coordinator
Skills Opportunity: • Upskill for new competencies required as part of PAS2035 • Embed skills and competencies set out in PAS2035 into curriculums for existing trades or add on as extra modules. • Create opportunities for existing trades to become multi-skilled	**Opportunity** • Upskill existing professions to develop new competencies required as deliver to PAS2035 standards up to L5 retrofit coordinator • Ensure new entrant routes have curriculums which meet this standard or offer competencies as part of extra modules.

• Encourage upskilling where there are new "competent person" schemes for example heat pump installation	

Figure 2: Skills development opportunities by trades & professional roles.

How will we achieve this?

It is challenging to develop a clear timeline for skills development for retrofit because skills development relies heavily of the market and confidence in the pipeline of work. Employers will not respond of their own volition unless the market for retrofit is there as upskilling too early carries the risk that there is no employment for learners. This challenge is mirrored for training providers.

Until there is a critical market at scale the sector is unlikely to respond. This work is well aligned to wider GMCA work to deliver domestic retrofit, so is well placed to be updated as the market develops, and we have some visibility on where demand will come from as outlined in the table below.

	Short term	Medium term	Long term
Market	Some new build	Increased social housing (when we have the levers to drive the market)	Need on scale across public and increasing private
	Localised small to medium sized social housing retrofit projects	Public estate (top 50 buildings)	
		New Build	
		Increasing privately owned retrofit "able to pay"	
Approach	Onsite training on live projects	Increased flexibility in funding options for retrofit training	Embedding of retrofit core skills in wider curriculum
	GMCA research into curriculums for trade and specialist roles		
Occupations	Reskilling and upskilling for traditional building trades, electrical and plumbing installation	Development of new retrofit coordinator role with increased need for client coordinator role	
	Opportunity to develop Multi-trade routes and add on trades for existing workforce	Assess additional roles from energy group bringing in wider energy roles for example to install solar PV	
	For current trades upskilling add-ons for retrofit design, advisors (lower-level building pathways to higher level retrofit coordinator)		
	Upskilling CPD for professionals (architects, surveyors, planners, project managers) to increase employability		

Actions	Design training which meets PAS2035 standards and new Part L of Building Regulations to upskill and retrain as well as embed in existing trade pathways.	Shared training facilities for upskilling and new entrants.	
	Potential to develop new training to add on a trade for current workforce	Align traditional trade and profession pathways to include retrofit standards	
	Potential to develop new more highly skilled multi-trade pathways (T-Levels?)		
	Create new pathways for upskilling existing trades to become retrofit assessors and designers as this training is at a similar level as an add on		
	Develop accredited CPD for professionals which meet standard for retrofit and gives them an employment edge/specialisation		

Figure 3: Skills development opportunities aligned to retrofit market levels.

Given the need for the upskilling of the existing workforce in addition to the increase of new entrants to the sector, the response from the skills system needs to be wide-ranging. A key part of this solution will be to provide an accurate aggregation of the upcoming demand in Retrofit activity, to help simulate interest and confidence, encouraging workers of all ages to train, retrain, or switch career pathway. In addition to this, there are various separate solutions for each group. The GM Skills system needs to:

1. **Start small and grew rapidly**: Reskilling and retraining alongside pipelines of small-to-medium sized projects with housing providers, whilst building an employer base for future projects.
2. **Develop new competencies**: Provide opportunities for new design and advisory competencies resulting in a new workforce of retrofit designers and advisors. This may lead to the creation of new training pathways for retrofit coordinators.
3. **Target professions for CPD** so that they can cascade retrofit approach down through a project. Ensure training includes the development of toolkits to support in cascading retrofit advice.
4. **Develop clearer reskilling and retraining pathways and packages** for employers which meet a GM standard of “effective training for retrofit” and better market these to alongside the rationale and business case for change within the construction industry.
5. **Develop new types of agile and flexible learning** including mobile, site-based training and digital solutions (for example, late afternoon small sessions have been suggested).
6. **Raise the profile of construction as a green skills sector** through inspiration activity with young people and families inside and outside of school. Giving consistent messages about career pathways for retrofit.

