

**Written submissions received for the London Assembly's
Housing Committee investigation into Social Housing Estate
Regeneration**

Volume 3 of 4

Ref	Organisation	Position/Title
Sub-007	None	<i>Eddie Richardson</i>
Sub-008	None	<i>Pat Turnbull</i>
Sub-009	None	<i>Sandy Stewart</i>
Sub-010	Poplar Harca	<i>Neal Hunt</i> - Director of Development
Sub-011	Catalyst Housing Limited	<i>Rosa Payne</i> - Business Development Manager
Sub-012	Affinity Sutton Group	<i>Kerry Kyriacou</i> - Group Development & New Business Director
Sub-012a	Affinity Sutton Group	<i>Kerry Kyriacou</i> - Group Development & New Business Director
Sub-012b	Affinity Sutton Group	<i>Kerry Kyriacou</i> - Group Development & New Business Director
Sub-013	Dot Dot Dot Property	<i>Katharine Hibbert</i> - Director
Sub-014	Peabody	<i>Rebecca Sudworth</i> - Director, Strategy and Communications
Sub-015	London Borough of Harrow	<i>Alison Pegg</i> - Housing Partnerships & Strategy Manager
Sub-016	Just Space	<i>Richard Lee</i> - Coordinator Just Space
Sub-016a	Just Space/ UCL Urban Lab and Engineering Exchange	<i>Dr Sarah Bell</i> - UCL Civil, Environmental and Geomatic Engineering
Sub-016b	Just Space/ UCL Urban Lab and Engineering Exchange	<i>Dr Sarah Bell</i> - UCL Civil, Environmental and Geomatic Engineering
Sub-017	London Borough of Camden	<i>Shama Sutar-Smith</i> - Senior Policy Officer
Sub-018	Metropolitan	<i>Brian Johnson</i> - CEO
Sub-019	None	<i>Roy Tindle</i>
Sub-020	London Borough of Sutton	<i>Rick Martinez</i> - Regeneration Manager
Sub-021	Circle Housing	<i>Paul Gaffney</i> - Head of Public Affairs
Sub-022	Royal Borough of Greenwich	<i>Gill Ackrill</i> - Head of Strategy and Partnership
Sub-023	CIH London	<i>Lynda Hance</i> - Chair
Sub-024	London Borough of Waltham Forest	<i>Joan Murphy</i> - Housing Strategy and Implementation Manager

Woodberry Down

Eddie Richardson, Redacted

Woodberry Down estate was started in 1948. I moved in to Rowley Gardens on the estate in 1961, into a new flat in a high-rise block, where I still live today. Rowley Gardens was the last major development on the original estate. As well as high-rise blocks, it has rows of maisonettes and plenty of green space in between. When you see it even now, it's not surprising that it won an award.

There were over 2000 council rented homes originally on Woodberry Down. In 1999 Hackney Council took the decision to knock down and rebuild the estate. There wasn't a ballot of residents. A PR firm held meetings in different parts of the estate to sell the plan to the tenants and leaseholders. The picture we were given was of a rebuilt estate we'd all be able to live in, with new homes the equivalent of the council homes we lived in. There was no talk of private development.

The latest re-scheduled plan for Woodberry Down has increased the number of phases from 5 to 8. We're only on Phase 2. The development will go on till 2032. People were originally told they would only have to move once, but already some have moved three or four times. The number of projected homes has gone up from 4,000 to 5,557. 60 per cent of these will be for sale by developer Berkeley Homes. So far their glossy tower blocks at the edge of the reservoir – the prettiest part of the estate – have been selling at up to £1 million, mainly to overseas buyers who rent them out at £1000 a month.

There won't be any council rented homes on the redeveloped estate at all. The original 2000 council rented homes will be replaced by 1,088 social rented homes owned by Genesis Housing Association. This means higher rents, higher service charges and less security of tenure. There will be another 1,177 so-called 'affordable' homes (part-rent, part buy and so on) but these are not actually affordable to most people in London.

This is if the plan goes ahead as it is now, and it's already been re-scheduled. New fire doors have been put in my high-rise block, so nobody's planning to pull it down any time soon; it's in the last phase. But why does it have to be pulled down at all? It is well designed, structurally sound, and a nice place to live in with great views. And I still have my secure council tenancy, and reasonable rent and service charges.

As far as I can see, the redevelopment of Woodberry Down estate is good for the shareholders but poor for those really in need of a roof over their heads. The so-called comprehensive redevelopment will like as not make the plight of the working poor even worse.

New Kingshold Redevelopment

Pat Turnbull, Redacted
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This redevelopment took place in the 1990s. It was part of the Hackney Comprehensive Estates Initiative, a government approved plan which affected five Hackney estates.

New Kingshold Estate was a concrete estate with a large number of deck access maisonettes most of which were on two levels, the blocks being four floors high, and two high-rise blocks, Thornhill Point and Halston Point, of about 21 storeys each. It was completed in 1969. We moved in in 1982. Our maisonette, on the upper walkway, had a very spacious living room, and two out of three bedrooms were also large; the third was small and so was the kitchen. The maisonette was very light because it had large windows taking up almost the whole wall. There was a lot of green space between the blocks.

Some big improvement schemes took place while we were there, for example our windows were all replaced because the original windows were rotting and some panes fell out. And new pitched roofs had been put on many blocks. There was also talk of replacing the communal part-heating system with individual boilers for each home. Some of the concrete walkways were also demolished so that maisonette blocks were more self-contained. So improvements and refurbishment were obviously regarded as viable at that stage.

The first we knew that we were regarded as a 'problem' was when a film crew arrived to film 'Summer on the Estate' which went out on TV in 1990. This was a distorted and sensationalised picture of our estate which concentrated on a small number of tenants who had big problems. They were not typical of the tenants on New Kingshold who were mostly just ordinary respectable working class people.

A problem developed with cockroaches which the council took a long time to solve. However, in the end they did eradicate the cockroaches and we were cockroach free for the last seven years that we lived in our maisonette. But the cockroaches became a part of the demolition campaign.

I have a feeling that deck access estates became an easy target for those who wanted to demolish them after the Broadwater Farm riots in Tottenham, because Broadwater Farm was a deck access estate. There was a lot of talk about young men being able to escape easily by the walkways. Ironically, the Broadwater Farm estate is still standing – though who knows for how much longer!

When the plan appeared to demolish the estate and rebuild, because of all the negative publicity, and because the two tower blocks had not been well looked after – people repeated stories of tenants throwing babies' nappies out of the windows and such like – the most vocal tenants at the meetings fell hook, line and sinker for the propaganda. I went to a meeting and pointed out that we would all lose our secure tenancies if we stopped being council tenants, and I was howled down. This deters people from putting a contrary point of view. And at that stage our part of the estate was to be

refurbished not demolished so we thought we would stay as council tenants anyway. I wonder what the tenants who campaigned for demolition would say if we could ask them now?

Individual selfish interests had a part to play in what happened. Some people believed that by becoming housing association tenants they would be a cut above council tenants, and be separated from the people around them whom they saw as a 'problem'.

The tenants on our regenerated estate are in fact pretty much the same kind of tenants as were on the old estate, because housing associations now house people from the council housing list. But people did not understand that they were actually part of a larger campaign to reduce the amount of council housing and transfer council homes to housing associations, and it was not explained to them.

Others thought that in the process they could press to be transferred to a Victorian street property, which they felt was more desirable (and also more saleable, given the right to buy).

Compared to the typical regeneration scheme nowadays the whole thing took a much shorter space of time, a few years. Tenants were involved in the planning of the estate and the selection of developer. I don't know much about that because I wasn't involved at that stage. I still thought I would be in a refurbished council maisonette.

We were one of the last two families to live in the original estate homes. By then there had been a change of plan on which I do not remember being consulted - our part of the estate was to be demolished as well and new low-rise council homes, mainly flats, were to be crammed in on that part of the site, actually at a higher density than what was generally recommended. For us to remain council tenants by this time we would have had to make at least two moves and by now we were desperate for one move and stability. Many people had had to make at least two moves in the process of the regeneration. We tried to keep our council tenancy at first but the homes we were offered on other council estates were far inferior to our concrete maisonette.

So in the end we decided to move into the terraced housing association home which we have now lived in since 1998. We have a small garden front and back which is nice. The living room and bedrooms are smaller than the living room and large bedrooms in our old maisonette, but the kitchen is larger. This, however, is not the case in all the new houses. We missed the big windows and the light at first and so did some of the other tenants I talked to.

Living in the middle of a demolition site is no joke, made worse by the decision to run a youth club in one of the empty flats below us, with the reverberations of very loud music resonating in our home. The last straw was when I came out of my home onto the walkway one morning to find two men in white boiler suits removing asbestos from the next flat but one. All our flats intersected in complicated ways so parts of that flat were right next to ours and we had a common central heating system. I phoned the council inspector and he came and stopped it but of course by then it had happened.

The council tried to persuade us to make two moves to enable them to demolish the rest of our block. In the end we just said no. So they said we could stay, for which I am grateful. At first we were asked not to tell the other family who lived round the corner, but I said I could not do that. So they let that family stay as well. So both of our families made just one move.

But our problems did not end there. It turned out that the sound proofing in the new homes, especially the flats, was quite inadequate. At our tenants' meetings there were many complaints from the people in the flats, and we even had a big survey done but of course it turned out that the flats met whatever regulations there were, so everything had to be dealt with as specific noise nuisance problems.

Coming from the concrete blocks we noticed the noise especially, even in our house. You can still hear people just walking about on the floor above us very clearly, although we have got used to it. But the main problem was loud music from next door or even several doors along and this caused major friction and mental torture for many years.

Then there were many other problems arising from having new neighbours and this happened all over the estate, because it was not just a question of the people from the old estate moving in, a lot of the people were from other homes including some who had many problems. We could not escape the suspicion that the council had taken the opportunity to transfer some of their biggest problems from council to housing association responsibility. Fortunately now we are a pretty contented and sociable community, but there were many years of trouble.

The stress of living in an estate being demolished, the several moves some families had to make, and the problems settling down in a new community should never be underestimated. We felt them ourselves. But some families felt them much worse. In one very sad case, not long after the move, first the mother died, then the father. Then the grown up daughter could not bear to stay in the family home and got a transfer to another local estate. And then a couple of years later I heard she had died as well, only in her forties. Would all that have happened if they hadn't had to move from their original home?

There are about 400 homes on our estate. Only about a quarter are council rented, whereas the whole estate was council rented before. I can't find the figures for how many homes there were on the estate previously, but it might have been as many as 700. Most of the homes are housing association rented homes, which have assured tenancies which are less secure than council secure tenancies, and have higher rents and service charges. There are also homes for sale and part rent, part buy. I don't know how many of these are now privately rented out.

We took the decision from the start that we would all stay in one tenants' and residents' association even though we had four different landlords – three housing associations and the council's ALMO. This has enabled us to stay as united as possible and it is not surprising that in any case we all have the same kind of problems. The disadvantage is we have to contact four different organisations where previously we would only have had to contact one. And while the housing

associations all recognise us as the representative of the tenants, Hackney Council will not. They communicate with us as a community association. They say it is because of the housing revenue account. We ignore this as far as possible and we take up the problems raised by council tenants just like any others and have council tenants on our committee, and to be fair Hackney Council always responds to the problems we raise.

People used to complain about the service as council tenants but we have not noticed any big improvement from becoming housing association tenants. Indeed, as housing associations have been deprived of government grants, numbers of staff have been cut and repair services have worsened, while rents and service charges continue to rise.

Over the years since our estate was rebuilt we have had to campaign vigorously for a number of things.

At first many homes had no wheely bins and Hackney Council refused to supply them saying we were not a wheely bin area, so we had to pressurise the housing associations until they bought wheely bins for their tenants. Before that there was rubbish all over the estate because cats and foxes were breaking open rubbish sacks that had been left out.

The front doors on the blocks of flats were so flimsy that they could be easily kicked in and after years we finally got all landlords to replace them with metal doors.

The workmanship and materials in the kitchens particularly turned out to be shoddy; cupboards and drawers started to fall apart in many homes within a short space of time. Repairs will be done, but no kitchens have been replaced except if people had moved out and homes were being re-let, or if the tenants replaced them at their own cost.

Although there had been provision for the replacement of the community hall in the plans to rebuild our estate (Section 106 money), at first the council refused to build it, and it took many years of pressure before they did build our community hall. Since then it has taken pressure again, and search for funding, to enable a twice weekly sports club for young people on the estate to run in the hall.

An elderly day care centre was built as part of the development; its use was restricted to very sick or disabled people so most pensioners on the estate had no access to it, and within eighteen months it was closed. Although it was completely unsuitable as a community hall, being surrounded by homes and built largely of glass and therefore bound to create serious noise nuisance, the council at first tried to persuade us to accept it instead of having our community hall built. Again, only determined campaigning persuaded them to abandon this idea, and fortunately it is now used by the health service and causes no problems to those who live round it.

One of the selling points of the Comprehensive Estates Initiative was that there would be ways to help people to find jobs. So there were plans for a training centre. For a while a training centre, mainly for computer courses, did run in temporary sites near the estate, then it closed for lack of funding.

There was supposed to be a sports centre on part of the site. We were concerned at the time that the facilities might be too expensive for people on the site to use. However, it did not get built anyway; I believe Sport England withdrew its funding because match funding was not available. We wanted to have a play facility of some kind on the site, but were unsuccessful in our requests and have finally agreed that it should be used for new housing. Of the 32 new homes, 15 will be council rented homes, and we believe this is only because of our persistent opposition to the idea that only homes for sale or part rent, part buy – unaffordable to most Londoners - should be on the site.

In the plans there was provision for an ‘urban park’. What we actually got was a small square. Plans for this to be an open area for people to sit in and for children to play in fell through because residents in the new homes for sale that adjoined the square came to meetings – the only time they did – and pressed for it to be covered with low shrubs. Since then the upkeep of the square has been a complicated issue involving the tenants’ and residents’ association, the council and the school which also adjoins the square. A compromise has been reached which allows for some upkeep of the square by the council, but an open area would have been more useful and also more attractive than the square as it currently is. There was also supposed to be a children’s playground, but in the end this did not get built.

Tenants on our estate have experienced continuous above inflation rises in their rents and service charges over the period, which are allowed for in the government-set rent formula, and which are much higher than any rises in incomes.

This is a summary of just some of the problems attached to the demolition and rebuilding of New Kingshold Estate.

I’ve been closely involved in what has happened in the period because I am the chair of Victoria Community Association, which is the tenants’ and residents’ association for the New Kingshold Estate (Hackney E9).

To: London Assembly Housing Committee

Re: Letter of 20 June inviting views on demolition/refurbishment of London housing estates

From: Sandy Stewart, Redacted

This is a very personal summary of some of the issues that have been of concern:

I am writing as a leaseholder on the Aylesbury Estate in Southwark. I have lived on the Estate for more than 20 years, having bought my maisonette from previous tenants who had exercised their Right to Buy (and lived to regret it). The Aylesbury, as you know, is in the process of demolition and new build to create a mixed tenure neighbourhood with nearly double the original density of housing.

There tends to be a fundamental problem of mistrust, deriving from the imbalance of power and information between the Council involved and the residents.

Southwark announced that it was to cost more than £100,000/unit to refurbish the Aylesbury and so the Estate would have to be demolished as the cheaper/more financeable model. The residents were never given the evidence for this.

In the time I have lived here, I have gone through four cycles: Refurbishment, then transfer to an HA with demolition (with a No vote), then refurbishment again and finally demolition again. During the refurbishment cycles we were told that the concrete slabs were good for 100 years, during the demolition cycles that all of the buildings would have crumbled away in 30 years.

We have also been told that 5500 new homes would need to be built, then that only 3500 would be enough. Now we are somewhere in-between.

I believe that it is crucial that some INDEPENDENT body should assess all of the evidence before such a huge decision is made about the lives of so many people. Then perhaps residents might believe what they are being told. Somewhere between all of these extremes is the truth, but so many very different stories can only build mistrust.

As was pointed out at the meeting of your committee on 10 July, on one side of the "consultation" table are a row of suits with financial models and experts, and on the other residents who usually only have limited capacity to respond. On the Aylesbury we were lucky that the demolition decision was made while the Aylesbury New Deal for Communities (ANDC) was working on the Estate. They worked on our behalf with the Council's Aylesbury Regeneration Team and did a lot of capacity building with residents. Other estates are not so lucky.

It was with the help of the ANDC that we were able to achieve goals in negotiation with Southwark Council over space standards, balcony sizes and many other issues involved in the Aylesbury Area Action Plan. The Council also agreed to tenants, and leaseholders receiving Council assistance in rehousing, being allowed one bedroom above assessed need if they wanted it. I do not think we could have done so much without help.

One really successful piece of consultation was the setting up of a model two- bedroom flat with 3 different floor layouts: fully open-plan living room/dining/kitchen versus an enclosed kitchen or an enclosed kitchen and dining area. More than 1,000 people came to walk around the mock up and vote for their preferred lay-out, one third for each type as it happened. As a result, we

have been able to make a good case for our architects to provide a choice of lay-outs in the new flats, not all just open-plan which seems to be the fashionable (cheaper?) option.

The Right to Return is a great principle but can look foolish in practice. On the Aylesbury, almost all tenants in the first 2 (of 4) phases will have to move off the Aylesbury footprint because not enough social housing can be built to rehouse them all, given that 50% has to be for private sale. These tenants have a Right to Return, BUT only when all current tenants have been rehoused. In a scheme set to last 18-20 years that will be a very long time to wait!

I feel it is really important to approach these issues with a united front. I know many tenants and leaseholders are mutually dismissive, but if faced with demolition/rebuilding/refurbishment then many of their issues are the same and all have a stake in the future success of their neighbourhood. All may be part of the community; of those hidden networks which it is so crucial to preserve if we can, and all should have a right to continue as part of them.

Councils need to be prepared to make a big investment in staff to manage the pre-care needed by so many residents: the elderly, disabled, illiterate, no English, no computer or computer skills, etc. We are lucky on the Aylesbury as our Housing Office is on-site and we have Housing Officers who have been in post long enough to get to know their tenants really well, so that those who will need extra help in the moving process are already mostly identified. They are also probably aware of the hidden social networks that it is so crucial to preserve as much as possible, as one of the ways to keep a cohesive community.

This work cannot be done at a distance. It needs a well-established, dedicated team on the estate which is prepared to learn from previous mistakes, and from other officers who have gone through a re-housing process. Our officers have come a long way from when this process started. Close liaison with the tenants & residents associations and area forum is crucial.

Creation Trust, our successor body to the ANDC, also works with vulnerable tenants and leaseholders to help them with rehousing. Our board, with a resident majority, follows events very closely. Our Housing team, the Aylesbury Regeneration Team, and now Notting Hill Housing Trust as our new development partner, come regularly to the Creation Board meetings to report on progress. It is planned that officers of these three arms of the Aylesbury Regeneration process will, in future, also share the same working space to facilitate the process.

Tenants also need after care and anecdotal evidence would suggest that housing associations are not always very good at this. New flats have new systems and gadgets, and residents have to be shown how they work. Before this, of course, they also need a very careful and full briefing on the financial implications of their move, especially any new utility bills previously included in their rent. Our resident groups will be making sure that Notting Hill, and other HAs involved do a good job on this.

One of the key lessons learned on the Aylesbury is that leaseholders may need as much, or even more, assistance with the moving process than tenants. Signs of this are the greatly increased range of options available to leaseholders now, the assignment of staff dedicated to helping them and the work being done by Creation Trust to give leaseholders an independent source of information and support.

The key problem for leaseholders is the issue of valuation. How do you place a "fair market value, i.e. as if no demolition were taking place", on a flat in a block due for demolition? On the

Aylesbury, for example, the Council is not allowed to compare values with properties off the Aylesbury due to a Lands Tribunal ruling. However, all properties on the Aylesbury are now sold by auction, i.e. at the lowest possible value. Why? Because all of the blocks are to be demolished. Thus demolition is built into the comparative price from the beginning.

Moreover, any individual flat is in a block which has had minimal repair and maintenance. Why? Because it is going to be demolished. A classic vicious circle has resulted in valuations which are driving most leaseholders out of Southwark and probably out of London. So much for political pieties about preserving communities: just not the leaseholders currently living in them.

This is especially hard for the elderly who may have local networks and are forced to move into a neighbourhood of strangers. Options such as shared ownership are unfair to people in their eighties who have long paid off any mortgage, but their offered price is usually much too low even to qualify them for any normal shared equity deal. Councils promise that no leaseholder will be financially worse off at the end of the rehousing process, but that can seldom actually be true. And what of the other things that made their old home comfortable such as social links and location?

Valuations should be made by an independent surveyor, not someone employed by the Council whose remit is obviously to downgrade anything of value in a flat, and upgrade all the negatives. This is not true of Southwark and is the major cause of mistrust amongst Aylesbury leaseholders for the whole valuation process.

All of the residents of an estate like the Aylesbury, declared as unfit and so due for demolition, are being made to move through no fault of their own. They are the victims of poor building, poor planning and lack of regular repair and maintenance, not the instigators. The process should therefore not take on an air of collective punishment.

24 July 2014

DEMOLITION AND REFURBISHMENT OF LONDON'S SOCIAL HOUSING ESTATES

Response on behalf of Poplar Harca - July 2014

1) What is the purpose of regeneration programmes and who benefits?

The main purpose of regeneration programmes is to address the specific characteristics of estates and areas where there are significant levels of deprivation. These characteristics are typically

- Poor quality housing stock sited in uninspiring and badly maintained environments
- A predominance of socially rented properties – essentially mono tenure
- High levels of worklessness and dependency on benefits
- High levels of over crowding
- Poor educational attainment
- High incidences of ill health caused by poverty, poor diet, obesity, alcohol and drug abuse, overcrowding etc..
- Higher than average levels of crime and anti social behaviour (ASB)
- Low levels of aspiration
- Poor amenities (local shops, play areas, community facilities, health centres)

Our considerable experience of regeneration in Tower Hamlets in East London has taught us that these issues must be tackled holistically, but most importantly that the community has to be involved. Regeneration is not just about changing the physical environment; it is about creating resilient communities who feel that they have control over their own destinies. A resilient, sustainable community will comprise of a true mix of people living in a genuine mix of tenures. Whilst the physical changes to bring about this mix can often be achieved quite quickly, longer term “community building” support programmes will need to run in parallel with the building/development programme. For example, these may focus on creating employment and training opportunities, providing intensive support for troubled families, running youth outreach services or teaching English as a second language.

The benefits of a successful regeneration are widespread and ripple far beyond the local community. A resilient community moves from a state of dependency to a state of positive net contribution, reducing the burden on the state and tax payer.

2) Which factors are considered in the decision to refurbish or demolish and rebuild

The decision making process on whether to refurbish or demolish and rebuild is frequently complex, but in truth largely driven by financial viability, the quality of the existing stock, the support of the local community and the ability of the local area to re-house tenants affected by a decant programme.

The financial viability of a proposed regeneration scheme is influenced by a range of factors, the most important of which are:-

- The number of lease holders (RTBs) living in the properties – Lease holders have to be bought out if demolition is to proceed. This can be a very heavy upfront burden on a regeneration business plan. A leaseholder buyback programme also requires the support of Compulsory Purchase Orders (CPO), which can be slow and politically difficult to achieve.
- The ability to increase densities, particularly in respect of the introduction of market sale properties to provide cross subsidy to the scheme.
- The availability of development loan finance at reasonable rates of interest
- The availability of grant and other subsidies
- The borrowing “headroom” capacity of the RSL, particularly noting that demolition of existing properties adversely affects the asset cover and interest cover covenants in the short term until new build properties can be securitised and let.
- The local private residential market and the sales values that can be achieved
- The historic debt that is attributed to the stock to be demolished and how this and the rent loss impacts on the business plan of the RSL.

The quality of the existing stock can be assessed against a range of criteria, which may include:-

- How easy is the stock to let and does it generally match local housing needs
- What is the mix of units
- What are the maintenance and management costs for the stock
- How much investment is required to bring the stock up to Decent Homes plus standards
- What is the realistic future lifespan of the stock
- Does the local community like the stock. Does it carry a stigma.
- Can the stock be refurbished to modern energy standards
- Is the local environment and green space well used and providing a genuine amenity to the local community, or just a featureless dog toilet for the few
- Do cars and parking facilities dominate
- Is there sufficient provision for play (for all ages of children)
- Are local shops and businesses thriving or are they boarded up and empty? Do they serve the local community well.
- Is there a history of high crime and ASB in the area and can Secure by Design principles be incorporated into the existing environment
- Are there proper community facilities to provide a place for people to meet and partake in social activities
- Are there nearby schools, health centres and other public facilities
- Is there easy access to public transport

The support of the local community is fundamental to implementing a regeneration programme. Whilst it is very unlikely that the support will be unanimous, securing the enthusiasm and support of key community leaders, influencers and champions will make progress much easier. It is important that capacity building programmes are run with the local community from the outset, so that people are able to participate fully in decision making processes and feel genuinely empowered throughout the regeneration programme. Because regeneration is a long term process, the expectations of the community have to be carefully managed, to ensure that the vision survives throughout the inevitable economic cycles.

A decision to demolish will require a complex and time consuming decant programme. In an area like Tower Hamlets, which already has 22,000 people on the housing waiting list, it is often very difficult to find alternative accommodation for affected tenants. Where there are specific and very special needs, say for a large family with a severely disabled child, it can often be a lengthy and difficult process to find a suitable alternative property.

In practice, the decision to demolish and rebuild will only be taken if there is a realistic chance of phasing a delivery programme so that most tenants can be re-housed in a single move. The decision would also require the support of other local providers, as they would often be called upon to re-house some of the displaced tenants in their stock. In Tower Hamlets this generally works well through the Common Housing Register. However, we often find that new supply does not necessarily synchronise with decant requirements.

3) How are tenants and leaseholders involved or consulted and at which stages

For a regeneration scheme to be successful it is imperative that the community is involved from the outset. Before any design work is carried out, there must be genuine engagement with the local community to document and understand the dynamics of that community, their problems and their aspirations.

It is also critical that engagement occurs with all sections of the community, not just the vocal minority. In practice this is very challenging, particularly with harder to reach groups. However, with a range of events and tools, an evidence backed picture of that community will emerge which will help feed in to the refurbish or demolish decision. We use a range of tools to undertake this consultation, which include

- Face to face interviews with tenants and leaseholders
- Drop in events in local centres
- Consultation events with local activity clubs, societies & schools
- Research with other key stakeholders – police, health workers, teachers, shop keepers etc..
- Smart phone & digital surveys such as “Commonplace”.

As ideas start to develop and consultants are engaged, then a range of workshop type events can be organised to help ensure that the solutions adopted meet the needs of the majority of the community. It should be noted that there will always be dissent. Many people are fearful of change, even though this change may be for the better. In many ways, the resilience of a community can be measured in its ability to accept and cope with change and at the outset of a large regeneration scheme, the resilience of the community is often low.

It is also important to use high quality modern tools and visual aids to help the community envisage and understand proposals as they develop. This is inevitably expensive, but always pays off in the end.

Consultation with leaseholders can be very challenging. Leaseholders fall in to two main categories:-

- Resident leaseholders – ex RTB tenants, often elderly and living on state pensions. These leaseholders are usually asset rich but cash poor and struggle to meet service charges or major works recharges.
- Commercial landlords – they may be the original RTB tenants, later purchasers or professional property investors, but now they let their properties to make a commercial return. They are usually opposed to any proposal that will result in either a surrender of their lease or a large re-charge bill.

Section 20 of the Landlord and Tenant Act places a statutory obligation on the freeholder to consult and issue notices in a particular way. This often conflicts with the softer more inclusive approach to consultation and engagement that works better for the wider community. If a demolition option is being taken forward, then it will inevitably require the backing of a CPO to ensure that all leases can be secured. The very nature of the CPO process is that it requires political support and can therefore be very confrontational.

In practice, the leaseholder engagement process has to be a measured mixture of carrot and stick.

In a demolition scenario there have to be sufficient incentives built in to the buy back process to ensure that the use of CPO powers is the very last resort. For resident leaseholders, we provide a number of incentivised relocation packages, including outright purchase, lease swap and shared equity. Valuations are enhanced to encourage early settlement and reasonable legal and relocation costs are met. For commercial landlords we offer an enhanced valuation and to cover reasonable legal and relocation costs.

In a refurbishment scenario where leaseholders may be facing a significant recharge, we will assist resident leaseholders by offering a variety of payment plans. In an extreme case, we will even place a charge on a property to recover our debt when the property is finally sold or the leaseholder dies.

For commercial leaseholders we expect payment in full once the invoice for the works is issued.

4) How does the regeneration work and, in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?

Successful regeneration is inevitably a lengthy process, that begins slowly and gathers pace as change starts to take effect. Physical change is the first and most obvious sign of regeneration, but creating a sustainable and resilient community is not just about physical change. Regeneration is also about attracting investment in to communities that otherwise would not have been there; employment opportunities, new health and education facilities, new transport links, new retail and community offerings etc..The benefits should be tangible and measurable, for example, an increase in educational attainment at key stages, a reduction in ASB, less dependency on benefits, fewer residents in fuel poverty.

However, the challenges that residents face, particularly during the physical transformation stages, can be considerable:-

- Moving or losing their home
- Construction noise and disruption
- Demolition blight for leaseholders in later phases

- Community fragmentation and change
- An influx of new residents in to the area

The decant process is without doubt the most disruptive part of any demolish and rebuild regeneration scheme. Decant programmes have to be run very sensitively, with a flexible range of options for both tenants and resident leaseholders to ensure that their needs are met. Every family's circumstances and needs will be unique and the package on offer must recognise this. Decant programmes always take longer than planned, so sufficient time should be allowed in any programme. Where possible, a right to return should be offered so that long standing communities are not broken up. Many local ties go back generations and these should be preserved wherever possible. This might sometimes require double decants, so the financial package must be tailored to recognise the significant disruption this can cause.

Construction noise and disruption can be greatly reduced if detailed and careful pre-planning work is carried out. The selection and management of the correct contractor / developer is also critical. They should be experienced in regeneration work and have considerable knowledge of resident liaison and interface. The community / contractor interface should be formalised through regular reports, newsletters, complaint procedures and meetings. Residents should be invited to assist in traffic and security plans from the outset, as they know their estates better than anyone. Communities should also expect to receive tangible benefits from the Companies that are working on larger schemes, such as apprenticeships and training opportunities for local young people, work placements for the unemployed and local labour programmes for local people and SMEs.

To limit disruption and to ensure that the community can see progress, construction should only take place on one defined section at any one time and works should complete properly before the contractor moves on to start the next section.

Last but not least, significant milestones and achievements should be celebrated by the whole community.

5) What more could the Mayor do to support effective regeneration whilst maintaining mixed communities.

The first and most important thing that the Mayor must do if estate regeneration is to continue is to stop the Right to Buy scheme in London immediately. If this does not happen, the financial viability of demolish and rebuild regeneration will be severely threatened and the likelihood is that whole swathes of low density, poorly designed estates will be effectively sterilised. Many of these estates in inner London are currently at low densities of 300 to 400 habitable rooms per hectare (hrh) and could comfortably support densities of 600 to 900 hrh. These estates could make a significant contribution to London's future housing needs. There are many excellent examples of regeneration projects where densities have been increased significantly, but the quality of the local environment and amenities have also improved significantly, creating genuinely beautiful places for people to live. (St Andrews Hospital, Bow. Aberfeldy Estate, Poplar. Ocean Estate, Stepney. Woodberry Down, Hackney).

Time for this move is running out fast. The current discount of circa £102,000 has created a tidal wave of RTB applications.

Secondly, the Mayor could assist by equity cash flowing the extraordinary up front costs of major estate regeneration. These mainly comprise master planning and leaseholder buyback costs. Early phases of regeneration programmes are often cash negative because of these costs and private developers are reluctant to inject the amount of equity required to get schemes going. Banks are also reluctant to provide development capital for these purposes. Equity provided by the Mayor could be recycled throughout the scheme and returned with interest when the scheme becomes cash positive.

Finally, large scale demolish and rebuild schemes rely on compulsory purchase orders to secure vacant possession. Local politics often delays the making of these orders, which blights regeneration schemes with additional costs and avoidable delays. Support from the Mayor through the use of the GLAs CPO making powers for key regeneration schemes could help unlock difficult local politics and bring forward significant amounts of new housing.

Additional Questions

- 1) *What triggers the decision to consider refurbishing or renewing in the first place – is it always about the condition of the building.*

See item 2) previously. The condition of the building and its net present value (NPV) is the greatest influence on any decision. However, there are a lot of other factors that will influence that decision.

- 2) *What guarantees are you able to make regarding rent levels and security of tenure for tenants.*

Secure tenants preserve their tenancy rights, including a right to a social rent, when they are decanted. However, an issue we often face is that tenants who are under occupying when they are decanted, often have to move to a smaller property because they do not qualify for a property of the size they used to have. Parking rights do not always transfer as well, which often causes problems.

- 3) *Have you undertaken carbon lifecycle or footprint analysis for any renewal projects.*

Not in any detailed way.

- 4) *How are options made public and consulted on*

See item 3) previously.

- 5) *Is it best to provide a preferred option or develop a number of options for consultation purposes*

This is very difficult to answer as it is so scheme specific. However, if one is going to present a suite of very different options, then the starting point must be that they are all financially viable.

Generally, it is better to establish early if demolition or refurbishment is preferred. If early community engagement has been carried out carefully, the right alternative will usually become apparent. Thereafter, it is important that the community has a genuine input into designs going forward. It is sensible to steer a community gently, but avoid presenting “done deals” or “fait accomplis”

6) What process do you use to to reconcile any conflicts between what estate residents might want and what represents sound asset management strategy from the provider’s viewpoint.

We have an established resident majority governance structure, which makes it clear that residents on estate boards have influence but that the final decision on any major capital investment programme is made by the Main Board (also with a resident majority). Being honest from the outset and presenting residents with the facts in simple, unjargonistic language always helps. As previously explained, tenant and leaseholder interests often seem to conflict, so this is a problem that we have to face on a regular basis.

7) Is stock transfer still valuable in terms of funding regeneration

Yes. It still provides the best access route to the capital markets for long term regeneration funding.

8) Do you plan to bid for the new £150 million regeneration fund.

We would like to, but we are concerned that the funds will be distributed as secured loans. As we are already quite highly geared, this will have an effect on our existing loan covenants. We would prefer to see an option for the fund to be distributed as equity into regeneration schemes, particularly to support high upfront costs such as master planning or leaseholder buybacks. This equity could be recycled throughout the life of the project and returned with interest once the project becomes cash positive.

Response to London Assembly Consultation ‘Demolition and refurbishment of London’s social housing estates’ from Catalyst Housing Limited

Catalyst is one of the leading housing associations in London and the South East. We provide more than 21,000 homes through a wide range of rental and homeownership opportunities. By 2020 we will build more than 7,000 new homes, housing 21,000 more people.

We are an award-winning developer – providing social, affordable and intermediate rental homes, sheltered housing, care homes, shared ownership and homes for private sale. We aim to be a catalyst for change and improvement wherever we work.

1) What is the purpose of regeneration programmes and who benefits

Purpose

Regeneration programmes are driven by the desire to improve the condition of homes and future usefulness of housing stock. They also look to tackle existing economic and social exclusion of both place and individuals, which usually includes an aspiration to increase density and diversify tenure.

Long term stewardship of an area is a fundamental part of tackling economic and social exclusion, linking physical transformation to sustained investment in the community.

Beneficiaries

There are a range of beneficiaries from regeneration programmes. These include:

- **Future residents**

By improving homes, increasing density and diversifying tenure, regeneration schemes provide ‘fit for purpose’ homes for future tenants (both those moving from the existing homes – often transferring under social rents; and those taking up affordable and market rent properties) and those looking for affordable homeownership and outright purchase options in the area.

- **Existing residents**

Existing residents eventually benefit from improved homes and local environment; however, the trade off for this is significant periods of disruption associated with living on a building site. Existing residents are also inconvenienced by the need to move, and not all residents will necessarily have a right to return, particularly in cases where there is a high volume of a particular type of unit (e.g. one bedroom flats) which do not meet the local authority’s preferred mix of homes (which best reflects local housing need).

In order to ensure that existing residents realise the full benefit of regeneration we work closely with them and partners (statutory, voluntary and community sector) to deliver economic and community improvements as well as physical transformation. Our community

development arm Catalyst Gateway plays a key part in this. This can include job training, employment and apprenticeship opportunities, youth activities and engagement, investment in wider community amenities such as green spaces, community gardens and play areas and supporting community enterprises and activities.

- **The local authority/registered provider**

The local authority benefits from access to improved, high quality social housing stock that meets current and future needs. Increased density and developing homes for sale enables cross subsidy to support the financing of the whole project and rents from the new homes provides additional income for the registered provider. Regenerating failing estates also provides benefits through long term savings on repairs, maintenance and management and by designing out areas that may permit anti-social behaviour.

- **The wider community, including local businesses and public services.**

Investment flows through regeneration projects into wider amenities that benefit the community such as community centres, improved roads and commercial facilities. The diversification of tenure, and therefore income profile, can also be of benefit to the local area in terms of the viability of local retail/commercial opportunities and provision of public services such as GPs and schools.

2) Which factors are considered in the decision to refurbish or demolish and rebuild?

A combination of qualitative and quantitative data on buildings/estates is reviewed to decide on the most appropriate approach to regeneration. This looks at a range of indicators which include the net present value, whether the units are suitable for modern living (or can be economically brought up to this standard), whether there are any housing management issues inherent in the current design and whether there are opportunities to increase density and diversify tenure (possibly by including market rented housing alongside any homes for outright sale and shared ownership).

On all of the estates that we are currently regenerating through demolition and rebuild programmes, the existing homes would have required significant investment to bring them up to modern standards, or had intractable problems inherent within their construction that would have made refurbishment impossible (such as Wimpey no-fines).

The number of leaseholders/freeholders can also be a significant determinant of whether to demolish and rebuild, as the cost to buy properties at market value plus 10% can significantly impact on the financial viability of a scheme where complete demolition and new build is proposed.

3) How are tenants and leaseholders involved or consulted and at which stage?

Regeneration of local authority stock, whether through phased 'trickle' transfer or large scale stock transfer, will ideally involve a significant amount of preparatory work with residents on the part of the local authority. In many cases this will include the formation of a representative

resident body who are involved in the development of the tender documentation and the interview and selection of a developer partner.

Where we are considering the regeneration of our own housing estates we work with residents to understand key issues for them in respect of the quality of their homes, estate and wider neighbourhood – identifying key areas in respect of what works well and areas for change/improvement. Housing needs surveys help us to understand individual needs, aspirations and concerns, which help to inform our proposals and any future master plan.

Once a master plan proposal has been developed, we start to engage with residents immediately providing an exhibition on the proposals and an opportunity for residents to meet with staff and the lead contractor.

With any regeneration project there is always a mixture of informing, involving and consulting. To be successful, dialogue must be honest about the elements of the proposals that residents are able to influence. The agreed master plan will have decided on some key financial parameters such as unit numbers, types and density. As the delivery of the project will be predicated on the basis of the financial modelling these elements are unlikely to be able to be changed, since this would affect the viability of the project.

As the planning application is being developed full consultation starts with residents and stakeholders across the estate and local area on the master plan and detailed proposals. We recognise that regeneration is stressful and emotive for existing residents, and we try to ensure that our consultation is sensitive and wide ranging and that we take the consultation to the residents rather than expecting them to come to us (for a detailed outline of our consultation approach see answer 15).

We would generally expect to obtain outline planning approval for the master plan followed by detailed approvals for each phase of the project – developed as each is progressed. We complete additional rounds of consultation for each phase with detailed guidance for residents about which elements are able to be influenced and which are non-negotiable.

The local lettings plan is developed through consultation with the formal representative resident body as part of the initial planning consultation. This agrees the principles for prioritising re-housing on the estate and ensures that homes are seen to be allocated fairly. This is particularly important where not all households are guaranteed a new home in the regenerated neighbourhood.

Early in each phase of the development we complete a housing needs assessment with affected residents which identifies their specific requirements. This can be completed by post, online or in one to one meetings. We carry out household visits in order to complete any outstanding assessments until we reach 100% of households. These assessments pick up details of the household's needs and also any health or vulnerability issues. Where these are identified we arrange occupational therapist assessments and use their input in the design and fittings of homes which meet individual need.