7. **Increase skills** for new types of heating and plumbing. Including competent person standards where possible.
8. Linked to the above, **promote employer engagement** through increasing technical routes including apprenticeship

Funding and Finance

Where are we now?

Unlike any other home improvement e.g., new kitchen or bathroom, retrofit is viewed myopically through the lens of financial payback, ignoring the wider benefits it brings. Funding retrofit is a complex challenge which requires a multitude of finance solutions to reflect the issues facing different sectors

- **Individuals** – need to be able to easily access finance solutions which are patient and provide an incentive to undertake the necessary work.

- **Commercial/residential landlords** are often able to access finance through traditional lenders. However, there are issues around capturing the benefits of retrofitting that impact upon the business case and balance sheet. That is, the landlord pays for the work, but the tenant sees the direct financial benefit (and the payback will not be short term).

- **Public sector** – can access finance through PWLB, which generally offers cheaper finance and is easy to obtain. But as the wider benefits of retrofit are not captured, and income streams take time to cover the loan, justification can be problematic. While there have been some relatively small-scale grant programmes which capture the income stream, they require a pipeline of proposals to be ready and deliverable. Development of this pipeline requires time and technical resource and capacity to fully understand and realise the opportunity; this capacity is lacking and not commensurate with the scale of the task in hand.

Whilst the issues around funding are now better understood, the innovative solutions to address these issues are not widely available.

Aside from access to finance, it is also worth noting there are financial issues created by competing priorities across organisations. Retrofit measures often deliver marginal financial returns, often over longer timeframes than traditional development projects. Therefore, it can be difficult to convince decision-makers to choose retrofit over alternative options where capital resources are limited, and wider climate change commitments and policies are not factored not the decision making

Where do we need to be?

There is a need for a suite of widely available, independent of technology, financial products, which meet the needs of those organisations and individuals who want to undertake retrofit measure on their properties. Currently, outside of the relatively

small-scale government grant programmes, there are limited financing options for retrofit which seek to address the challenges noted above.

There is an opportunity for a GM partnership to act as a trailblazer, bringing to the market a number of new finance initiatives to support the widescale delivery of retrofit supporting the public, commercial, domestic and social rented sectors. Key to this will be to review and value the wider benefits of retrofit, activity not simply on a financial return which ignores the cost of carbon, does not factor in future market price changes and associated future risks including security of supply of gas.

Creating financial products which are predicated on carbon savings and onsite generation, should also reduce the prevalence of "value engineering" out the low carbon measure.

How will we achieve this?

There is a need to create a blueprint for what suitably structured financial product look like and demonstrate there is a demand for both the provision and uptake of them. The GMCA are working in collaboration with the Green Finance Institute to move forward a number of workstreams to bring such products to market, this will include:

[PLACEHOLDER FOR COLLABORATION GRAPHIC]

- **Local climate bond** – building on work in other detailed work is underway to determine if a viable pilot can be established in GM, potentially as a method of funding the Public Sector retrofit pipeline which has been developed through the Go Neutral programme.

- **Property linked finance** – successful in the US this is a concept where financing for retrofit stays with the property and not the individual when ownership changes. Work is already under development through an equity release type mechanism to elderly individuals, but in order to be accessible to the wider population it would likely require legislative change. The full legal requirements are being worked through.

- **Demand aggregation** – bring together the demand side of the market to a volume that will then prove attractive to suppliers/financiers, providing economies of scale and reducing costs. This was done through the GM Solar together campaign which saw over 300 Solar PV arrays installed, due to timing it was not possible to incorporate a suitable financial product with this. A pilot to trial this approach in GM is being developed.

- **Green rental agreement** – this initiative sees rental agreements which include the cost of heating, thus providing an incentive for landlords to retrofit. This addresses one of the key challenges of retrofitting in that the benefits and financing are not always linked. Work is underway to establish how this type of agreement could be linked with the GM's Good Landlord Charter.

- **Green mortgages** – in this concept, lenders offer preferential rates to homeowners that retrofit their property. Green mortgages do already exist but the offering is not extensive or well recognised.