Catalyst's Regeneration Advisors build up one-to-one relationships with residents throughout the phases, developing their individual move plans and consulting with them over specific choices for their new homes, including doors, flooring, paint colours, layout and kitchen finish.

4) How does the regeneration work and in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?

The key problems for estate residents during regeneration are related to long term construction activity. These include dirt, health and safety, noise, parking constraints, heavier than usual traffic and large numbers of strangers on site who change with trades. Residents will also be affected by having to decant to a new home and potentially move twice if they have to move off the estate and then return once the new homes are completed. Some residents may not be allocated a new home in the regenerated neighbourhood if there are insufficient homes of a particular size to meet their need, and will have to move away from their existing neighbours and communities, although we seek to avoid this wherever possible.

To manage the fact that estates become building sites for many years we use phased development based on geography. This helps to contain the building disruption within agreed areas as far as possible. Consultation with residents includes the development of a construction traffic strategy and agreement as to on site working hours. We also work with local schools to reinforce messages about the dangers of the construction site.

By using constructor partners from our OJEU compliant Strategic Framework we are confident of their ability to ensure high standards whilst on site, including an agreed code of conduct, health and safety procedures, site security, access, parking and customer care. We seek to employ a proportion of local labour and have requirements set out in our contracts which make provision for this. All of our contractors have resident liaison officers and all sites are registered with the Considerate Constructors Scheme.

We accept that there will always be things that go wrong and that Catalyst are accountable for all activity on our sites. We develop open communication channels with residents who can become additional eyes and ears during the regeneration programme and help us to ensure the principles around site management (agreed through the consultation) are upheld. When residents identify problems we expect all of our staff and contractors to be responsive and resolve the issues.

It is also important to understand residents' specific needs quickly in order to ensure effective and personalised management. We complete an audit of all homes in each phase. This allows us to identify those residents who want to stay on the estate, those who are interested in a permanent move, as well as those with any particular support needs. For all regeneration schemes (where we own the stock) we make budget provision for meanwhile works. This is to ensure that existing tenanted properties are maintained in good, liveable condition for the duration of the programme and can include kitchens, bathrooms and windows.

The decant process is managed by our Regeneration Advisors and is person focused. The advisors agree personal move plans with residents and arrange disconnection/reconnection, a moving firm to assist with packing/unpacking, a handyperson to remove rubbish, liaise with support workers/family/friends if required. We try to ensure that residents only have to move once on all regeneration schemes, however, where there are specific needs (such as a ground floor flat) or a resident prefers a specific location to be close to family or neighbours we would try to accommodate this through a double decant.

We publish the compensation amounts that tenants will receive, including home-loss payment, a disturbance payment to cover removals and other costs associated with moving as well as additional payments for loss of rooms or outside space.

For all regeneration schemes (where we own the stock) we also make budget provision for meanwhile works. This is to ensure that existing tenanted properties are maintained in good, liveable condition for the duration of the programme and this can include programmes of kitchen, bathroom, boiler and window replacements.

Leaseholder and freeholder consultation across the estate starts early, and has to be managed closely as this can be particularly distressing and difficult for those who don't want to leave their homes. Where Council's are the property freeholders they will be required to lead such negotiations with the leaseholder – with Catalyst providing additional support to the process. Where Catalyst is the freeholder we provide a one to one service in the same way we work with tenants and provide opportunities e.g. fixed equity schemes which allow existing leaseholders the ability to buy a property of the same size on the new scheme. In situations where the value of the new properties is higher than the current ones we have developed fixed-equity models which enable the provision of interest free loans to cover the difference with no rent payable. In some situations we have purchased leaseholder/freeholder homes in advance of our timetabled requirement in order that the household can move elsewhere and we may use the home to decant tenants from an early phase.

5) What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?

In order to maintain mixed communities the Mayor could enshrine a principle within the London Plan that no regeneration scheme reduces the amount of affordable housing on a site. On more marginal schemes this may involve a commitment from the Mayor to invest in priming sites with low land values and property prices to ensure financial viability, or investing in infrastructure to increase values.

In order to ensure long term stewardship and investment in regeneration sites, the Mayor could also ensure that local authorities or registered providers retain legacy ownership of sites to ensure ongoing investment in the community.

The requirement to use centralised energy where feasible (London Plan, 5.2 D, c) creates significant pressure to provide communal heating systems or combined heat and power (CHP) for regeneration schemes. Experience has provided significant concerns over the

appropriateness of these systems on relatively small schemes, as they often result in losses for registered providers or increased costs to residents.

There are considerable costs related to centralised systems, including specialist consultants and sub-contractors. These costs are passed on through service charges in addition to individual heating charges. In reality the homes we develop are well insulated and have very minimal space heating requirements. Residents are therefore mainly paying additional service charges for hot water.

Our view is that CHP systems only work for extremely large developments since they produce a significant amount of electricity, with no guarantee that it will be used on the site beyond communal areas. The cost for the license to sell energy back to the grid is prohibitive compared to the value of the amount of electricity we would sell. In reality this makes the installation of CHP an inefficient and costly option, with the heating element much less efficient than a gas boiler and large amounts of electricity produced for limited use in communal areas. In our experience most registered providers are installing CHP alongside communal gas boilers to meet planning requirements but never utilising the CHP systems, representing a huge wasted cost.

A review by the Mayor of the blanket requirement for centralised energy would support more cost effective regeneration schemes.

6) What triggers the decision to consider refurbishing or renewing in the first place – is it always about the condition of the building?

The trigger to consider regeneration of an area usually relates to poor condition of the housing stock and the costs associated with addressing this. In the majority of cases, estates which are regenerated will also have significant design related issues – e.g. Radburn layout – which make them difficult to manage and police (for instance back alley ways, podium gardens, lack of overlooking of public areas); and many will be of a failing construction method e.g. Resiform, Bison, Reema, Wimpey-no-fines. However, other wider issues are also considered such as the social and economic utility of the place, if it's in an area of high demand, whether the layout and unit mix is conducive to modern living and if it feels safe, secure and connected.

Alongside this we consider if there is significant latent land value and the potential to provide a greater mix of people to support a sustainable community including the local economy, infrastructure and amenities.

We also review market intelligence for the wider area to understand future opportunities around the site and whether the regeneration of a place would have a wider impact in terms of a broader change to the local area, for example improved infrastructure such as Cross rail increasing demand in particular areas.

7) What guarantees are you able to make regarding rent levels and security of tenure for tenants?

Local authorities will generally dictate tenancy arrangements and rent setting policies for tenants transferring from their homes into new ones built by the Registered Provider.

Our experience is that local authority tenants will usually transfer at a social, target rent, but many will not be prepared for additional costs such as service charges, increase in Council Tax, and individually metered water rates (much of which is included in Council rents)

Key issues for local authorities and registered providers to work through in respect of local lettings plans will be how they address the needs of multi-generational households (particularly adult children who are living in the family home, sometimes with their own children) and those who are under-occupying their homes.

On our Wornington Green estate in Kensington Catalyst has made the decision to ease overcrowding by offering adult children their own tenancy in the new neighbourhood and guaranteeing all residents a property to meet their current needs.

8) Have you undertaken carbon lifecycle or footprint analysis for any renewal projects?

Catalyst is committed to improving sustainability and is one of only two housing providers nationally to achieve gold in the SHIFT sustainability benchmarking scheme. We are well on our way to achieving our target 15% reduction in the organisation's carbon footprint by 2016.

To date no carbon lifecycle or footprint analysis has been completed for renewal projects. There is fairly comprehensive evidence that upgrading and retrofitting existing housing stock is less carbon intensive than demolishing and re-building, even over the long term life of the building. However, as described in responses to questions two and six, the factors we consider in regenerating an area are never solely about the condition of the property. There are usually wider community sustainability and land use considerations that would take priority in decision making over the carbon footprint of the different options.

9) How are the options made public and consulted on?

For local authority regeneration projects, the local authority will generally have made the options public and sought resident input into these.

They may have laid out in some detail what they want to achieve through the regeneration and developers bidding to deliver the works will do so in line with this guidance.

Ideally the local authority will form a consultative resident body as part of the process who will be involved in decision making from the outset, including writing specific questions for the tender and being part of the interview and selection process. The residents are therefore an integral part of the decision making process for which option to proceed with.

Where we are regenerating our own estates, we make contact with residents to inform them that we are considering options for improving the estate. We complete a survey with all residents using a robust methodology to understand what they like/dislike about the estate including their homes, their rooms and communal spaces. We achieve a high return rate by completing these face to face where they're not returned. We work to develop a financially viable master plan, which factors in resident feedback alongside broader market intelligence

such as land values, housing need, rental yield and market values, and keep residents updated on progress with developing a proposal.

Once we develop a proposed master plan (whether our own or the local authority's) we follow broad consultation processes set out under question 15.

10) Is it best to provide a preferred option or develop a number of options for consultation purposes?

Where a regeneration project is being led by the local authority, there are potentially a series of options presented in advance of our involvement. The local authority sets out what they require the regeneration to achieve through the tender documents and developers/registered providers shape their proposals to deliver the required outcomes. Residents are then involved in choosing the preferred delivery partner based on the options, either through ballot or through involvement in the development and assessment of tenders.

Once a preferred option proposal has been developed there are limits to the areas that residents are able to influence, as the preferred option is likely to have been worked up as part of achieving financial viability and sign off. It's important to be honest about this, as there will be elements of the preferred option that can't be changed.

We consult with residents on elements around the preferred option where there is a genuine choice. Inevitably the process of engagement and dialogue with residents is a mixture of informing and consulting.

11) What process do you use to reconcile any conflicts between what estate residents might want and what represents sound asset management strategy from the provider's viewpoint?

We are clear from the outset of consultation with residents which elements of the scheme are able to be influenced and which are non-negotiable. Where we are unable to compromise or mitigate conflict points with residents we work to explain through our various information/involvement and consultation activity why particular decisions have been made and what the impact of other options would be on the programme.

On many regeneration schemes independent Resident Advisors ('Tenants Friends') are employed (either by the local authority or ourselves) who work with the formal resident groups and individual residents to support their understanding of the regeneration process and to enable residents to challenge us where appropriate. Often the Local Authority will have invested in the capacity of the formal resident group and trained them to understand regeneration finances and design and they will share information with a wider resident population as to why certain decisions have been made.

12) Is stock transfer still valuable in terms of funding regeneration?

Stock transfer to registered providers provides an opportunity to maintain a single strategic body with the skills to complete regeneration, provide finance and carry risk instead of the local

authority. On some schemes we have worked closely with the local authority to achieve phased vacant possession and rolling decant which also achieves the same aims without the costs and risks inherent in a stock transfer.

13) Do you plan to bid for the new £150m regeneration fund?

We are reviewing the opportunities presented by the new fund for regenerating some of our own estates. However, if we could achieve regeneration economically using our own funds it is likely we would pursue this route instead due to the conditions and complexity of the borrowing arrangements.

14) What are the key concerns for tenants and leaseholders when regeneration proposals are issued? What processes can be used to resolve these issues effectively? Can you cite examples which demonstrate this from your experience?

The key concerns for both tenants and leaseholders are the detail of what the proposals mean for them personally and what options they have. For example:

- entitlement in relation to new accommodation
- where/when moving
- layout and design of new flats
- rent/service charge/bills increase
- car parking provision
- choice over location of new home/option to move back in with existing neighbours
- buying out and value of leasehold/freehold properties.

For every project we develop a Communications and Consultation Plan which uses learning from our history of regeneration schemes to pre-empt key concerns and provide as much detailed information on the individual impact of the proposals when they are issued. We have specialist officers to work with residents and talk through in detail how the proposals affect them individually. Where we can't answer a question we are clear about when and how it will be answered in the future.

We use detailed models of the proposals to show people where they live now, what phase they will be in and where they will be likely to move to. At the Havelock Estate in Ealing we used taped out layouts of flats in the school hall so that residents could get a feel for the size and design of the new homes. The consultation approach detailed in question 15 also takes information and the opportunity to influence to as wide a range of residents as possible.

We also work with our key local stakeholders to try and provide consistent answers to issues surrounding the regeneration. For example at the Havelock Estate in Ealing a number of leaseholders and freeholders are affected and raising their concerns with local councillors. By keeping the councillors apprised of the offer we are making, and meeting jointly with the concerned residents and councillors we were able to resolve some of their concerns and ensure that a consistent message was being provided to residents.

15) What makes for effective consultation? What happens and when? Can you cite examples which demonstrate this from your experience?

Firstly it is important to recognise that regeneration schemes represent major upheaval for existing residents. In order to achieve meaningful engagement around the wider master plan it is essential that residents first understand the detail of what the proposals mean for them.

We ensure that at the initial launch event for the master plan we are able to show people where their home is in the phasing, when they will be affected and where they would be moving to. We ensure all involved staff are trained on anticipated FAQs and where we are unable to provide an answer there and then we are clear about when and how individuals will be updated.

Effective consultation over the master plan is by definition multi-faceted and uses a wide range of opportunities to engage with as many people as possible. Some of the consultation and information tools we use as standard are:

- bi-monthly newsletter to provide information and details of opportunities to comment on proposed development
- posters across the local area advertising consultation events
- email updates to those who provide their email addresses
- monthly bullet point briefings to key stakeholders including councillors, local authority officers and other local agencies
- SMS reminders of events and meetings
- a dedicated website
- consultation meetings and drop ins with a model of the proposed development
- design workshops
- visits to other Catalyst regeneration sites
- special interest meetings with leaseholders/freeholders/adjacent neighbours
- resident steering group and sub-groups covering design, neighbourhood management, community regeneration and lettings and moves
- engagement with existing recognised resident groups.

We try to avoid public meetings wherever possible as we have found that these can be dominated by a few and unrepresentative of the majority. We therefore try to work with individuals where possible and take the consultation out to where people are going to be. We have translators available during all consultation opportunities and make sure that we plan the timings of all activities with cultural sensitivity.

We use targeted events to attract hard to reach groups, which will vary depending on the project. For example through our recent pre-planning consultation period at the Havelock Estate in Ealing we ran a variety of additional consultation activities. These included:

- a football skills course for young people in half term used to consult on the use of open spaces for sports/play
- a session using arts activities to get views on the master planning, architecture and open spaces
- a play scheme over Easter with activities for 8-12 year olds that provided the opportunity to meet with parents/carers to discuss the regeneration proposals
- a specific consultation event for residents living in the existing sheltered housing in the communal garden and invited older residents from across the estate
- pop up stalls outside the school gates and at local bus stops
- drop in sessions at the local community shop
- extensive door knocking
- one to one meetings with translators where this was required.

At the Havelock Estate in Ealing we consulted with residents for six months from the initial launch of the master plan. At the end of the consultation period we held a final exhibition to show residents what was being submitted for planning consent. We also published 'you said, we did' articles in the magazine throughout the consultation period so residents could see how their feedback was being used. This included an explanation of why some resident suggestions had not been taken forward.

Catalyst Housing Limited
24 July 2014

Affinity Sutton Group

Redacted

25 July 2014

To: housingcommittee@london.gov.uk

Dear Sir

Demolition and Refurbishment of Social Housing Estates in London

Affinity Sutton Group is one of the largest housing associations in England. We work in over 120 local authorities including 16 London Boroughs, in which we have over 18,500 of the 57,000 properties we own and manage. We are a member of the g15 group of London's largest housing associations. We welcome the opportunity to provide evidence to the London Assembly's on this issues which is based on our varied and extensive experience of demolition, rebuilding and refurbishment of social housing in London over many decades.

London's housing stock is ageing. While most social housing estates meet the Decent Homes Standard, more and more are no longer truly fit for purpose, failing to meet modern expectations and nearing the end of their useful lives. Some are capable of cost effective improvement but in some cases, refurbishment is simply uneconomic. These cases offer an opportunity to rethink their design, purpose and occupancy. Often there is an opportunity for increasing density, improving layouts, improving their eco performance and cost in use. Regenerating or redeveloping such estates is an opportunity that should be grasped.

We believe that regeneration requires a tailored response based on careful consideration of the specific circumstances. The most suitable option will emerge from considering many factors and whichever mix of demolition, rebuilding and refurbishment is selected, the process will be long and complex involving many different participants. As an experienced developer and social housing provider, Affinity Sutton has a long term commitment to managing estates and has the expertise and track record required to propose a suitable solution and driving the vision forwards. We see estates in relationship to their wider neighbourhood and broad economic contribution to London. The demolition and rebuilding of an estate located in a desirable neighbourhood is clearly more straightforward and economically viable than tackling one in an area of decline. Adopting a 'whole place' based approach is important, taking into account the needs of future as well as current residents and neighbours. Working closely with all of those with a legitimate interest is a key ingredient in producing a supported and satisfactory outcome.

1) *What is the purpose of regeneration programmes and who benefits?*

Well maintained, good quality, social housing benefits our residents, wider society and London as an economic entity. As a large Housing Association regeneration is an important way to improve the quality of our housing stock, and invest in communities to make the best use of our homes. We also benefit from stronger partnerships, and improved relationships with local authorities.

Sherwood Close, Ealing. We worked in partnership with Ealing Council to demolish and rebuild 209 homes. The 1972 estate was no longer fit for purpose, poorly designed with low ceiling heights, poor orientation and deck access between blocks with dark corners and badly lit routes. It had an inappropriate unit mix (60% single bed units). These factors left high number of residents feeling unsafe and fearing crime. Ealing decided the estate needed a 'new start' as part of their wider strategy for redeveloping six estates. They were impressed by Affinity Suttons' track record and extensive regeneration experience. The demolished flats will be replaced with 300 homes, mixed tenure homes importantly retaining the same number of affordable bedspaces.

2) *Which factors are considered in the decision to refurbish or demolish and rebuild?*

Refurbishment and demolition are just two options considered in our comprehensive decision-making process carried out when assessing the future of an estate. Our monitoring and management processes identify early indications of problems on an estate such as unexpected management costs, excessive repairs costs or a requirement for ever more intensive housing management. A number of factors are taken into account during our appraisal process including:

- Modelling the estate's net present value, and socio-economic factors such as arrears, voids and repairs profiles
- Structural issues, historic design problems (e.g. over-provision of bedsits) and major works required over the next 30 years
- Housing management issues
- Resident concerns and satisfaction with property
- Energy performance
- Business-led issues such as location and whether we still want to offer these services (e.g. key worker/supported)

We assess our stock portfolio for planned preventative maintenance programmes. These portfolio assessments form the framework to prioritise neighbourhoods, and estates with targeted analysis to identify poorly performing blocks or homes. Detailed decisions balance the complex interactions of lifecycle of materials, energy costs, current technical knowledge, building longevity, or landlord responsibility.

The encouragement for Housing Associations to 'sweat their assets' through sale or redevelopment of estates in high value inner London is a short term policy. Asset disposals have an important part to play in an effective asset management strategy but sales should be based on careful economic analysis rather than political philosophy.

3) *How are tenants and leaseholders involved or consulted and at which stages?*

Resident involvement in regeneration projects is essential for us to understand what is important to them and to get under the skin of real local problems. Resident involvement is desirable from an early stage enabling residents to be presented with realistic options, but must be balanced against the risks of premature engagement before a commitment to act has been made. The degree of involvement depends on how engaged the community is.

We undertake consultations in a tenure blind way as we may have a mix of both social tenants and leaseholders on an estate. These groups may have different concerns, but are treated equally as the existing community. Leaseholders are subject to a highly regulated consultation process and they have particular concerns about sharing redevelopment costs and ensuring the resultant increased service charges are fair.

The Lavenders, Sutton. We demolished 295 homes on a 1960s estate suffering from chronic social and economic problems, where Sutton council were spending 66% of their social services budget. Over 80% of the residents living there wanted the estate to be demolished and replaced with new homes and improved landscaping. The £130m regeneration project was funded thorough an innovative self financing partnership approach. An influential process of resident involvement designed a new masterplan consisting of 470 new homes for affordable rent, part buy/part rent and outright sale. Project team meetings were chaired by a resident to ensure the community were fully involved in the process. Construction started in 2009, with phase 1 completed in 2011 and overall the project will provide 800 new homes, with many returning original residents. This established community has taken ownership of a busy new community centre.

4) *How does the regeneration work and, in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?*

Change of any sort will always be disruptive, but in our experience much can be done to mitigate the worst effects. Once a construction programme is in place there is greater certainty of progress than during the initial limbo of early decision making. As responsible developers, dealing with the negative impacts of construction is a deciding factor in our contractor selection. We require more than mandatory requirements with participation in the Considerate Contractor scheme, use of local labour and apprentices as standard. We have a dedicated resident liaison officer available for general information and emergencies. Some disturbance is inevitable, and they are compensated though payment of housing loss and disturbance allowance. A multi-channel information campaign addressing residents concerns can reduce stress during the process. Some communities see the period of site works as an opportunity for collective activities; at Ramsden there were projects decorating construction hoardings.

Ramsden Estate, Orpington. The seven year multi-million pound Ramsden Revival was a joint venture with Linden Homes. The estate had suffered long term problems with crime and ASB, with residents and the wider community keen for intervention. The poorly designed 1960s flats on the estate were rebuilt with mixed tenure low rise flats and houses. The regeneration is considered to be a great success by both residents and partners, with increased satisfaction with the neighbourhood and rising market values.

How we address common resident and leaseholder concerns:

These are some of the key resident concerns that arise:

- *Ineffective communication / Lack of transparency.* Details of the extensive communication processes we follow are described below. The key to communicating with residents is being honest about possibilities, not making unreasonable promises or withholding information, managing residents' expectations particularly where the information they might desire is not available.
- *Break up of existing communities or decanting outside London.* We work hard to maintain community ties as we know how long it takes a sense of place to evolve, and the reliance of our residents on their existing social networks. Relocation has to be a resident's choice. We have a very successful home exchange process, and we work with individuals to achieve a suitable relocation. Double decanting is very rare and only ever likely in a first phase. Schemes are planned with rolling decanting, for example at The Lavenders small off estate sites were developed and occupied first.

Alkham and Horton Towers / The Ridge, Bromley. Two 15-storey towers in an area of low values and low demand which due to structural problems would have required over £100k per flat to repair. These have now been demolished and will be replaced with a total of 96 well-designed new homes within a much improved landscape. These new homes support the Council's regeneration of the area and contribute to creating a mixed community. Sales prices are competitive and the majority of purchasers are local to the Bromley area, mostly first time buyers. Many are the sons and daughters of residents from our estates, purchasing with a mortgage and in some cases Help To Buy 2.

- *Disruption:* Residents are concerned about the time taken to complete demolition and rebuild, but a refurbishment scheme is also likely to take a minimum of 3-5 years. Complex regeneration schemes can take far longer. Being upfront about this at the outset helps manage expectations.
- *Reduced room size:* The GLA London Housing design standards have largely mitigated residents concerns about space standards, external space, accessibility and environmental conditions.
- *Use of short term tenancies not lifetime tenancies / insecurity and the future availability of social housing.* Our tenants retain the same level of security of tenure that they would otherwise have without redevelopment.

5) What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?

We welcome grant from the Mayor to facilitate regeneration projects and would value further funding initiatives for refurbishment and regeneration. We feel there are opportunities to further support successful regeneration by:

- The GLA fund to facilitate regeneration sites will helpfully unlock stalled schemes, but further use of Mayoral influence could allocate pump-prime funding for projects and to avoid deferred or suspended schemes.

- Cutting red tape. The Mayor could facilitate a fast track planning process during the initial period of greatest uncertainty for residents.
- There are currently two tiers of early stage discussion with the local authority and also the GLA. This could be sped up by better co-ordination between planning authorities.
- By demonstrating that Mayoral decisions are based on the realities of a local situation rather than a centralised policy view (for example a requirement for cycle storage for all flats which would have resulted in fewer homes not reflecting the needs of the elderly age profile of those being housed).

Detailed questions

1) *What triggers the decision to consider refurbishing or renewing in the first place – is it always about the condition of the building?*

The factors that trigger renewal decisions have been detailed above but they are usually linked to the condition via staff or resident feedback, poor performance on our models. In the same way that we look at each estate individually and holistically, the solution might require a mixture of physical and social approaches to regeneration so the trigger decision can be either development or management led. However our overriding social purpose means there may be occasions where the decision made to refurbish stock is based on social need rather than pure financial drivers.

2) *What guarantees are you able to make regarding rent levels and security of tenure for tenants?*

Existing tenants retain their tenure and new customers renting a general needs property may be offered a 5 plus 1 year fixed term tenancy agreement. Recent research into the affordability of housing costs, and rent setting undertaken for Affinity Sutton by Cambridge Centre for Housing Policy and Research¹ illustrates how extreme the challenge of setting truly affordable rent levels has become in London. All of our rents are charged at below market levels with the highest rent charged at 80% of market. We never charge more than the applicable local housing allowance and our minimum charge would be set by the government's target rent formula.

3) *Have you undertaken carbon lifecycle or footprint analysis for any renewal projects?*

We work to higher standards than building regulations and comply with GLA standards. Meeting our own challenging aspirations for our Energy Efficient Standard will dictate what depth of retrofit is required and we look to extend the lifecycle of buildings through refurbishment.

4) *How are the options made public and consulted on?*

We first identify the various stakeholders to be consulted such as Residents, Tenants' associations, councillors, the local MP, Chair of the Planning Committee, local forums/interest groups or businesses as well as the wider neighbourhood. We seek to

¹<http://www.affinitysutton.com/media/1286426/Housing%20Costs,%20Affordability%20and%20Rent%20Setting.pdf>

ensure that tenants are aware of our proposals prior to the wider public. Our communications plan uses a mix of communication channels including newsletters², flyers, local newspapers, exhibitions, models, emails, texts, redevelopment/refurbishment websites³ and computer flythroughs.

A dedicated tenant liaison manager attends residents' association meetings, and we organise resident-led task teams and site visits to other estates. We gather feedback at key events and online, which is monitored and reviewed to shape proposals. We often share a summary of residents' points raised with how we have implemented the changes in a 'You said, We did' style format⁴.

Chelsea Estate, Kensington and Chelsea. Plans being discussed for this hundred year old estate include a mix of demolition, retaining and refurbishing of blocks, with substantial new building. The demolished blocks don't meet (and can't be refurbished to meet) Decent homes standards and previous attempts to modernise and install bathrooms have been unsatisfactory. The tight flat plans and circulation makes retrofitting lifts impossible even for retained blocks. However we're working closely with residents to develop a satisfactory scheme. Residents are very engaged with the consultation process but recognise that it is a slow process: *"Most impressed by quality of presentation and staffing of consultation", "Like the new website", "Concerned that new development will take too long, want it built soon so can have a new flat to meet needs."* A majority 69% of respondents agree that the new estate will provide an improved environment for tenants to live in⁵.

5) *Is it best to provide a preferred option or develop a number of options for consultation purposes?*

We tend to devise a draft proposal (with alternatives) acting as a framework to identify which decisions are fixed, and those that are subject to alternatives or options. Residents are involved in decisions and can clearly see how their ideas are feeding in to the scheme and how the design evolves in response. Being realistic about which issues residents can make a genuine choice on, and carefully managing their expectations is key. Unit numbers or planning restrictions may constrain their input to the scheme design, but even within a constrained scheme there are always elements that can be subject to meaningful consultation.

6) *What process do you use to reconcile any conflicts between what estate residents might want and what represents sound asset management strategy from the provider's viewpoint? Other trade offs?*

We find that residents are able to understand the cost envelope explanations of what can be achieved. The basis of the whole life costs assessment process is balancing the long term benefits against immediate investment. For example health improvements may only emerge over a very long time period whilst reducing voids on a scheme can happen very rapidly.

² See attached newsletter in Appendix A

³ <http://sherwoodclose.co.uk/> <http://www.suttonestatechelsea.com/>

⁴ See example of a 'You said, We did' newsletter in Appendix B

⁵ Consultation Feedback Report Prepared by Meeting Place communications on behalf of Affinity Sutton Sutton Estate, Chelsea June 2014

7) Is stock transfer still valuable in terms of funding regeneration?

This depends on the individual circumstances, such as location, whether we have stock in the area or see particular need. Where stock transfer is a viable proposal we may well do this.

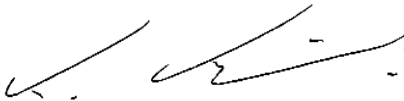
8) Do you plan to bid for the new £150m regeneration fund?

We will review bids in the light of the criteria for suitability and location of our current programme. We fund regeneration schemes through a variety of routes depending on the costs and extent of investment needed. Unlike developers who are looking to extract the value or profit from sale properties, we use cross-subsidy to provide more affordable properties, retaining our long term investment in a community.

Should you wish to discuss our response please do not hesitate to contact me

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Yours faithfully



Kerry Kyriacou

Affinity Sutton Group Development & New Business Director

Associated sites

Work will commence in the summer at **Leicester House/St John's Road** which will provide 20, two bedroom and seven three bedroom houses together with **Middleton Road** which will comprise 25 new one and two bedroom apartments. Both these developments will be sold privately and the proceeds will help fund the redevelopment of Durand Close.



Leicester House



Middleton Road

Other sites starting in the summer include, **Sydney Road** which will provide 41 new homes including 22 two and three bedroom houses for rent and **Mallinson Road** which comprises seven, two bedroom houses for rent.

Dates for your diary:

We want to know how you would like your new homes to look so please come along to these meetings if you can and help us shape the new Durand Close into how you want it to be.

Steering Group Meetings

All meetings will be held on a Wednesday at the Riverside Centre starting at 7pm.

16 May 13 June 11 July 15 August 12 September 17 October 14 November 12 December

Design Panel Meetings

Workshop 2

Energy workshop – 23 May

Workshop 3

Review of site layout – 27 June

Workshop 4

Community Centre, shop, flat block and house layouts, preliminary elevations – 25 July

Durand Close Phase 1 Detail Planning Exhibition – 6 September

Useful contacts:

The Lavender Housing Partnership
Maple House, 157 - 159 Masons Hill,
Bromley, Kent, BR2 9HY

Telephone: 020 8285 4090
email: info@lavenderhousing.co.uk
www.lavenderhousing.co.uk

Sutton Council's Regeneration Team
Telephone: 020 8770 6805
www.sutton.gov.uk

Sutton Council's Tenancy Services
Telephone: 020 8770 6998
For information or questions regarding housing
repairs, please use the Council's free phone number
0800 195 5552.

INPARTNERSHIP

WELCOME

to the third edition
of our Lavender Housing
Partnership newsletter
– In Partnership.



FIRST RESIDENTS AT MELLIFONT CLOSE • P2



REVISED TIMELINE • P3



SITE OF DEMOLISHED BUNGALOWS • P3



The aim of this newsletter is to keep you informed of progress and events around the regeneration of Durand Close and the associated sites.

We held a design panel meeting on 24 April and we were pleased to see so many of you came along. More meetings will be held throughout the year and details of these can be found on page 4.

We look forward to seeing you at these too.

The Lavender Housing Partnership

Contents

Outline plans for Durand Close approved

We are delighted to report that the regeneration of Durand Close has been given the thumbs up by the Greater London Authority and the London Borough of Sutton, who gave their consent in March to the outline master plan for the redevelopment of Durand Close.

Neil McCall, chief executive of Broomleigh, said: "This is really good news. We're delighted to have got through this major stage in the planning process and are looking forward to getting on with the detailed plans for the regeneration. The next few years will be a very exciting time for Durand Close."

Durand residents will now be involved in agreeing the detailed design for Phase 1 of the regeneration, with a view to obtaining detailed planning approval from the Council by the end of the year.

First residents move into Mellifont Close

Work has progressed well with the development of nine, two and three bedroom houses at Mellifont Close on the site of the former builders yard in Robertsbridge Road, Carshalton. Handover took place on 11th April, and a number of Durand residents have now moved into their new homes, some of which have been adapted for their specific needs.

Melanie Hinks recently moved into her new home at Mellifont Close. She said: "It is lovely and quiet especially at night and my new neighbours are really friendly. My son, who is disabled finds the lift so helpful and both myself and my partner are very impressed with the standard of the equipment."

Wendy Moran lived in Durand Close for many years and said: "It is much nicer and quieter than where I lived before".

We wish them all the best in their new homes.



Bungalows demolished

The site of the bungalows at 1-19 Durand Close has been of a health and safety concern to ourselves and the residents' group. As a result of this the area was hoarded up and made safe and we are now pleased to say that the bungalows have been fully demolished. This will allow the development work to commence once Detail Planning has been granted.



Revised timeline

We have revised our Durand Close redevelopment and associated site timeline to bring it up to date.



Site access

Building heights

Accommodation
access

LISTENING TO YOU...

Car
parking

Landscaping

Northfield
Avenue


Homes

UPDATE

Our design team has been working hard to incorporate your feedback from all the previous consultation events into the final masterplan. During previous events you raised a number of concerns we've listed below how we have addressed these issues:

	Your Concern	How we've addressed it
Site access	<p>Only one way in</p> <p>Perimeter fence stops links to surrounding neighbourhoods</p>	<ul style="list-style-type: none"> • Creation of two new north south streets link the development to existing neighbourhoods • Creating a better connected street network • Fence removed to create new pedestrian links to Tawny Close and Northfield Avenue
Accommodation access	<p>External communal access and narrow dark and confused routes through the estate</p>	<ul style="list-style-type: none"> • Active street frontages with entrances at street level • Houses and apartments will overlook the new streets • Front gardens to ground floor accommodation
Car parking	<p>Unsafe undercroft and undesignated parking areas</p> <p>Shoppers and commuters using estate as a free car park</p> <p>Under 40% of Sherwood Close residents own a car</p>	<ul style="list-style-type: none"> • Spaces provided for 40% of new homes on the estate. • Parking bays to be controlled and monitored
Landscaping	<p>Respect existing mature trees</p>	<ul style="list-style-type: none"> • Existing trees used to define areas suitable for building block positions • Use existing Plane tree to define a new Public Square • New trees to be located to enhance the new development • Creation of two new public spaces • Community Room overlooks new public space • Block B landscaped courtyard for residents use
Building heights	<p>Eight-storey towers, four-storey double stacked maisonettes</p> <p>Buildings surrounding site predominantly two storeys</p>	<ul style="list-style-type: none"> • Four storey maisonettes to the west of the site (Seaford Close side of site) reduced to three storeys • Storey heights will be no higher than the existing tower blocks
Northfield Avenue	<p>Block C</p>	<ul style="list-style-type: none"> • Block C split into two blocks — the smaller block has a mix of rent and shared ownership
Homes	<p>New home sizes</p>	<ul style="list-style-type: none"> • New homes will be at least as big as the existing

Redacted

 @3dotproperty
www.dotteddotproperty.com

London Assembly Housing Committee Investigation - Call for Evidence: Demolition and refurbishment of London's social housing estates

Response from Dot Dot Dot Property, a social enterprise protecting property by occupation

July 2014

Background

1. Dot Dot Dot is a social enterprise working with empty property, often located in social housing estates that are undergoing change and regeneration.
2. We protect buildings that would otherwise be empty by providing protection through occupation - otherwise known as "property guardianship". We currently work on behalf of housing associations, ALMOs and Local Authority owners but also work with commercial and private landlords and other institutional property owners. As a social enterprise, our model of property guardianship is that we provide – through our guardians' volunteering - a positive social impact for the communities in which we work, and to London more widely. We achieve this by supporting all of our property guardians to volunteer for at least 16 hours per month for community and charitable causes, and the average guardian volunteers for 23 hours per month. In the last 12 months, Dot Dot Dot property guardians have contributed 18,000 hours of volunteering time, equivalent to three full time jobs worth of benefit for London charities, community causes and civil society.

Our work and our experience

3. Since our start three years ago, we have successfully protected empty properties located within a number of different estate regeneration schemes throughout London. Whilst the location, scale and precise challenges of these schemes vary, Dot Dot has acquired important insights regarding:
 - how regeneration programmes can be delivered effectively on the ground,

Letting people who do great volunteering
live in properties that would otherwise be empty.



- the challenges of delivering new or redeveloped buildings in existing estates, whilst making long-term residents feel supported and engaged,

and

- the positive impact that temporary, innovative interventions can deliver for the wider community.

4. Our clients are large and medium-sized housing associations and Arms-Length Management Organisations (ALMOs). All of our current clients are London-based. Although we have views about housing supply, and the ways in which regeneration programmes are conceived and funded, we have limited our response to the topics where we feel we have the most to offer the Committee's investigation.

Three key insights from our work

5. In response to the Committee's call for evidence, we would like to share our experiences in three areas where we have developed insight that is relevant to the Committee's investigation.

Insight 1: We often see scope for more planning of the effort that is required to sustain communities during the regeneration process

6. As an organisation working in large-scale regeneration areas, we have learned that a great deal of active management of the regeneration process itself is always needed. It is a mistake to assume that estates will somehow move from a 'before' state to an 'after' state, without thinking about the requirement for sustained engagement with residents and relevant community-based interventions during the period of change. Stronger interventions and management of the regeneration process itself would ensure residents continue to remain connected to what is happening, and feel supported through the changes. The risks of residents becoming disengaged would be reduced.
7. It seems obvious to us that in stating a desire to create new and strengthened neighbourhoods, that residents and communities need to be taken care of too, alongside the bricks and mortar and building new homes. We often see more scope for a clearer strategy for how the community side of regeneration will be taken care of and how communities will be supported. There is a real risk that - amongst the Gantt charts and project planning, hoardings and cranes - the needs of the community itself in that process are largely invisible, are misunderstood or are not properly catered for.
8. Residents living in regeneration areas often tell us that they feel that they are only engaged in the (often lengthy) consultation around the plans, and then not contacted again until the practicalities of decanting and moving. They tell us that

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live in properties that would otherwise be empty.



they find the regeneration experience unsettling and disruptive, even though they can see and understand the overall need for change and are confident about the improvements that regeneration will ultimately deliver.

9. We feel that this is partly a result of a planning gap: regeneration activity is complex, expensive and high-risk and the focus is rightly on getting the new housing out of the ground, but is often at the detriment of other supportive activity which could develop and nurture communities through the process. Time spent on community development activity, resident engagement and community-building will surely reap rewards for the future communities and neighbourhoods that regeneration is meant to deliver.
10. We suspect it may also be a gap between responsibilities: often we see regeneration activity being delivered by both local authorities and housing associations together, but a feeling that buildings that are being closed down and the residents living in those buildings have somehow fallen through such a gap. Or it may be that the larger components of regeneration work - building and redevelopment - are more visible and more enticing, and somehow the work of community building is in second place to the physical redevelopment.
11. We believe that:
 - The success of regeneration schemes should be judged on the resilience and strength of communities, not only on the quality of the new buildings and the improvements to physical infrastructure.
 - Regeneration should be understood as a dynamic process - one that happens in the context of existing places and communities. Therefore successful regeneration activity requires explicit and consistent resident engagement and community development activity in order to strengthen communities through the regeneration process. Where this is done, we believe the results are more confident neighbourhoods and stronger communities.

Insight 2: Closing down buildings early and incrementally is problematic for both the residents who remain and the organisation responsible for management

12. In situations where Dot Dot Dot has been engaged to protect empty flats as the secure tenants move out, we have been able to support the careful and good quality management of the building itself. This has reduced the risks associated with empty properties (vandalism, theft of metal, cannabis farms, anti-social and criminal behaviour) and has supported the residents who remain to feel that the building is not being closed down around them ahead of their move somewhere else. The flexible nature of property guardians and the fact that installing property guardians creates footfall, eyes and ears and a legitimate – albeit temporary - form of housing has positive effects in these situations. In turn, it makes regeneration a better quality experience for residents and is a cost-effective form of security for

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live in properties that would otherwise be empty.



organisations.