The above summarises several key finance initiatives that are being developed to address the challenge of funding retrofit.

Delivery

Where are we now?

As previously outlined, there are multiple interrelated factors which mean the retrofit market in GM is not delivering the scale needed to address the challenge. This market failure is exacerbated at the moment due to a number of competing demands on the retrofit sector, namely:

- A backlog of works which were stopped/delayed due to covid restrictions
- A demand for home upgrades as a result from more of us working from home
- A stamp duty relief to increase the number of people moving home, an action which often triggers building works
- Post Grenfell safety works on External Wall Cladding/Insulation
- Short term Government initiatives e.g., Green Home Grants

This means that the sector, has more work than they can deliver. Companies can therefore pick and choose what they do, and in the main are choosing routine work they are familiar with, requiring no upskilling with inflated margins. This cost increase is exacerbated by the rapid increase in the demand for materials on the back of COVID induced supply chain pinches. This abundance of work also reduces the sectors willingness to release staff for training or engage more widely in the discussions on retrofit as their time can be spent more profitably elsewhere. There is therefore a need to balance the need for large numbers of properties to be retrofitted in the shortest possible amount of time, with the physical limits of the existing supply chain, noting that if we grow demand too quickly the risk of poor quality or inappropriate installation rises, which would jeopardise future delivery.

When viewing the delivery of building retrofit this is best viewed as 3 sub markets: domestic, public and commercial/industrial as nature and scale of the interventions differ, as does our understanding of the challenge and the level influence we can exhort.

Domestic Delivery

Key to success will be measuring progress across GM's housing stock, without the need for expensive data collection systems. So we intend to use existing Nationally available data, namely Energy Performance Certificates (EPCs) which are required every time a house is sold or let.

For a household to be able to affordably heat their home from renewable sources, the energy rating needs to be C or above, or running costs become prohibitive in the current market. The work we have undertaken with Parity in 2020/21 "Pathways to Healthy Net Zero Housing for Greater Manchester" tell us that we need to increase the thermal efficiency for three quarters of our homes, some 887,000 households.

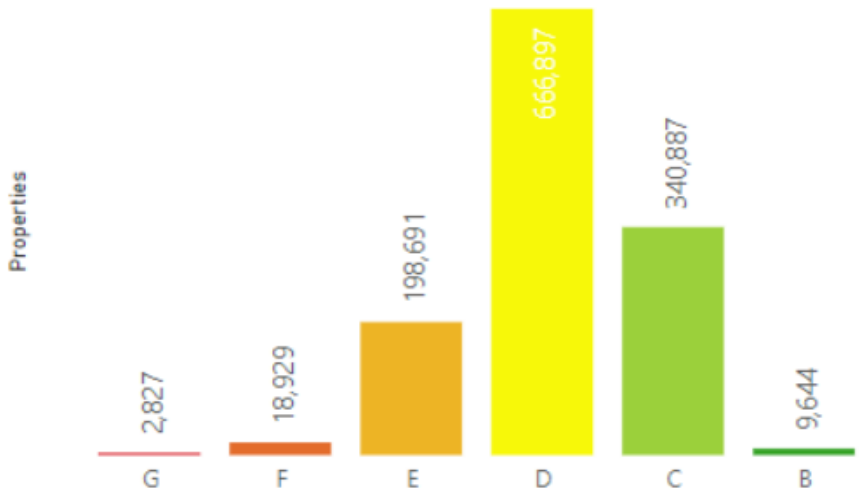
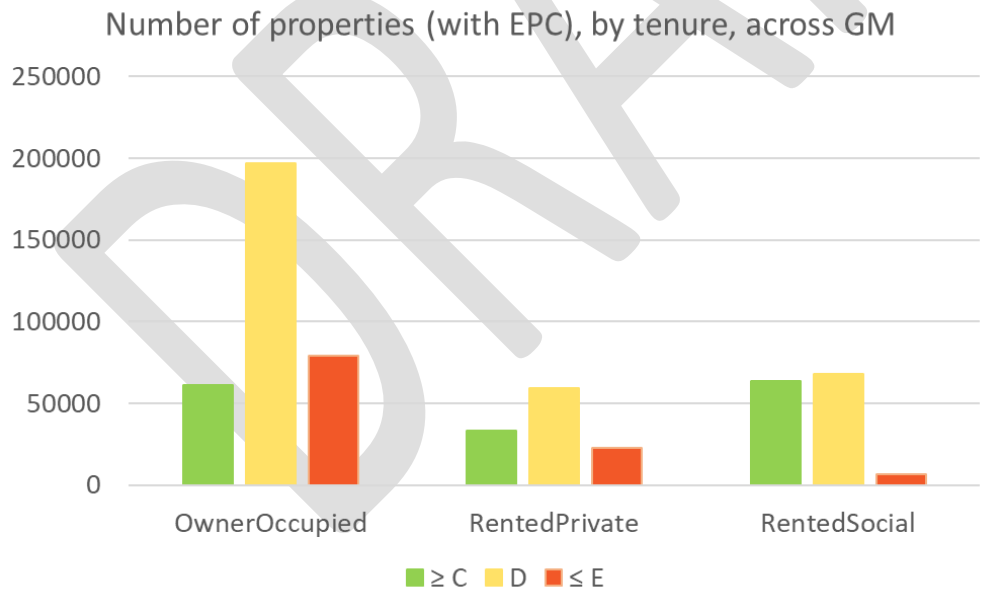