13. And we observe that in some areas, local authorities and their housing association partners are implementing strategies for temporary accommodation towards those which they have a homeless duty alongside placing property guardians in properties which either do not achieve the required lettable standard, or where total flexibility is required - and we have witnessed excellent results from this way of using buildings that would otherwise be empty, too.
14. The property guardian industry always provides flexibility, so that plans can adjust, decants can be achieved on time and that vacant possession can be achieved promptly and efficiently whenever the building is ready to be demolished or handed over to the construction company.
15. This positive practice contrasts with other situations that we are aware of where tower blocks were emptied out slowly over lengthy periods of time, resulting in crime, vandalism, anti-social and criminal behaviour and visible drug use. These situations are likely to leave residents scared and stressed, and feeling less optimistic about the regeneration process itself and less able to engage with the changes.
16. In our experience, the costs and effort in managing empty buildings (or those in the process of being emptied) can often be underestimated. The detrimental impact on residents and their quality of life can often be underestimated too. Managing empty buildings requires a markedly different skillset to general housing management and the need for more specialist and experienced support often presents itself. Additionally, we often see housing organisations repeating the same mistakes in this area, resulting in avoidable stress and problems for both residents and staff coupled with the risk that a decant situation deteriorates and that control of a building is lost to unwanted activity such as drug dealing, drug using and other forms of criminal behaviour.
17. We believe that:
 - Buildings are always better occupied, and that there needs to be more widespread understanding amongst housing and regeneration professionals that a range of approaches exist to achieve this. These should be explored when any building is considered for closure or decanting.
 - A proper risk assessment should be undertaken by those responsible for regeneration and redevelopment: including the potential costs of managing a building that is being emptied, set alongside the possibility of detrimental activity and negative uses, including consideration of customer satisfaction and comfort and the potential for creating social value during the regeneration process.

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live in properties that would otherwise be empty.



Insight 3: Short-term and ephemeral interventions in the community can bring new energy and ideas into an estate that is undergoing change, for the benefit of everyone

18. As an organisation specialising in working only with empty properties, the fundamental belief on which our business is based is that empty properties are a waste and can and should be put to better use for temporary housing, whether by temporary housing clients (where this is possible) or by property guardians when more flexibility is required. And as a social enterprise, we also provide a practical way for empty properties to be used to support volunteering for community and charitable causes.
19. We ensure that all of our property guardians are committed to being great neighbours to those living around them while using their time to make a difference by volunteering for charitable projects.
20. We have some great case studies from our security contracts in three different London estates where localised, relevant volunteering within estates that are undergoing regeneration have helped support communities and build community cohesion.
21. Activities undertaken by Dot Dot Dot property guardians have included activities such as gardening schemes and organised litter-picks. As well as improving the look and feel of estates, these activities have also galvanised community action and brought neighbours closer together, which in turn has helped sustain interest through the regeneration process and has strengthened community networks amongst residents. We believe this assists the community and builds strength, and that an injection of fresh energy and ideas can foster improvements in a neighbourhood and capacity to undergo change in ways that would be difficult to achieve through a 'professional' intervention or project.
22. We believe that:
 - The value of short-term, temporary interventions in regeneration areas is high and that organisations managing regeneration should give due thought to how to use empty property assets to achieve positive outcomes. This could extend to community-minded property guardians as well as meanwhile uses of larger buildings – for example creating workspaces and community activities.

For further information please contact:

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07903 577689

Dot Dot Dot 
Property Guardians

About Peabody

Peabody has been creating opportunities for people in London since 1862, when it was established by the American banker and philanthropist, George Peabody. Our mission is to ensure that as many people as possible have a good home, a real sense of purpose and a strong feeling of belonging.

We work solely in London, with a presence in the majority of London boroughs. We own and manage around 27,000 homes, providing affordable housing for close to 80,000 people.

As well as bricks and mortar, we provide a wide range of community programmes for our residents and neighbourhoods, including help with employment and training, health and wellbeing projects, family support programmes, welfare benefits advice and activities for younger and older people.

We are committed to sustained investment in affordable housing, and recently issued a £350m bond to develop new homes, regenerate existing estates and provide more services. By 2015, we aim to provide around 1,000 new homes a year. Around 600 of these will be for affordable and social rent, and the rest will be made available on the open market to fund more social and affordable housing.

The Peabody Group is growing, and we recently welcomed Gallions Housing Association into the Group. Gallions manages around 6,500 homes, mostly in Thamesmead, south east London. Tilfen Land joined us in April, bringing over 100 acres of development land into the Group. This means that, for the first time in a generation, Thamesmead has been brought into a single, well-resourced ownership. We will invest an initial £225m in Thamesmead and, working in partnership with others, we will transform it into a vibrant place to live and work.

Our response

We welcome the opportunity to contribute to the GLA's call for evidence on the demolition and refurbishment of social housing estates in London. Outlined below is a case study of our ongoing demolition and redevelopment of our St John's Hill estate in Wandsworth, which will provide over 500 new homes for Londoners.

Case study – St John's Hill, Wandsworth

Our St John's Hill estate, located opposite Clapham Junction, 'Europe's busiest railway station', was originally built in the 1930s and provided 353 homes for Londoners. We are currently in the process of demolishing and redeveloping the estate – the new scheme will increase the number of homes available to 528.

The regeneration is being completed in three phases – in the first phase, residents have been decanted from the estate to local Peabody properties; upon completion of 'phase one' (due in summer 2016), the

residents from the 'phase two' homes will be moved into the new 'phase one' homes, a process which will repeat for 'phase three' (due to complete in 2021).

Deciding to proceed

The main trigger for the decision to demolish and redevelop was the fact that the flats on the estate were beyond their useful life. Many were suffering from damp and condensation, or were too small, with unsatisfactory 'room-off-room' arrangements. Furthermore, the general estate environment was also bleak, with very little in the way of soft landscaping and private amenity space.

Therefore, we wanted to improve the quality of the stock; however, retrofitting and refurbishing the existing stock would have been prohibitively expensive. The demolition and redevelopment of the estate would enable us to make more efficient use of the land by increasing the number of dwellings, providing a greater range of dwelling sizes, and a more balanced tenure mix. In addition, the redevelopment would improve the public realm and enhance the community facilities; the estate would be opened out to provide a route between Clapham Junction railway station and Wandsworth Common. Peabody would benefit by improving the value of the site and increasing the rental stream, as well as benefitting in the long-term as a result of lower repairs and maintenance costs.

There would also be considerable benefit to the local community, with guarantees to prioritise the jobs created to local residents; we have committed to provide 18 apprenticeships in phase one in connection with the development (with plans to provide similar number for phases two and three).

When deciding to proceed, we considered the Public Transport Accessibility Level (PTAL) as a factor. This was really a response to factors that are taken into account when considering regeneration rather than a specific consideration at St John's Hill. Nevertheless, the site has the highest rating on the PTAL scale because of the adjacent railway station and multiple bus routes - this has numerous advantages including the ability to increase the density of development as planning policy allows increased densities on sites with high PTAL ratings.

Engaging with residents and the local community

We are committed to engaging with residents and the local community; an important aspect in our decision to proceed was the ability to enable residents to shape the homes and environment in which they live. We have invested considerable time and resource into effective resident consultation, ensuring that the consultation process is not merely a 'tick box' exercise, and leading by example to ensure that the contractors involved in the development also engage with the community.

We set up the Peabody Residents' Steering Group in 2007 to represent and relay the views of the estate residents. They have played a key role throughout the development of the scheme, for example, assisting in the selection of the architects, Hawkins Brown.

In May and December 2008 we held a number of consultation events with residents to discuss topic areas, such as the masterplan for the site and energy saving ideas. The residents' concerns and ideas were addressed in subsequent revisions of the design proposals. Consultation with residents and the Steering Group intensified from 2010 onwards, once the design team had options and design concepts to put before the residents for their input.

Although in principle it is often more effective to present a preferred option – rather than a range of options – to residents, we have enabled residents to comment on the plans and proposals throughout the development process.

We selected a building contractor (having involved residents in the interview process) who would be proactive in terms of resident engagement. During the development process, the contractor has provided newsletters every couple of months with detail on the progress, as well as a resident liaison officer, which has increased visibility and enabled the contractor to listen and respond to resident requests.

A display of the application proposals and models was available for residents to view in the community hall during the estate's 75th anniversary celebration in September 2011. Members of the project team were on hand to answer any questions and there was an opportunity to provide feedback. In November 2011 a public exhibition was attended by over 130 people, and the results from feedback forms found over 90% supporting the principle of regenerating the site. In addition to liaising with residents on the estate, consultation with neighbours and the local community has also been very important, and had a significant influence on the scheme proposals.

We value the importance of not simply using consultants to carry out the engagement process, which can cause the developer to appear remote in relation to the residents. Therefore we have ensured that there has been a human face to Peabody's engagement – the development managers who have led the project at different stages have been visible and accessible for residents to contact, with gradual transitions at each stage when the management of the project has been passed on. Throughout the consultation process we have also ensured that residents are kept informed by making ourselves available during evenings and weekends, to suit residents who might be at work.

With phase one underway, we will continue extensive consultation and engagement with residents, ensuring that when new residents of different tenure types move in, they have representation in the Steering Group, and that all have the opportunity to contribute to the development of the new community facilities to be included on site.

Responding to challenges

One of the main challenges was the disruption caused to residents by the decanting process, particularly for those who will have to move twice. An important aspect in resolving this was to ensure continuous and clear communication with residents, explaining what would happen, and what their options were.

An additional issue in terms of balancing resident demands and the principles of our asset management strategy was the retrofitting of existing stock. Having originally intended not to retrofit stock to the Decent Homes Standard, due to the imminent demolition of the estate, the resident demand for new bathrooms, kitchens and other aspects of the Decent Homes Standard meant that we decided to go ahead with the retrofitting, which would provide benefit to the residents for the years leading up to the demolition.

Support from the Mayor

We welcome any mechanisms by which the Mayor may be able to support the financial viability of a redevelopment; for example, by removing some of the costs where possible, such as an exemption from the liability to pay the Community Infrastructure Levy to the Mayor.

For further information, please contact:

Rebecca Sudworth, Director, Strategy and Communications

Redacted

London Assembly-Call for evidence: Demolition and refurbishment of London's social housing estates

Evidence from the LB Harrow – 25 July 2014

What is the purpose of regeneration programmes and who benefits?

The purpose of our regeneration schemes is to improve existing Council housing which is not economic to continue repairing and maintaining and would be costly to improve to modern standards, especially of energy efficiency. In addition this provides an opportunity to build new affordable housing to better meet current and future housing needs, for example to build more larger family homes for rent, low cost home ownership and new homes for sale to meet the wider housing growth needs. We have two major regeneration schemes currently on site and near to completion. These are:

Rayners Lane estate – Replacement of c. 500 homes with c. 750 new homes achieved via stock transfer to Home Group in 2001. This estate is near to completion with only the final phase of sale homes to be completed.

Mill Farm Close – Replacement of c. 110 homes with c. 165 new homes achieved via stock transfer to Catalyst Communities HA in 2008. The final phase of replacement social housing is currently on site.

Which factors are considered in the decision to refurbish or demolish and rebuild?

The primary factor with the above estates was the condition of the existing buildings, either non traditional construction (Resiform) or with inherent structural problems (Laing Easiform). Option appraisals concluded that the cost and quality of refurbishment would not present value for money or address the inherent condition issues. Regeneration also provided an opportunity to address multiple deprivation, with both the estates above being in the most deprived areas in Harrow.

During January – March 2014 we have also conducted feasibility studies on a further 9 estates, initially led by the objective to identify areas where we could build additional housing, including affordable housing. As a result of these studies we have identified 1 estate where we are taking forward regeneration plans due to the fact it is non-traditional construction and beyond value for money economic repair and 2 for further options appraisal to consider in detail the costs of refurbishment, including retrofitting versus the cost of partial or complete redevelopment.

How are tenants and leaseholders involved or consulted and at which stages?

We involve tenants and leaseholders at the very first stage in the process ie at the options appraisal/feasibility process. We invite them to participate in selection of lead consultants and share all relevant information so that the decision making process is open and transparent.

How does the regeneration work and, in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?

For the schemes currently on site, we transferred the estates to housing associations which residents were fully involved in selecting. Prior to the transfer the main issues were agreeing the Offer document. Tenants issues were mainly about rent levels, decanting and rehousing process, size and type of new properties, type of construction (against Modern Methods of Construction) due to their experiences with the existing homes), overall density and loss of car parking. These were managed and resolved through the ongoing engagement and involvement process.

Leaseholder's were understandably concerned about the valuation of their properties and rehousing if unable to afford to buy elsewhere. With regard to valuations, the leaseholders were able to nominate a valuer to negotiate on their behalf and voluntary repurchase was agreed in most cases. Resident leaseholders were offered an equity share option to buy on the estate if unable to afford purchase elsewhere. A separate Offer document was provided to leaseholders and they voted separately which was taken into account.

For the Mill Farm Close estate a CPO public enquiry had to be held following objections from 3 leaseholders. This was confirmed and the Inspector commented on the thorough and comprehensive consultation and involvement process which had underpinned the proposals.

The engagement and involvement processes have continued during the development process which has enable the resolution of problems as they have arisen. With regards to the Rayners Lane scheme, residents have been involved in making some difficult decisions during the recession in order to ensure the scheme could proceed.

What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?

For the new regeneration schemes the council is now considering, a key issue will be finding suitable permanent or temporary decant solutions to enable the schemes to progress and reduce any impact on homelessness. The availability of grant without the current restrictions with regard to rent levels, pan-London nominations would be helpful to Harrow.

These last two points are not within the remit of the Mayor but do affect our ability to deliver regeneration schemes. Harrow is only one of 2 London Boroughs at its HRA Borrowing Cap. Unlike earlier regeneration schemes, the borough wants to develop the replacement affordable housing itself for retention in the HRA and being unable to borrow – even though we can afford to do so – hinders our ability to bring additional funding to the projects.

The current Right To Buy discounts are also becoming a hindrance to regeneration. On some of our estates, tenants can purchase properties for a relatively small sum if they qualify for maximum discount which then adds to regeneration scheme costs. Whilst the process of serving Demolition Notices can help, it can still take a considerable amount of time to progress plans before these can be served.

Housing providers

What triggers the decision to consider refurbishing or renewing in the first place – is it always about the condition of the building?

See above. In the schemes in development an option appraisal has determined that it is not economically viable to refurbish the existing stock. However, the decision also takes into account the need to change the mix of housing – both size and tenure – to better meet current and future housing needs as well as build more sustainable communities. Current proposals have started with the need to provide new and better homes and the schemes being taken forward all have issues with regard to their existing condition as well.

What guarantees are you able to make regarding rent levels and security of tenure for tenants?

Approved projects have all included guarantees on rent levels and security of tenure. Rent levels have been at social housing levels for existing tenants. The council is already introducing affordable rent levels for its new build housing capped for the larger properties at around 60% of market rent. This will be an item for discussion with existing tenants on the new regeneration schemes taking into account the other benefits being achieved such as the provision of larger, more energy efficient housing.

Have you undertaken carbon lifecycle or footprint analysis for any renewal projects?

Not as yet.

How are the options made public and consulted on? Is it best to provide a preferred option or develop a number of options for consultation purposes?

As stated above we have decided to involve our residents at the outset and present a number of options. An example of this can be found on our website with regard to the feasibility studies we have just completed. See www.harrow.gov.uk/homesforharrow

What process do you use to reconcile any conflicts between what estate residents might want and what represents sound asset management strategy from the provider's viewpoint?

The process to date has been the sharing of information in order to reach agreed solutions. Sometimes this has taken a long time! For example with Rayners Lane we submitted bids for estate action funding and PFI because the residents did not want to consider stock transfer before it was agreed this was the only solution to achieve the shared vision.

Is stock transfer still valuable in terms of funding regeneration?

We are not considering this at the moment. Our current plans are to lead the regeneration in partnership with a developer with the Council retaining ownership of the new replacement affordable housing. This would be made easier if the Council could borrow more than it is currently able to do so as a result of the HRA borrowing cap.

Do you plan to bid for the new £150m regeneration fund?

We are currently reviewing all funding solutions to enable us to take forward the next regeneration scheme. Whether we bid for the above will depend on whether this fits in with our preferred delivery model and resident aspirations.

To: Darren Johnson
Chair of London Assembly Housing Committee

Dear Darren and London Assembly Members

Demolition and Refurbishment of Social Housing Estates in London

It is our view that far too little attention is given to the possibility of refurbishment of social housing, even though it can deliver cost savings, reduce embodied carbon and cause much less disruption to the lives of residents and communities

Even the most difficult, hard-to-heat structures can be retrofitted to the highest energy standards, with tenants helped to remain and at lower cost than new build. Furthermore, it is possible to do extremely ambitious retrofit, with the residents in situ avoiding the additional costs and disruption of temporarily housing people elsewhere.

Whatever is promised when demolition is offered to social housing tenants, the reality is that the vast majority of tenants, will not be able to move back to the estate when it is rebuilt. These social issues are well documented in the 2014 handbook Staying Put which is being submitted to your investigation on our behalf by Professor Loretta Lees.

Now we would like to submit 2 further documents as evidence:-

Demolition or Refurbishment of Social Housing? A review of the evidence (attached) and

Policy Briefing: Making Decisions on the Demolition or Refurbishment of Social Housing (attached)

These have been produced by UCL Urban Lab and Engineering Exchange in response to a commission by Just Space and London Tenants Federation.

Through the UCL collaboration we are also producing

- a series of fact sheets on embodied carbon, health and well being, and building lifecycles, aimed at tenants and community groups, and
- a commentary on how Chapter 5 of the London Plan could be changed so that it is more relevant to refurbishment and demolition issues.

All the results of the commission will be launched at a meeting at UCL in October 2014. We will certainly extend an invitation to you to attend and we look forward to receiving the results of the Housing Committee investigation.

Kind regards

Richard Lee

Coordinator Just Space



UCL

UCL Urban Lab and Engineering Exchange
for Just Space and the London Tenants Federation

Demolition or Refurbishment of Social Housing?

A review of the evidence

25th July 2014



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**UCL Urban Lab and Engineering Exchange
for Just Space and the London Tenants Federation**

Demolition or Refurbishment of Social Housing?

A review of the evidence

25th July 2014

Authors:

Kate Crawford
Charlotte Johnson
Felicity Davies
Sunyoung Joo
Sarah Bell



Executive Summary

This report provides a review of technical models, evidence and case studies for decision making relating to the retention or demolition of social housing stock.

Technical assessments of building suitability for refurbishment or demolition are often based on models of building performance. These include energy performance of the building compared to standards for new buildings, and assessment of environmental and energy impacts of the building over its lifetime from construction to demolition. Decisions can also be based on a series of performance and cost indicators. All modelling and indicator based approaches require assumptions about the building and the economic and policy context in which regeneration will take place, which need to be examined and justified in each case.

Evaluation of the economic case for refurbishment is sensitive to the institutional factors such as the UK retrofit supply chain and market; tenure types and management capacity; access to finance and/or willingness to invest. Typical cost indicators are capital expenditure, operational expenditures and capital investment appraisal. Estimating the costs and impacts of refurbishment or demolition is complex, uncertain and subjective – especially where non-monetary costs and benefits have to be assigned a value. Financing mechanisms for refurbishment are less well established than construction.

The energy performance of a building is an increasingly important consideration in decisions to demolish or refurbish, and it has a big impact on the health of residents and the cost of their energy bills. Energy is used by residents as they live in a building throughout its lifetime. Energy is also used to manufacture building materials and construct the building in the first place and then in demolition, reusing, recycling and moving materials to dispose of them. Reducing carbon emissions associated with the built environment means reducing the emissions associated with the whole life cycle of buildings. However, refurbishment and retrofitting of buildings, including insulation, replacing windows and boilers, heating networks, and installing renewable energy, can improve the performance of existing buildings to near-new standards. Decarbonising the UK electricity grid will also reduce the climate change impacts of energy used in buildings, and will increase the relative importance of embodied carbon and energy in the lifecycle impacts of a building. Case studies demonstrate even hard to treat buildings can achieve high energy efficiency standards. The carbon emissions associated with building use depend on the source of energy used. Increased low carbon sources of energy to produce electricity on the grid in the future may reduce the environmental impacts of energy used in homes. Research has shown that there are often differences between the predicted and actual performance of buildings (performance gaps) and that people sometimes adapt their behaviour in ways that increase consumption after an energy efficiency project (rebound effects). Performance gaps and rebound effects are often not taken into account when assessing benefits to residents like a reduction in bills or improvements in thermal comfort. If future savings have been over-estimated, it is residents (rather than the professionals estimating the savings) who are doubly and disproportionately penalised, firstly, because what has been promised is not delivered and, secondly, because they pay the energy bills.

Relatively simple water efficiency retrofitting can achieve savings of 17.5 litres per person per day, compared with the London average of 160 litres of water used per person per day. Sustainable drainage methods can also be cost effectively retrofitted into existing buildings and estates, delivering a wide range of benefits including reduced overheating of buildings. The construction and demolition sector contributes 33% of all waste in the UK every year (47% in London). Much of this is due to demolition waste. The UK construction sector currently recycles 73% of its waste, but still contributes more than 4 million tonnes of waste to landfill each year. Recycling demolition waste reduces the environmental impacts of demolition, but refurbishment avoids waste to landfill and many of the environmental impacts of new construction.

Improving the quality of social housing stock is essential to reduce health inequalities in the UK. Housing has significant impacts on mental and physical health and wellbeing, and should be a key factor in regeneration decision making. Refurbishment can deliver improvements in housing quality at a faster rate than demolition and rebuilding of social housing, but health issues such as ventilation and indoor air quality can be complex issues to address in refurbishment. Refurbishment of buildings presents opportunities for the creation of jobs requiring a new set of skills that will be in demand if the UK is to meet its carbon emission reduction targets. Operation of renewable energy systems also provides opportunities for community development through refurbishment of buildings and estates.

It is clear that the ability for communities to engage in refurbishment and demolition decisions would be enhanced by a consistent and transparent approach to the reporting of lifecycle costs, energy and carbon, water and waste and monitoring the well-being of those affected by refurbishment and demolition. The literature reviewed here is emerging from different fields – engineers, energy modellers, planners and public health specialists – and shows some useful results but is often hard to disaggregate in a way that shows how the effects of refurbishment and demolition play out for different groups of people. However, many aspects of refurbishment and demolition are complex and interact with each other: what is needed is a more balanced inter-disciplinary view of what housing interventions mean for people and who the winners and losers are in the short and longer term.

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1 Introduction

The demolition of homes is amongst the most contentious issues in urban regeneration. Decisions to demolish or refurbish buildings are often taken by professional experts and developers, without adequate engagement with local residents and communities. Demolition or retention decisions can not only cause conflict between residents and regeneration authorities, but can also cause conflict within communities. Where some people see dilapidated, unhealthy, anti-social buildings that should be knocked down, others see homes, communities and opportunities for renovation and refurbishment.

Good decision making in regeneration requires thoughtful assessment of financial and technical information, within a context of meaningful engagement with residents and communities. Decisions to demolish or refurbish buildings are rarely clear cut, and will invariably involve trade-offs between different objectives and values.

This report provides a review of main factors involved in decision making for refurbishment or demolition of social housing building stock. It summarises available evidence for environmental and economic costs and benefits, and provides case studies of regeneration schemes that involved refurbishment of social housing. Chapter 2 addresses key technical methods used in decision making regarding the retention or demolition of buildings, and Chapter 3 reviews the economic implications of such decisions. Chapter 4 reviews the energy and carbon implications of demolition compared to refurbishment, and Chapter 5 considers issues related to water and waste. Chapter 6 covers key issues related to communities and residents, focussing on health and wellbeing. The conclusion outlines key findings.

2 Regeneration decision making

Regeneration decision-making is a complex and contentious area of urban planning and policy making. This chapter focusses on the legislation, policies and objectives linked to planning and regeneration in the UK that determine whether social housing buildings are demolished or refurbished. These include areas such as energy, climate change, waste management, housing quality and health. The frameworks for supporting and evaluating decisions are considered in terms of environmental, economic and social outcomes. These different categories tend to be treated differently in the literature either because there are fewer data available, the data are uncertain or because the outcomes themselves are regarded as difficult to measure or quantify (see Box 1). In particular, this applies to the health, well-being, social life and educational impacts on individual residents as well as impacts on society at large such as the costs of health or care services that are linked to planning or housing policies (Roys et al. 2010)¹. Where possible, this report draws attention to these gaps.

Two general approaches are involved in decisions about existing stock and whether to maintain (repair), refurbish (retrofit) or demolish and, possibly, rebuild. The first considers the building stock as a whole while the second addresses individual buildings and estates.

2.1 Whole building stock approach

The first approach is designed to support policy decisions and considers the whole (national) building stock or large (investor or sector-based) property portfolios. This level of analysis aims to answer questions like: what level of carbon emissions come from residential buildings in the UK; how and by how much could UK emissions from buildings be reduced; how much would it cost the UK to reduce these emissions?

Typically, models of the whole building stock are based on data such as age and condition of housing by building type and location. Tenure type is also included to give an indication of the people or institutions responsible for different categories of the stock. Typical housing types can then be subjected to individual building approaches (see Section 2.2) to analyse environmental performance.

There is disagreement over how useful any estimates of building lifetimes based on the whole building stock approach are for making societal or planning decisions about refurbishment or demolition. Although building lifetimes can be estimated by looking at numbers of buildings built and demolished over time in the whole building stock (like using birth rates and deaths rates to estimate average life expectancy of people in a population) (Kohler 2007), it has been argued that this implicit or effective building life (See Table 1) “has little to do with the actual longevity of housing and, despite suggestions to the contrary carry no direct implications for public policy towards the stock” (Lowe 2007, p. 413).

This is particularly relevant in the often controversial ‘technical’ debates about demolition exemplified by the arguments for and against more demolition. Table 1 below summarises some aspects of this debate to show how the data is used arguments are put forward and why.

¹ This analysis categorises costs as “costs that could be quantified given better data” and “costs that exist but are probably not quantifiable” and identifies: costs to society at large (externalities) such as health care and care service costs; and costs to individual residents such as physical and mental health, social isolation, discomfort of living in buildings that need repairs, school achievement, personal insecurity or the costs of damage to uninsured possessions, accidents or hygiene conditions at home and the cost of moving.

Table 1: Arguments for and against demolition based on Whole Building Stock approaches

For Demolition (Boardman et al. 2005)	Against Demolition (Lowe 2007)
Argument <ul style="list-style-type: none"> • 26 million properties in total; • 20,000 demolished per year; • $20,000 \div 26m = 0.1\%$ demolition rate; • $26m \div 20,000 = 1,300$ year stock lifetime; • Average Standard Assessment Procedure (SAP) rating can only improve from 44 (1996) to 66 (2050); • +6% energy consumption change by 2050. 	Argument <ul style="list-style-type: none"> • Heritage value: dwellings that will be the most difficult to insulate are likely to be those with the highest heritage value so unlikely to be demolished; • Embodied investments: significant energy and CO₂ investment in infrastructure for demolition and new build (especially high for greenfield sites); • Urban systems and interdependence: existing housing, particularly the oldest housing, is compact and has co-evolved with public transport systems and other systems, which in many cases are still operational; • Urban design: costs associated with loss of “intimacy and human scale of most remaining pre-First World War housing” (p. 425); • Decarbonization of energy supply: modelling of plausible improvements to buildings and energy supply and conversion systems shows level of CO₂ emissions in 2050 insensitive to the demolition rate.
Conclusion <p>UK requires a fourfold increase in demolition rates from 20,000 per year to 80,000 per year.</p>	Conclusion <p>“The argument that higher rates of demolition are necessary to decarbonize the UK housing sector requires one to assume an implausible lack of progress in other areas” (p.422).</p>

2.2 Individual buildings and estates

The second approach is designed to support decisions about individual buildings or estates. This level of analysis aims to answer questions like: what are the costs and benefits to different stakeholders of refurbishment versus demolition for this building now and in the future; and which are the most valuable refurbishment measures? This approach relies on a variety of methods for evaluating environmental, economic and social costs and benefits and prioritising different interventions.

In reality, building performance depends on the behaviour of people, indoor temperatures, energy consumption and carbon emissions. Building performance is complex because it:

- is dynamic (changes over time) because occupancy and weather patterns change from day to day and season to season. Although there may be patterns in these changes, they have random (or stochastic) characteristics too which means they cannot be fully predicted;
- is adapting to feedback from control systems and interacting with the behaviour of occupants with their own cost constraints, comfort preferences, ability or willingness to ‘optimise their preferences’, for example, by opening windows, turning on heating or setting timers and thermostats;
- depends on multiple systems that don’t always add up to the sum of their parts, for example, good ventilation might mean colder temperatures; and
- relates to the building’s original design (how well it is ever able to perform) and state of repair (how much performance might deteriorate over time or be affected by break downs).

To make sense of this complexity, mathematical models are used to support decisions. These models attempt to simplify complex processes by assuming they can be understood:

- as inputs and outputs (eg heat in and heat out);
- as standards (eg typical properties of insulation or key performance indicators); or
- over fixed timeframes (eg a period over which a typical weather pattern can be assumed).

Models usually rely on a variety of assumptions and on data that are already collected.

Box 1: Questioning a technical model

Models do not offer a perfectly accurate measure of performance or a perfect prediction of the future but they can help to compare different scenarios or indicate possible trends. Models can be critiqued by double-checking:

- **Diagnosis:** Are the parameters (the important factors or inputs in the model) and the relationships between different systems a logical and reasonable representation of the physical or social reality? What is included and what is excluded in the model? what is given more or less importance?
- **Calibration:** How well do the results coming from the model match real-life measurements, bills or monitoring?
- **Benchmarking:** Are the results comparable with what might be expected for a similar project or peer group sample (average, best practice or an acceptable minimum)?
- **Model sensitivity analysis:** Which are the most critical factors and assumptions in the modelling? Does changing each input parameter have the effect on output data that one might expect?
- **Results sensitivity analysis:** Which parameters have the most significant impact on the results of modelling? Can this be explained by the design of the model itself? Can this be explained by the physical or social reality?

2.2.1 Energy consumption modelling

It is useful to get a score or snapshot of a building's energy consumption. This helps to compare different buildings based on the same typical year of weather data and gives a way to evaluate compliance with Building Regulations. The UK's Standard Assessment Procedure (SAP) Box 2 is based on a model that combines a building's dimensions, surface properties (capacity to store and transfer heat), air leakage rates, efficiency and controls of boilers and other equipment, solar gains, hot water consumption and typical annual weather data (BRE on behalf of DECC 2011). The advantage of standard procedure is that it is a fast, relatively simple analysis that uses standard software tools. The disadvantage is that indoor comfort levels and occupant behaviour are fixed so SAP cannot account for new types of behaviour or adjustments to preferred levels of comfort after a refurbishment, particularly in housing where people have had expensive heating systems and indoor air temperatures lower than is healthy or comfortable. In other words, a refurbishment may mean that people are suddenly able to consume more energy (as much as they would have liked to consume before) and maintain higher indoor air temperature for the same cost (CAMCO 2011; Dimitriou et al. 2014). This is also known as the 'rebound effect' and is explained in more detail in Section 4.

It is also useful to understand how a building might perform in a real year or over its operational lifetime and to compare how different designs might compare in terms of performance. For example, modellers can change the overhang of a roof in a model or the insulation of a ground floor to see the relative effect that each change might have on overall performance and relate this to costs. Dynamic thermal simulation (e.g. TAS proprietary software) uses longer series of weather data and model the interaction of control systems and use patterns. This modelling takes more time, computational power and skill and experience to develop and interpret.

Box 2: The Standard Assessment Procedure (SAP) (Department of Energy and Climate Change 2014)

"The Standard Assessment Procedure (SAP) is the methodology used by the Government to assess and compare the energy and environmental performance of dwellings.

SAP works by assessing how much energy a dwelling will consume, when delivering a defined level of comfort and service provision. The assessment is based on standardised assumptions for occupancy and behaviour. This enables a like-for-like comparison of dwelling performance. Related factors, such as fuel costs and emissions of carbon dioxide (CO₂), can be determined from the assessment.

SAP quantifies a dwelling's performance in terms of: energy use per unit floor area, a fuel-cost-based energy efficiency rating (the SAP Rating) and emissions of CO₂ (the Environmental Impact Rating). These indicators of performance are based on estimates of annual energy consumption for the provision of space heating, domestic hot water, lighting and ventilation. Other SAP outputs include estimate of appliance energy use, the potential for overheating in summer and the resultant cooling load."

2.2.2 Life cycle modelling

Buildings do not just consume energy and emit carbon dioxide during their operational life: process of raw material extraction, transportation, construction, demolition and disposal all consume energy (see Figure 1). Life cycle modelling tries to take account of this consumption and its associated emissions by building an inventory of all the materials used and referring to indexes (large data sets of the carbon and energy emissions associated with different materials and products based on tests or research, for example, the University of Bath's Inventory) or rules of thumb (estimates based on experience or data from similar projects) (Sweetnam and Croxford 2011). This is covered in more detail in Section 4.3.

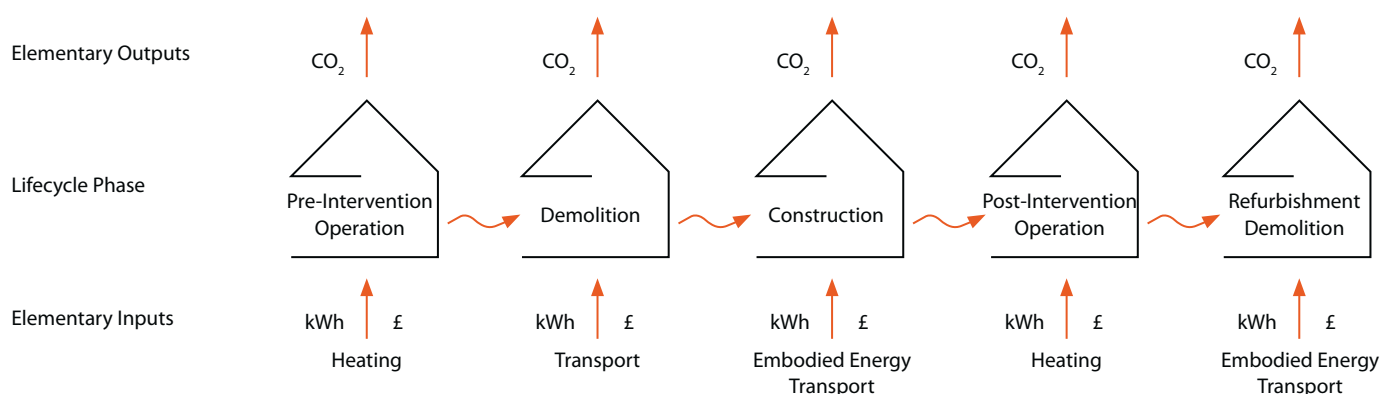


Figure 1: Lifecycle phases and flows (Sweetnam and Croxford 2011)

2.2.3 Life cycle performance indicators

The analysis and comparison of models often depends on extracting a variety of performance criteria from targets established in design standards (see Appendix B) to estimated or predicted performance for different options. These performance or comparison indicators are not necessarily included in planning proposals and are not always consistently applied in the literature. A glance at the case study summary in Table 2 shows that a variety of different indicators and units are used and cannot always be directly compared.

Table 2: Typical Key Performance Indicators are summarised below and usually involve cost, energy and emissions estimates per square metre (for easy comparison).

	Definition	Units	Reference or Case
SAP Scores or Ratings ²	See Box 2		
Construction cost	Cost of construction works (to refurbish or rebuild)	£/m ²	(Sweetnam and Croxford 2011)
Operational cost	Annual fuel cost per square metre	£/m ² /annum	(Sweetnam and Croxford 2011)
Embodied Energy (primary)		MJ/m ² kWh/m ²	(Sweetnam and Croxford 2011) (Uzsilaityte and Vytautas 2010)
Operational energy (primary)	Annual total energy consumption per unit of the building area	MJ/m ² /annum kWh/m ²	(Sweetnam and Croxford 2011) (Uzsilaityte and Vytautas 2010)
Embodied Carbon		kgCO ₂ /m ²	(Sweetnam and Croxford 2011)
Operational Carbon		kgCO ₂ /m ² /annum	(Sweetnam and Croxford 2011)
Total energy consumption (embodied + operational)		kWh/m ²	(Uzsilaityte and Vytautas 2010)
Total CO ₂ emissions		tCO ₂	
Saved energy	% marginal primary energy savings during renovation measure lifetime.	%	(Uzsilaityte and Vytautas 2010)
Marginal improvement on baseline			(Bull et al. 2013)
Avoided emissions			
Cost per tonne of carbon saved			(Sweetnam and Croxford 2011)
Carbon cost effectiveness	Cost of carbon abatement for each measure based on the capital investment required to save 1 kg CO ₂ in a given year (used where annual cost savings will be realised by the resident, not the landlord, analysis shows which will deliver the biggest carbon saving per unit of upfront capital investment)	£ CO ₂ /kg CO ₂ saved per year	(CAMCO 2011)

The performance of a 'do nothing' scenario against refurbishment or against a 'demolition and new build' option is usually sensitive to assumptions about future prices and the building lifespan. In an analysis of refurbishment in Clapham Park, London, Sweetnam and Croxford (2011) found that modelling a shorter lifespan and fixed future fuel prices favoured smaller investments that paid back early in the lifecycle ie < 30 years (refurbishment); when they assumed that fuel prices would rise the model started to favour rebuilding over a 90 year lifecycle; and modelling based on a low discount rate (this is a low inflation scenario which makes money cheaper now than later) the model favoured low cost measures (now) that achieved modest savings (soon).

² Retrofit research by Radian homes suggested that "rdSAP is inadequate to model true benefits of advanced retrofit" and that "kg/m²/yr or CO₂ m²/yr makes a better target and gives fairer comparison than % emissions reduction targets against baseline" (CAMCO 2011)

2.3 Assessment frameworks and more complex modelling

Generally, refurbishment decisions and modelling are based on some analysis of the whole building stock and of individual buildings. Refurbishment measures for energy, carbon and operational savings typically include: insulation (cavity wall, solid wall, roof, loft and floor); high performance windows and doors; draft proofing and air tightness; high performance boilers and controls; communal heating; and energy efficient lighting and appliances (Davies and Osmani 2011).

The review of refurbishment case studies and literature suggests:

- Deciding on priority measures: refurbishment measures should be prioritised according to an energy hierarchy, ordered in terms of reduction and conservation of energy use first and only then considering renewable energy³.
- Deciding on technologies: using proven innovation can deliver more positive carbon value or better abatement outcomes (CAMCO 2011).
- Optimising combinations: the case studies report a variety of ways to decide on levels of refurbishment (i.e. how much insulation will make the most difference to cost/carbon/energy?) or limited money (i.e. refurbishing which parts of the building stock will make the most difference to cost/carbon/energy?). These include:
 - scoring against established criteria;
 - modelling different combinations of technological measures (possibly including for stylised or reported/monitored occupant behaviour);
 - modelling/evaluation a broader set of agreed scenarios over time (including fluctuating or rising fuel prices, costs of decanting residents, social costs of capital); and
 - more complex decision algorithms and Monte Carlo simulations⁴ (Ferreira 2013).

This section demonstrates that the chosen assessment approach depends on the questions at stake and the data available.

Gaps in the case studies included:

- Lack of analysis of demolition and waste disposal (quantities, embodied energy, costs etc.). One study noted: "The construction and demolition industry produces approximately 33% of all the waste from industry in the UK each year. An astounding 19% of this waste is a consequence of over-ordering for new build" (Patalia and Rushton 2007).
- Lack of analysis of water consumption and embodied water.
- Lack of analysis of decanting or temporary housing costs.
- Lack of analysis of other non-technical factors.

³ CIBSE. Activity areas in a building, <http://www.cibseenergycentre.co.uk/activity-areas-in-a-building.html>

⁴ Monte Carlo simulations in this case use the same input-output models but generate and then use random input variables to see what happens to the outputs. For example, to look at the effect of fuel price, fuel prices over time (along with all other inputs) would be random within a specified range so that the model outputs can be analysed for worst, best and typical scenarios.