Figure 2-1: Distribution of SAP rating of homes in Greater Manchester.

The work also identified that while the average household in GM emits 3.6tCO_2 pa, this figure varies widely, with smaller homes and flats emitting less, with the highest density of carbon intensive homes on the edges of region, these properties are also more likely to be off the gas grid. The work also identified that 57% of GM are owner occupied, 20% private rented, and 23% social rented.

While retrofit activity is needed across all three tenures, both in percentage and absolute terms the owner occupier sector has the most inefficient housing.



Note: only around half of properties have an Energy Performance Certificate

Our work with the Energy Systems Catapult has identified that around 30% of households are willing to undertake some form of retrofit, but for the barriers previously identified this is not materialising.

To support this market the Government introduced the Green Homes Grant voucher scheme target the Private rented and Owner Occupier sectors, it has been unsuccessful and received highly critical feedback from the National Audit Office. While the similarly named

Local Authority Green Homes Grant, is investing £27m this year to retrofit the most fuel poor homes in GM is proving to be considerably more successful there is not enough capacity in the supply chain to meet customer demand and is likely to result in funds being unspent and returned to Government. This is particularly acute for External Wall Insulation contractors due to the remedial works post Grenfell.

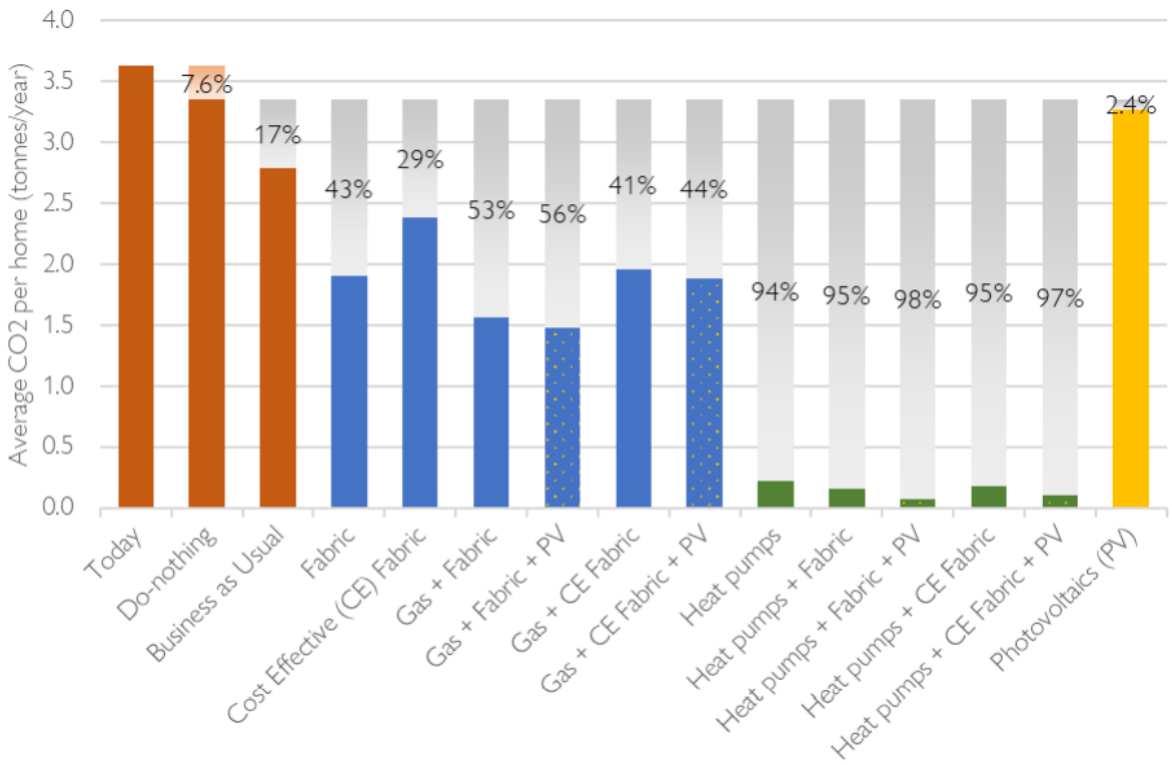
While the above funds have been of some value, their scale and duration mean they are not commensurate with the challenge GM faces. This is compounded by the schemes focus on the most inefficient homes (EPC - EFG) which make up only a quarter of the 887,000 homes that need retrofitting.

To stop the scale of the retrofit challenge getting worse all new homes will be designed to be net zero carbon by 2038, and we plan to build 30,000 net zero affordable homes by 2037.

Where do we need to be?

The Parity Projects work provided a range of scenarios or GM to achieve Net Zero housing by 2038.

Historically, retrofit schemes in the UK focus on improving insulation and efficiency of a boiler, but largely remain reliant on the fossil fuel boilers. There is no place for mineral gas in net-zero housing by 2038. The main option to decarbonise domestic heating in GM is the electrification of heat through air source heat pumps (ASHPs), and, where opportunities exist, the development of heat networks. “Heat pump + cost effective fabric +solar PV” is the most cost-effective means of reaching carbon neutrality, currently reducing emissions by 97%.



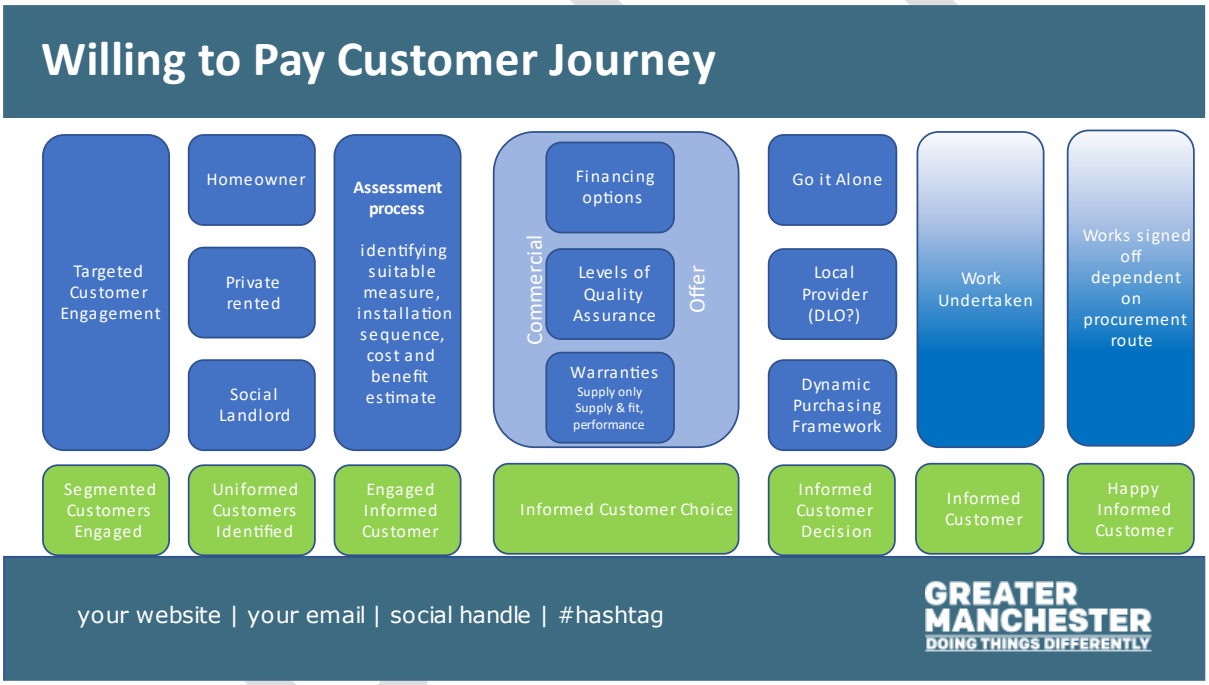
To enable ASHP to provide cost effective domestic heating system, homes need to be well insulated, and heating systems may need alterations. Therefore, whilst fabric measures will