Table 3: Comparison of Different Modelling Approaches. Compiled using conceptual frameworks and analysis in (Bull et al. 2013; Ferreira 2013; Lowe 2007; Uzsilaityte and Vytautas 2010)

Scale of Interest	Individual Building (multiple criteria)	Individual Building (life cycle analysis)	Investment or Building Portfolio (priority or target groups and interventions)	Whole Building Stock (options appraisal)
Type of Question	How sustainable is my building refurbishment project?	What are the carbon emissions/energy consumption/running costs over the life cycle of my building for 2 scenarios?	Which Energy Refurbishment Measures and ERM combinations result in the greatest overall reduction to the life cycle carbon footprint (LCCF) and life cycle cost (LCC) for typical portfolio buildings?	What refurbishment measures have greatest impact on CO ₂ emissions from existing dwellings? What might be the impact on CO ₂ of combining these measures (insulation and strategic tech shifts in delivering heat) with partial decarbonization of electricity generation?
Method	Multi-criteria analysis based on comparing "situations that are flexible enough to incorporate different criteria based on the client's needs" (Uzsilaityte and Vytautas 2010), for example, BREAAAM or other building assessment tools ⁵	Model of an average unit based on: <ul style="list-style-type: none"> • Dimensions/properties of dwelling • Scenarios describing expected performance • Modelled performance using SAP calcs; • Estimated life-cycle costs using SAP; life cycle inventory; indexes; and rules of thumb • Economic cost of scenarios 	Parametric model of typical unit based on: <ul style="list-style-type: none"> • Dimensions/properties of dwelling • Dynamic energy simulation • Set of parameters with assigned options⁶ • Estimated life-cycle costs using simulations; life cycle inventory; indexes; and rules of thumb • Regression analysis for parameters with statistical significance on energy consumption, and size of effect 	Modelling hypothetical 'stock typical' ⁷ based on: <ul style="list-style-type: none"> • UK building stock data to inform 2 Standard Dwelling Types for the UK • SAP 2005 to estimate the cumulative reduction in CO₂ emissions per dwelling (t/a) for typical solid walled (new boiler, super-glazing, re-roofing, external insulation) and cavity walled dwellings (new boiler, wall insulation, super-glazing, re-roofing)

⁵ For example: <http://www.sustainablehomes.co.uk/shift/>; <http://www.insidehousing.co.uk/social-homes-a-third-more-efficient-than-uk-average/6527805.article>; <http://www.insidehousing.co.uk//6528487.article>

⁶ wall; 4 roof; 4 floor; 2 glazing options; various infiltration rates

⁷ 80 m², semidetached house, heated with gas, with a glazing ratio of 25% (window area to total floor area); 50 m² edge of a mid-floor flat, heated electrically, with a glazing ratio of 25%. Solid walled dwellings constitute 6.6m homes, 31% of total UK stock (Vadodaria et al. 2010)

Criteria and Weighting	Criteria defined, weighted and tested with stakeholders	Defined performance criteria or standards for emissions, energy and costs Specified design life Specified prices and Specified rate of inflation	Defined options but unspecified performance Specified design life Specified prices and Specified rate of inflation	Derived building performance and building type frequency in stock (building stock data limited ⁸) Specified efficiencies of technology (eg boilers) Specified carbon intensity of energy sources (eg from the grid)
Optimisation	Maximising scores for a “finite number of alternatives, explicitly known in the beginning of the solution process” ⁹ against established criteria	Ranking of scenarios for minimised costs and maximised performance	Best fit correlation between variables (greatest significance, greatest effect)	Ranking of measures for maximised carbon savings on individual building Ranking of scenarios by emissions (summed across stock)
Type of Answer	Score and rating	Scenarios with scores, ratings, emissions, costs	Best fit combination of measures and associated marginal life cycle costs	Scenarios with energy consumption and emissions

2.4 Performance of building elements and systems

There appear to be limited data that allow refurbishment and demolition scenarios to be compared in terms of the costs and lifecycles of different building components. There is limited data available to allow refurbishment and demolition scenarios to be compared in terms of costs and lifecycles of different building components. Appendix A summarises indicative replacement cycles and economic life by building component. In addition, a number of papers mention the importance of structure and subsystems in analysing building life-cycle impacts and performance.

2.4.1 Structures

Architects analysing a high rise refurbishment in the West Midlands note that longevity “can often relatively easily be enhanced by localised remedial works or more expensively over-cladding/over-roofing” and that “the decision for refurbishment should typically focus on localised problems, such as: carbonation, chloride content, de-lamination of panels or brick slips due to inadequate movement joints on blocks built with traditional frames.” (Patalia and Rushton 2007). A 1992 survey of high rise refurbishment noted signs of ageing as “spalling concrete, cracked, flaking and stained facings and finishes” and also categorised construction typologies (but without further analysis of the implications of typology for refurbishment/demolition) (Trim 1992):

- **traditional method:** blocks built using either a traditional in situ concrete frame for taller buildings or load bearing brickwork (up to 10 storeys), and employing cavities.
- **direct works:** blocks were built by the authorities own direct works departments, usually employing similar methods to those of the traditional built blocks.
- **proprietary process:** blocks built by in-situ or prefabricated, 40 separate building processes identified including Reema¹⁰, No fines, Tracoba, Simmcast, Bison, Myton etc.

⁸ Lowe (2007) notes: “An absence of empirical data unfortunately make it impossible to be certain that these reductions are being achieved in practice. While total CO₂ emissions from dwellings are reasonably accurately known, there has been no systematic monitoring of energy use to determine the impact of successive revisions of the Building Regulations, or to determine the split between end-uses within the overall total. Some measurements of internal temperatures have been made (Summerfield et al. in press), which appear broadly consistent with SAP 2005,12 but there has been no systematic measurement of the thermal properties of dwelling envelopes in the UK stock. There is still less certainty with respect to demand for water heating and cooking.” Lowe also concludes that solid-walled dwellings are not “thermally irredeemable” and that the emissions reductions achieved by demolition and new build have been over-stated.

⁹ Triantaphyllou, E. (2000). Multi-Criteria Decision Making: A Comparative Study. Dordrecht, The Netherlands: Kluwer Academic Publishers. p. 320. ISBN 0-7923-6607-7.

¹⁰ Reema (REED and MALLIK, a company that traded in Salisbury, Wiltshire between 1937 and 1968): system of building using prefabricated reinforced concrete panels which came into being in the late 1940s and was still in use well into the 1960s

2.4.2 Subsystems

Durability of subsystems is important in refurbishment decisions and in prioritising refurbishment measures because many of these measures “involve replacing existing subsystems and are characterized by high fixed and low marginal costs... unlikely to be economic unless applied towards the end of the life of each subsystem. Clearly refurbishment strategies that recognize this fact and take account of the maintenance cycle of each dwelling or group of dwellings will tend to be cheaper than strategies that do not” (Lowe 2007 p. 416). The Subsystems of greatest importance to life-cycle energy performance are:

- **heating:** expected to be replaced in less than 15 years, and may need replacing in less than 10 years.
- **windows:** the physical lifetime of window frames should be many decades, but sealed glazing units may begin to fail within 20 years.
- **roofs:** domestic roof coverings are normally expected to require replacement within 50 years;
- **walls:** re-pointing and re-rendering may be required every 50-100 years.

2.5 Supply chains and market transformation

The structure of the housing industry, supply chain and housing tenure all have an impact on the perceived and estimated costs, benefits, quality and risks of refurbishment projects. A number of structural or institutional aspects emerged from the case studies.

2.5.1 UK supply chain and retrofit market

There is currently low demand for retrofit products and services in the UK market, and a lack of regulatory drivers to develop new skills (CAMCO 2011). Social housing providers who decide to pursue retrofit and refurbishment options are taking on risk in this underdeveloped market. Risks relate to low levels of skills and knowledge about sustainable retrofitting in supply chains and in housing providers. Such risks could result in poor performance of retrofit installations, possibly leading to defects in buildings and poor health outcomes for residents (Swan et al. 2013). New supply chains contribute to high capital costs for energy efficiency materials compared to better established, conventional materials (Davies and Osmani 2011). Perceived inconsistencies in VAT charges by architects and property owners imply a favouritism towards demolition and new build over retrofit and refurbishment (Davies and Osmani 2011).

2.5.2 Tenure types and management capacity

Different landlords have different skills, incentives and control over upkeep. Social and institutional landlords generally have higher capacity for undertaking retrofit than individual owner-occupiers or individual private landlords (Thomsen and van der Flier 2011; Meikle and Connaughton 1994). Individual owners do not have the necessary information and ability to judge the long-term quality of the construction (Kohler 2007). In regards to retrofitting to reduce carbon emissions, there is a gap between the scale of the problem (global warming) and the decision scale (private, individual housing) (Debizet 2012). Market mechanism, incentives and standards are insufficient to shape/maintain the building stock. A combination of “public policies combined with differentiated forms of use and property rights and access to qualified information” is needed can assure a long-term capital conservation (Kohler and Yang 2007 p. 360)

2.5.3 Access to finance and willingness to invest

A lack of access to low cost finance and the budgeting of retrofit and refurbishment programmes by social housing authorities can present a barrier to implementation. The typical value of investment in energy efficiency and low carbon measures by social landlords is £5,000 - £12,000 per unit (CAMCO 2011). Social housing providers typically pay for refurbishment and retrofit through their maintenance budgets, rather than through borrowing (CAMCO 2011), or by cross-subsidising regeneration through the release of higher value land for other types of housing development. This review has not yet found systematic estimates or projections for future refurbishment costs. These will depend on the level of refurbishment achieved now and what can be achieved later, future energy supplies and prices, future environmental legislation and the mechanisms by which these future costs can be financed. In a future scenario where it becomes more common to borrow to finance refurbishment works, the land and housing assets held by social housing providers will be an important factor in securing loans – if these assets have been sold now to fund current projects, they can neither be sold again to fund projects nor used to guarantee loans to finance projects.

2.6 Key messages

It should be noted that there are a number of **limitations** to the data used in modelling:

- There is only a limited amount of data that disaggregates the environmental performance of different building components when modelling refurbishment and demolition scenarios, including key factors such as structures (including how buildings were originally constructed) and Subsystems (such as heating, window, roofs and walls).
- Data are limited on both historic costs and future costs of refurbishment.
- A variety of different indicators are used in design standards which cannot always be directly compared when assessing planning proposals. 'Do nothing' scenarios are generally sensitive to assumptions about future prices and building lifespan.
- There is a lack of analysis of demolition and waste disposal, water consumption and embodied water, and temporary housing costs in assessments.

3 Economics

Any evaluation of the economic case for refurbishment is sensitive to the institutional factors mentioned in the previous section and will be examined against these: UK retrofit supply chain and market; tenure types and management capacity; access to finance and/or willingness to invest. This section looks at published case study data, costs and some of the perceptions and assumptions around them, and methods for comparing costs and financing.

The case studies and literature give a variety of pre- and post-project cost estimates for refurbishment and demolition projects (see Appendix A). For the purposes of appraising and managing projects, typical cost indicators are:

- **capital expenditures (CAPEX):** cost of acquiring, producing or enhancing fixed assets.
- **operational expenditures (OPEX):** the cost of supply and manufacture of goods and provision of services in the accounting period in which they are consumed. This includes depreciation of fixed assets and maintenance costs.
- **capital investment appraisal:** these are methods for understanding the value over time of an upfront investment and are often used by design teams to compare different technical options. Payback Period and Net Present Value are commonly used and guidance on their application in the building services industry is provided by the Chartered Institution of Building Services Engineers (CIBSE 2008).

As with the arguments for and against demolition given in Table 1, estimating the costs and impacts of refurbishment or demolition is complex, uncertain and subjective – especially where non-monetary costs and benefits have to be assigned a value. CIBSE notes that even for ‘technical’ or ‘quantifiable’ building systems and services: “capital appraisal is most influenced by items that have an accurate monetary value”, “the advantages [of capital investments in building services] are difficult to evaluate financially, while the disadvantages are very easy to cost”. These methods depend on some “tangible return” which for building operations are not positive profit or returns on investment over time but rather reductions in hypothetical future investments such as energy consumption, maintenance efforts or costs associated with shifts to cheaper fuels (CIBSE 2008).

These costs are different from financial indicators that are used to report business performance, profits and losses. This review has not yet found any refurbishment case studies that link specific projects to the business plans and financing options of owners, housing associations or developers. This review did not look at sources of finance for refurbishment schemes¹¹.

3.1 Case studies and cost benchmarks

Table 4 shows the data available for the 6 case studies reviewed for this study. Although cost data are also given per metre squared and per housing unit, offering the potential to develop benchmarks and cost comparisons, more data and clarity are needed on what costs include. Where these data are less developed - a feature of a less mature market - project and product costs estimated at the feasibility and design stages tend to be inflated to allow for this uncertainty.

¹¹ However, more information on funding is available in the 2013 guide for funding for energy efficiency retrofits <http://www.energyforlondon.org/tag/london-green-fund/>, <http://www.london.gov.uk/priorities/environment/tackling-climate-change/energy-efficiency/re-new-home-energy-efficiency>

Table 4 Case study cost data

		Clapham Park Regeneration Project, London	Sandwell Metropolitan Borough Council, West Midlands	Wilmcote House, Portsmouth	Daneville Estate, Liverpool	Tenement, Greenock	Borough Grove, Petersfield, Hampshire
Time period (years)		30, 60, 90, 120	60	<30	30	50	50
CapEx		✓		✓	✓		✓
OpEx	Total						✓
	Decanting		No decant	No decant	No decant		✓
	Rental loss						✓
	Staff costs						✓
Net Present Value (NPV)		✓					
Payback Period		✓					
Utility bills		✓	✓				
Savings on utility bills				✓	✓	✓	

3.2 Maintenance and repair

Twenty years ago, housing associations were apparently “only just beginning to address the issues of longer term cost profiles and financing strategies for major repairs” (Joseph Rowntree Foundation 1995 p. 2). Since then, the management of repairs and maintenance - which also requires and results in growing knowledge about costs - has faced a number of challenges (Audit Commission 2002) including: allocating resources to the most appropriate stock; delivering planned maintenance programmes and spending these budgets on time; controlling (relatively expensive) responsive repair work; involving tenants and leaseholders in decisions; managing and monitoring performance to get the best out of maintenance contracts. More recently, a number of the researchers involved in these earlier analyses have noted that Housing Associations now have long experience of managing repairs and maintenance so operating and management risks are regarded as “fairly easy to price” (Whitehead and Scanlon 2014).

Reliable cost data exist but may be regarded as commercially sensitive. Not all of these data are published or freely available to the public. CIBSE references a number of sources including published estimates and rules-of-thumb including the Building Cost Information Service¹² (data are embedded in an online calculator); Spon’s mechanical and electrical services price book (£130); cost models and case studies in subscription journals (e.g. Building Services Journal); and specialist cost consultants.

¹² <http://calculator.bcis.co.uk/>

Nationally, this means that estimating maintenance costs is more difficult than other operating costs like service charges, ground rents and utility bills (at least for the time being) because “there are no wide coverage databases of information publicly available to allow comparisons” and what historical data exist have to be “derived from similar installations or components and need to take into account various factors that will be specific to the proposed scheme. Some of these factors will be difficult to express in financial terms” (CIBSE 2008).

Monitoring, statistical modelling and management of preventive maintenance - of which refurbishment cycles form a part - is increasingly sophisticated with methods borrowed from the manufacturing sector and made possible by advances in Building Information Management (BIM) systems. These approaches use historical or real-time data on mean-time-to-repair and mean-time-between-failures for individual system components and then apply algorithms designed to automate a manager’s decisions about whether to fix or replace items (CIBSE 2008)¹³ or to allow maintenance personnel to respond more effectively to reports of damage or repair requests from tenants (Briller 2013).

3.3 Costs and impacts for residents

The difficulties associated with estimating the cost and value of better building systems are magnified for the costs and impacts on residents and wider society and include: quantifying “tangible” returns; sensitivity or bias to certain factors or highly subjective valuations “hidden” in technical models; valuation of future savings; and the complex interaction of individual and institutional behaviours.

3.3.1 Direct costs and benefits to residents

In general, for refurbishment, “[r]ecent studies point at the unwanted environmental, social and economic impacts of demolition and conclude that life cycle extension by improvement, renovation and renewal is a better and more sustainable solution” (Thomsen and van der Flier 2011, p. 360 citing Itard et al. 2006; Power 2010; Thomsen and van der Flier 2009b). However, benefits to residents tend to be quantified as savings or reductions in bills (plenty of data but usually based on estimating from models) or improved comfort/health associated with warmer and drier homes (an assertion based on assumptions about behaviour or health outcomes). Three main issues with the estimation of benefits to residents appear to be:

- lack of quantitative monitoring of bills, internal temperatures and occupancy patterns before and after projects to calibrate technical modelling of different refurbishment scenarios
- lack of qualitative or anthropological work on real occupant behaviour before and after projects; and
- as a relatively serious consequence of the above, and in an area of analysis where assumptions are highly sensitive to user behaviour, there are few possibilities for linking analysis of behaviour and post-occupancy performance with resident participation.

Together these issues may combine to over-estimate energy or carbon savings and under-emphasis on rebound effects. As suggested in the Portsmouth case study (Dimitriou et al. 2014): these are scenarios where energy consumption does not change after refurbishment because people opt to consume more, cheaper energy in order to be more comfortable or continue to consume and pay as little as possible for energy in order to manage strained household budgets.

Other factors that are particularly relevant for the scrutiny of refurbishment or demolition decisions are the impacts on residents of:

- **Delays in refurbishment and demolition works:** as with construction in general, there is experience of renewal processes taking longer than expected: “Time schedules are prone to delays and elongation due to external circumstances: economic cycles, changing housing markets, political change and other developments that cannot be influenced at the local level” (Wassenberg 2011, p. 377). This review found little case study evidence on the time needed for demolition and clearance or the individual and social impacts associated with these disruptions. Cost models are also likely to be sensitive to delays but this review did not find detailed analysis of this when scenarios were compared.
- **Decanting:** one of the case studies gives a detailed breakdown of the costs of moving residents out while works take place (see Table 5 below). An estimate of the same order, £10,000, but from different data is given for the costs of moving people out of poor quality housing to more suitable accommodation by the BRE (Roys et al. 2010). This review was not exhaustive but found little data in the refurbishment literature on the costs or time needed for the decanting process itself. Planners in Portsmouth rejected decanting based on the assumption that for refurbishment of an 11 storey high-rise with more than 100 dwellings, it would take 18-24 months to decant plus 12 months to demolish plus a period for new construction before residents could move back (Buckwell 2012). Radian Homes had a dedicated staff member and a liaison officer as part of the long term resident engagement process involved in refurbishment.

¹³ Related literature not reviewed here: (Gokce and Gokce 2013; Rankohi 2013)

- **Mixed tenure inhabitants:** this review but found only a few references to this issue in case studies. In one case this was referred to as a cost that falls to some residents of “the not-yet-paid-for mortgage for the original housing” (Wassenberg 2011, p. 376). Another case study reported that mixed ownership had caused delays as a result of different administrative procedures for distributing costs and gaining access to properties, but the delays were not regarded by the housing association as significant (Yates 2006).
- **Changes in available floor space:** the cost, value and/or impact on convenience and access of lost internal floor space or redesigned communal spaces (e.g. more accessible lifts, corridors or entrance ramps) was generally not mentioned, with the exception of the Greenock case study (Yates 2006)

3.3.2 Costs and benefits to society

Among the wider societal costs or benefits (see also Section 5.3):

- **Environmental (or project) costs of waste disposal in refurbishment and demolition:** This review found only limited analysis of the volumes, reuse and costs of dealing with demolition waste, with the exception of: a) a high-rise refurbishment case study (Patalia and Rushton 2007) and b) estimates of waste avoided in refurbishing 600 semi-detached houses in the Daneville Estate refurbishment (WRAP UK 2012). The authors of the Clapham Park study note that it was “impossible to obtain accurate information regarding the impacts and costs of the demolition phase of the rebuilding scenario, however as the results are already clearly in favour of refurbishment, additional cost, embodied energy and carbon are likely to have further confirmed this conclusion” (Sweetnam and Croxford 2011, p.13).
- **Social or market costs of carbon:** the social cost of carbon or “the price society should be willing to pay to avoid the (global costs of) damage a tonne of carbon causes over its lifetime by reducing emissions” was included for comparison with the ‘cost per tonne of carbon saved’ indicator used to compare scenarios for Clapham Park by combining monetary and carbon investment with 30, 60, 90 and 120 year lifetime savings (Sweetnam and Croxford 2011, p.4)
- **Longer/wider impacts of refurbishment or demolition:** a number of (early stage) frameworks for conceptualising this were covered in the review (Thomsen and van der Flier 2012; Thomsen and van der Flier 2011; Wassenberg 2011) but research into the longer, wider impacts of regeneration projects was not included.

Table 5 Costs associated with resident decant at Borough Grove (CAMCO 2011) 14 properties in total, each household decanted for 9-12 weeks

Item	Cost
Removals and storage for average 3-bed house	£2,000
Decant fit-out costs – including re-carpeting – new / relaid as necessary (new in lounge and dining room, following removal of chimney breast), also blinds, white goods etc	£3,000
Rent loss from “decant home” for 12 week decant period - £110/week for 3-bed house	£1,300
Resident costs (typically between £100-£500 per decant for services reconnection, post forwarding, etc)	£300
Inconvenience payment (under Radian decant policy)	£500
Resident Liaison Officer (approx £30k per annum averaged across 14 properties)	£2,100
Site office and presence office (averaged across 14 properties)	£800
Total	£10,000

Table 6 Total costs associated with refurbishment of Borough Grove (CAMCO 2011) 14 properties

Borough Grove, Petersfield, Hampshire					
Project Process and Methodology	Phase	Pre-project	During Project	Post-project	Alternatives
	Consultation	2004-5 Drum Housing Association consulted with residents of the estate	Resident Engagement Process (resident liaison officer)	Resident Feedback	2004-5 Drum Housing Association consulted with residents of the estate
	Modelling	SAP 2009, RDSAP and BREEAM		SAP 2009, RDSAP and BREEAM	based on previous experience of demolishing pre-cast REEMA type homes as well as construction of Code 4-5 new homes
	Monitoring	Air-tightness; Thermal imaging; internal temperatures, gas, water, electricity consumption	Construction waste	Air-tightness; Thermal imaging; internal temperatures, gas, water, electricity consumption	
	Occupant surveys			Resident Feedback	
	Training/ Dedicated Staff	build capacity among regional agencies, social housing providers, housing professionals and policy makers in the SE region,			
	Supply Chain Interventions	map regional activity on low carbon refurbishment exemplars and create a network for disseminating results including the establishment of a network of "Refurbishment Pioneers" in social housing, develop a conceptual finance model suitable for mainstreaming low carbon refurbishment within the region, provide targeted business assistance to SMEs and other key organisations.			
Size	Form	Semi-detached, concrete panel (Reema) construction, E-rated			
	Average unit size	85m ² (est)			
	Bedrooms	3			
	Communal space per unit				
	No. of dwellings	14			
	Storeys	2			
	Floor Height				
	Total Floor Area	1,190 m ²			

Time	Date of Construction	1950s			
	Original Design Life	30 year (outperformed this life-expectancy)			
	Construction time				
	Decant Period		9-12 weeks	9-12 weeks	
	Expected/Assessed Design Life		50 year period	50 year period	
Costs	Total Cost of Works				
	Cost/m ²				
	Consultancy Fees				
	Cost per unit		£91,900 (£1,089/m ²)	£91,900 (£1,089/m ²)	£144,700 (£1,714/m ²)
	Decanting cost		£10,060 per unit (£119/m ²)	£10,060 per unit (£119/m ²)	£10,030 per unit (£119/m ²)
	Rent (loss or decant-related)	£110/week for 3-bed house			
	Sustainability features cost		£79,700 (£944/m ²) incl VAT and site management	£79,700 (£944/m ²) incl VAT and site management	£131,600 (£1,560/m ²)
	Internal staff time		2140 (£25/m ²)	2140 (£25/m ²)	£3,070 per property (£36/m ²)
	Bills for residents	Bills £1000-1500/year			
Resources	Op Total Emissions t CO ₂ /yr	7.2	2.1	2.6	
	Op Energy kWh/m ² /year				
	Op Water l/p/d	113	92	92	
	SAP Rating	(E) 47	(B) 90	(B) 85	
	Embodied Carbon				
	Embodied Energy				
	Embodied Water				
	Waste Haulage				
	Demolition, Excavation and Disposal				
	Concrete				
	Masonry				
	Rebar				

Box 3: Effect of rising fuel prices on Clapham Park simulation

Capital investment appraisal means weighing up the benefits on making an investment now, given benefits in the future. Two methods were used to model the effect of rising fuel prices on a comparison between refurbishment and demolition scenarios at Clapham Park (Sweetnam and Croxford 2011).

These methods are:

- **Simple Payback Period:** this gives the number of years it would take to pay for an investment using the savings generated each year, in this case savings on gas bills. To work out the payback period you divide the overall project cost (CAPEX) by the annual saving in the first year. A high payback period means the investment is large compared to the annual savings so the project with the lowest payback period is ranked best. Payback period is not based on realistic prices because the method assumes that fuel prices and prices in general don't change over time (inflation is zero) and it gives less weight to projects that might start paying back more in the long-term, either after other projects have paid back or at a time in the future when there is a dramatic rise in fuel prices but the investment has already paid for itself.
- **Net Present Value:** this gives an estimate of the value of investing in a project now. To work out the net present value, the year on year savings are added together and subtracted from the original capital investment. This is different from the payback period because prices in the future change in line with inflation. This reduces the bias towards projects that save money early in their lifetime. A low NPV is better than a high NPV because this means it is the cheapest current option for saving money in the future.

Sweetnam and Croxford compared 4 scenarios (although costs of demolition were excluded!): refurbishment versus rebuilding and with fuel prices steady or rising.

Assumptions in the Clapham Park model

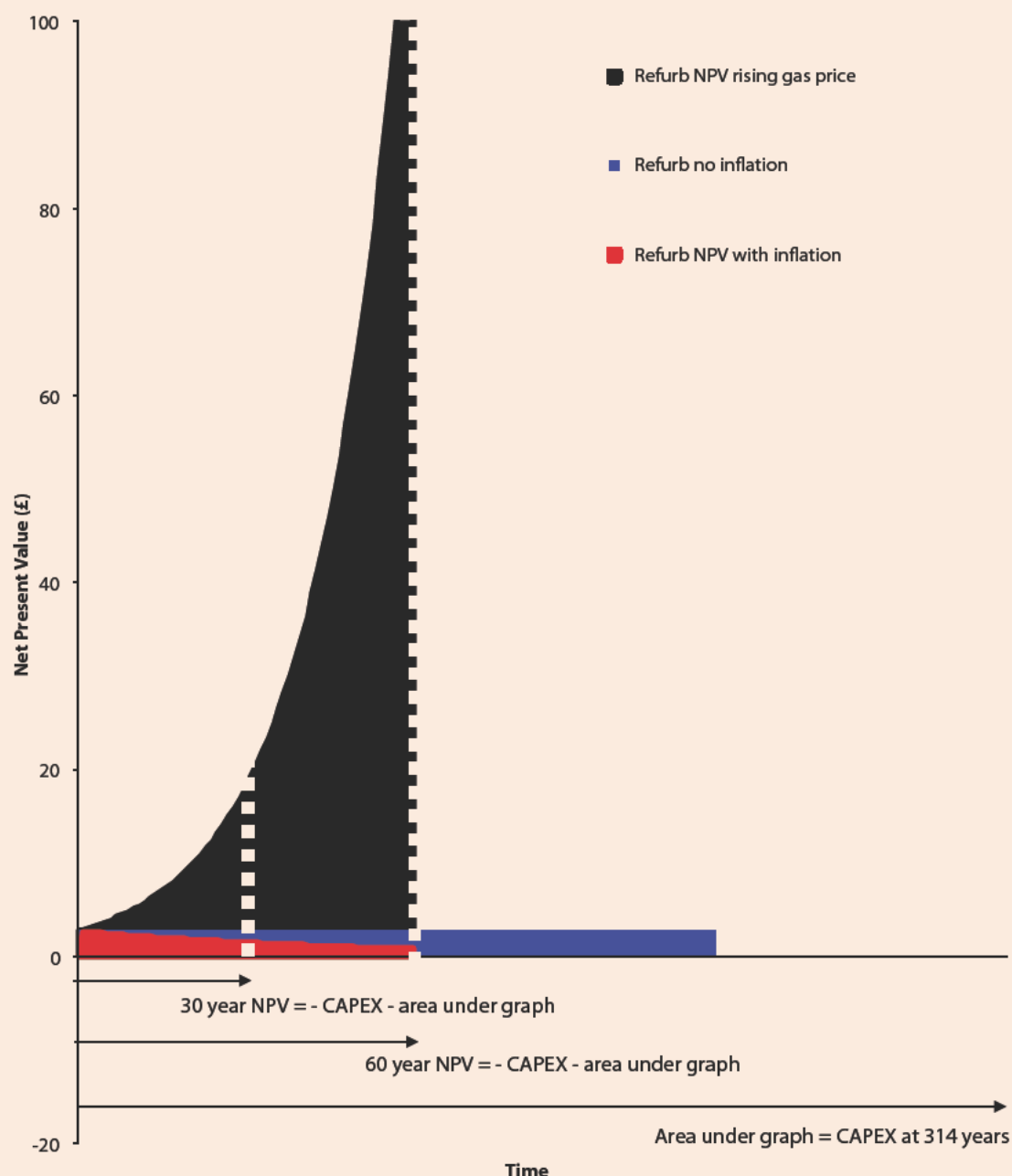
		What does this assumption mean?
Gas Price Volatility	8%	This is the annual percentage rise in the price of gas: 8% is added to the price in the first year giving a new, higher price. At the end of the second year 8% is added to this higher price and so on (based on compound interest)
Discount Factor	2%	Discount rate is a way of accounting for inflation. Inflation is the % rise in general prices each year. When inflation is high, the money you have this year is worth less next year: you can't buy as much stuff with it because stuff costs more.
Current Gas Cost (£/kWh)	0.03	This is the price of a unit of gas. The unit, kilowatt hours, is a unit of energy, like a calorie, and is the amount of energy in a certain amount of gas.

Results of the Clapham Park model

	Refurbishment		Rebuilding	
	Steady Prices	Rising Prices	Steady Prices	Rising Prices
Best NPV				
Second Best NPV				
Worst NPV				
Second Worst NPV				
Investment (£ 2010/m2)	847.4	847.4	1678	1678
Annual energy saving from consuming less gas (kWh/m2)	81.49	81.49	111.49	111.49
Annual saving on gas bills in 2010 prices (£/m2) Year 0	2.702208	2.702208	3.697008	3.697008
Simple Payback Period (years) (no inflation)	314		454	
30 Year NPV (£2010)	-787	-593	-1592	-1331
60 Year NPV (£2010)	-753	1095	-1546	979

The graph below illustrates the different ways that payback periods and net present values account for savings over time. The total future savings are represented by the areas under the graphs but in slightly different ways:

- payback period is the (blue) area under the graph showing constant annual savings each year
- NPV is the total upfront capital investment minus the area under the graph so the larger the area to deduct from the capital cost, the lower (and better) the NPV because the option is the cheapest thing to do now. In this case the largest area under the graph is for the refurbishment scenario with high price rises because investing in energy efficiency will save so much money in a future scenario where energy is more expensive.



Note: the economic models applied in conjunction with 'technical' models are generally very simplistic and used for comparative purposes. They are limited in the extent to which they are informed by and might inform a business or investment case. In particular, property and land values are not considered and alternative accommodation and relocation options are not considered.

3.4 Financing Investment

3.4.1 UK retrofit supply chain and market

Reflecting the undeveloped supply chain and market, a variety of technical, economic and social risks and “hidden costs” associated with refurbishment and retrofit remain and these appear to deter investment:

- **Prices:** the market is characterised by low fuel prices (for now) and so there is only low interest in savings from cutting fuel costs. The market is also characterised by low competition which pushes up product and supplier prices (CAMCO 2011);
- **Risks seen by designers:** a survey of UK architects identified and ranked perceived challenges to low carbon housing refurbishment: financial and business, design and technical, legislative, environmental and cultural (Davies and Osmani 2011);
- **Risks seen by owners, investors and developers:** Radian housing reported from stakeholder workshops¹⁴ that “the amount of investment most social landlords would typically be prepared to make in energy efficiency and low carbon measures - is approximately £5,000 - £12,000” and identified: Technical risks (equipment quality lifetime; maintenance cost; warranties; efficiency; innovation; controls; perceived dampness; service levels); Economic risks (interest in Pay As You Save / Green Deal, small investments – high transaction cost, SMEs dominate the market, different loan products for different technologies); Social risks (realise the savings, sabotage projects, loss of space, appliance loads, appearance of property)

These suggest a need (alongside financing mechanisms) for a change in perceptions, awareness and behaviour throughout the supply chain. Concrete suggestions for individual projects focused on a “framework for quality workmanship” and targeting users with “behaviour change training... at the point of occupancy” (CAMCO 2011).

3.4.2 Tenure types and management capacity

Ownership and management are relevant to the measurement and perception of costs and risks because they affect how these are shared between investors and occupants in ways that can simultaneously:

- allow refurbishment to be financed (covering the cost of borrowing money),
- allow savings to be realised by tenants (especially those struggling with high energy bills) and
- encourage energy saving behaviour (especially if the cost of heating dwellings falls).

Inter-related factors of interest to refurbishment projects are:

- Recovering investments through rent: Radian homes cite “a lack of flexibility for social landlords to reflect the energy efficiency investment costs in rental increases” as well as potential unwillingness of tenants to pay, Radian’s stakeholder workshop suggested that at least 50% of energy savings should be passed on to tenants (CAMCO 2011). This figure is not (yet) based on occupant surveys or modelling.
- Long payback periods for energy efficiency measures but short terms of tenure/high churn rates for tenants. This means that the community engaged in decisions over refurbishment may not see the benefits if they move elsewhere in the short term.
- Borrowing: as well as a reported unwillingness of developers to use mortgage-type financing for refurbishment and a lack of clarity about how the cost of financing would be shared with tenants, there is a lack of data (see the gaps in data on direct savings of refurbishment schemes) and confidence about whether the estimated future savings can be realised, which, if future savings are the basis for repaying loans (eg Green Deal), make borrowing difficult and risky.

3.4.3 Access to finance and/or willingness to invest: grants, subsidies and loans

Risky current costs and uncertain future savings limit financing because these are the conditions under which banks typically do not want to lend and developers are hesitant to borrow. Alternative sources of investment are grants, subsidies and loans that can be backed up or guaranteed in ways that help developers to make future payments, even if refurbishment schemes fail to yield expected savings; other costs or problems arise; or tenants are unable to pay.

¹⁴ “stakeholders including NHF, HCA, DECC, EST, PUSH, SEEDA, pioneering housing associations, local authorities, construction companies, energy suppliers, representatives of other private sector organisations and banks”

Box 4: Financing mechanisms proposed by Radian Homes

As part of the Borough Grove refurbishment, Radian Homes looked at different financing options and concluded that loan guarantees were “the most cost efficient form of subsidy” and could raise at least £20 from capital markets for a £1 subsidy. This is known as a leverage ratio of 1:20 (1 in for 20 out). Loan guarantees for these types of investment are not common in the UK but there is EU experience.

Another promising proposal was to set up a revolving loan fund. This operates like a large pool of money created by multiple, large investors (like pension funds) who expect long-term, low risk but moderate returns. From this large pool, small loans are made to many borrowers. The borrowers are quickly able to start (within 2-3 years, which is the time it might take for a refurbishment project to be completed, and quicker than, say, large infrastructure projects which typically attract similar types of large investors) and continuously (over quarterly intervals) contributing to the pool with their repayments and the pool slowly grows. The risk of investing in this sort of fund are lower than one off loans to refurbishment projects because the following flows in and out of the pool are carefully balanced to make sure it is never empty (in reality the pool is just a series of constant flows in and out rather than a static pool of tangible money):

- frequency (regularly and predictably),
- amount of each borrower’s repayment (small size but high number),
- time between lending and when repayment can start (short)
- conditions that stop investors dipping in too soon to take out large chunks of investment

There is still a risk (probably accepted by investors) that an individual borrower might fail to repay but it would not affect the fund as a whole. This also means that these funds can afford to build in a period of “grace without reproach (typically up to 1 year)” which gives borrowers some flexibility. The risk that many borrowers fail to pay back would be low but if it happened the pool would be depleted so investors would arrange for this risk to be covered by a guarantee that works like insurance but is paid for by a government subsidy (eg 5% of the fund).

Radian suggest that this sort of mechanism is advantageous because for every £1 of subsidy, £150 of investment can be achieved over the long term, “(for a social housing provider) borrowing is made against the guarantee fund instead of property assets”, it has worked well in the EU, can be based on a “pay as you save” approach against overall annual energy savings which means paying more in years where energy savings have been higher (e.g. very cold winter with high energy consumption making the savings from energy efficient systems higher in absolute terms).

3.5 Lifetimes: policy, modelling and finance time frames

Decision-making is sensitive to the assumptions and projections made about the life of a building. Expected lifetimes and time scales of interest are treated differently by different stakeholders involved in decisions (Figure 2):

- Economic analysis: stock, asset and portfolio analysis (e.g. building “survival rates” of the order 1,300 years);
- Research and case studies: longer range modelling (30-120 years)
- Energy policy: 5, 15 and 35 year timeframes to 2020, 2030 and 2050;
- Design: a specified design life (in order to raise and guarantee investment) and potentially cost-benefit analysis or NPV for evaluating design options (25-50 years)
- Investment, insurance and liability periods: 25 year mortgages, 6 year contract liabilities, 2-15 year product warranties.

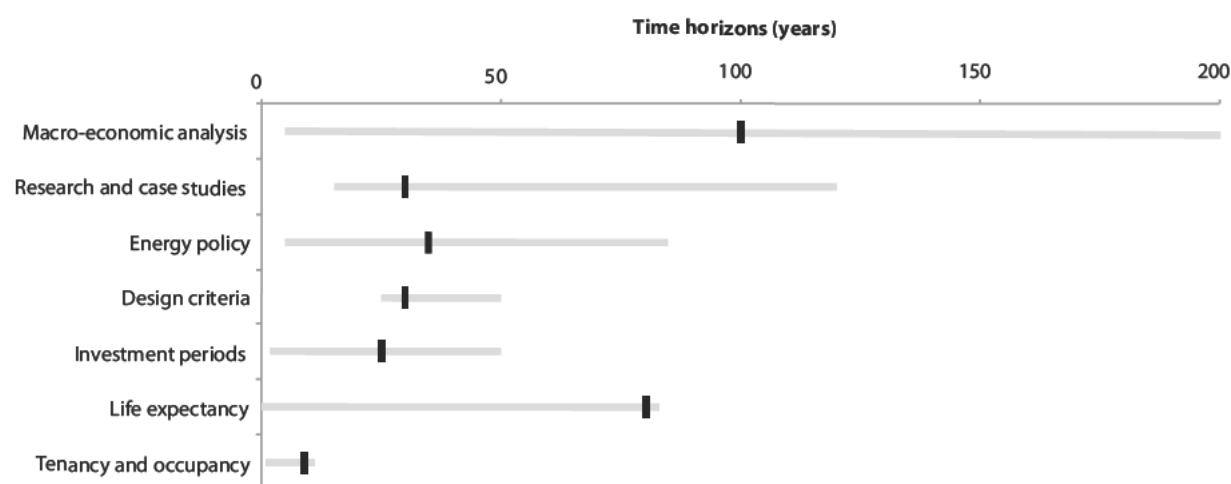


Figure 2: Time horizons of housing decisions and analysis.

The timeframes used by different decision-makers affect the critical thresholds at which one option wins out over another on economic, environmental or social grounds. These notional thresholds are illustrated in the following graphs for a number of the scenarios covered in this document. The graphs (Figure 3) on the following pages illustrate that:

- **Markets and prices:** whether refurbishment has lower cumulative emissions compared to new build in the long run depends on whether the practicable performance standards for refurbishment are the same or better than the standards set new construction. It is worth noting that the economic reasons for redevelopment (rising land and building values) have historically been largely independent of energy performance because location plays such an important role in determining these values and energy performance can be difficult for prospective building owners and occupiers to assess. Whether energy performance becomes more important in rent setting depends on how much choice occupants have about their housing and whether energy performance is really a driver in those choices¹⁵ (see Figure 3: scenarios I to V)
- **Decarbonisation:** investment in decarbonisation of the grid might make a bigger difference in emissions per pound spent than improving the energy performance of buildings through refurbishment or new construction (see Figure 3: scenario VI)
- **Behaviour and performance:** justifications (targeted at building users) for either refurbishment or demolition that rely on over-optimistic assumptions about improved energy performance and lower bills, disadvantage tenants because a) land and building values rise independently and faster than energy prices so developers gain whether or not energy performance is improved and or bills fall; b) the time frames over which tenants see a benefit is longer than typical tenancies (see Figure 3: scenario VII).
- **Maintenance and repair:** reducing the embodied energy and carbon involved in construction, maintenance and repairs and making sure that major refurbishments perform better each time, mean that the cumulative emissions from refurbishment fall below those of new construction sooner (see Figure 3: scenario VIII)

3.6 Key messages

In the UK there is a gap in the capacity, willingness and confidence of decision makers to a) make transparent and be able to interrogate the assumptions in decisions about refurbishment and demolition and b) to invest in refurbishment (or other innovative options). This applies to policy-makers, built environment and planning professionals, as well as tenants, housing associations, developers and lenders. Part of this involves collecting cost data and analysing the impacts on different people and places over time of “doing nothing”, refurbishment and demolition scenarios. This necessarily means research into the behavioural and technical realities of living through refurbishments and feeding what is learnt into ongoing relationships with tenants and into the design of other projects.

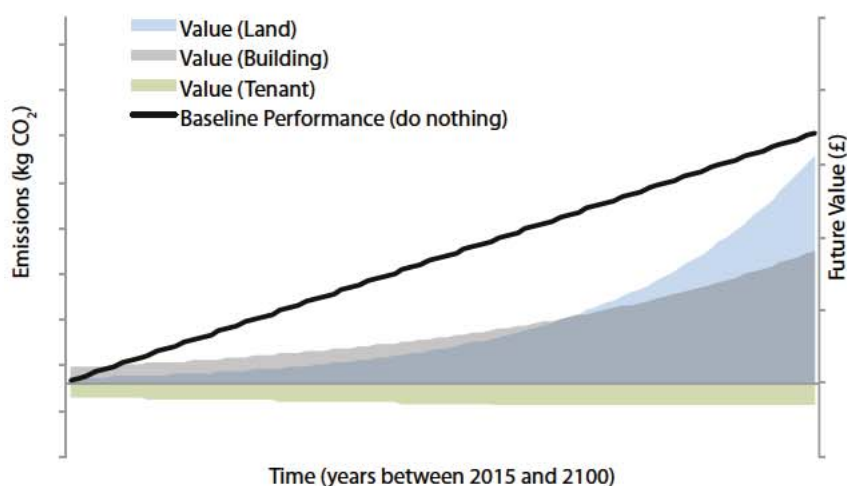
Figure 3 illustrates some of the relationships between time horizons of decision-makers and the thresholds at which one option wins out over another. This is based on notional scenario modelling in the absence of data, models and tools to support transparent decision-making. Table 7 summarises the different time periods over which decisions about housing and related policy are made.

¹⁵ For example, registered social landlords, housing associations and local authorities might expect higher rents where an investment in improvements has delivered better energy performance or hope to use higher rents to pay for future improvements. Whether this is realisable or reasonable in practice depends on who is paying rent; how rent is paid; what difference a change in rent or energy bills makes to household budgets compared to other factors (for example, changing location might affect associated transport and food costs, people choosing better indoor comfort means no cash savings or using the savings for other necessities means no spare cash to pay more rent); and who is able to opt out of the improvements or move to alternative accommodation. Meanwhile, buyers and private renters can in theory use energy performance certificates alongside other criteria, like location, when choosing housing but poorly performing buildings in good locations will still command high rents and the difference in rent between poorly performing and well performing housing in the same area may come down to other factors like the ‘period features’ in a poorly performing building.

I Base Case "do nothing"

Assuming:

- no energy price inflation,
- low inflation on building value (rent)
- higher inflation on land values



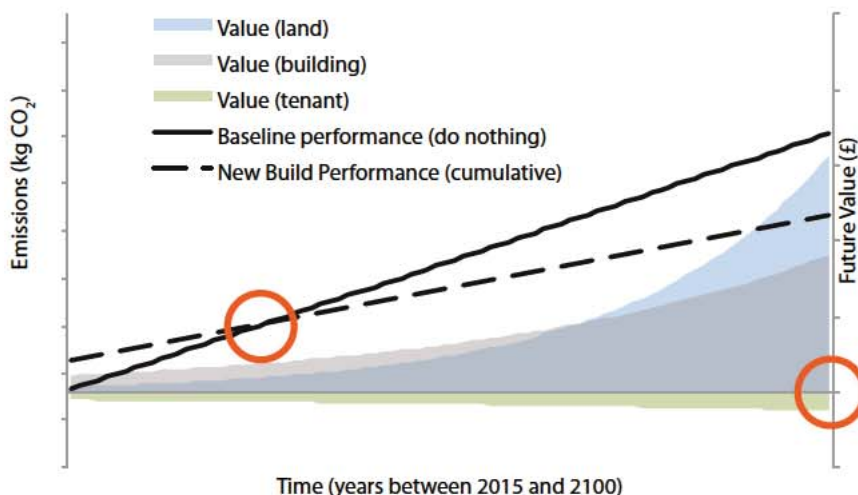
Cumulative carbon emissions and tenants bills increase over time.

Land and building inflation occurs over periods shorter than the life expectancy of buildings (and people). This is within the design life but much longer than average tenancies.

II Demolish and rebuild to current building standards

Assuming:

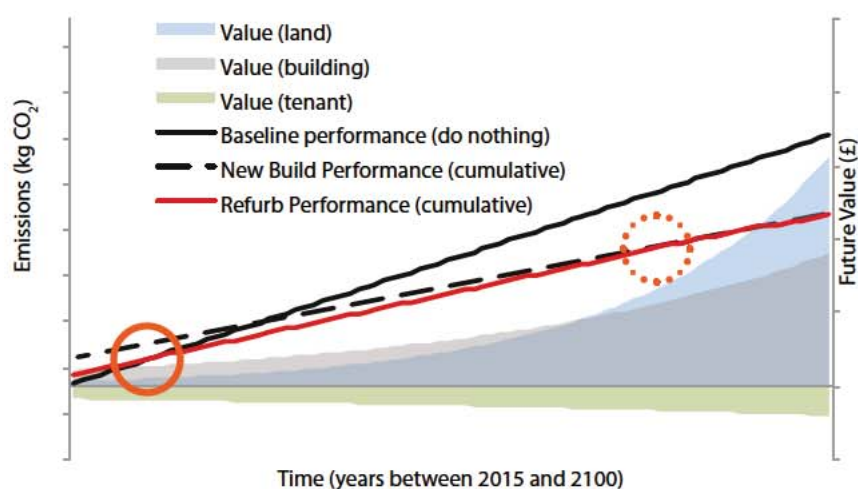
- as above
- relationship between new build and refurb performance is as per Clapham Park case study



The new building consumes embodied energy in construction but generates lower operational emissions over time. Tenants energy bills are lower than "do nothing". In time, the cumulative emissions from new build are lower than the "do nothing" scenario.

The better the energy performance of the new build, the sooner this happens. This may happen well within the life expectancy of existing stock and design life of newer buildings.

III Refurbishment



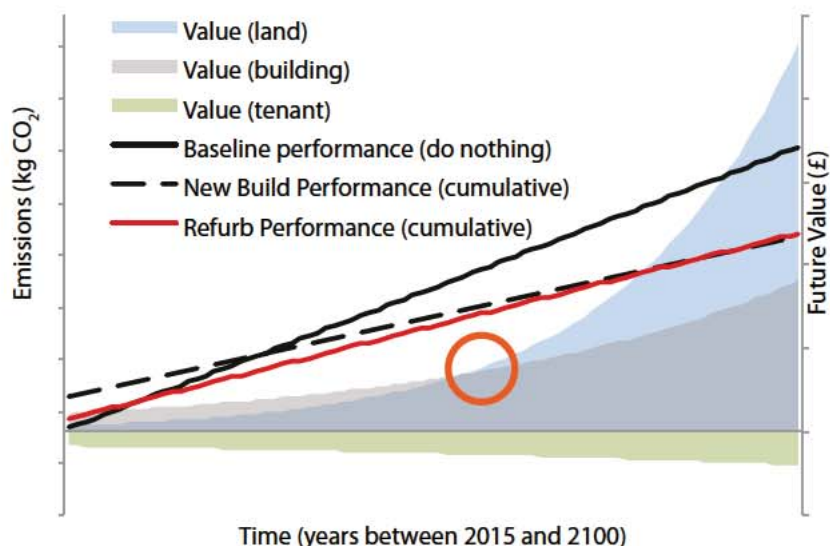
Refurbishment consumes embodied energy (but less than a new building) and tenants bills are lower than "do nothing". In time, the cumulative emissions from refurbishment are lower than "do nothing". **This happens faster than for the new build providing a refurbishment can perform as well as a new build. In the longer run, new builds may have lower cumulative emissions than refurbs, if new buildings have better energy performance. Reducing the embodied energy of new builds also means new builds overtake refurbs sooner.**

Figure 3: Impact of time horizons on decisions and analysis of housing options.

IV Land price inflation (relative to rent/building cost inflation)

Assuming:

- no energy price inflation,
- low inflation on building value (rent)
- higher inflation on land values

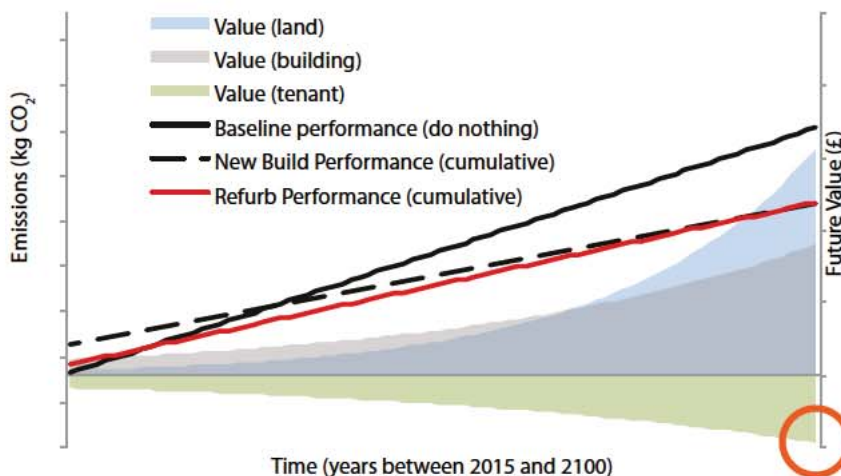


The decision to redevelop may be made sooner when land value inflation is higher than building inflation. **Neither of these factors is directly linked to the energy performance of buildings but it may be correlated if:** a) poor energy performance reduces the ability of tenants to pay rent from their household budget b) poorly performing buildings command lower rents than other buildings in the same area.

V Fuel price inflation

Assuming:

- moderate energy price inflation,
- low inflation on building value (rent)
- higher inflation on land values



Tenants in the "do nothing" scenario will face much higher future energy bills.

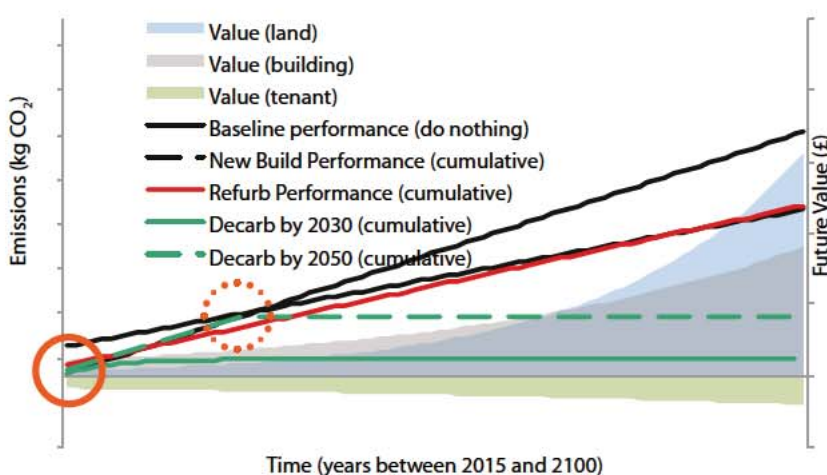
When average tenancy periods are short, the future cost of bills may not be paid by or valued by current occupants.

Higher inflation on energy prices means that people start paying higher bills sooner.

VI Decarbonisation by 2030 or 2050

Assuming:

- no energy price inflation,
- low inflation on building value (rent)
- higher inflation on land values

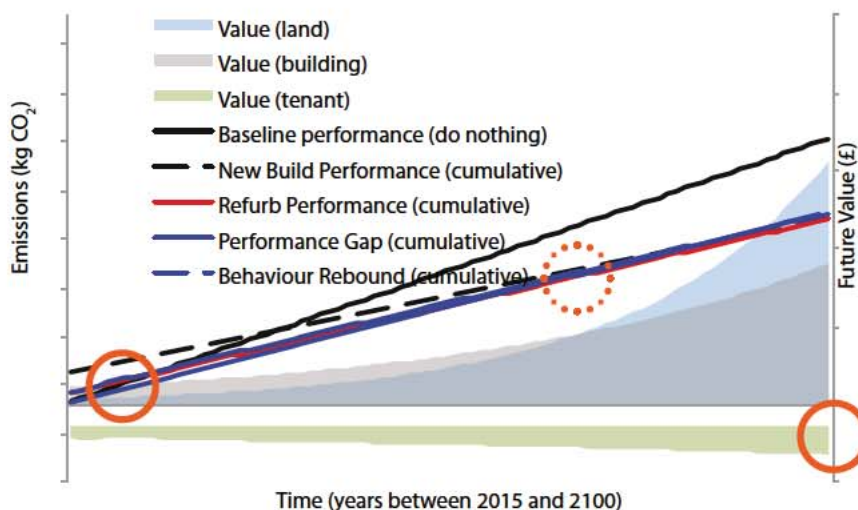


If the UK successfully decarbonises the national grid (relies on low or renewable sources of energy) and housing uses only electricity for heating and hot water, the emissions from un-refurbished buildings could be lower than new buildings that use energy from the current supply mix.

The bills paid by tenants do not take account of higher energy costs from the process of installing new energy generators.

Figure 3: Impact of time horizons on decisions and analysis of housing options.

VII Behaviour and Performance

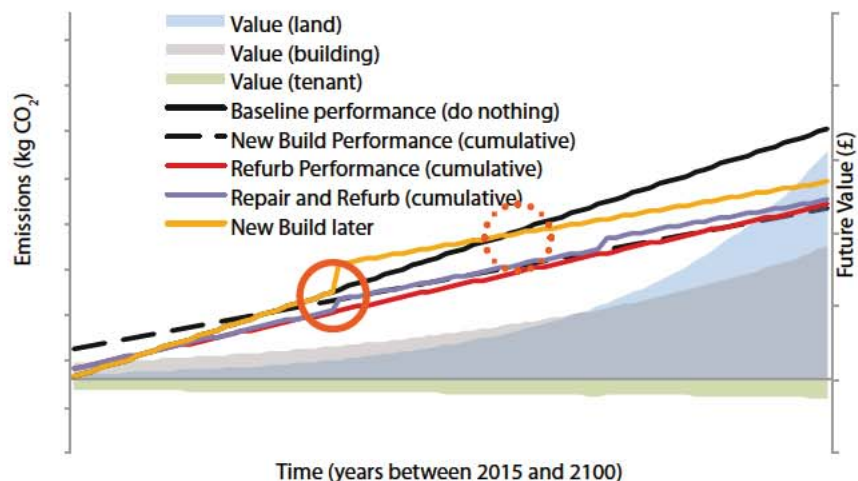


If the assumptions about energy performance are optimistic (there is no rebound effect and components and fabric perform as well as predicted), then a) the savings to tenants in the long run will have been over estimated (but land and building values unaffected); b) the moment at which new build or refurb perform better than doing nothing is later and the moment when refurb performs better.

VIII Repair and refurbishment vs building new build later

Assuming:

- new buildings and refurbs in 20 years time can perform 10% better
- repair uses 10% of embodied carbon of a refurb



Regular refurbishments would need to make a significant improvement to energy performance to reduce operational and embodied emissions over the long term. Lower embodied energy refurbs that improve energy performance result in lower life time carbon emissions.

If the decision to demolish and rebuild is deferred (eg for 20 years), the new building would still have to perform significantly better than a refurbished building to generate lower operational and embodied carbon emissions.

Figure 3: Impact of time horizons on decisions and analysis of housing options.

Table 7: Range of time periods (in years) over which decisions are made

Economic analysis: stock, asset and portfolio analysis	50	1300	Based on English Housing Survey: 50%+ of homes over 50 years old, 22% over 100 years old; building "survival rates" of the order 1,300, http://www.cotac.org.uk/conf_2012_pres/snicol/snicol2.pdf
Research and case studies: longer range modelling (15-120 years)	15	120	Range from 6 case studies analysed for this report, http://www.legislation.gov.uk/ukpga/1980/58
Energy policy: 5, 15 and 35 year timeframes to 2020, 2030 and 2050;	5	85	Based on 2020, 2030, 2050 and 2100 appraisal models, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48184/3136-guide-carbon-valuation-methodology.pdf
Design: a specified design life from the client's brief	25	50	Housing 25-30 years compared to British Library and Portcullis House 250 years. These periods are specified in order to raise and guarantee investment. They are also used for cost-benefit analysis or NPV for evaluating design options (25-50 years)
Investment, insurance and liability periods: 25 year mortgages, 6 year contract liabilities, 2-15 year product warranties;	2	50	Based on limitation act and white good warranties
Life expectancies: average for 2013	78	83	ONS data http://www.ons.gov.uk/ons/rel/lifetables/national-life-tables/2010---2012/sty-facts-about-le.html
People: median length of time in current residence (UK)	1	11	Social Trends 41 - Housing - Office for National Statistics, average (median) length of time that households in England had lived in their home was 8 years. Owner-occupiers had been in their current home on average the longest at 11 years, followed by social-renters at 7 years

4 Energy and carbon

The energy use and greenhouse gas (GHG) emissions associated with buildings are key concerns driving the assessment of whether to refurbish housing or to demolish and rebuild it. Chapter 2 has discussed how assessment decisions are made. This section of the report reviews evidence generated from research into the energy used and carbon dioxide (CO₂) emitted through the construction, refurbishment and demolition of buildings (embodied energy) as well as the energy used and CO₂ emitted through the use of the building (operational energy). It highlights some of the related issues associated with reducing energy and carbon emissions through interventions in housing, including potential benefits of 'a green economy' enabled through a retrofit industry as well as unwanted consequences such as inadequately ventilated buildings.

Key issues for the Retrofit vs demolition debate are:

- Can old homes be refurbished to the same energy performance standards as new homes? (Demand equivalence)
- How much does the embodied carbon of construction materials and processes add to the overall emissions of new and refurbished homes? (Lifecycle equivalence)
- Does new construction offer more opportunities for low carbon generation or supply switching? (Supply equivalence)
- Which socio-economic groups and housing types will be targeted through refurbishment programmes and demolition programmes? (Distributional equivalence)

4.1 Operational vs. embodied energy

The energy consumption associated with buildings can be analysed in two ways; operational and embodied. A building's operational energy is incurred through the use of the building. It refers to the energy used in heating, ventilating, lighting and appliances to maintain comfortable conditions in the building. The **operational energy** of a building depends on the condition of the building, the systems installed in it and the occupants' use of the building (Ibn-Mohammed 2013).

The **embodied energy** of a building refers to the energy used to extract, manufacture, transport, and assemble the materials for its construction. It sometimes also includes energy to deconstruct buildings and dispose of the materials (see Figure 4). There are also other environmental impacts of material use, including impacts on human health (see Section 6), and lifespan and maintenance requirements (see Section 2) which are aspects included in a building's Life Cycle Assessment (LCA).

Lifecycle assessment of UK houses shows that the global warming potential of energy and emissions during the lifetime of the building (operational) is significantly greater than the impact of construction of the building and demolition at the end of its life (embodied energy) (Cuella-Franca and Azapagic 2012). This means much research and policy is focused on understanding and reducing operational energy, however the embodied energy of construction materials and processes becomes more important if we increase low carbon sources of energy to provide the operational energy required.

Box 5: Energy, carbon, carbon dioxide and greenhouse gases

Energy	<p>In physics, energy is defined as the capacity to perform work. It takes various forms, such as electrical, thermal, kinetic or nuclear.</p> <p>Inside homes we use two types: electrical energy for lighting and appliances and thermal energy to keep rooms warm and supply hot water.</p> <p>Electrical energy is typically generated at remote power plants and delivered to the home through the electricity grid. However generating electricity on residential sites is becoming more common through technologies that use renewable sources, like as roof mounted solar PV cells or wind turbines.</p> <p>Thermal energy is more typically produced in homes and most of us use boilers to produce central heating and hot water. Boilers burn fuel (usually gas from the national grid) to produce the thermal energy we use.</p>
Carbon (C)	<p>Carbon is an organic chemical element which becomes carbon dioxide (CO₂) when combined with oxygen. It is the carbon content in fossil fuels that burns to produce energy.</p> <p>Carbon is neither the same as carbon dioxide nor a greenhouse gas, but is often used as a shortened form of the term of 'carbon dioxide emissions'.</p> <p>The term 'Carbon' is used today as a scale to make comparisons across different types of energy sources and energy uses. We talk about the 'carbon intensity' of different fuels which means how much CO₂ is produced from different sources to perform the same work. Or we impose 'Carbon limits' to cap the amount of CO₂ and GHG produced within a defined area or activity.</p>
Carbon dioxide (CO ₂)	<p>Carbon dioxide is a gas which is produced through plant and animal respiration, decaying materials and through burning organic matter such as fossil fuels.</p> <p>Burning fossil fuels such as coal, oil or gas to create energy to support human activities and energy demand, produces excessive amounts of CO₂ that cannot be absorbed through natural processes such as plant respiration. CO₂ remains in the atmosphere and is one of the main gasses contributing to global warming.</p>
Greenhouse gases (GHG)	<p>Greenhouse gases are present in the atmosphere that absorb radiation and reflect it back to the Earth as heat. This process raises the earth's temperature and induces climate change. Most common GHG are carbon dioxide, methane (CH₄) and nitrous oxide (N₂O) and fluorinated gases.</p>

4.2 Carbon vs. energy

The two terms, 'energy' and 'carbon' are not interchangeable. The carbon dioxide (CO₂) and other pollution emitted in the air, depends on which fuel is used to provide energy. If the fuel is from a renewable source (a 'clean' fuel) then the carbon emissions are zero or close to zero. A building's 'operational carbon' can be high or low depending on whether the operational energy (used during the use of the building) is from a high or low carbon source. Likewise, if the fuel used to produce and transport building materials is from 'clean' fuel, its 'embodied carbon' (used during the construction, refurbishment and demolition of buildings) is lower than if a fossil fuel is burned or more carbon intense materials are used.

To date, a great deal of effort has been made to reduce the operational energy of buildings and the carbon emissions associated with this. For example, the UK government announced in 2006 that all new residential buildings will be net zero carbon buildings by 2016, that is, carbon emission from operational energy of buildings should be zero. This means that the operational carbon emissions need to be offset with renewable energy production on site and by other measures. It is easier (and cheaper) to offset a building's entire operational carbon when it is a low energy building and uses little energy to begin with.

Material choices are usually defined and considered at the early stages of a construction project. By planning carefully for a building's future maintenance and eventual end of life demolition, embodied carbon can be reduced. However at present, unlike operational carbon, there is no embodied carbon regulation or policy. Yet when considering the environmental impact of a building, as we reduce operational carbon, embodied carbon's impact will proportionally increase.

4.3 Embodied carbon and energy

Embodied energy has been a low-profile issue when it comes to the energy efficiency of buildings, compared to operational energy.

A number of recent review papers of the literature on embodied energy found:

- **Difficulties making comparisons between reported estimates:**
 - "The majority of the studies cited are not comparative, lack the level of detail required to make any comparisons and have inconsistent boundaries" (Monahan and Powell 2011)
 - This is because of inconsistency in methods of analysis, geographic location, age of data and its completeness and the time period over which energy consumption was modelled (Dixit et al. 2012)
- **Embodied Energy as a % of lifetime energy use:**
 - Sartori and Hestnes attributed the wide variation in the percentages reported for embodied energy as a proportion of total lifetime energy to different energy supply and industrial systems and climates concluding that "The differences [between 60 studies in 9 countries] are, indeed, simply too great to allow any further general conclusion" (Sartori and Hestnes 2007)
 - the percentages that are routinely cited for embodied and operational energy as a proportion of lifetime energy should not be applied generally and their reference and source material have to be carefully checked
- **Embodied energy estimates in the UK construction sector:**
 - There appears to be consistency in the estimates reported in research for the embodied energy of different materials and processes in the UK (Monahan and Powell 2011)
 - High rise buildings may have higher embodied energy than other types of building (Sustainable Homes 2014; Atkins Carbon Critical Masterplanning Tool reproduced with permission from Atkins in RICS 2012, p. 9)

Table 8 shows a comparison of several studies on embodied energy to show that embodied energy as a proportion of lifetime energy should be reported with care.

Table 8: Embodied energy as a proportion of lifetime energy

Source	Assumptions	Model Results
Cuella-Franca and Azapagic 2102	<ul style="list-style-type: none"> Common existing UK housing: detached, semi-detached and terraced Cradle to grave Based on 2008/9 energy mix and energy end uses Modelled over 50 years but assuming no change in energy mix, energy efficiency 	<p>Global Warming Potential from these houses proportionally:</p> <ul style="list-style-type: none"> 90% in use, 9% embodied and 1% end of life
Monahan and Powell 2011	<ul style="list-style-type: none"> 3 bedroom semi-detached house Cradle to site Compared embodied energy between traditional (masonry cavity wall) and modern methods of construction (timber frame with larch cladding or brick veneer) Modelled only embodied and primary energy consumed before operation and occupation so no modelling of operational energy 	Detailed estimates of embodied energy for different materials that were consistent with previous estimates from the UK.
Sustainable Homes 2014	<ul style="list-style-type: none"> No models, boundaries or time periods specified Refers to BRE research from 1991 for typical 3-bed detached houses stating that energy in use would overtake embodied energy 	Extrapolates from (out of date study on one type of UK housing) to claim that over 60 years, embodied energy accounts for only about 10% of the lifetime energy use of the building
Plank 2008 cited in Dixit et al. 2012	"Plank (2008) concluded that in the United Kingdom, a heating dominated region, the embodied energy accounts for only 10 percent of the total life cycle energy."	No details given in citation and original paper is pay-per-view. Unclear what type or age of housing, what year the data applies to, the projected lifetime of the building under discussion.

With improvement in energy efficiency potentially contributing to reductions in operational energy use (new buildings may be more energy efficient than older buildings but this does not automatically mean that their occupants will use less energy than those in older buildings) and a shift to renewable sources of energy and electrification of the grid, the percentage of embodied carbon and energy as a proportion of the total life time energy use is increasing. It is particularly significant for design and construction of sustainable homes (Thormark 2002 cited in Monahan and Powell 2011).

In addition, absence of regulations and policy to oversee embodied carbon and energy means that this is a challenging area for the UK's successful transition to a green economy. Indeed, in 2010 the UK Government Low Carbon Construction Innovation and Growth Team recommended to develop a methodology to measure impacts of embodied carbon and energy at design phase of building construction. During 2011 and 2012, a voluntary standard to measure environmental impacts of buildings, the European Standards TC350, which includes British Standards EN 15978:2011 for the assessment of the sustainability construction works, was published (Moncaster and Symons 2013).

There exist various ways to calculate embodied energy of buildings. Amongst the various methodologies, adopting a Life Cycle Assessment model is a recent trend. However, Dixit et al. (2012) point out inconsistency and incompleteness of data used in the LCA based analysis and summarize the reasons why it is difficult to obtain data thoroughly for the LCA in following ways:

- Difficulty and complexity in tracing all environmental impacts of building materials due to physical characters of buildings, variety of building materials used and complexity of construction process
- Difficulty in data collection and interpretation due to long life span and the dynamics of buildings such as alteration, renovation and replacements
- Lack of standards and reliable information in building production and delivery processes

Despite the controversies over a LCA based analysis, the BS EN 15978:2011 which is the most used method for embodied carbon and energy calculations in the construction industry (RICS 2012) as well as the European TC 350 Standards bases on the LCA model.

In BS EN 15978:2011, embodied energy measurement is delimited by 'cradle-to-gate', 'cradle-to-site', 'cradle-to-end of construction', 'cradle-to-grave', or 'cradle-to-cradle' boundaries, which are referred to as 'system boundaries' in a life cycle analysis of buildings (Figure 4). System boundaries show which processes of building construction works are to be included in embodied energy calculations. Cradle-to-gate measures energy use from raw material extraction till manufacture of the finished materials at factory, cradle-to-site from the extraction till transport of the materials to construction site, and cradle-to-end of construction from the extraction to transport, construction and assembly on site. Cradle-to-grave includes all processes over the total life cycle of buildings encompassing raw material extraction, production, delivery to site, assembly, construction, refurbishment and replacement, demolition, and disposal at the end of building life cycle. And, cradle-to-cradle includes cradle-to-grave plus the process to convert the demolished products into new materials.

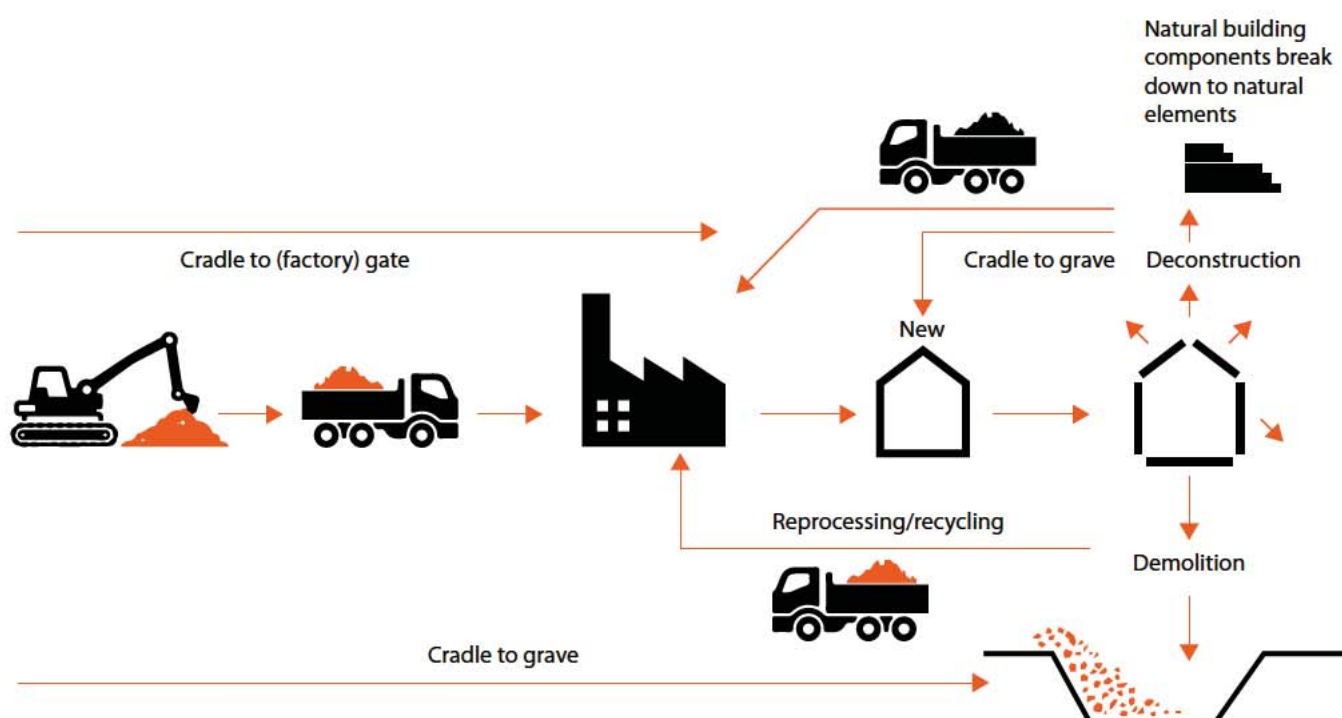


Figure 4: System boundaries in embodied energy analysis of buildings

Dong et al. (2005) compared the embodied carbon for retrofitting or rebuilding three example houses from the 1930s, 1960s and 1980s. They modelled the effects of insulating the attic and basement walls and sealing air leakage. The results should that for a "40-year life cycle, the rebuild option has a lower life cycle energy, global warming potential, and air pollution, which are predominantly associated with building operation. But the retrofit options have lower water pollution, solid waste generation, and weighted resource use, associated with material flows. The retrofit options also have lower life cycle economic costs than rebuilding" (Dong et al. 2005, p. 1051)

Box 6: LCA based embodied carbon calculation at design stage (RICS 2012)

Step 1. Breakdown of building components:

The following building components are embodied carbon-critical and therefore embodied carbon analysis should be carried out by quantity survey and considered primarily when targeting embodied carbon reduction at design stage.

- Foundations
- Basement retaining walls
- Grounds
- Frame
- Upper floor
- Roof
- Stairs and ramps
- External walls
- Windows and external doors
- Internal walls and partitions
- Finishes

Step 2. Cradle-to-gate calculation

When types of building components, their size and number, and building materials are not yet known:

Calculation of embodied carbon of buildings is carried out by multiplying the floor area by the benchmark embodied carbon value. The benchmark embodied carbon values in CO₂e per m² is shown in figure 2 (with residential buildings boxed in red).

When types of building components, their size and number, and building materials are known:

A building material specific cradle-to-gate embodied carbon values are required for the calculation. The value is in the form of kg CO₂e per kg material. It is provided in the product's Environmental Product Declarations (EPDs) or can be obtained from the Inventory of Carbon and Energy (ICE) database from the University of Bath.

The quantity of material to be used can be estimated by multiplying the material density by the building component's volume. Then, embodied carbon is calculated by multiplying the quantity by the embodied carbon value. At last, the sum of the embodied carbon of each building components is the embodied carbon in the designed building.

Step 3. Utilising the LCA outcome

To identify embodied carbon intensive components and materials (RICS 2012).

The outcome of the LCA of buildings can be used to identify materials and building components whose contribution to the overall amount of embodied carbon is relatively high. Also, the building industry provided benchmark value can be used to evaluate the performance of construction project in comparison. However, the benchmark database from the industry is at premature stage, lacking reliability in the data used.

A building's life cycle impacts on environments are greatly associated with decisions made at early building design stages. A study (Cofaigh et al. 1999 cited in Basbagill et al. 2013) showed that wise decisions made on material selection, building shape and dimensioning, and orientation at the early design stage could reduce environmental impacts by 40% comparing to an exemplar of design. An LCA can be used as a tool to assist building designers in optimizing and making decisions about material selection and dimensions of building components to mitigate embodied carbon impacts. However, caution should be paid when utilizing cradle-to-gate embodied carbon analysis. Some cases, even cradle-to-gate embodied carbon of material is low, transport of material to site might increase cradle-to-site embodied carbon of material significantly. Also, though using large thermal mass materials could result in high cradle-to-gate embodied carbon, this may reduce the overall life cycle carbon emissions from buildings because it will reduce the need for cooling and heating. (RICS 2012).

4.3.1 Reducing embodied carbon

One of the common measures recommended for reduction of embodied carbon is to cut down the quantity of building materials. Additionally, RICS (2012) recommends to use "products with high recycled content, e.g. cement replacement materials such as GGBS (ground granulated blast furnace slag) or PFA (pulverised fuel ash)", to implement "low carbon design details, e.g. exposed concrete ceilings; aerated block work; rotary piles; voided biaxial slabs" and to replace with "low carbon alternatives to traditional building products". Figure 5 provides benchmark values for the carbon intensity of different building types.

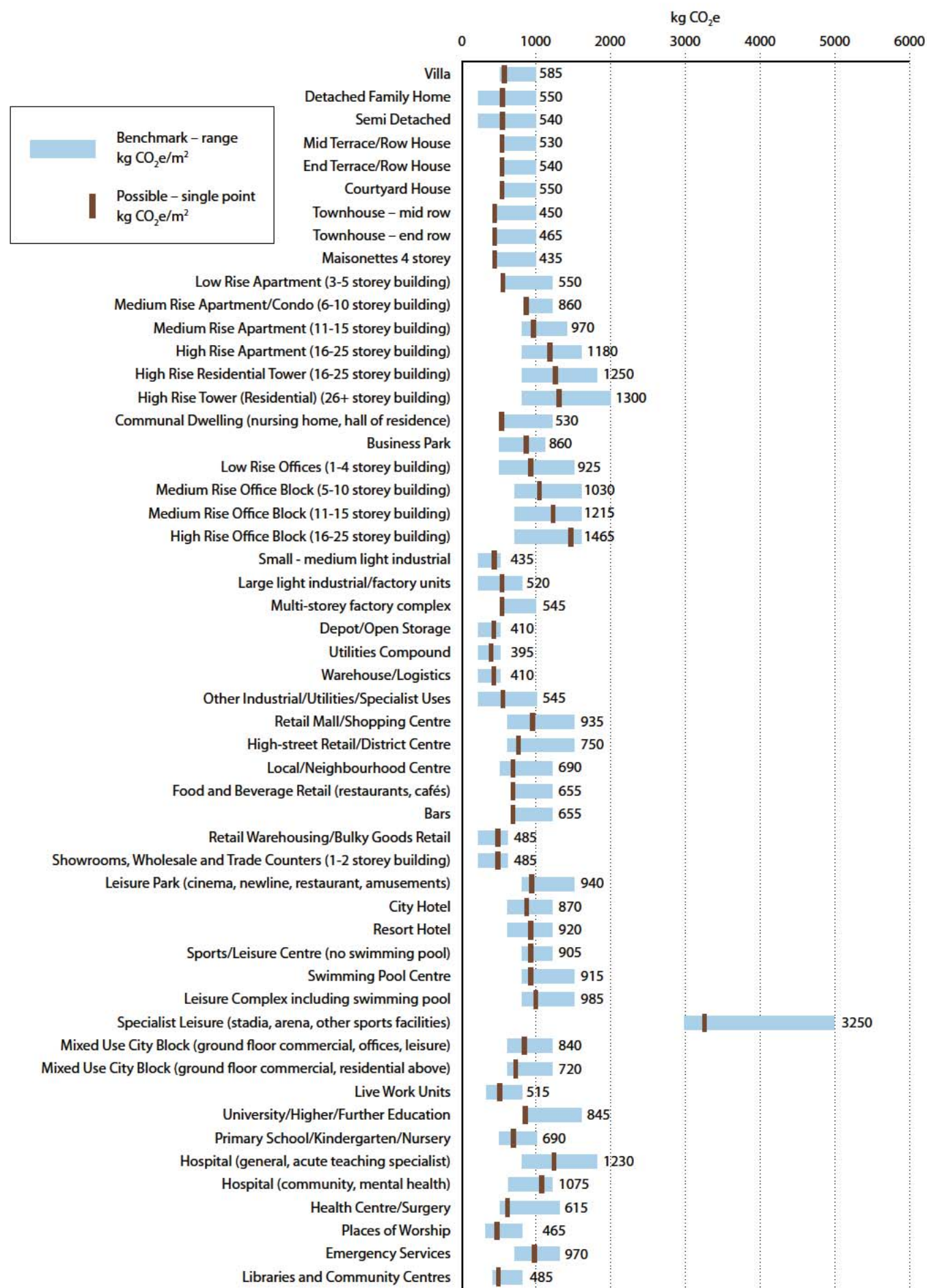


Figure 5: Embodied carbon benchmark values (Atkins Carbon Critical Masterplanning Tool reproduced with permission from Atkins in RICS 2012, p. 9)

4.4 Operational carbon and energy

The operational energy used in homes generates around 25% of the UK's greenhouse gas (GHG) emissions and reducing these is a key strategy for the UK (Palmer and Cooper 2012). As figure 6 below shows, the majority of this is produced heating our homes. The chart shows how the energy we need in our homes is split between different types energy services (called 'end uses') and is based on data for all UK homes in 2012.

Heating is the largest end use, followed by the energy needed for hot water in bathrooms and kitchens. Heating is a currently a key UK policy area with a number of policy and incentives schemes that attempt to reduce the amount of energy needed to keep homes warm, and change the way this energy is generated and supplied (see appendix xx for a list of policies and measures). DECC's 2013 report on heating states that 'the proportion of household energy used for water heating reduced from nearly 30% in 1970 to just 18% in 2011' (DECC 2013, p. 67). This is attributed to energy efficiency improvements such as better lagging and more efficient boilers, but also because we are using a larger proportion of the energy to heat our homes. Water efficiency improvements can also reduce the energy needed for our hot water systems, as is discussed in Section 0.