not cut emissions enough, they are essential to the successful uptake of low carbon heat, as well as substantially supporting reductions in fuel poverty. They also enable heat pumps or other zero carbon solutions to be easily deployed at a later date. As such we:

- We need to stop using gas fired heating
- We need a large-scale rollout of heat pumps this decade
- We need widespread insulation improvements to make homes suitable for low carbon heating technologies (including heat pumps), including retrofitting over 887,000 homes to move from EPC grade D or lower, to a C or above.

How will we achieve this?

To enable an at scale retrofit market to develop, action is needed in both the social rented sector and willing to pay homeowners. To help catalyse both Owner Occupier and Private Rented willing to pay market, the GMCA is looking to procure a a vehicle (Name to be determined) which will create a flexible customer focused end to end service. The service will clearly outline what retrofit actions are needed, the order they are needed in and the expected costs and sources for finance. Customers can then choose how to progress the works, including contracting the Retrofit Accelerator to deliver the improvements.



The Retrofit Accelerator scheme is looking to enable a Market which can retrofit over 61,000 homes each year, although for the reasons identified this will take time to achieve.

Across the city region, circa 20% of our 1.2m households live in social housing and while these tend to have better energy ratings than Private rented or Owner Occupier home, circa 138,000 will require retrofit improvements to make them suitable for renewable heating and to meet the current Minimum Energy Efficiency Standard by 2030. The current plans look to retrofit 5% of this, some 7200 homes with an investment of £118m investment.

While some Providers have already committed to phasing out gas boilers, further works is needed to galvanise those in the sector who are committed to the GM goals; creating a clear pathway with timelines for both the phasing out of gas boiler and the number of properties

which will need to be improved. This collaborative approach is needed to create a fully functioning retrofit market, which is able to specify minimum standards for key technologies, which in turn will reduce the cost. It will also enable the works to be phased and avoid the risk a back loaded uncoordinated programme will create excessive demand on suppliers and result in increased costs. The shape and size of this programme can then be communicated to the market and skills providers to inform and stimulate interest.

Renewable heating and generation supply chain

To understand the capacity of the renewable energy technology installation market, we can use MCS (Micro certification scheme) data: to install renewable energy technologies, suppliers need to be MCS registered. Currently there are 39 MCS accredited installers in Greater Manchester. This does not include any of the associated ancillary building work and its supply chain. The MCS data can also tell us what technology has been deployed, its location, and the tenure of the properties in question.