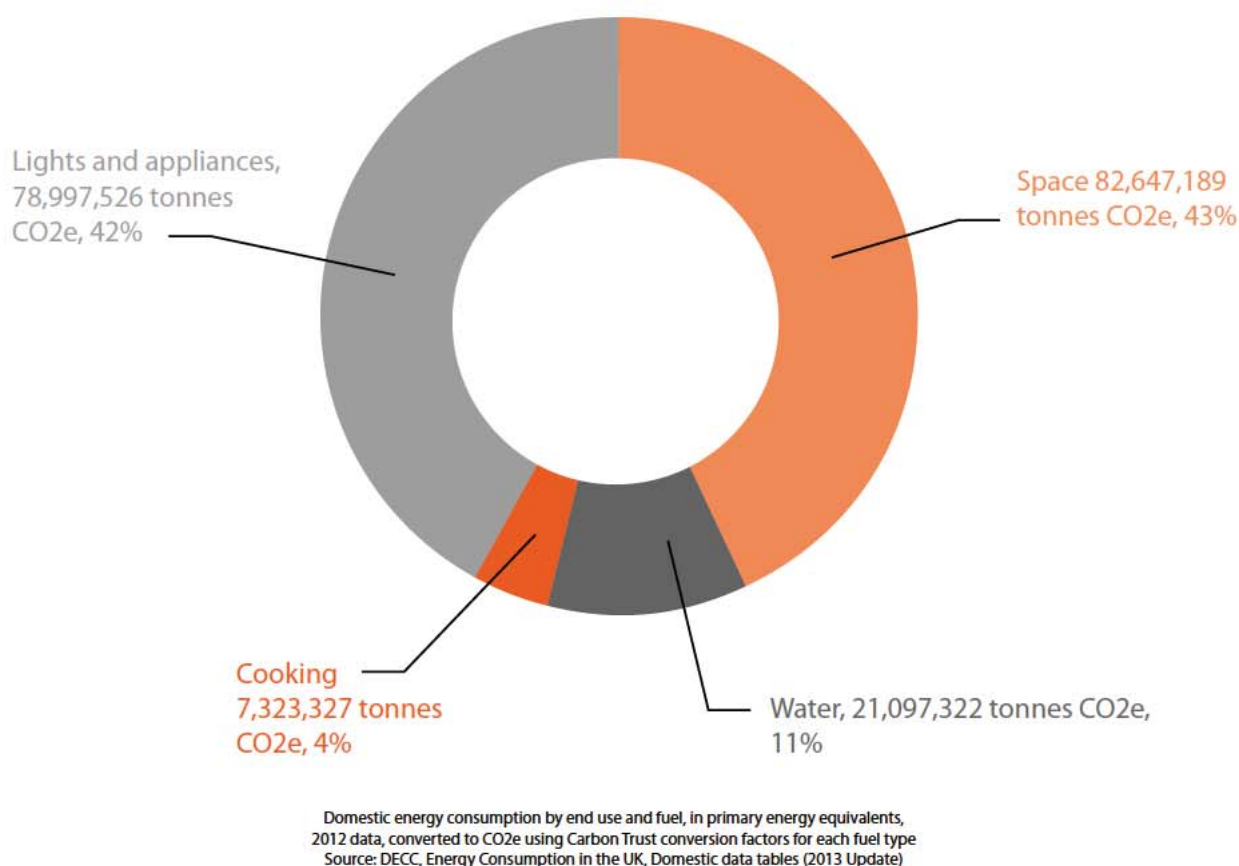


Figure 6: How homes use energy: A breakdown of operational energy by end use emissions for the UK housing stock in 2012¹⁶

The third largest part of a home's operational energy is from appliances. This is rising as we have more appliances in the home. Air conditioning systems are also included as domestic appliances. Cooling is not currently a major demand in the UK and the majority of residential stock uses natural ventilation. Electric air-conditioning currently accounts for less than 1% the energy used in the housing stock's (DECC 2013, p. 71) but this is likely to rise. The issue of ventilation becomes more critical when thinking about the summer overheating. Over-heating has adverse health implications, and raises energy costs through the need for cooling.

4.4.1 Reducing operational energy

Tackling operational energy focusses on two questions:

- How much energy does the building require to keep it warm, dry, lit and ventilated? (operational energy)
- What level of emissions are produced by the energy sources used by these systems that are keeping the building

¹⁶ Carbon Trust conversion factors available at <http://www.carbontrust.com/resources/guides/carbon-footprinting-and-reporting/conversion-factors>

habitable? (operational carbon)

Question one relates to demand side research and focuses on the energy and carbon emitted by the systems in homes and can include studies on specific technologies as well as studies on how people use them; such as behavioural studies focussing on attitudes and awareness of people using appliances (Abrahamse et al. 2005; compared with Darby 2001) and practice theory research focusing on the cultural factors that shape energy use in the home (Shove 2010; Shove et al. 2014; Wilhite 2008). Question two relates to supply side research and draws attention to the fuel sources used to produce the electrical and heat energy used in homes. Currently for UK housing this is predominantly natural gas, which accounts for 70% of the energy supplied to residential buildings (Pyrko and Darby 2010).

The UK government's strategy to reduce CO₂ emissions from the housing sector addresses both questions. It aims to reduce demand through energy efficiency programmes and building regulations, and it aims to switch to lower carbon supply through decentralised energy schemes which build up renewable generating capacity close to the housing source, and through decarbonising the grid supplied energy, for example by generating electricity from lower carbon fuels (e.g. natural gas), or renewables (e.g. wind turbines).

Supply side and demand side policies affect the amount of energy used and GHG emissions produced by new and refurbished buildings, but to different extents. This is discussed in the following sections.

4.4.2 Tackling operational energy through new build

New residential buildings can be designed to use very low levels of energy and make use of low carbon sources. UK building regulations specify the energy performance of new buildings and have become increasingly more stringent since first introduced in 1965. The newest buildings regulations will require all new buildings to be 'Carbon Zero' from 2016. This means the operational energy for new builds should be low and supplied from renewable sources.

The operational energy and associated CO₂ emissions of new buildings is lower than existing buildings. However, as discussed above, when considering the embodied energy and CO₂ emissions associated with the construction, the gains of improved operational performance can be lost over the lifetime of the building. This is particularly important if an old building has been demolished in order to be replaced by a new one. In addition as we switch to renewable sources to supply our operational energy we produce few CO₂ emissions, and the operational carbon of our buildings become less critical.

The reality of constructing enough new houses to accommodate the population also presents an overwhelming challenge, and has significant carbon consequences. New construction will not deliver the number of homes needed by the population, and research suggests that by 2050, 70% of the homes in use will be ones that already exist today (Power 2008). This means retrofitting established building also plays a key role in reducing the amount of energy consumed in the UK and the volume of GHG emitted.

4.4.3 Tackling operational energy through retrofit

It is technically possible to retrofit homes to have the low operational energy and carbon of new builds, as shown by the following case studies in Box 7.

Box 7: Case studies of retrofitting to reduce operational energy and carbon emissions.

1) Wilmcote House, Portsmouth City Council

Portsmouth City Council refurbished 3 **tower blocks, from 1968** with 11 storeys each. The decision not to demolish was based on the high costs of rebuilding and the difficulties of decanting and rehousing residents in the local area.

The total budget for the project was **£13 million**, including ECO funding.

The buildings were retrofitted to achieve **very low operational energy levels** equivalent to current building standards for new buildings (EnerPHit standard). The retrofit included external wall insulation, new heating systems, roof insulation and high performance windows. The **life of the buildings was extended by a minimum of 30 years**, and heating and hot water **costs reduced by 90%**, saving around £750 each year for each dwelling. In addition the refurbishment also rectified structural problems, improved the look of the buildings, expanded living space by enclosing walkways, provided secure communal space and 2 new units on the ground floor (ecda.co.uk, n.d.).

2) Victorian Terrace, Oxford (Retrofit for the Future project)

Two bed terrace owned by Oxford City Council. The retrofit included external and internal wall insulation, loft sunpipe, mechanical ventilation with heat recovery, new gas boiler and solar PV and thermal panels. The results produced an 80% reduction in operational energy, calculated by monitoring post retrofit consumption, and compared to modelled pre-retrofit consumption levels. Annual energy bills are estimated to be under £500

3) Edward Woods Estate, London Borough of Hammersmith and Fulham

Three, 24 storey blocks with 176 homes built in the 1970s. The total budget for the project was **£16.3 million**, with the money generated from the sale of 12 new penthouse flats constructed in the project and grant funding:

- GLA targeted Funding for energy saving £5.24m
- CESP Funding for energy saving £0.60m
- s106 (from previous regeneration scheme) £1.67m
- HRA capital £3.52m
- Capital Receipts £5.10m

Retrofitting existing buildings can provide other benefits, by maintaining the cultural heritage offered by the built environment and the personal attachment people feel for their homes and local communities. Unlike building from new, retrofitting can be quicker, less disruptive to residents and less dependent on dry weather conditions (Power 2008).

The residential sector has been seen by governments as easier to transition to a lower carbon future in comparison to transport and industrial sectors, however implementing a national programme capable of delivering this transition is proving difficult and predicted savings are not being achieved at the required rates (Davies and Oreszczyn 2012). Two key reasons are; firstly the difficulty in achieving the widespread changes needed for the built environment, and secondly the failure of installed improvements to achieve the anticipated savings. The former reason is associated with the need to establish a market and supply chain capable of delivering energy efficiency upgrades and total building refurbishments on a broad scale. The second reason is associated with the complexity of getting the technologies to function as designed (often called 'the performance gap') and understanding how households adjust to living in more energy efficient homes (often called 'the rebound effect') (see Box 8).

Box 8: Performance gaps and rebound effects: the difference between expected and actual operational energy reductions from refurbishment

There is typically a difference between the energy savings expected from energy efficiency upgrade and the savings achieved in practice. For example if an old boiler is replaced with one that is 20% more efficient, the energy needed to heat the home is expected to fall by 20%. However this is often not the case and research specifically on household heating pre and post thermal retrofits identify a set of reasons. These include the complexity of installing and operating low energy technologies in different types of buildings, poorly modelled predictions, different ways that residents understand and use new systems, and how they spend the financial savings they gain (Galvin 2014; Hong et al. 2006; Sorrell et al. 2009).

The Performance Gap: focusing on the technologies

The 'performance gap' refers to the difference between the calculated energy performance of the building as designed, and the actual performance of the building which is measured by monitoring how much energy is consumed by the technology or the building post-retrofit. The difference between the design (or modelled performance) and the energy can vary dramatically, over 200% in one study of thermal retrofit examples in Germany (Galvin 2014). A study of UK homes found that the introduction of new gas central heating systems, although theoretically more efficient had no impact in reducing the amount of fuel consumed (Hong et al. 2006). The Zero Carbon Hub found that issues affecting the performance gap for new construction were: the design process, procurement, construction, commissioning and completion, construction joint details and knowledge and skills (Zero Carbon Hub 2013).

Evidence of the performance gap is helpful in identifying potential problems with a retrofit, but is less helpful in identifying the causes of such problems. Reducing the performance gap requires more research into modelling techniques as well as more research on the design, installation and operation of energy efficiency upgrades.

The Rebound Effect: focusing on the consumers

The 'rebound effect' refers to consumer reactions to energy efficiency programmes. From an economics perspective, energy efficiency improvements make energy services (like heating) cheaper, and so may encourage people to use more, or spend the financial savings on other energy consuming activities (e.g. a household spends less on energy bills, so takes more flights). This means incentivising energy efficiency may not deliver expected energy savings (Sorrell et al. 2009).

Empirical studies of energy efficiency in homes have shown that part of the rebound effect can be explained by occupants choosing to heat their homes more. Milne and Boardman (2000) have argued that 'most households in the UK are not warm enough' and making heat more affordable will help households heat their homes more adequately. This portion of 'rebound' is called 'comfort taking' by DECC (2012) can be recognised as a positive outcome of energy efficiency programmes which are evaluated for their impact on fuel poverty and reducing ill health and not only on carbon savings generated.

However empirical studies have also found that not all increased levels of heating post-retrofit rises in heating are intentional but some are due to poorly installed controls rather than choice (Love 2013; Milne and Boardman 2000). These studies show that the rebound effect can be reduced through better engagement with residents about efficiency upgrades in their homes.

4.5 Demand

Research analysing how to reduce the energy demand of the residential buildings sector includes:

- increasing the uptake of energy efficiency measures;
- improving the technical efficiency of the system, e.g. installing a new boiler;
- improving the operation of an installed system, e.g. by improving the system's controls and helping people understand how to program their heating efficiently;

- switching to a different form of heating system, e.g. removing electric heaters installing a wet system and connecting to a communal boiler or CHP unit; and
- a combination of these.

4.5.1 Space heating

Studies looking specifically at retrofitting heating technologies have found some disappointing results. Analysing the impact of the government scheme 'Warm Front' example more efficient gas central heating did not produce expected reductions in fuel use, even after discounting the 'comfort taking' of fuel poor residents (Hong et al. 2006).

4.5.2 Domestic hot water

This is typically covered as part of domestic heating systems. Water efficiency measures can also deliver energy savings as people use less hot water in their daily activities (discussed in Chapter 5).

4.5.3 Cooling

Overheating problems can be created or increased when high energy performance standards for buildings are achieved that reduce winter fuel costs but which fail to address the impact of summer sun (AECOM 2012).

- Residential buildings built around the 1960s and small top-floor purpose-built flats are prone to overheating.
- Newly constructed highly insulated houses have also been found to have the potential to be at higher risk of overheating than older, less well insulated houses.

Overheating is a risk for both new builds and for refurbished housing unless summer solar shading is provided in the building's design or refurbishment.

4.5.4 The importance of controls

Currently 90% of UK homes have central heating, but of these only 49% have a full set of controls (TVRs, timers and room thermostats) and private rented accommodation is the least likely housing type to have controls (Munton et al. 2014). There is an assumption that improving heating controls (e.g. having easy to use thermostatic radiator valves, timers and room thermostats) will reduce energy used in homes, but the evidence is weak. DECC's 2011 Energy Follow Up Survey found that installers rather than residents are more likely to decide about the controls installed and where they are put. When residents do use their controls the evidence suggest it is to adjust their thermal comfort, rather than save energy (Munton et al. 2014).

This suggests that improving residents' understanding of the equipment in their homes is critical to achieving energy savings and improving thermal comfort (Love 2013). This is an issue which exists for residents in new buildings as well as existing ones, therefore **the retrofit process offers an opportunity to engage residents and help them understand how their homes use energy**. This may not be the case if residents are relocated or purchase newly built flats.

4.5.5 The whole system approach

In addition to investing in individual technologies, upgrades or energy efficiency installations, an alternative approach to refurbishment is to adopt a 'whole system approach' which views the building as a system and seeks to comprehensively rework all aspects to achieve the maximum reductions in operational energy. This approach has been taken on individual homes, as well as on estates such as Wilmcote House and Edward Woodward Estate.

The Technology Strategy Board (TSB) guide to making retrofit work suggests that taking a 'whole system approach' is necessary to achieve significant CO₂ savings (Technology Strategy Board 2014). Through this approach three of the 40 buildings they studied were retrofitted to achieve an 80% reduction of CO₂ and another 23 achieved 50-80% reductions.

With the Green Deal and new Energy Company Obligation, current government policy is trying to encourage a whole system approach, but there are problems with the way assessments are carried out. The assessments should identify a set of measures, but have been found to exclude high cost measures such as solid wall insulation, or floor insulation.

4.5.6 Energy Performance Certificates

Energy Performance Certificates (EPCs) rate a building on an A to G scale (similar to energy labelling for white goods) to reflect fuel costs under standard occupancy conditions. In January 2013 it became mandatory for landlords and owners of new buildings and existing buildings to provide EPCs when homes are sold, leased or rented.

The regulations require an EPC to be given free of charge to the person who becomes the buyer or tenant of the building.

- An EPC shows the energy efficiency rating on an A–G rating scale for a building
- The EPC includes recommendations on how to improve energy efficiency.
- The EPC may also include information showing which of the recommendations would be eligible for finance under the Green Deal scheme.

Social and private landlords **must provide** new tenants with an EPC for their home.

4.6 Supply

4.6.1 Decarbonising the grid

The energy used in homes can produce different levels of GHG emissions depending on the fuel source (also referred to as the carbon intensity of the fuel). Technologies like heat pumps use electricity to provide heating in homes. These can be lower carbon than using oil burning stoves and so can help homes which are not connected to the gas grid become lower carbon.

There are concerns about increasing electricity powered heating given the proportionally high level of coal used in the UK to generate electricity, however Pyrko and Darby (Pyrko and Darby, 2010) have argued that rising UK dependency on carbon intense electricity is pushing renewable energy generation up the political agenda.

4.6.2 On-site renewables

There are a range of technologies that can be used to generate heat or electricity from renewable sources and which are small enough to be used on individual buildings or estate. These include solar photovoltaic cells which generate electricity and solar water heating systems to supply hot water for bathrooms and kitchens.

The government is supporting the development of on-site renewables through building regulations which allow on site renewables to offset the carbon emissions from the energy used by the building's operation. The government is also providing feed in tariffs which means that groups or home owners can earn income by generating low carbon heat or power (see Appendix B for details of the policies)

Box 9: Dumfries and Galloway Housing Partnership (DGHP) and Air Source Heat Pumps (ASHP)

DGHP is a registered social landlord with 10,300 homes, 1 600 of these are off gas grid. In 2011 DGHP successfully competed for the Renewable Heat Premium¹⁷, winning £175 000 to trial renewable heat technologies in 17 off grid rural homes. DGHP retrofitted the homes and trialled individual biomass boilers, Ground Source and Air Source heat pumps. All homes achieved the 2020 CO₂ targets of 42% emission reductions and generated savings on household bills. Tenants with heat pumps were happy with comfort and cost savings, but the biomass boilers were also well liked and were lower carbon. This is because the heat pumps are powered by electricity from the grid which has a higher carbon intensity than biomass.

DGHP decided to install air source heat pumps throughout their off grid stock because it was the most affordable option at £6,000 per installation. Households can expect to save around £340 a year on bills. The housing provider could not afford to spend more on lower carbon technologies like biomass boilers.

If the carbon intensity of the electricity grid is reduced, the homes will also see their operational carbon reduce. An air source heat pump lasts up to 20 years, and grid decarbonisation may take longer than this.

¹⁷ This scheme has been replaced with the Renewable Heat Incentive, see Appendix B

4.6.3 Decentralised energy and heat networks

Decentralised energy and heat networks provide an alternative option to reduce GHG emissions from the housing sector and the UK government is currently supporting the development of heat networks throughout urban areas of the UK (Hawkey et al. 2013; Hawkey 2012). These are not limited to residential buildings, but can include them, providing opportunities for lower carbon heating for new and existing residential buildings. Providing central heating and hot water on a large scale for buildings can be more energy efficient and more cost effective than using individual boilers to heat and provide hot water to every home in a building. However the upfront costs of investing in the infrastructure can mean that this option is excluded from the start, even if the operational and user costs are lower following the installation and the life span of the generating system is longer.

It is easier to lay the underground pipes for a heat network when building from scratch, however new low energy buildings should not require much heat in comparison to existing buildings. This means heat networks can be considered as a retrofit option to help existing buildings reduce their operational carbon levels. Heat networks can provide heating more efficiently and with lower emissions than other sources like electric heating. The network infrastructure has a longer life span (60 years+) than the generating plant used to supply the heat (25 years for gas combined heat and power) and can transition to lower carbon sources over time.

Box 10: Pimlico district heating network

The Pimlico district heating network pipework has lasted for over 60 years and during this time the generating plant has been changed three times. The carbon intensity of the heating supplying these buildings has changed according to the fuel source and efficiency of the generating plant. Today the service provider uses combined heat and power technology which is more efficient than heat only boilers, and which generates income by selling the electricity to the national grid. This keeps the costs down and today residents in Pimlico connected to the system benefit from low heating prices.

Communal heating systems often already exist in social housing, but typically are provided by a 'heat only boiler'. It is more efficient to use a combined heat and power (CHP) unit which generates both heat and electricity. The electricity generated can be used on site, or sold to the national grid with revenue subsidising the cost of the heat produced. The most cost effective time to replace a boiler is when it comes to the end of its life, but investment decisions should take into account the projected savings on fuel use, revenues generated and carbon emissions reduced, not only the upfront capital costs of the technology. Heat networks become more cost effective when including mixed developments and the heat market in the UK is growing, and extending beyond its current focus on social housing.

District heating is an established technology and European markets have developed low cost domestic heat exchangers that give residents control over their individual heating supply and reduce existing concerns around freeloading, overheating and distributional losses. The EU directive on metering and billing transparency comes into force in June 2014 and provides further incentive to upgrade existing communal heating infrastructure (DECC 2014) (see Appendix B for details of heat policies).

DECC is supporting CHP uptake and currently has a £6million fund (November 2013 – April 2015) for Local Authority grants for heat network feasibility studies. A £10million Urban Communities Energy Fund (UCEF) will be launched this year to support communities wanted to generate their own heat and power. Further support takes the form of regulation, for example the London Plan requires developers of new buildings consider the feasibility of connecting to District Heating schemes.

More research is needed to answer:

- Are existing residential estates suitable for heat network extension and what are the costs?
- What are the carbon and financial costs and benefits of removing heat only boilers and adding buildings to heat networks?
- What life time?

4.7 Research on associated issues

4.7.1 Energy efficiency programmes and uptake of measures

As well as regulating building standards, the current UK government approach to increase energy efficiency (EE) uptake in the residential sector relies on the private sector marketing achievable EE gains as cost effective. There are also obligations on energy companies to supplement the lower-income and more rural areas where measure may be less market viable (Hamilton et al. 2014). Innovative financial products (e.g. the Green Deal) have been created to reduce market barriers, but concerns have been raised that other uptake barriers exist (for example the inconvenience of installing EE measures) and that a voluntary programme will not achieve sufficient coverage (Mallaburn and Eyre 2014).

Studies focused on the decisions taken by owner-occupiers have confirmed that home renovations tend to be carried out as part of daily life and fitted into a cycle of wear and tear maintenance. This means measures which improve internal aesthetics such as retrofitting a kitchen or bathroom are more widespread than the installation of measures that are purely for energy efficiency gains such as window fittings and insulation (Gram-Hanssen 2014). However, focusing on the uptake and prevalence of energy efficiency measures in the UK between 2000 and 2007 Hamilton et al. (2014) have shown the impact of regional schemes targeting fuel poverty and social deprivation on getting building fabric interventions (such as wall and loft insulation) into the UK housing. The study also identifies the role of industry standards and building regulations, relating the increase in condensing boilers to the 2005 building regulations amendments.

Research has found that tenure helps explain different levels of energy saving measures installed. Homes belonging to Registered Social Landlords (RSLs) have proportionally more loft insulation installed than other public and private sector housing (Utleay and Shorrock 2008). After this group come owner occupiers then local authority renters, and the worst performing housing is currently owned by private landlords. This illustrates the 'tenant-landlord problem', 'the mismatch between the party paying the costs of installing energy efficiency measures (the landlord) and the party receiving the benefits (the tenant)' (Druckman and Jackson 2008, p. 3179)

This problem is being addressed by incentives such as the Green Deal which spreads the costs of the energy efficiency improvements over the lifetime of the installed upgrade. This means that renters receive the benefits of EE improvements, and contribute to the costs through their bills. When they move on, the next renter will continue to pay for the improvement. Renters can now find out in advance what the energy performance of their home is because Energy Performance Certificates are now mandatory for all new and existing homes that are sold or rented.

From a retrofit or demolish perspective these findings raise a number of issues:

- Cheaper measures may have already been installed by RSLs and Local Authorities (LAs) making the cost of future upgrading higher
- Demolishing existing buildings in the public sector and not-for-profit is less likely to get rid of the worst performing stock.
- Demolishing existing buildings in the public and not profit sectors may have higher embodied carbon because these homes may have proportionally more energy efficiency materials already installed

4.7.2 Deep or shallow retrofit

Without established standards, there remains uncertainty over the level of retrofit that should be aimed for and is achievable. Retrofitting buildings for energy efficiency can range from low cost measures such as loft and cavity wall insulation, to complete refurbishment of the building and energy systems. As discussed above, the cheaper measures are likely to have already been installed by RSLs and LAs.

The Energy Savings Trust has analysed different options in its report 'Roadmap to 60%: eco-refurbishment of 1960s flats', which divides retrofit in low, middle and high cost activities. They find that a 60% reduction in CO₂ emissions by 2050 can only be achieved by 'deep retrofit' measures, requiring extensive work to the building fabric. Their study finds this costs £10,000 per unit, with a turnaround time is six to eight weeks and that there will be additional costs to relocate residents through this period. However deep retrofitting standards were achieved in Wilmcote House without having to relocate residents (see Box 7).

When achieving deep retrofit levels, the embodied carbon of the construction materials and processes becomes more significant, however deep retrofit demands a bespoke design and complex mixture of technologies, structural changes and user engagement to ensure the levels of savings are achieved (Konstantinou and Knaack 2011).

The need for an integrated approach that can bring together the different stakeholders from the construction sector, the housing sector and residents, is recognised as critical to rolling out a wide reaching retrofit programme. Achieving this in practice is hard (BRE and Energy Saving Trust 2012).

In their 2012 report 'Refurbishing the Nation' BRE and the Energy Saving Trust highlight the following points as key to increasing the roll out of refurbishment programmes at the scale required to meet UK climate change commitments:

- Develop refurbishment standards
- Improve skills among smaller and local construction sector contractors
- Design refurbishment in line with local housing types
- Promote easy-to-use and low tech solutions
- Improve funding streams and business case

4.7.3 Retrofit and the green economy

An energy efficient refurbishment industry needs to be developed which is capable of meeting this challenge for the UK building stock to contribute significant emissions reductions and energy savings. A report by BRE and the Energy Savings Trust on this challenge states:

The government estimates that 5,000¹⁸ homes will need to be refurbished per day, in order to meet its 2050 carbon reduction target. Equally, this presents massive employment opportunities, with the Energy Saving Trust estimating that more than 100,000 insulation jobs could be created (BRE and Energy Saving Trust 2012).

4.7.4 Generating income through retrofit

Deep retrofit provides an opportunity for landlords and tenants associations to generate additional income. In the case of the Edwards Woods estate, the refurbishment process added 12 penthouse flats to the buildings which were sold to help subsidise the refurbishment works. The project added solar PV panels to generate electricity for the lifts and corridor lighting so saving the costs of buying this electricity from the grid. It also created new commercial premises on the ground floor let to voluntary organisations (Bates et al. 2012).

Box 11: Feed-In-Tariffs in Brixton Renewable Energy Project

In Brixton, the social enterprise 'Repowering London' is generating income by installing solar panels on the roofs of tower block housing and selling the power to the grid. This community owned renewable generation is supported by government 'feed-in-tariffs' which supplement the sale of electricity (see Appendix B for details and links to the policies, and <http://www.repoweringlondon.org/> for details of the project).

4.7.5 Unintended consequences

Using the building stock as the vehicle to deliver the UK's carbon savings has some consequences. (Davies and Oreszczyn 2012) suggest there are 7 'known, but poorly understood' consequences:

1. Indoor Air Quality (IAQ) problems associated with reduced ventilation: for example, particulate matter, radon, VOCs, moisture (resulting in mites and mould) and environmental tobacco smoke in domestic buildings. This is why good, controlled ventilation is crucial when upgrading or building more airtight dwellings.
2. Higher energy prices due to increased use of decarbonised supply leading to fuel poverty and associated health effects.
3. Energy efficiency improvements without adequate solar shade increasing the risk of summer-time overheating which can result in impacts on health
4. Energy efficiency improvements resulting in increased GHG emissions due to the 'rebound effect'.
5. Changes to the hygrothermal properties of building fabric resulting from ill-considered or executed improvements in thermal properties, causing cold bridges, condensation, mould growth and decay.

¹⁸ Other calculations put this figure at 2,000 buildings a day (26 million buildings over 35 years, every 365 days)

6. The use of distributed energy technologies moving energy generation into urban areas and hence potentially intensifying the urban heat island.
7. Health and safety issues associated with refurbishment increasing the potential for elevated fire risk.

4.8 Key messages

This chapter has reviewed the energy and carbon issues relevant to the debate over whether to retrofit existing housing stock or demolish and rebuild it. The key messages are:

- Existing buildings can be retrofitted to achieve the same energy performance standards as low energy new builds
- The energy performance of both retrofitted and newly built low energy buildings depends on residents' understanding the systems in their homes. Retrofit may provide opportunities for user engagement, but these opportunities are not currently being taken
- The carbon emissions associated with the energy used in homes depends on the fuel sources used. Policies to decarbonise the national grid and to encourage on site and community based low carbon are currently in place and as these increase the relative contribution of embodied carbon of the construction materials and processes for demolition and rebuild become more significant
- Retrofitting existing buildings can provide income generating opportunities
- Social housing currently has more energy efficiency measure installed than housing stock in the private rented sector

5 Water and Waste

Most of the debate about the cost and environmental impacts of demolition compared to refurbishment focuses on energy and carbon, but it is important not to lose sight of other environmental impacts and costs. Construction of new buildings requires water, concrete, steel, timber, glass and many other materials, which all have environmental impacts during their production. A detailed life-cycle assessment of buildings, including building assessment tools such as BREAMM, should cover a range of environmental impacts, including impacts on biodiversity and the use of materials from local and sustainable sources. This review does not address the full environmental impacts of refurbishment or demolition, but focusses on the key issues of water and waste.

5.1 Water

Water is often overlooked in regeneration schemes, but it is a very important environmental issue to be considered in construction, refurbishment and use of buildings. Water is used in construction and by residents during the lifetime of the building, and it is also important to consider how sewage and storm water are dealt with in new or refurbished buildings.

The south-east of England is a water scarce region. London receives less rainfall each year than Rome and Istanbul. On average, water consumption in London is 162 litres per person per day. With a growing population it is important to reduce the amount of water each person uses every day by improving water efficiency. Reducing the amount of water used by the construction sector, particularly in producing concrete, will also help relieve pressure on stressed water resources. A study of an Australian home, with much higher per capita daily water consumption than the UK, showed that water used in construction was greater than the water used directly by the occupants over the lifetime of the building (Crawford and Pullen 2011). 'Embodied water' is therefore more significant than water use in the home throughout its lifetime, in contrast to the current situation for 'embodied carbon' compared with lifetime carbon emissions.

At the same time as we are dealing with water shortages, London's drains and sewers are overflowing because of increased volumes of water running off roofs and hard surfaces during storms. This is caused by paving and building over green spaces, which stop the water infiltrating the ground, and more intense storms, which are consistent with climate change predictions. This additional runoff causes sewers to overflow into the Thames and other rivers, and contributes to local flooding.

Improving how water is managed in housing estates can have many benefits for residents and the local environment. Improving water efficiency in homes can reduce water and energy bills. Better management of storm water can improve local green spaces, reduce overheating and improve residents' health and wellbeing.

This review will consider two water issues in relation to refurbishment or demolition and construction of social housing: water efficiency; and drainage.

5.1.1 Water efficiency

Water efficiency is unlikely to be considered in decisions to demolish or retain housing in regeneration schemes. However, water efficiency should be considered in designs for new buildings and in retrofit and refurbishment programmes. Water efficiency is covered by Part G of the Building Regulations, requiring all new homes to be designed for an average consumption of 125 litres per person per day. Considerable reductions in water use from the current London average of 162 litres per person per day can also be achieved in existing buildings by retrofitting and refurbishment, particularly of kitchens and bathrooms. Bathrooms and kitchens have shorter lifespans than buildings, providing opportunities to install more efficient appliances. There are also a number of measures that can be implemented without the need for full renovation.

Waterwise and the Energy Savings Trust (2012) calculated that retrofitting homes with water efficient shower heads, tap aerators and cistern displacement devices on existing toilets can save 5.5 – 17.5 litres of water per person per day. These devices can be easily installed by homeowners or during a short visit by a trained installer, and they are often provided free of charge by water companies, who are obliged to help customers reduce water demand. For an average household paying for water via a water meter, with 2.3 people these simple measures can result in savings of £29 on their annual water and energy bills, 8,380 litres of water and 36kg of carbon dioxide produced by heating water. For a family of four the annual financial saving is estimated to be around £56.

Higher water savings can be achieved when bathrooms are renovated, such as during Decent Homes improvement programmes. A report by Waterwise (2009) for the GLA showed that approximately 80% of social housing properties had at least one bath but no shower installed. Retrofitting a shower into social housing properties has been shown to save 39 litres per property per day, and replacing old toilets with dual flush toilets can save 61 litres per property per day. Waterwise recommend that mixer showers are preferable to electric showers, which can increase residents' electricity bills.

Box 12: Tap Into Savings

The Tap Into Savings programme was run by Waterwise and Global Action plan, in partnership with water companies and social housing providers in Surrey, the West Midlands and Essex in 2010 and 2011. Working with EcoTeams of residents, more than 4,500 homes were visited and provided with water and energy efficiency devices and advice. The programme resulted in an average daily saving of 40 litres per home (Waterwise 2012).

5.1.2 Drainage

Overflowing drains and localised flooding during rain storms can be amongst the most unpleasant and dangerous experiences for residents. Broken, blocked or under-capacity drains can be part of the justification for demolition of housing where repair or replacement is costly. Replacing and repairing drains can be difficult and expensive where they are buried underground or difficult to access within buildings.

Social housing providers are responsible for drains on their properties and must maintain them in good order, but these drains connect to sewer networks owned by Thames Water. Managing surface water is also the responsibility of Local Flood Authorities, and Local Authorities also have an increasing role to play in managing drainage through the planning process.

New developments and regeneration schemes will be required to include Sustainable Drainage Systems (SUDS) wherever possible. SUDS aim to reduce the amount of water flowing into the sewers, which helps to prevent flooding and overflows. SUDS measures include green roofs, rainwater harvesting systems, permeable paving, rain gardens and using green spaces to store water temporarily during storms. These measures can also provide water for gardening or toilet flushing, reduce overheating in summer and improve the quality of the local environment. Islington Council is also promoting SUDS as a means of reducing subsidence, which affects a number of homes for Islington properties (Islington n.d.).

Retrofitting SUDS to existing buildings and estates should be considered in any regeneration scheme. Retrofitting SUDS can alleviate drainage and flooding problems by reducing the volume of water flowing into local drains, thus reducing the need for demolition as a means to solve drainage problems. For instance, if the volume of water flowing into drains can be reduced by retrofitting a green roof or rainwater harvesting systems, then existing drains will be able to function more effectively.

The GLA, Local Authorities, Local Flood Authorities and Thames Water are all interested in promoting SUDS in London, and can provide guidance and funding for SUDS schemes on social housing properties. SUDS measures can be cost beneficial over their lifetime compared with conventional drainage solutions. Permeable paving and green roofs have been shown to be less costly than conventional options over their full lifecycle due to extended lifetime and lower maintenance costs (Gordon-Walker et al. 2007, livingroofs.org n.d.). Rainwater harvesting provides an economic benefit through reduced water charges (Gordon Walker et al. 2007). Subsidies and grants for improving adaptation to climate change and reducing storm water runoff can contribute to financing SUDS schemes.

Box 13: Ethelred Estate Green Roof

In 2005 the roofs of 10 buildings, comprising 253 flats, on the Ethelred Estate in Kennington were replaced with green roofs. The Ethelred TMO opted for green roofs as they offered a lower life-cycle cost compared with conventional roofs. They also provide additional benefits including reduced storm water runoff (livingroofs.org n.d.).

5.2 Waste

Construction and demolition in the UK generate the largest amount of waste each year of any sector. In 2008 the construction sector generated more than three times as much waste as households, accounting for 35% of all waste generated in the UK (DEFRA 2011). A further 30% of all UK waste in 2008 came from the mining and quarrying industries, with approximately 84% mineral extraction used to provide materials for construction (Cuella-Franca and Azapagic 2012). Waste management in the construction sector has improved considerably in recent years due to policy changes related to the EU Landfill directive. In 2010 73% of construction and demolition waste in England was recycled as aggregate (DEFRA 2012), with 4.28 million tonnes sent to landfill (Hobbs 2012).

Using recycled aggregate in new construction reduces waste to landfill and the environmental impacts of new construction. A study of UK houses showed that recycling materials at their end of life reduced global warming potential by 2-3% (Cuella-Franca and Azapagic 2012). Refurbishing existing buildings avoids demolition waste to landfill and reduces the need for new materials, particularly concrete, steel and bricks. This also avoids costs associated with landfill, recycling and new materials.

Box 14: Daneville Estate, Liverpool

The Daneville Estate is owned by Liverpool Mutual Homes (LMH) and consists of 600 properties. Tenants and residents of the Daneville Estate were consulted regarding options for regeneration and it was decided to refurbish rather than demolish all properties, including 63 homes which had been vacant for 30 years. Refurbishment was shown to be cheaper than demolition and new build, and avoided producing 45,000m³ of demolition waste. Structurally unsound homes were refurbished using a structural external wall insulation system, which avoided demolition as well as improving energy performance (Wrap UK 2012)

5.3 Key messages

Water and waste are often overlooked in decisions about retrofitting or demolishing homes as part of urban regeneration schemes. This section has addressed these issues and the key findings are:

- Considerable reductions in water use can be achieved by refurbishing bathrooms and kitchens.
- New developments and regeneration schemes will be required to include Sustainable Drainage Systems (SUDS) wherever possible in order to reduce the amount of water flowing into the sewers. This in turn can reduce the need for demolition to solve drainage problems. Retrofitting SUDS and other green infrastructure to existing buildings and estates should be considered in any regeneration scheme.
- The construction sector generates 35% of all waste in the UK; waste reduction is thus a key priority. Waste management has improved considerably, with 73% of waste from construction and demolition recycled as aggregate. Using recycled aggregate in new construction reduces landfill waste and the environmental impacts of new construction. Additionally, recycling materials at the end of houses' lives may reduce the potential to contribute to global warming by 2-3%.
- Refurbishing existing buildings is the best way to reduce waste: this avoids demolition waste and reduces the need for new material, avoiding associated costs of landfill, recycling and new materials.

6 Residents, Communities and Wellbeing

The decision to demolish or refurbish housing clearly has major impacts on residents and the wider community. Regeneration projects broadly aim to improve living and economic conditions, but the means to achieve this and the distribution of costs and benefits are often highly contentious. This section explores the impacts of demolition and refurbishment on residents and communities from a health and wellbeing perspective.

6.1 Wellbeing

The decision to demolish and relocate residents in social housing is contentious and has been debated not only in the UK but elsewhere. Public housing in America carries the same debate (Cooper et al. 2014). Some have called for residents to stay in place, particularly since the early 2000s (Cooper et al. 2014). Evidence on the relationship between housing and wellbeing is emerging but further research in this area is needed before clear conclusions of the relative benefits of refurbishment compared to demolition and rehousing.

A number of frameworks for the assessment of wellbeing exist. Whitehead and Dahlgren's (1991) holistic 'determinants of health and wellbeing' on neighbourhoods has been selected for this review, and is shown in Figure 7

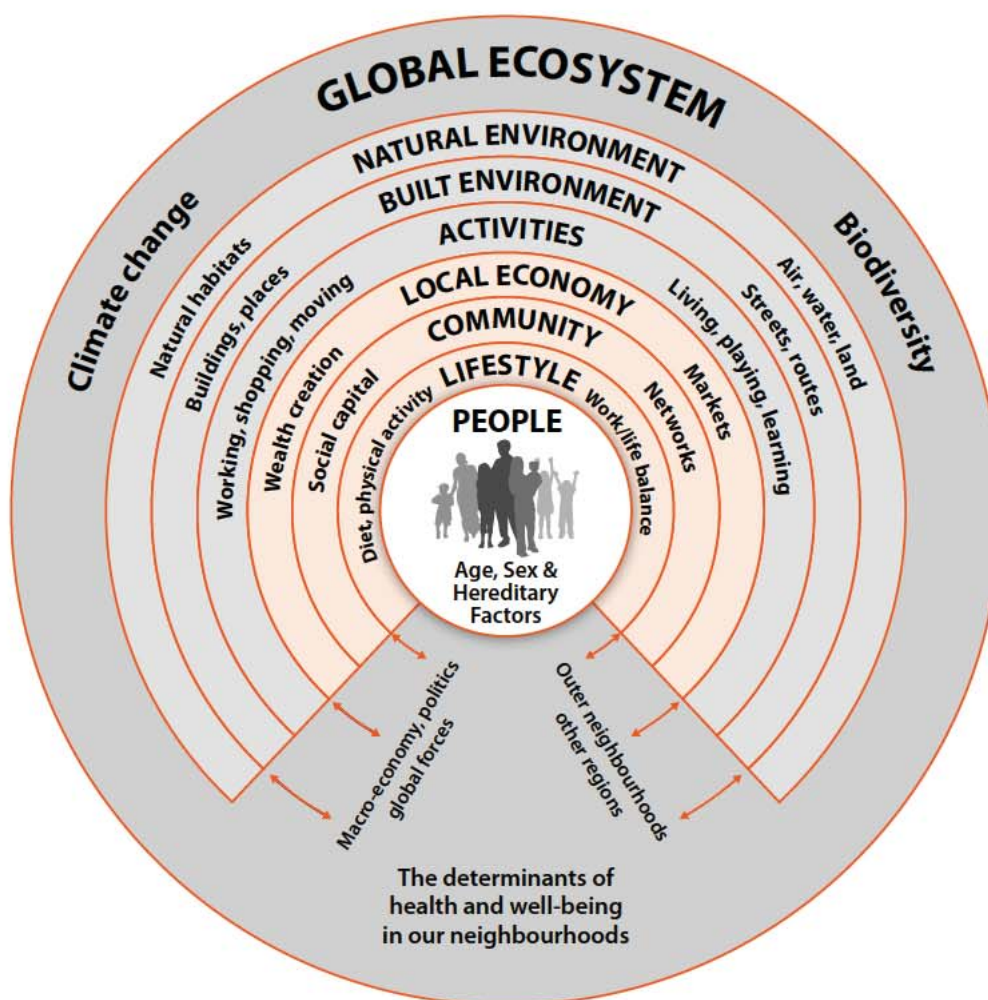


Figure 7. Holistic framework of health and well-being (adapted from Whitehead and Dahlgren (1991))

The six domains outlined in this framework (natural environment, built environment, activities, local economy, community and lifestyle) have been used as indicators against which to collate the literature on demolition or refurbishment.

The literature review is based on searching the PubMed database¹⁹ and personal communication with experts in the field (pers. comm. Peter Craig and Hilary Thomson at SPHSU on 14/05/14, and Matt Egan and Mark Petticrew at LSHTM on 21/05/14).

Relevant results have been summarised using the six domains of wellbeing. A number of search results returned literature related to housing and health and not necessarily demolition or refurbishment, which have been omitted. The literature reviewed included meta-analyses, in-depth case studies and review or comment pieces in peer-reviewed journals and reports.

6.1.1 Natural environment

While this report has focused on the built environment and its relationship to wellbeing, the natural environment also plays an important role. Literature linking demolition and refurbishment to wellbeing from the perspective of the natural environment appears to be limited. Demolition could provide an opportunity for green space in otherwise dense, concrete urban areas. The likelihood of demolition leading to conversion of the land use to green space is debatable given the value of land in inner city areas and this land value as a driving factor for demolition. There appears also to be limited evidence on the short and long term (or intergenerational) impacts on wellbeing of waste entering the natural environment as result of demolition.

6.1.2 Built environment

This section has been divided into internal space, high rise and sense of place.

Internal space

Issues of internal space have been raised by the literature. Positive impacts for people that move into dwellings with more space have been reported (Thomson et al. 2012). However older housing tends to have more generous standards of space than new build (Power 2010); reducing the likelihood that residents will move into larger homes when relocating after demolition.

High rise

There is a lack of research assessing the health effects of changes in housing type on wellbeing (Thomson and Petticrew 2005) with the exception of high rise. While this review found a number of sources looking at the health and wellbeing impacts of high rise housing the findings were mixed.

A number of sources highlight that high rise living has been linked to poor mental health and stressful conditions including social isolation, crime, reduced privacy and a lack of opportunities for children to play safely (Thomson and Petticrew 2005). However other reviews have stressed the limited evidence base, lack of clarity and ability to establish any causal link (Thomson et al. 2012) (Thomson and Petticrew 2005). Findings in this area of literature can also be contradictory, for example, one study found that living in high rise is actually more disadvantageous for adult-only households compared to families or elderly households (Kearns et al. 2012).

Positive impacts of living in high rise further counter the traditional link of high rise to poor wellbeing. Interviews with residents indicate that some enjoy the views and security offered as a result of living on higher floors citing this as their main reason for wanting to stay in their accommodation (Kearns and Darling 2013; Lawson and Egan 2012). In addition, high rise living reduces commuting time (where it is located close to employment) and can ensure sufficient density to support local businesses (Thomson et al. 2012), this can improve social integration (Power 2010).

Sense of place

Two studies commented on the negative impacts demolition has in terms of sense of place. Demolition sites are often unsightly and generate poor perceptions of an area which affects resident morale and local businesses (Power 2010). The physical deterioration associated with demolition sites can also be detrimental for social relations (Mason et al. 2012).

¹⁹ Pubmed is a free search engine that can be used to access various medical databases. Search terms can be used to find references and abstracts on topics in life sciences and biomedicine. Twenty seven combinations of search terms were entered into the database, 'demolition and wellbeing' resulted in the largest number of hits (224) although a large number of these were deemed as irrelevant. Demolition, refurbishment, social capital, social networks, social cohesion, health and wellbeing were all searched for in various combinations.

6.1.3 Activities

Although some residents after demolition and relocation report improved educational opportunities (Thomson et al. 2012), demolition can be detrimental to local services and community facilities as a number may leave the area as a result of demolition (Power 2010). One case study looking at demolitions in Chicago noted that demolition and relocation may have net zero effect on education (Jacob 2003). On the other hand, refurbishment of housing has led to reductions in reported absences from school and work (Thomson et al. 2012). Renovation may also be less disruptive as area services can usually continue to operate (Power 2010).

6.1.4 Local economy

Those that move from deprived areas to improved housing in middle-income areas reported an increase in employment opportunities (Thomson et al. 2012) however demolition can negatively affects businesses over a wider area (Power 2010). In comparison renovation and infill building as opposed to large-scale demolition and new build supports local economic development as it involves reinvestment in declining neighbourhoods using small locally based building firms that usually hire local workers. In a context of high rates of economic inactivity in urban areas, despite low official unemployment, this development can generate new jobs, skills and motivation within demoralised communities (BMVBS 2007; Winkler 2007).

There is evidence from research, practitioners and policy makers that refurbishment of buildings significantly contributes to job creation. The Energy Saving Trust's Home Economics Report from 2011 estimates that over 100,000 jobs can be created via the insulation industry for existing housing (Energy Saving Trust 2011). A study commission by the European Climate Foundation in Hungary found that employment benefits are higher when the refurbishment of the building has higher energy saving specifications. Job creation through the refurbishment market will significantly benefit small to medium businesses as these are the ones most involved in refurbishment and retrofitting interventions in the UK (Killip 2013).

6.1.5 Community

This section has been subdivided in line with distinctions made in the literature into: general impacts, perceptions and satisfaction. This review treats the term 'community' as a broad theme covering notions of social capital, social cohesion and networks.

General community impacts

Some studies suggest residents see demolition as an opportunity for a fresh start in a new area with new social relations (Patalia and Rushton 2007). In the GoWell study conducted in regeneration areas of Glasgow, aspects of community were rated higher for those that moved out of the area after demolitions (Go Well 2011) leading to the conclusion that relocation after demolition can stimulate neighbourliness and greater social support (Mason et al. 2012). This evidence runs contrary to the more typical opinion that demolition leads to or further intensifies existing social blight (Lopez 2009); or to the fragmentation of existing communities that hold considerable social value (Power 2010).

It must be emphasised that the balance of evidence is inconclusive on the positive impacts of demolition on communities. In the same GoWell the 'remainders' (the groups of residents that stayed in the area) experienced decline in their social environment with reduced social contact, degradations in levels of trust in each other and a loss in their sense of safety (Mason et al. 2012). However findings are mixed as those that remained also reported a greater sense of social harmony. Residents also expressed increased levels of anxiety when moving away from an area where they had existing social relations. This was in spite of the improvements expected from the demolition (Lawson and Egan 2012). Additional meta-analysis reviews of literature further support this claim (Thomson et al. 2012). Refurbishment case studies have demonstrated an ability to improve social relationships (Lawson and Egan 2012), this is especially particular of warmth improvements (this may be due to improvements in usable space although causal links between warmth improvements and improved social relations are not completely clear), (Thomson et al. 2013; 2009)²⁰. Whether and how these impacts might translate into health improvements has yet to be determined (Thomson and Petticrew 2005).

²⁰ Although it should be noted that this could only be because warmth and energy efficiency was studies – there may be additional social benefits from other refurbishment interventions.

Perceptions

Demolition is not always perceived negatively by residents. As already mentioned, some residents have perceived relocation post-demolition as an opportunity for a fresh start and have reported a greater likelihood of being able to make changes such as starting a new job as a result of this new start (Lawson and Egan 2012). Indeed, improvements in general appearance of an area post demolition are linked to increased levels of neighbourhood satisfaction (Petticrew et al. 2009; Kearns and Darling 2013; Go Well 2011). Negative perceptions of an area may also be a driver for residents to be happy to move (Kearns and Darling 2013). In contrast, resident perceptions of an area have also been reported to decline after demolition. This was found in Wave 2 of the Go Well study with the most notable decline being in relation to overall condition, overall space and external appearance of the home (Mason et al. 2012). Residents perception of control is an important factor in overall perceptions of demolition, the Go Well study found people were less satisfied with demolition and relocation if they had a limited capacity to make choices. One study noted how residents often felt the decision to demolish had already been made when they were consulted (Kearns and Darling 2013), this could affect satisfaction as residents may have already resigned to the notion of demolition. The temporal relationship between demolition and resident perception and satisfaction is of interest, however few studies have mapped how this changes over time – this may be an area worth exploring in further detail.

Satisfaction

Living in an area of poverty or decline can have a self-perpetuating effect on resident satisfaction (Davidson et al. 2008) and may be a reason why those that relocate have positive perceptions of demolition. As already mentioned, there are a limited number of case studies assessing perceptions of refurbishment works post-completion. Some studies have sought to understand which aspects of regeneration have the biggest impact on resident perception. One report found that the extent to which residents view demolition or refurbishment negatively depends in their own housing intentions, the process of movement and degree of control they have and their own personality and disposition (Lawson and Egan 2012).

6.1.6 Lifestyle

This section focuses on health indicators and has been divided into physical and mental health. Evidence on the links between general housing quality and health is emerging. The BRE Trust commissioned a report to create a methodology of calculating the health costs of poor housing. The report found that if works were done targeting the worst health and safety hazards in the poorest homes in the UK the NHS could make savings of £56 million a year (Garrett et al. 2014). Tyler et al. (2012) have also tried to value and estimate the expenditures on community development and homelessness.

The specific health impacts of demolition or refurbishment also remain poorly understood (Thomson et al. 2012). Positive impacts of relocation following demolition on self-reported health are small (Petticrew et al. 2009), although studies suggest this may be because evidence has been measured using time periods that are too short: longer term studies may show greater health impacts (Thomson et al. 2007). There is uncertainty around who benefits from demolition: some studies report increased improvements in health but do not highlight that this increase is experienced by a different population (Thomson et al. 2012).

The health impact of demolition on the elderly has been described as negative (Power 2010) with the importance of being able to age in place emphasised (Windle et al. 2006). Indeed, the announcement of demolition has been shown to have a detrimental impact on health. One study recorded the changes in GP consultation after announcement of demolition, claiming that after adjustments had been made for other changes in health that consultations increased by 20% (Halpern and Reid 1992). The process of moving has been described as a stressful and health damaging event by some literature, this is compounded if residents are not fully informed due to a sense of uncertainty and lack of control (Thomson and Petticrew 2005).

Refurbishment generally tends to have more positive association with health with few reports showing adverse effects of refurbishment (Fenwick et al. 2013; Thomson et al. 2009). A number of studies have measured the effects of warmth and energy efficiency improvements on health and have shown these to be positive post completion of the works (Bryson et al. 2007; Chapman et al. 2012; Gilbertson and Green 2008; Howden- Petticrew et al. 2009; Thomson et al. 2012).

Physical health

While links between housing and general health has been covered in limited detail there are fewer studies that link health impacts of demolition or refurbishment to specific physical conditions most probably due to the difficulties around measurement. Respiratory health is often discussed in this area. Most studies seem to link warmth and energy efficiency refurbishment with positive effects on respiratory health (Thomson et al. 2012) although some have highlighted negative impacts and emphasise the conflicting evidence (Thomson and Petticrew 2005).

Mental health

The WHO report mental health issues to be one of the world's biggest diseases. The relationship between mental health and housing it is poorly researched and some have called for this to be outlined as a new field in research (Popkin et al. 2002).

The evidence around the impacts of demolition and refurbishment tends to favour refurbishment. Positive links between demolition and improved psychosocial health have been found in the Go Well study in Glasgow (Go Well 2011). A study of residents in Atlanta found significant improvements in depressive symptoms for those that relocated although they stress the validity of this evidence as they had no control group to compare these depressive symptoms with (Cooper et al. 2014).

These positive links are countered by a number of studies. Deterioration in feelings of vitality, increase in self-reported stress, anxiety and depression have been acknowledged in existing literature reviews, particularly when feelings of control are limited (Mason et al. 2012). A lack of information and control leads to uncertainty and feelings of powerlessness by residents which have knock on impacts on mental health (Bryson et al. 2007; Cole and Flint 2007).

In contrast many studies have reported positive impacts on mental health post-refurbishment works (Thomson et al., 2012). There are a number of reports analysing the impacts of the Warm Front Scheme on mental health, all of which found positive improvements of mental health for residents (Gilbertson and Green 2008; Howden-Chapman and Chapman 2012; Webb et al. 2013).

Box 15: Go Well Project, Glasgow

Go Well is a research programme investigating the effects of housing renewal strategies in Glasgow on the health and wellbeing of communities. It is collaboration between Glasgow Centre for Population Health, the University of Glasgow and the MRC/CSO Social and Public Health Sciences Unit.

The programme is planned to take place over the course of 10 years (2005 – 2015), this provides opportunities for much needed studies into health and wellbeing that take place over a longer term period. A large number of studies have already been published and can be found online at <http://www.gowellonline.com/>.

The studies focus on six regeneration areas in Glasgow and compare impacts between 2 cross sectional samples of residents. The 'outmovers' are those residents that have moved out of the regeneration areas and the 'remainers' are those that have lived in the same regeneration area since 2006. As part of the regeneration strategy 19,100 demolitions are planned.

6.1.7 Discussion

A number of issues have emerged as a result of conducting this review.

Weak evidence base

This review has highlighted the weak evidence base linking the impacts of demolition and refurbishment to resident wellbeing. Although this study has found some sources indicating impacts of demolition and refurbishment on wellbeing many of these sources, particularly those that conducted systematic literature reviews, noted that the evidence base linking housing improvement to health is weak (Petticrew et al. 2009). Additionally, the 'extreme heterogeneity' and poor quality of data limits opportunities to synthesise existing data and while the quantity of studies has increased in recent years – albeit marginally - the difficulty in synthesising remains (Thomson et al., 2001; 2006; 2009; 2013). The impacts of warmth and energy efficiency improvements in health has is being increasingly reported most probably due to the growing interest at a government level in retrofit as a means to curb the impact of the contribution of existing housing to GHG emissions.

Housing renewal, demolition and refurbishment are poorly distinguished

There was difficulty distinguishing between refurbishment and demolitions when reviewing some of the literature. Many sources include housing demolition as part of their assessment of housing improvements thus making it difficult to draw any clear conclusion. This was the case with a number of sources that were systematic reviews including Thomson et al. (2012) and Thomson and Petticrew (2005).

Short term vs long term

A number of sources indicate the differences in long term and short term health impacts and the need to distinguish between them. One study describes their inability to detect long term health impacts as a limitation and recommends more studies with longer follow up periods (Thomson et al. 2013). This study also recommends looking at impacts on socio economic determinants of health as a valuable indication of the potential for longer term health impacts. The long term and short term health impacts may be an important distinguishing factor when considering demolition or refurbishment.

Evidence gaps

There were a number of gaps in the literature which again supports the idea that this area of research lacks clarity. This is particularly apparent in the literature discussing the impacts of high rise on wellbeing.

Box 16: Fusion 21, Merseyside

Fusion 21 are a procurement consortium based in the Wirral, Merseyside. They provide training and skills to the local community in retrofitting buildings. For example, their work with the Helena Partnership generated 119 jobs: <http://www.fusion21.co.uk/case-studies/procurement/helena-partnerships-founder-member/>

6.2 Resident empowerment and involvement

Studies advocate for improved community engagement in housing renewal projects and that this is an essential component in ensuring residential wellbeing. This was emphasised in a number of reports reviewed through the WHO survey on housing and health (Thomson and Petticrew 2005).

Studies linking mental health to regeneration strategies – both for demolition and refurbishment - have noted the stress and anxiety invoked on residents as a result of poor or little information and uncertainty in regeneration plans for the area (Bryson et al. 2007; Cole and Flint 2007; Halpern and Reid 1992; Kearns et al. 2012; Mason et al. 2012).

A number of case studies demonstrate this:

- Residents in East Baltimore reported a lack of notifications and awareness around the plans for large scale urban development, this prompted a report into residential demolition practices (Bowie et al. 2005)
- The majority of tenants interviewed as part of one of the Go Well studies had not been involved in the consultation process on plans for the area. Most residents seemed surprised about being asked whether they had been involved in demolition proposals and options for the area as they saw this something the Glasgow Housing Association would decide. A number of residents felt the decision to demolish had already been taken and that their participation in meeting would not have made any difference (Egan and Lawson 2012; Kearns and Darling 2013).

This lack of involvement by residents has tentatively been suggested as a failure to empower residents and achieve any sense of community ownership from the housing improvement process (Kearns and Lawson 2009).

Information campaigns have been shown to be an important component when involving residents (Lawson and Egan 2012; Popkin et al. 2002; Howden-Chapman et al. 2005). However there are additional barriers to community participation that must be considered (Marmot 2010).

Addressing the concerns of residents reduces the negative short term impacts on mental health and helplessness (Egan and Lawson 2012) while also contribute in the long term to more sustainable communities (Howden-Chapman and Chapman 2012). It is in the interest of policy makers, local authorities, social landlords and others responsible for the implementation of renewal schemes to consider such issues. Failure to do so limits the capacity of urban renewal schemes in improving communities (Huxley et al. 2004).

Box 17: Hope IV, USA

The HOPE VI housing plan is a scheme instigated by the US department of housing and urban development in 1992 and still in operation. Its aim is to regenerate social housing projects in America that are considered to be the worst in the country. A core driver of the scheme is to relocate residents from this housing into mixed-income developments. A number of sources found in this review studied HOPE projects in different US cities and have come to various conclusions.

- A report on the demolition of public housing in Atlanta under the HOPE VI project found that while there was strong support for demolition and redevelopment from HUD department and Atlanta city officials, there was also strong opposition from public housing resident groups. Despite this opposition plans were approved for the demolition (Oakley et al. 2013). While the study did find that residents were happy with their housing improvements post relocation it also advises policy makers that resident satisfaction is not linked to perception of neighbourhood level characteristics. This supports the arguments against displacement of communities as a result of demolition.
- Another study identified the concern residents had as to how they were treated as a group of public housing tenants. The level of appropriate treatment from authorities affected residents overall satisfaction with the scheme. This was found to be of greater priority than their individual situations and outcomes (Goetz 2013).
- Some respondents in studies have also been found to express a wish to return to the regenerated development post completion. This was more likely to be the case for residents who had been living there longer, were receiving disability benefits or were older. Confusion, suspicions and mistrust were identified as major challenges at different HOPE schemes. Further research into the mental health impacts associated with displacement and relocation were recommended (Popkin et al. 2002).

6.3 Health inequalities

Poor housing quality has long been known to have a negative impact on the health of individuals and the public. The analysis of health inequalities in the UK shows reduced life expectancy and poorer health outcomes for those on lower incomes in the UK compared to those who are better off. The Marmot Review was one of the key reports analysing this problem, and strongly advocates improving existing housing conditions as a means to reduce health inequalities in society (Marmot 2010)

Various studies reviewed for this report also highlighted the potential housing interventions carry in reducing health inequalities (Thomson et al. 2009; Macintyre et al. 2003). However, failure to report the differential impacts of housing interventions on social and economic inequalities makes current evidence base in this area weak (Thomson et al. 2013). This is important to note for future studies into the impact on housing improvements.

6.4 Key messages

It is difficult to draw clear cut conclusion in favour of refurbishment or against demolition as a result of this review. This is due to the poor evidence base as indicated by a number of well-regarded sources along with limited reliability and poor distinctions between demolition and refurbishment.

While the community impacts of demolition and refurbishment are especially mixed the lack of adverse health impacts of refurbishment on mental and physical health indicators provides additional support for housing improvements favouring refurbishment over demolition.

Understanding the impact of demolition or refurbishment on residents is complex as health and wellbeing is broad and interdependent on many different factors. Most of the studies surveyed have addressed this and made clear that there is an apparent gap in understanding this. Much needed research is needed to clarify mixed findings and ambiguity on the literature.

Refurbishment increases comfort for the individual. Reports show improved physical and mental health as a result of refurbishment, particularly around energy based improvements. At the community level, reports suggest a reduced sense of isolation and that social capital can be maintained as a result of refurbishment. However this is not always guaranteed particularly if the neighbourhood and surroundings remain in decline. Housing improvements have to take place alongside other area based interventions in order to be truly effective and to reach maximum potential. Such an approach requires multidisciplinary collaboration with different departments in local authorities working together.

There is some evidence that relocation post demolition can improve wellbeing, particularly if the resident moves to an area with improved socio economic characteristics. Challenges have also been made to traditional perceptions of breaking up community networks as a result of demolition with some studies showing an improvement in social relations. However, demolition and relocation can also compromise the mental health of residents with evidence of increased reporting in stress, anxiety and depression post demolition. This stress is linked to feelings of powerlessness and the lack of control or opportunity to engage with the housing authority about the move.

This suggests that involvement of the community in the decision making process, regardless of the outcome, is essential in order to reduce impacts on wellbeing, particularly mental health. Social factors therefore must be incorporated into the decision making process.

7 Conclusions

The case studies and evidence reviewed in this report indicate that refurbishment of social housing can deliver significant improvements in energy, environmental and health performance, leading to costs savings and improved living standards for residents. The overall lifetime costs of refurbishment may be lower than demolition and construction, with less disruption to local communities and residents. Engaging residents in regeneration decisions has resulted in successful refurbishment of a number of hard to treat social housing properties and estates in different parts of the UK.

7.1 Evaluating the economic case for refurbishment

Estimating the costs and impacts of refurbishment or demolition is complex, uncertain and subjective. The typical cost indicators used in assessment refurbishment and demolition projects are: *capital expenditures* or CAPEX (the cost of fixed assets); *operational expenditures* or OPEX (the costs of goods and services); and *capital investment appraisal* (understanding the value of an investment over time).

As more experience has been gained in managing repairs and maintenance, management risks are easier to estimate, although estimating maintenance remains difficult. Key issues for management of repairs and maintenance include:

- allocating resources to the most appropriate stock;
- delivery of maintenance programme on time and on budget;
- controlling responsive repair work;
- involving tenants and leaseholders in decisions; and
- managing and monitoring performance.

There is a growing body of research suggesting that extending the lifecycle of buildings by refurbishment is preferable to demolition in terms of improved environmental, social and economic impacts.

In the literature covered by this review, benefits to residents are mainly confined to assessment of potential reductions in bills or improved thermal comfort. This means that the performance gap (differences between predicted and actual performance of buildings) and the rebound effect (where people adapt their behaviour in ways that increase consumption after an energy efficiency project) both of which would reduce projected savings are not included in the modelling. Where future savings are over-estimated, it is the occupants who are penalised, firstly, because what is promised is not delivered and, secondly, because they pay the energy bills. By contrast, there is usually no automatic or direct penalty for designers, developers or facilities managers whose buildings do not perform as they predicted. The limited scope of such assessments in the literature is partly due to a lack of quantitative monitoring of before and after refurbishment projects, and of qualitative work on occupant behaviour.

There are also difficulties in estimating the costs and impacts on residents, particularly around: quantifying tangible returns; valuing future savings; and the complex interaction of individual and institutional behaviours. Key issues affecting residents include:

- delays in refurbishment and demolition work (which generally takes longer than expected);
- moving residents during works taking place (there is little comprehensive data on the cost or time involved);
- complications of mixed tenure and sharing costs fairly between residents and over a wide variety of occupancy periods.
- The costs of rehousing tenants, the time taken to do so, and the resulting pressure on other local housing resources should be included in economic analysis of demolition compared to refurbishment.

Assessing the impacts on wider society remains difficult. Key issues are:

- the environmental costs of waste disposal
- the social or market costs of carbon
- longer-term impacts of refurbishment or demolition

Further work is needed to gather more data and analysis in all these areas.

The UK supply chain and retrofit market is under-developed and suffers from increased risk due to lack of knowledge. There are a variety of technical, economic, and social risks and hidden costs associated with refurbishment. Prices and perceived risks amongst architects and designers, owners, investors and developers are all factors in the undeveloped supply chain and market. There is a need for a change in perceptions, awareness and behaviour throughout the supply chain, supported by appropriate policy frameworks.

Tenure types and management capacity, in particular the different skills and priorities of landlords, affects how costs and risks are shared between investors and occupants; how refurbishment can be financed; how savings can be realised by tenants; and how energy-saving behaviour can be encouraged. Particular issues include recovering investments through rent, and the tension between short-term tenures and long payback periods for energy efficiency.

Access to finance and willingness to invest in refurbishment: the risk of current costs and uncertain future savings mean there is a reluctance to both lend and borrow. Grants, subsidies and guaranteed loans could address this.

There is a need to address the capacity, willingness and confidence to make and explain decisions about refurbishment and demolition and to invest in refurbishment on the part of tenants, housing associations, developers and lenders. In part, this can be tackled through: collecting more data on costs; undertaking further analysis of the impacts of different scenarios on different peoples and places over time ('do nothing' / refurbishment / development); and research into behavioural and technical realities and wellbeing outcomes of living through refurbishments to inform other projects.

7.2 Improving energy performance and reducing carbon emissions

Residential buildings generate greenhouse gas (GHG) emissions through two processes: occupants' use of a building (*operational energy*); and the extraction, manufacture and transportation of materials for a building's construction and demolition (*embodied energy*). The greatest impacts on global warming are likely to be through the energy consumption and emissions of a building during its lifetime rather than its construction and demolition. However **the embodied energy of a building will become more significant** as the UK achieves more stringent building standards and takes steps to decarbonise electricity generation.

Current buildings standards mean that newly constructed homes are likely to be more energy efficient than older buildings but this does not automatically mean that their occupants will use less energy than those in older buildings. However refurbishment of buildings can achieve similar levels of energy performance to new buildings whilst avoiding the GHG emissions of demolition and construction of new buildings. Major refurbishments of existing residential buildings will need to comply with nearly zero energy emission standards from 2016.

The operational energy of residential buildings contributes 23% of the UK's greenhouse gas emissions. Retrofitting to reduce energy consumption can also deliver other benefits, including reduced fuel bills and increased thermal comfort, and can be done by:

- Improving energy performance through improvements to the building fabric, installing more efficient appliances and controls, and improving occupant understanding of how energy is used in the home;
- Switching fuel sources, such as using renewable resources on-site to generate heat or power, or connecting to neighbourhood energy supplies such as low carbon heat networks.

7.3 Water and waste

The environmental impacts of refurbishment compared to demolition are not only about energy and carbon, but also about the environmental impacts of the production of water, concrete, steel, timber, glass and many other materials used in the construction of new buildings, and the impact of the waste that is generated through demolition and construction.

Water is often overlooked in regeneration schemes but is a vital issue in terms of: how it is used in construction; how it is used by residents; and how sewage and storm water are dealt with. Water efficiency should be considered both in designs for new buildings and in refurbishment programmes. In London – a water-scarce region – average water consumption is 162 litres per person per day. Reducing the amount of water used by individuals and by the construction industry will help to alleviate pressure on scarce resources. Improvement of water management in housing estates will also benefit communities and better management of storm water using green infrastructure to tackle runoff can create local green spaces with advantages for residents' health and for biodiversity.

The construction sector generates 35% of all waste in the UK; waste reduction is thus a key priority. Waste management has improved considerably, with 73% of waste from construction and demolition recycled as aggregate. Using recycled aggregate in new construction reduces landfill waste and the environmental impacts of new construction. Additionally, recycling materials at the end of houses' lives may reduce the potential to contribute to global warming by 2-3%. Refurbishing existing buildings is the best way to reduce waste: this avoids demolition waste and reduces the need for new material, avoiding associated costs of landfill, recycling and new materials.

7.4 Social factors

Understanding the impact of demolition or refurbishment on residents is complex, as health and wellbeing are broad and interdependent on many different factors. Because wellbeing is a highly subjective concept, it can be used to support cases for demolition even where strong evidence is lacking. Further research into the impacts of demolition and refurbishment on wellbeing is therefore needed.

There is evidence to show improved physical and mental health as a result of refurbishment, particularly around energy based improvements. At the community level, refurbishment can lead to a reduced sense of isolation and maintenance of social capital. However, these positive impacts are undermined if the neighbourhood and surroundings remain in decline. Housing improvements need to take place alongside other area-based interventions in order to be truly effective and to reach maximum potential. Such an approach requires multidisciplinary collaboration with different departments in local authorities and other stakeholders working together.

Whilst refurbishment has been shown to improve individual mental and physical health, it is also important to bear in mind unintended consequences, such as retrofitting ventilation units leading to poorer indoor air quality which can have a detrimental impact on respiratory health.

There is some evidence that relocation after demolition can improve wellbeing. However, demolition and relocation can also compromise the mental health of residents, with increased reporting in stress, anxiety and depression post demolition. This stress is linked to feelings of powerlessness and the lack of control or opportunity to engage with the housing authority about the move.

The retrofit industry and the decentralisation of energy offer considerable opportunities for local development and community engagement, which in turn can lead to local regeneration, lower energy costs, generation of local income, and improved trust:

- Refurbishment of buildings significantly contributes to job creation
- Small and medium businesses involved in refurbishment and retrofitting in the UK can particularly benefit;
- Employment benefits have been shown to be higher when the refurbishment of the building has higher energy saving specifications.

Involvement of the community in the decision making process, regardless of the outcome, is essential in order to reduce impacts on wellbeing, particularly mental health. This should include actively engaging residents so that they feel a sense of ownership and participation and keeping them fully informed of the process.

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Appendix A: Definitions of Building Life

	(CIBSE 2008)	(Thomsen and van der Flier 2011)	(Kohler 2007)	(Sweetnam and Croxford 2011)	(Lowe 2007)
Economic Life	Estimated number of years until that item no longer represents the least expensive method of performing its function (life expectancy, economic life factors, indicative life factors).		An assumed period of time over which costs and benefits of buildings are assessed - not necessarily related to the likely service lifetime or physical lifetime but to tax regulations, legal requirements or accounting standards.		

Technological Life	Estimated number of years until technology causes an item to become obsolete	Obsolescence as a process described as growing divergence between the declining performance of buildings and the rising expectations of users and proprietors			
Service Life or Estimated Service Life or Useful Life (CIBSE) (single building or its parts)	Estimated number of years during which an item will perform its function according to some established performance standard (at least as long as the design life)	Period of time during which a building or its parts meet or exceed performance requirements (ISO)	Period of time after installation during which a building or its part meet or exceed performance requirements; can be the end of the physical life of a building but also the indication of what a client expects		
Design Life	This is a period of time decided by a building owner/developer and written in to the Client's Brief. It guides engineers and assures investors and insurers about the quality and durability that has been specified for the building and its equipment. Over this time a building or component of a building is expected to function adequately without the need for major repairs or replacement if properly maintained.				

Service Life Replacement Date or Replacement cycles	Time intervals when components or subsystems have to be replaced because their service life is less than design life of the whole building or system				
Effective service life			Time for which a certain probability of survival (effective lifetime) can be guaranteed		
Effective (physical) lifetimes or Implicit Life (whole building stock)		AKA life span, building pathology and mortality of buildings as average period of physical existence, including the usage and end-of-life phase	Estimated from buildings that have been built/destroyed in whole building/infrastructure stock over time; lifetime of stocks of building typologies (relates to societal or planning decisions to use the complex resource of the building stock in a sustainable way). AKA Survival Functions		Implicit dwelling life based on the ratio of total household numbers to annual demolition rate
Lifecycle Phases (products or projects)	<ol style="list-style-type: none"> 1. Acquisition 2. Use and maintenance 3. Renewal and adaptation 4. Disposal. 	Development phase, including the design and the construction phase, and the usage phase, consisting of the actual use and the reuse or end-of-life phase	New construction, operation, maintenance, refurbishment and disposal	<ol style="list-style-type: none"> 1. Pre-refurbishment 2. Demolition 3. Construction 4. Post-refurbishment 5. Refurbishment or demolition for a refurbishment scenario and a new-build scenario 	

Building Components			Patalia and Rushton Tab 4		CIBSE Guide M	Lowe	
			Replacement Cycle (years)	Cost %	Economic Life Factor (years)	Replacement Cycle	Technological Life
Interior	Decorations		5	2			
	Floor Finishes		10	2.5			
	Kitchen and Bathroom Fittings		15	7.5			
	Sanitation and Drainage	Below ground drainage (plastic)			40		
		Internal waste, foul and rainwater drainage (plastic)			20		
		Sanitary ware			25		
Mechanical and Electrical Systems	General Mechanical and Electrical		30	24.5			
	Space heating	cast iron sectional boilers (MTHW/LTHW)			25	10	15
		condensing boilers (MTHW/LTHW)			20		
		domestic boilers (combination)			10		
		domestic boilers (condensing)			15		
		pumps			15		
		mild steel flue			15		
		Storage heaters (electric)			10		
		Hot water system	Domestic gas-fired hot water (storage and continuous)			12	
	Electrical water heaters				12		
	Water system	Mains cold water booster			15		
		Shower mixer and head			10		
	Distribution systems	Radiators (steel)			20		
		Heating pipework system (plastic)			35		
		Pipework thermal insulation			30		
	Ventilation	Extract fan (e.g. domestic)			10		
	Cooling	Not considered					
	Electrical	Sub-main distribution (most components)			20		
		External lighting installations			15		
		switched socket outlet (SSO)			15		
		CFL			3		
	Lifts	Electric traction lifts (packaged)			15		

Renewables	PV	PV Panels			25		
		lead-acid batteries (sealed)			5		
		nickel-alkaline batteries (vented)			20		
	Wind Turbines				20		
	Renewable Heat	Solar panels (water heating)			25		
Envelope	Walls	External walls	60	17.5			
		Render and Pointing (masonry walls)				50-100	centuries
	Roof		60			50	
	Windows	Frames	60				many decades
		Sealed Glazing Units	60				20
Structure	Substructure		60+	46			
	Frame		60+				
	Floors		60+				

Appendix B: Buildings codes, targets and regulations

Building Codes

The energy performance standards for buildings in England are covered by the technical documents – Part L (Conservation of Fuel and Power). This separates buildings into four types:

- L1A New dwellings (residential buildings)
- L1B Existing Dwellings
- L2A New Buildings other than Dwellings (non-residential buildings)
- L2B Existing Buildings other than dwellings

New 2013 versions of Approved Document L1A and L2A (ie for new residential and non-residential buildings) come into effect from 6 April 2014. These regulate different energy using aspects of a building including heat loss through walls, roofs, floors, doors and windows, the energy performance of lighting, ventilation and heating systems.

Renovation work and extensions to existing buildings must comply with the approved document L1B. These regulations apply when the work will affect how much energy is being used and covers:

- An extension
- A change of use (from non residential to residential)
- A change or extension of the windows and lighting, heating or ventilation systems.
- The replacement or renovation of an external wall, floor or roof, or an internal one which separates the conditioned area of a home (the rooms that are heated or cooled) from a non-conditioned area (for example a garage or unheated corridor)

The UK has a 2016 deadline for all new residential buildings to be zero carbon, and a 2020 for all other new buildings. To help the construction sector meet this stretching target, an off-setting system called 'allowable solutions' has been designed, and will come into practice in 2016. This means that developers who cannot make their new buildings 'zero carbon' can contribute to other carbon abatement strategies. Retrofitting existing buildings could be one of these allowable solutions and local authorities "either individually or in multi local authority partnerships, or in partnership with the private sector, [can come] forward with Allowable Solutions' projects or measures" for private sector developers (Department for Communities and Local Government, 2013, p. 41).

Heat policies and Regulation

EU Directive on metering and informative billing

The UK is addressing the need to provide meters and billing information to residents whose homes are connected to district heating systems or shared heating and hot water supplies. For existing buildings, changing from a rated to a metered service is discretionary and depends on the cost and technical feasibility of adding meters and changing the billing system.

For new buildings and renovations it is mandatory to provide meters and charge according to metered supplies.

Details are available on DECC's website:

<https://www.gov.uk/government/consultations/implementing-the-energy-efficiency-directive-metering-and-billing-of-heating-and-cooling>

Renewable Heat Incentive (RHI) (text from Energy Saving Trust Website)

The domestic RHI provides financial incentives to owners of eligible, renewable heating systems on their homes. It supports air source heat pumps (ASHP), biomass systems, ground source heat pumps (GSHP) and solar thermal technologies with tariffs varying depending on the technology.

The domestic RHI is open to owner occupiers, private landlords, Registered Providers of Social Housing and self-builders who have installed an eligible technology since 15th July 2009, provided they meet the scheme criteria.

Successful applicants will receive quarterly payments for seven years. Any public grants previously received, including the Renewable Heat Premium Payment (RHPP), will be deducted to avoid a double subsidy. The scheme covers England, Wales and Scotland only.

Ofgem is responsible for administering the scheme which opened in Spring 2014. Find out about eligibility criteria and the application process by visiting Ofgem.

Feed in Tariffs

The government is providing support for home owners and community groups who install equipment that generates energy from renewable sources. Once installed, groups receive payments for the electricity generated by any of the following technologies: Groups can be paid for the electricity they generate, even if they use it themselves, and for any surplus electricity they export to the grid. Groups will also save money on electricity bills, because they use their own electricity rather than buy it.

The following technologies can be used:

- Solar photovoltaic (usually called PV) with a total installed capacity (TIC) of 5MW or less
- Wind with a TIC of 5MW or less
- Hydro with a TIC of 5MW or less
- Anaerobic digestion with a TIC of 5MW or less
- Micro combined heat and power (CHP) installations with a TIC of 2kW or less

The tariffs vary, but can be found on Ofgem's website.

Labelling and Certificates (voluntary and compulsory)

The Energy Saving Trust explains the different indicators that landlords can use to measure the energy performance of their buildings:

- 1) Energy use ratings indicate how much energy a dwelling uses, similar to the way that miles per gallon unit can be used to compare how fuel efficient cars are. It typically includes the energy needed for heating, hot water, lighting and ventilation under set conditions (eg heating the home to 21C for 9 hours a day). It usually does not include things like washing machines, electronic equipment which are not governed by part L.
- 2) Energy or fuel cost ratings indicate the energy bill a resident could expect from living in a home, and are sometimes used to establish targets by social landlords.

Energy Performance Certificates (EPCs) rate a building on an A to G scale (similar to energy labelling for white goods) to reflect fuel costs under standard occupancy conditions. These are now required for new buildings and existing buildings when they are newly sold, rented or leased.

Social and private landlords must provide new tenants with an EPC for their home.