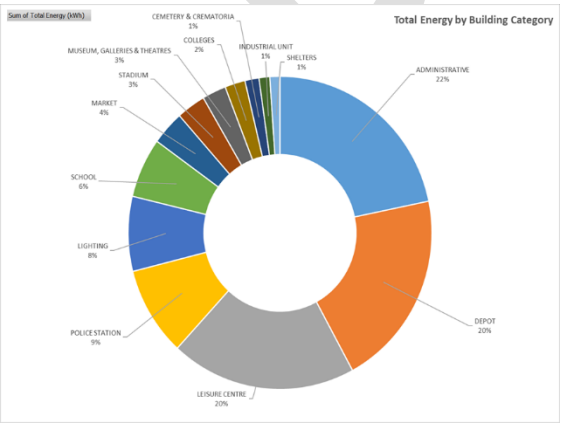
By monitoring how many MCS accredited installs there have been in a given period in GM and how many were done by GM companies, we can monitor and understand the capacity of the local supply chain to deliver the demand. Combining this with the number of MCS installs that were delivered by GM companies outside of the region, together this will enable us to estimate the current capacity of GMs market.

Commercial

PLACEHOLDER FOR ADDITIONAL TEXT.

Public

The Public Sector emissions 505,000 tCO_2 per annum account for 4.3% of Greater Manchester's CO_2 carbon footprint, to put this into context this is comparable to the Wigan's entire transport emissions or 80% of the domestic emissions of Oldham and Rochdale combined. Considerable work has been undertaken to understand what individual buildings emit and the function they provide, unsurprisingly two thirds of emissions arise from administrative building, Depots and Leisure Centres. Through the Public Sector Decarbonisation fund, 150 buildings are currently being retrofitted, with an investment of £78m saving an estimated 9,000 tCO_2e per annum, which equates to 1.8% of Public Sector Emissions. There is also the need to retrofit over 70 local authority controlled schools per annum at an average cost of circa £1m each.



Conclusion

To be drafted

- **Implementation Plan [tbc]**

MANIFESTO PRIORITY	**Retrofit Taskforce** (Mark Atherton)							
COMMITMENT	•Detailed plan to deliver home and building improvements at scale •Bring together all the key partners in this endeavour – businesses, housing providers, universities, colleges and community groups •Develop the financing and skills solutions to make it possible •Prioritise areas where housing quality is lowest							
ULTIMATE GOAL	***An average of 61,000 homes retrofit annually between now and 2038; Average DEC rating of C for all public buildings by 2024***							
DELIVERY GATEWAYS								
	0-3 months	**3-6 months**	**6-9 months**	**9-12 months**	**12-15 months**	**15-18months**	**18-24 months**	**24-36 months**
	Milestones / Activity							
Skills	Retrofit Skills Hub starts: 165 Bootcamp Starts: 145	Retrofit Skills Hub starts: 315 Bootcamp Starts: 145 Release of Green Economy Skills Intelligence Report	Retrofit Skills Hub starts: 395	Retrofit Skills Hub starts: 265	Evaluation of programmes, re-deployment of funding	Ongoing deployment of AEB, other funding		
Funding and Finance								
Delivery **Green Homes Grant** GMCA secured £27M of funding		1800 homes receiving energy efficient installs						

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to run the Green Homes Grant Local Authority Delivery scheme in Greater Manchester.		(advice), saving money and carbon.						
Sustainable Warmth Funding *GMCA submitted a bid. (January 2022 to March 2023.)*	*Awaiting outcome of bid submission.*					*1200 low-income homes improved*		
Retrofit GM A consumer led proposition aimed at the willing to pay market.	A consortia of delivery partners identified.	Launch of proposition for Greater Manchester residents.						12,000 homes improved

Annex 1: Performance Metrics [draft tbc]

Skills

Finance

Delivery

1.

Metric – mean average over 3 years	**Value**
Number of public buildings retrofitted	70
Number of LA controlled schools retrofitted per annum	70
Number of Socially rented homes retrofitted	xxx
Number of Willing to Pay owners engaged	xxxx
Number of WTP homes improved (over 3 years)	4,000
Number of EPCs moved from below D to C and above without Public Support	8,400
Number of MCS renewable heating systems deployed in Greater Manchester	Monitor
Monitor incremental domestic upgrades via the median average movements in kWh/m^2 capture in EPCs	Monitor
Number of Retrofit Equivalents*	Monitor

* Similar to FTE, this is a measure of other overall improvement in the housing stock and is equivalent to the SAP rating increasing by 7 points