UCL POLICY BRIEFING – JUNE 2014

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KEY CONCLUSIONS

- **Refurbishment of social housing can deliver significant improvements in energy, environmental and health performance**, which can lead to costs savings and improved living standards for residents.
- Refurbishments can have **lower overall lifetime costs than demolition and construction** and can cause less disruption to communities and residents.
- **Engaging residents in regeneration decisions is crucial** and has resulted in successful refurbishment of a number of social housing properties.

Making Decisions on the Demolition or Refurbishment of Social Housing

Key points for making decisions

- **Social factors and well-being indicators** should be incorporated into decision-making alongside cost, energy and carbon indicators.
- Decisions about refurbishment and demolition can be complex: **cost and performance models are highly sensitive to a few key assumptions** about the expected lifetime of buildings and future energy prices.
- **Key environmental factors:**
 - **Embodied carbon in buildings** may start to make a more significant contribution to emissions than operational carbon as the UK generates more electricity from renewable sources.
 - **Water efficiency** should be considered both in designs for new buildings and in refurbishment programmes.
 - The construction sector produces 35% of waste in the UK.
- **Refurbishment avoids considerable waste** from demolition and construction of new buildings.
- Sharing evidence and synthesising case studies would help social landlords, tenants, developers and lenders make and explain decisions about refurbishment and demolition. This, alongside development of the supply chain, may help to **unlock investment in refurbishment**.

Introduction

This policy briefing summarises the main factors involved when deciding whether to refurbish or demolish social housing, including environmental and economic costs and benefits. Such decisions will involve trade-offs between different objectives and values. The briefing discusses:

- evaluating the economic case for refurbishment, including impacts on communities and residents;
- the energy and carbon implications of demolition compared to refurbishment;
- issues around water and waste; and
- social factors in housing and regeneration, including health and community participation.

1. Evaluating the economic case for refurbishment

Estimating costs and impacts of refurbishment

Estimating the costs and impacts of refurbishment or demolition is complex, uncertain and subjective. The typical cost indicators used in assessment refurbishment and demolition projects are: *capital expenditures* or CAPEX (the cost of fixed assets); *operational expenditures* or OPEX (the costs of goods and services); and *capital investment appraisal* (understanding the value of an investment over time).

Assessing maintenance and repair

As more experience has been gained in managing repairs and maintenance, management risks are easier to estimate, although estimating maintenance remains difficult. Key issues for management of repairs and maintenance include:

- allocating resources to the most appropriate stock;
- delivery of maintenance programme on time and on budget;
- controlling responsive repair work;
- involving tenants and leaseholders in decisions;
- managing and monitoring performance.

Assessing impacts on residents

There is a growing body of research suggesting that **extending the lifecycle of buildings by refurbishment is preferable to demolition** in terms of improved environmental, social and economic impacts. However, **the assessment of benefits to residents is limited** to reductions in bills or improved comfort, which risks over-estimating energy or carbon savings and under-emphasising rebound effects. This limited assessment is partly due to a lack of quantitative monitoring of before and after refurbishment projects, and of qualitative work on occupant behaviour.

There are also **difficulties in estimating the costs and impacts on residents**, particularly around: quantifying tangible returns; valuing future savings; and the complex interaction of individual and institutional behaviours. Key issues affecting residents include:

- **delays** in refurbishment and demolition work (which generally takes longer than expected);
- **moving** residents during works taking place (there is little comprehensive data on the cost or time involved);
- complications of **mixed tenure** and sharing costs fairly between residents and over a wide variety of occupancy periods.

The costs of rehousing tenants, the time taken to do so, and the resulting pressure on other local housing resources should be included in economic analysis of demolition compared to refurbishment.

Costs and benefits to wider society

Assessing the impacts on wider society remains difficult. Key issues are:

- the environmental costs of **waste disposal**
- the social or market **costs of carbon**
- **longer-term impacts** of refurbishment or demolition

Further work is needed to gather more data and analysis in all these areas.

Institutional factors in evaluating the economic costs for refurbishment

There are a number of institutional factors that affect the costs, benefits, quality and risks of refurbishment projects which are briefly discussed below.

The UK supply chain and retrofit market is under-developed and suffers from increased risk due to lack of knowledge. There are a variety of technical, economic, and social risks and hidden costs associated with refurbishment. Prices and perceived risks amongst architects and designers, owners, investors and developers are all factors in the undeveloped supply chain and market. There is a need for a change in perceptions, awareness and behaviour throughout the supply chain, supported by appropriate policy frameworks.

Tenure types and management capacity, in particular the different skills and priorities of landlords, affects how costs and risks are shared between investors and occupants; how refurbishment can be financed; how savings can be realised by tenants; and how energy-saving behaviour can be encouraged. Particular issues include recovering investments through rent, and the tension between short-term tenures and long payback periods for energy efficiency.

Access to finance and willingness to invest in refurbishment: the risk of current costs and uncertain future savings mean there is a reluctance to both lend and borrow. Grants, subsidies and guaranteed loans could address this.

There is a need to address the capacity, willingness and confidence to make and explain decisions about refurbishment and demolition and to invest in refurbishment on the part of tenants, local authorities, housing associations, developers and lenders. In part, this can be tackled through: collecting more data on costs; undertaking further analysis of the impacts of different scenarios on different peoples and places over time ('do nothing' / refurbishment / development); and research into behavioural and technical realities and wellbeing outcomes of living through refurbishments to inform other projects.

2. Improving energy performance and reducing GHG emissions

Residential buildings generate greenhouse gas (GHG) emissions through two processes: occupants' use of a building (*operational energy*); and the extraction, manufacture and transportation of materials for a building's construction and demolition (*embodied energy*). The greatest impacts on global warming are likely to be through the energy consumption and emissions of a building during its lifetime rather than its construction and demolition. However **the embodied energy of a building will become more significant** as the UK achieves more stringent building standards and takes steps to decarbonise electricity generation.

A £13 MILLION 'DEEP RETROFIT' OF 107 HOMES IN 3 TOWER BLOCKS INCLUDED

- External wall insulation render
- Roof insulation and waterproofing
- Surface over-cladding, enclosing balconies & access decks
- Triple glazed windows
- Replacement of heating and hot water systems
- Replacement of ventilation system with whole house heat recovery ventilation

UNINTENDED CONSEQUENCES OF RETROFITTING

Delivering carbon savings through the UK's building stock risks a number of negative unintended consequences, including:

- **Indoor Air Quality** problems associated with reduced ventilation;
- Energy efficiency improvements increasing the risk of **summer-time overheating** which can adversely affect health;
- Energy efficiency improvements resulting in **increased greenhouse gas emissions** due to the 'rebound effect';
- Improvements in buildings' thermal properties causing **cold bridges, condensation, mould growth and decay**;
- Health and safety issues associated with refurbishment increasing the potential for **elevated fire risk**.

Current buildings standards mean that newly constructed homes have a lower operational energy than older buildings (*ie* typically produce fewer emissions when occupied). However **refurbishment of buildings can achieve similar levels of energy performance to new buildings** whilst avoiding the GHG emissions of demolition and construction of new buildings. Major refurbishments of existing residential buildings will need to comply with nearly zero energy emission standards from 2016.

The operational energy of residential buildings contributes 23% of the UK's greenhouse gas emissions. Retrofitting to reduce energy consumption can also deliver other benefits, including reduced fuel bills and increased thermal comfort, and can be done by:

- **Improving energy performance** through improvements to the building fabric, installing more efficient appliances and controls, and improving occupant understanding of how energy is used in the home;
- **Switching fuel sources**, such as using renewable resources on-site to generate heat or power, or connecting to neighbourhood energy supplies such as low carbon heat networks.

The scale of the retrofit challenge

There are nearly 27 million homes in the UK – most of these will still be standing in 2050, creating a **refurbishment rate of roughly 60 000 homes a year** for the next 35 years. Developing the skills and supply chains capable of delivering this level and scale of housing stock refurbishment is challenging, but presents an opportunity for the 'green economy'. Retrofitting of buildings for energy efficiency measures can range from low cost measures such as loft and cavity wall insulation to complete refurbishment of buildings and their systems. **Only 'deep retrofit' (total fabric and system refurbishment) measures are likely to achieve the target of a 60% reduction in operational energy.**

3. Other environmental factors: waste and water

The environmental impacts of refurbishment compared to demolition are not only about energy and carbon, but also about the environmental impacts of the production of water, concrete, steel, timber, glass and many other materials used in the construction of new buildings, and the impact of the waste that is generated through demolition and construction.

Water

Water is often overlooked in regeneration schemes but is a vital issue in terms of: how it is used in construction; how it is used by residents; and how sewage and storm water are dealt with.

Water efficiency should be considered both in designs for new buildings and in refurbishment programmes.

In London – a water-scarce region – average water consumption is 162 litres per person per day. Reducing the amount of water used by individuals and by the construction industry will help to alleviate pressure on scarce resources. Improvement of water management in housing estates will also benefit communities: increased water efficiency can reduce bills for residents with water meters; and better management of storm water using green infrastructure to tackle runoff can create local green spaces with advantages for residents' health and for biodiversity.

Retrofitting for water efficiency

Considerable reductions in water use can be achieved by refurbishing bathrooms and kitchens. A case study in London showed that retrofitting a shower into social housing property can save 39 litres per property per day; and installing dual flush toilets can save 61 litres per property per day.

Local authorities have an increasing role to play in managing drainage through the planning process. New developments and regeneration schemes will be required to include Sustainable Drainage Systems (SUDS) wherever possible in order to reduce the amount of water flowing into the sewers. This in turn can reduce the need for demolition to solve drainage problems. **Retrofitting SUDS and other green infrastructure to existing buildings and estates should be considered in any regeneration scheme.**

SUSTAINABLE DRAINAGE SYSTEMS (SUDS) MEASURES

- green roofs
- permeable paving
- rain gardens
- rainwater harvesting
- using green spaces to store water temporarily during storms

Reducing waste

The construction sector generates 35% of all waste in the UK; waste reduction is thus a key priority. Waste management has improved considerably, with 73% of waste from construction and demolition recycled as aggregate. Using recycled aggregate in new construction reduces landfill waste and the environmental impacts of new construction. Additionally, recycling materials at the end of houses' lives may reduce the potential to contribute to global warming by 2-3%. Decision making and policy in this area could be improved by improving the availability and consistency of data relating to demolition and construction waste.

Refurbishing existing buildings is the best way to reduce waste: this avoids demolition waste and reduces costs, carbon emissions and social and environmental impacts associated with transport, landfill, recycling and the mining and manufacturing of new materials.

4. Social factors in decision-making

Impacts on residents' wellbeing

Understanding the impact of demolition or refurbishment on residents is complex, as health and wellbeing are broad and interdependent on many different factors. Because wellbeing is a highly subjective concept, it can be used to support cases for demolition even where strong evidence is lacking. Further research into the impacts of demolition and refurbishment on wellbeing is therefore needed.

There is evidence to show **improved physical and mental health as a result of refurbishment**, particularly around energy based improvements. At the community level, refurbishment can lead to a reduced sense of isolation and maintenance of social capital. However, these positive impacts are undermined if the neighbourhood and surroundings remain in decline. **Housing improvements need to take place alongside other area-based interventions** in order to be truly effective and to reach maximum potential. Such an approach requires multidisciplinary collaboration with different departments in local authorities and other stakeholders working together.

Whilst refurbishment has been shown to improve individual mental and physical health, it is also important to bear in mind unintended consequences, such as retrofitting ventilation units leading to poorer indoor air quality which can have a detrimental impact on respiratory health.

There is some evidence from Glasgow that **relocation after demolition can improve wellbeing**. There may be improvements in social relations, contrary to perceptions of demolition breaking up community networks. However, demolition and relocation can also **compromise the mental health of residents**, with increased reporting in stress, anxiety and depression post demolition. This stress is linked to feelings of powerlessness and the lack of control or opportunity to engage with the housing authority about the move.

Wellbeing, health, housing and urban design

Poor housing quality has a negative impact on individual and public health. This is a significant problem; research into the health costs of poor housing has shown that addressing the worst health and safety hazards in the UK's poorest homes could save the NHS £56 million a year. Particular housing factors that affect health include:

- agents such as asbestos, carbon monoxide, radon, lead, and mould that affect **indoor air and environmental quality**;
- **internal environment**, such as cold, damp, housing design or layout, infestation, hazardous internal structures or fixtures and noise;
- **lack of space** which can contribute to poor mental health;
- **fuel poverty**, which affects physical and mental health (4.5 million people are recorded as living in fuel poverty; retrofitting to improve energy efficiency is key to addressing this);
- the **broader social and behavioural environment**, such as overcrowding, sleep deprivation, neighbourhood quality, infrastructure deprivation, neighbourhood safety and social cohesion;
- the **broader macro-policy environment**, such as housing allocation, lack of housing tenure, housing investment, and urban planning.

Rethinking high-rise

Demolition and construction of high-rise buildings has been a strong feature of many urban regeneration schemes. Traditionally, high-rise social housing is associated with social decline and poor health. In contrast, many urban regeneration schemes incorporate high-value high-rise housing for private ownership or rent, with high service standards. Increasingly it is recognised that it is **wider area interventions, rather than high-rise buildings, that affect wellbeing**, with studies also showing that families enjoy living in high-rise (contrary to the belief that high-rise is bad for families). This challenges the view that demolition of high-rise is preferable. There are also opportunities to create other benefits through refurbishment: retaining high-rise buildings can leave room for more green spaces in densely populated cities (providing planning policies are put in place to maintain green spaces). **Refurbishment of a building should be part of the refurbishment of the wider area** to ensure the opportunity to improve wellbeing is maximised.

Job creation

The retrofit industry and the decentralisation of energy offer considerable opportunities for local development and community engagement, which in turn can lead to **local regeneration, lower energy costs, generation of local income, and improved trust**:

- refurbishment of buildings significantly contributes to job creation (for example 100,000 jobs created from insulating existing housing stock);
- small and medium businesses involved in refurbishment and retrofitting in the UK can particularly benefit;
- employment benefits have been shown to be higher when the refurbishment of the building has higher energy saving specifications.

Community participation

Community participation is crucial to the success of any regeneration scheme. A lack of resident participation from an early stage is often a determinant in decreased wellbeing, yet residents are not always involved effectively in regeneration. Decisions on demolition and refurbishment have different impacts on leaseholders and tenants. Delays to housing improvements can also lead to stress for residents.

Involvement of the community in the decision making process, regardless of the outcome, is essential in order to reduce impacts on wellbeing, particularly mental health. This should include actively engaging residents so that they feel a sense of ownership and participation and keeping them fully informed of the process.

BACKGROUND

This policy briefing summarises the main findings from research commissioned by Just Space and the London Tenants Federation and undertaken by UCL Urban Lab and Engineering Exchange. The research report provided a review of technical methods, evidence and case studies for decision-making relating to the refurbishment or demolition of social housing. For a copy of the full report, email Dr Sarah Bell, UCL Civil, Environmental & Geomatic Engineering (s.bell@ucl.ac.uk).

Call for evidence from the London Assembly- Estate Regeneration Programmes

July 2014

Response from London Borough of Camden

Thank you for the opportunity to submit a response to your call for evidence on estate regeneration.

Camden has an ambitious estate regeneration programme that is well underway in developing 1,100 Council homes. Our Community Investment Programme makes best use of our existing assets to generate funds and opportunities to build new homes, improve homes and improve our local schools, as well as innovating and improving the urban spaces that surround those developments.

Our response addresses the questions set out in the call for evidence in order, and the additional questions posed to Housing Providers.

What is the purpose of regeneration programmes and who benefits?

Regeneration programmes provide a win-win opportunity for local residents and enable the Council to deliver improvements for the community;

- existing tenants will move into a modern, fit for purpose home;
- people in housing-need benefit from the additional new properties achieved through higher density redevelopment;
- local communities benefit from improved urban spaces achieved through redesign, as well as apprenticeships and employment opportunities in building, design, and for development consultants, and other specialists;
- residents benefit from mixed tenure and mixed income communities within the development;
- regeneration provides shared ownership opportunities for those on middle incomes to access the housing ladder;
- the Council can achieve specialist housing schemes to meet housing and care needs through regeneration programmes
- the market sale of properties on Camden's scheme funds estate redevelopment, and refurbishment of homes as well as improvements to our schools and the surrounding urban spaces.

However, with a lower level of subsidy from the GLA, it is increasingly challenging to achieve genuinely affordable housing development in inner London.

Which factors are considered in the decision to refurbish or demolish and rebuild?

Three factors influence our decision to refurbish or demolish an estate;

- i) Quality of the existing stock: it may not be economic to repair certain buildings and some buildings have characteristics (e.g. blocks of bed-sits

or very small space standards) which are such that even if they can be repaired or refurbished to their original standard or better, they will still not meet the needs of the community. Where that is the case we will consider demolition and rebuild. We develop our estate regeneration schemes through a dialogue with residents about all the investment options and try to co-produce a solution with them.

- ii) Density of existing development: some sites have particularly low densities and afford an opportunity to demolish and rebuild to a significantly greater density. We tend to measure the financial viability of the new development in terms of paying for it-self through private sales whilst re-providing demolished housing and, preferably, an uplift in social rented and shared ownership homes and where possible to generate surplus capital receipts to reinvest in existing housing stock – we do not ‘cap’ development once we have met first targets. Conversely, if an existing development is extremely dense, we would avoid trying to redevelop the site unless the existing accommodation was completely unsuitable as we would suffer a net loss of rented stock.
- iii) Availability of funding: we have sites which we could potentially develop but the capacity to fund these is limited by the borrowing cap. In some instances, private or voluntary sector developers may be able to bring these sites forward but we would tend to look at any such proposal with a keen eye on the amount of replacement and new social rented units we would obtain out of such an arrangement – again, we would seek to avoid any reduction in social rented if at all possible. The exception to this would be where we have unlettable stock – bedsits with communal facilities for example, where we would seek to create self-contained, modern homes. In such a case social rented floor space would not be reduced but the number of individual units would.

How are tenants and leaseholders involved or consulted, and at which stages?

- Tenants and leaseholders are consulted at all stages of the process, when initial proposals are put together, at the planning consent stage and throughout the process there are regular engagement meetings with tenants and leaseholders on the progress of the development. We develop our estate regeneration schemes by through a dialogue with residents about all the investment options and try to co-produce a solution with them.
- Officers talk to ward councillors, tenants and residents associations, residents involved in the redevelopment, the local community and the wider community and stakeholders.
- Consultation takes place through exhibitions, newsletters, and we encourage feedback on schemes being presented.

How does the regeneration work and, in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?

- The plan for each estate is different depending on a range of factors.
- In some schemes, all residents are decanted and the estate is demolished. On other schemes we have built the new development on land within the estate, and have offered residents one move from their old home into the new home, before demolition of the old block.
- Some programmes are refurbishment only, and may include some additional building or landscaping of the estate to improve safety, privacy, play spaces, and more coherent use of space.
- We also convert non-residential spaces to provide new homes, example being roof top conversion of disused communal laundry rooms and former community centre office and GP surgery spaces.
- Our sites also provide market sale homes to part fund the the cost of the regeneration programme. 'Secure by design' consultants look at the proposals to ensure the proposals will not make it easier to carry out antisocial behaviour.
- Problems associated with building works are managed by the contractor. The contractor has a construction management plan – which includes their responsibility to mitigate against problems encountered by residents living next to the site, such as noise and site debris.
- The main concerns reported by residents tend to be around their right to light and privacy in the new development. Surveys are carried out on potential impacts and suitability of the design is demonstrated at the planning stage.
- Sometimes residents dislike the design- the consultation process provides options and information to help residents understand what is and isn't realistic. Landscaping is often of concern to residents, and discussions around trees and parks to be included is addressed throughout the process.
- We also provide support to people who need or wish to leave the site. This includes compensation payments for moving and handholding to help them move into their new home. Leaseholders who need to leave usually get offered the market value plus 10% if they are resident. If they are not resident compensation is still available.

What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?

- Sufficient funding for estate regeneration is important to help inner London areas achieve rents that are genuinely affordable. The viability model for assessing levels of social housing through s106 on a private development is widely considered to be broken. On our own schemes we can achieve much higher levels of social housing than a private developer.

- The Mayor's grants system is complex with specific criteria that sometimes don't match the proposals within our agreed pipeline of housing development. Completing the grant applications can be resource intensive, and may require us to amend our existing schedule of works to meet the timescales and criteria set out by the Mayor. It would be helpful if the Mayors Grant funding had sufficient flexibility to assist us to bring forward the development programmes that our Cabinet and planning department have agreed. Grant levels for individual projects are unrealistically low in central London.
- We do not consider the new social housing regime of 'affordable rent' set at up to 80% of market rent to be *genuinely affordable*. In Camden we have calculated that a two bedroom flat at 80% of market rent would require a joint income of over £48.5k. On our own regeneration schemes we build housing at target level rents using our own additional subsidy, to help maintain our mixed communities. We would welcome grant support from the Mayor to build at target rent levels.

Housing providers- Sector specific questions

What triggers the decision to consider refurbishing or renewing in the first place – is it always about the condition of the building?

The decision to ask people to move out of their settled homes is never taken lightly.

The main considerations will be based on stock condition, but suitability of the stock and development potential of an existing building or estate land is also a factor.

As an example, Holly Lodge previously provided bedsit accommodation that was outdated having shared facilities and no central heating. It was in low demand as shared facilities are no longer considered acceptable and we have a large supply of small units and a high demand for large units. The redevelopment provides modern self-contained properties with central heating, and includes some provision for wheelchair users and for large families to meet housing need.

What guarantees are you able to make regarding rent levels and security of tenure for tenants?

Tenants asked to leave their Council home will be guaranteed another Secure Tenancy at target rent. Those who are asked to leave have an opportunity to return to a new property in the new development if they so wish. They may choose to move to a Registered Provider for their own reasons.

Have you undertaken carbon lifecycle or footprint analysis for any renewal projects?

Chester Balmore is a flagship housing scheme that builds on Camden Council's rich tradition of architectural quality and housing innovation. It is one of the country's largest ECO Schemes built to Passivhaus Standard of high thermal performance,

exceptional airtightness and mechanical ventilation to reduce energy bills by up to 70%. There are 23 new homes for social rent ranging from 1-4 bed. We have commissioned UCL to carry out an analysis of the energy savings generated from this development.

How are the options made public and consulted on?

We undertake door to door surveys and provide training for tenants & residents and their representatives so that they can be actively involved in considering options and help to shape design. We involve them in the selection of architects and contractors and the design and finishes of the new homes.

When we consult residents we usually run exhibitions with the consultants, we provide information on the Camden website. We also provide newsletters and sometimes send physical boards out to the residents explaining the scheme proposals and keeping them informed on progress. For each scheme we have set up a 'development forum' for local people to get involved in influencing the development.

The planning department also invite people to consider what is being submitted to planning, and often receive comments from those on the development forum and other local people.

Is it best to provide a preferred option or develop a number of options for consultation purposes?

In our consultations, we provide a range of feasible options to consider what can be done. On some schemes there are fewer options due to the specifics of that site.

What process do you use to reconcile any conflicts between what estate residents might want and what represents sound asset management strategy from the provider's viewpoint?

The issues that arise depend on each estate. These concerns are discussed through exhibitions and alongside consultants to understand and respond to the issues raised. Ward Councillors also have a role in representing the views of the local community. We also use the opportunity to raise awareness in the local community about our Community Investment Programme to raise funds and invest in our homes and schools.

Is stock transfer still valuable in terms of funding regeneration?

We don't use stock transfers to fund regeneration in Camden. For specialist housing schemes a registered provider may be selected to manage the supported housing provision.

Do you plan to bid for the new £150m regeneration fund?

Our Directors are currently considering the potential and opportunities offered by this fund and the Housing Zone regime.

End

24 JULY 14

21 July 2014

Darren Johnson AM
Chair, GLA Housing Committee
GLA
City Hall
The Queen's Walk
London SE1 2AA



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Improving **life** together

Redacted

www.metropolitan.org.uk

Darren

Thank you for your letter. It was a pleasure to host the committee at Clapham Park and to assist with your investigation into refurbishment and demolition.

As I outlined on 2 July, at Clapham Park we are delivering a mix of refurbished homes and new homes as well as helping to deliver more housing and more affordable housing in London. We believe that the regeneration will prove transformative for the area and the local community.

I look forward to reading the findings of the committee's investigation. If you need any more information in the meantime, please contact Chris Quince in our Public Affairs team on chris.quince@metropolitan.org.uk who will be happy to help.

Furthermore, if there are other opportunities for inputting into the committee's work in the future, please don't hesitate to contact us.

Yours sincerely

Brian Johnson
CEO



Metropolitan is a leading provider of integrated housing services, care and support and community regeneration. Metropolitan is the brand name for Metropolitan Housing Trust Limited (MHT) and Metropolitan Support Trust Limited (MST), registered office: The Grange, 100 High Street, Southgate, London N14 6PW.

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From: Redacted
Sent: 25 July 2014 15:29
To: Darren Johnson
Subject: Refurbishment versus regeneration

Hi Darren,

Some notes on the destruction of viable estates in Royal Greenwich.

Greenwich aims for 'regeneration of 3 Charlton estates:

http://www.royalgreenwich.gov.uk/info/200079/regeneration/142/development_area_woolwich/6

1. There has been very little, if any, real consultation. Residents have been told that there are serious youth gang problems - there are not - and that the buildings are structurally unsound. The Greenwich Industrial History Society has denied the unsoundness; it is led by a former councillor, from the majority Labour Group, Dr Mary Mills, and industrial historian.

2. Residents were offered like-for-like accommodation but many report offers that fall far below this, in terms of room numbers.

3. Information flow has ceased and remaining tenants are being left in worry and fear for their future. This is particularly true of families spread across the estates, of older people and younger with school age children.

Photographs of the estate may be seen at:

<http://dougasmccarthy.me/2014/01/morris-walk-estate-woolwic>

There are apparently plans for the replacement of similar estates in the Woolwich area.

Residents have not been given satisfactory structural reasons for this demolition and replacement; probably because none exist. The buildings look drab - concrete panels with embedded pebbles - but external cladding would improve thermal efficiency and appearance, and cost a great deal less.

Can supply further information, if required.

Best wishes,

Roy

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To: Darren Johnson, AM
Chair, London Assembly Housing Committee

28 July 2014

From: London Borough of Sutton

Call for evidence - Demolition and refurbishment of London's social housing estates

The London Borough of Sutton response is set out below. We would welcome the opportunity to provide more information on the areas covered by our responses to each of the individual questions:

1. What is the purpose of regeneration programmes and who benefits?

In Sutton the outcomes have seen significant improvements to peoples' lives, by arresting the decline in their living conditions and providing better standard housing to meet the needs of the 21st century. Regeneration programmes on two of our estates have helped to tackle anti-social behaviour, crime, child/teenage density levels and social stigma. On a third estate, a not-fit-for-purpose sheltered housing scheme with studio flats and shared bathrooms has been demolished and replaced with 131 one and two bed self- contained flats built to Lifetime Homes standard for older people and younger vulnerable people with disabilities.

Regeneration also brings improvements to the wider community. In Sutton the regeneration of one estate of 295 flats incorporates the building of a new community centre and shop, together with improvements to the riverside walk. These undoubtedly benefit the wider community and not just those residents moving into the newly built houses and flats.

In addition the physical environment is transformed with the estates becoming places where people want to live and be associated with.

2. Which factors are considered in the decision to refurbish or demolish and rebuild?

The long term investment requirements to sustain existing housing and the cost benefit of starting again with demolition and new build. In Sutton's case this investment level was disproportionate to the amount required to sustain the rest of our housing stock. The funding source has also influenced the decisions made. In the 1990s Sutton was able to attract significant SRB monies to regenerate a large deck access estate. By the early 2000s this funding source was no longer available and the Council had to seek an alternative model to proceed with the regeneration of a smaller estate. This was achieved by entering into a partnership with a Housing Association/Registered Provider and a Contractor/developer to deliver a mixed tenure solution. In addition the Council identified several smaller satellite sites which were developed by the

partnership to assist with the rehousing programme. The regeneration of one estate therefore of 295 units has turned into a wider project looking at delivery of over 430 new affordable homes across the estate and 10 other smaller sites. These comprise redundant garage sites, not fit for purpose sheltered housing and smaller scale unpopular estates and clusters of properties requiring disproportionately high levels of continuing investment. In turn the overall housing delivered will total nearly 700 new homes including housing developed for sale which will provide cross subsidy for the affordable housing provision. This wider project has therefore helped the Council address a number of its strategic housing objectives over a number of years.

Mixed tenure was also a key factor in the funding of another regeneration scheme, helping to cross subsidise the social rented units.

3. How are tenants and leaseholders involved or consulted and at which stages?

Sutton prides itself on our transparent and customer centred approach to reaching decisions affecting peoples' lives. With the small 295 flatted estate it was the residents who drove forward the option of actually demolishing their own estate and starting again. This followed a period of working with community architects looking at the options including refurbishment.

Residents were directly involved in the appointment process for both the Housing Association partner and the Contractor/developer.

A residents' adviser was appointed to work with residents throughout the Master Planning stages, including design workshops and opinion surveys. These influenced the ultimate design solution and planning submission.

In addition residents were key members of the Steering Group established to oversee the direction and delivery of the project.

A similar approach has been taken in the regeneration of two other estates in Sutton, with tenants heavily influencing the design of the new housing and the governance of the project.

4. How does the regeneration work and, in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?

Sutton's experience tells us that the contractor/developer's role is critical to the successful progress of the programme. Their on-site management role and engagement with residents helps alleviate the inevitable difficulties of managing a construction site not just for the remaining estate residents but for the surrounding community. We also established a regular resident/contractor liaison meeting chaired by the resident adviser with representation from the ward councillors.

Delivery of the regeneration depends very heavily on a successfully managed rehousing programme. Residents need to know from the beginning what they can expect in terms of alternative housing options and the criteria we used for assessing their housing entitlement. We in fact introduced some local lettings policies to assist with this process, after discussions with residents. Also for returning residents it was important to agree in advance the priorities for letting the new properties and keep them informed of the build progress through newsletters.

5. What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?

Sutton would welcome the Mayor's continuing recognition that regeneration of estates may need higher levels of funding than say refurbishment or indeed development of a cleared site. However the additional benefits (as outlined above in our response to the first question) should also be factored into any assessment of value added or value for money. These wider benefits do bring about significant change at a local level.

We would also welcome some simplification and relaxation of the various funding streams and frameworks covering the Mayor's Housing Covenant, S106s, Community Infrastructure Levy, the need for planning gain and perhaps a rebalance towards more rented provision and less emphasis on home ownership products.

In addition, could you please address the following questions which are more specific to your sector:

Housing providers

6. What triggers the decision to consider refurbishing or renewing in the first place – is it always about the condition of the building?

We have addressed this in our response to Question 2 above. Additionally, as pointed out in that response, involving residents in what happens also triggers which option is chosen. Council members have listened to what residents regard as the priority for them and their estate. However decisions have also been taken on very small scale sites (less than 50 flats/houses) that are based very much on the housing stock's condition and the viability of having to invest disproportionate amounts of money into the future.

7. What guarantees are you able to make regarding rent levels and security of tenure for tenants?

We have worked in partnership with Housing Associations/Registered Providers to deliver the regeneration of three estates over the past 10 years. For tenants returning to a new build on the estate site we have managed to agree that social rent levels have been implemented for them and that their security of tenure is maintained. To date we

have completed the rehousing programmes and so are not having to face up to the new issues of fixed term tenancies and higher rent levels for new rehousing programmes.

8. Have you undertaken carbon lifecycle or footprint analysis for any renewal projects?

Sutton regards itself as a leading proponent of sustainable living as evidenced by our One Planet Living principles. In particular one smaller estate is being regenerated within the Council's designated Hackbridge Sustainable Suburb where these principles are guiding the design. Our regeneration partners are certainly required to evidence that the development solution includes low carbon/renewable energy sources.

9. How are the options made public and consulted on?

As explained above Sutton has a track record of resident engagement and transparency in reaching decisions on regeneration projects. We have presented options by way of residents' workshops, consultation surveys, appointing of resident advisers and on site exhibitions.

10. Is it best to provide a preferred option or develop a number of options for consultation purposes?

We have tended to develop a number of options that we could move forward with. Rather than producing a preferred option to residents. Particularly when this approach could be seen by residents as a decision already made. The options appraisal stages have also actively involved Council members before a final recommendation is presented for decision.

11. What process do you use to reconcile any conflicts between what estate residents might want and what represents sound asset management strategy from the provider's viewpoint?

We have elsewhere referred to some of the consultation and engagement mechanisms we have adopted. These also help to cut through such conflict. Also the role of local ward councillors helps in getting the message across as part of the approach we adopt of being transparent and clear on why choices are presented as they are. As already stated some of the processes involve early engagement with residents, workshops, use of resident advisers and community architects, resident liaison groups and residents being represented on project steering groups. All these bring residents into the decision making framework.

12. Is stock transfer still valuable in terms of funding regeneration?

We have used advanced stock transfer with an earlier much larger estate regeneration, with the backing of residents. But not in the two most recent ones where the Council retained the estate until the rehousing programme was completed and then the land was transferred to our registered provider partner.

13. Do you plan to bid for the new £150m regeneration fund?

We are not intending to bid for 2015/16 funding as we understand that funding will only be provided to private sector partners, and the delivery body must not be classifiable as a public sector body. We will however review our position next year with particular reference to our partnering arrangements for achieving further estate regeneration.

Tenant & leaseholder associations

14. What are the key concerns for tenants and leaseholders when regeneration proposals are issued? What processes can be used to resolve these issues effectively? Can you cite examples which demonstrate this from your experience?

In Sutton's experience the following are the concerns most often raised:

- Loss of home. Residents are given the option of returning to a new home.
- Break-up of the community. By careful management of rehousing programmes those residents wishing to return can do so. However we have also found that by developing new homes on other smaller sites as part of the regeneration project, residents are happy to move permanently into one of these. We have also re-provided a purpose built community centre and cafe as well as a new shop. These have all helped to retain a sense of community.
- Time frame both in the sense of how long before rehousing happens and also in terms of living adjacent/within a construction site. Clear information is vital on the phasing programmes for both rehousing and construction. The establishment of a regular resident/contractor on site liaison group has helped with concerns during the construction phases.
- Leaseholders and freeholders have specific concerns about being able to buy somewhere else locally given the relatively low valuation offers received from the Council. The Council responded to this problem on another regeneration project, by introducing an additional relocation grant, a lump sum payment to try and close the gap in values. In addition elderly leaseholders would find it even more difficult to raise finance to enable them to buy. The Council has agreed to rehouse in these circumstances. We are also implementing a "swap" option whereby a freeholder is able to swap into a new build property when completed.

15. What makes for effective consultation? What happens and when? Can you cite examples which demonstrate this from your experience?

As set out in responses to questions 3, 9, 10 and 11 above, Sutton has adopted an array of practices to ensure residents are effectively consulted on the regeneration of their estates:

- We have appointed independent residents advisers from the very early stages of estate regeneration proposals. Residents need to be free to formulate their own thoughts and suggestions but facilitated by an adviser who can steer them through the bureaucracy and inevitable complexity of regeneration projects, options, funding and development processes as well the legal and statutory framework that needs to be negotiated.

For further information please contact:

Rick Martinez
Regeneration Manager
London Borough of Sutton
3rd Floor Civic Offices
St Nicholas Way
Sutton
Surrey SM1 1EA

Redacted

July 2014

Circle Housing Submission to the London Assembly Housing Committee Inquiry into the demolition and refurbishment of London's social housing estates

About Circle Housing

Circle Housing Group¹ is one of the UK's largest providers of affordable housing with 66,000 homes across the country and we are the largest provider of affordable housing in London, with 30,000 homes across 25 London Boroughs. We provide desirable homes, sustainable communities and trusted services to around 200,000 customers. We also have a track record of regenerating communities, to transform the livelihoods of local residents with established regenerations such as Holly Street in Bow, and more recently Orchard Village in Havering which is nearing its final stage. We are also currently consulting on a major regeneration project in Merton.

Our approach to regeneration has community engagement and resident involvement at its heart and aims to build diverse and cohesive neighbourhoods. Ongoing consultation with local communities ensures that residents are able to get involved and influence the regeneration proposals for their neighbourhood. Circle engages local residents, businesses and community organisations in each area and works in partnership with local authorities to ensure it meets wider housing and regeneration objectives.

Circle Housing's response to the London Assembly

We welcome the opportunity to respond to the call for evidence for the inquiry into the demolition and refurbishment of London's social housing estates and our response focuses on our experience of major regeneration projects across the capital.

The Benefits of Regeneration

At Circle Housing, our mission is to enhance the life chances of our residents. We help achieve this by providing, managing and maintaining great places for people to live. In some cases, the condition of homes and general layout of an estate means that regeneration is the best way of addressing the problems residents face in their everyday lives. The decision to pursue a regeneration programme is never taken lightly and involves undertaking stock condition surveys, the anticipated long-term maintenance costs, initial consultation with residents, liaison with the local authority and careful analysis of the financial viability demolition and rebuild. A comparison between anticipated future costs of maintaining the existing homes and neighbourhoods versus the new, regenerated homes will inform the decision-making process.

¹ Our partners are: Nine registered providers (RPs): South Anglia Housing, Wherry Housing Association, Old Ford Housing Association, Circle 33 Housing Trust, Merton Priory Homes, Mole Valley Housing Association, Mercian Housing Association, Roddons Housing Association and Russet Homes; two support & care partners: Circle Support and Invicta Telecare, the UK's largest independent provider of telecare services, as well as Circle Living for sales, marketing and management of affordable and private rental homes.

The primary beneficiaries are the residents who stand to gain from high-quality, energy efficient, accessible homes that are better suited to their needs. This is particularly the case for vulnerable residents such as older or disabled people whose homes will be adapted to take their specific requirements into account.

There is a range of socio-economic and environmental benefits associated with creating what is likely to be perceived as a more attractive neighbourhood. The provision of improved local amenities means residents could see new schools, community facilities, better roads and transport links. Regeneration further supports local communities through the creation of apprenticeship schemes, employment and skills training and job opportunities for local people, not just in construction but in the long term through better local services.

Local businesses are likely to gain from increased footfall as visitor numbers increase and the 'place shaping' role of regeneration tends to be regarded as positive by Local Authorities. As housing numbers usually increase due to increased density and better laid out neighbourhoods, regeneration helps local and national government meet their housing targets. This is particularly important in London in the South East, which suffer from acute housing shortages.

In addition to residents benefitting from energy costs being kept to a minimum, more sustainable new neighbourhoods help to address climate change by reducing CO2 emissions. The Code for Sustainable Homes should be applied to new developments and a minimum of '4' is generally required by the local planning authority. Lower levels of crime and anti-social behaviour may be reported as the redesigned neighbourhoods are safer and residents feel a sense of pride in a better place to live.

The Importance of Consultation

Tenants and homeowners alike should be consulted at the earliest opportunity to build trust and demonstrate transparency. Residents of all tenures should initially be asked about what they like and don't like about where they live and what they would like to see improved.

Consultation should ideally be ongoing throughout the regeneration process but will intensify at specific times such as:

- Masterplanning – work with residents on the design of the new homes and layout of the proposed new neighbourhood. This could also include how open spaces could be improved, what parking facilities will be required and how access to public transport and local facilities would work. This work informs the production of the planning application
- Planning application submission – comments may be made to the developer or to the Local Authority through the formal planning application consultation process
- Demolition and rebuild including start on site and decant phase – liaising with residents who may have to move into a temporary home and keeping residents who remain on-site informed about the demolition process
- Phase-by-phase completion – residents move into their new homes and will require access to their landlord to respond to any questions or problems

Regeneration is carried out in stages (see above) and residents will have different concerns at different times in the process. A timetable of the regeneration process should be made available and regularly updated with residents being made aware of how long the new development could take to build so they can make informed decisions about their future.

In the case of the Merton Regeneration Project, Circle Housing intends to provide residents with a first iteration of the masterplan in the Autumn. This will be modified in consultation with residents before being submitted as part of the planning application process. We view masterplanning

consultation as an opportunity to refine the masterplanning options over time so that residents are able to see how their views shape the plans.

The main issues will pertain to uncertainty, disruption, resistance to change, the financial offer and the location and choice of new home. Refining and communicating the options and offer for residents at the earliest opportunity also helps build trust with residents. For tenants, there will be concerns about potential increases in rent once they move in to the new development. For the Merton Regeneration Project, we have made a pledge that all residents keep all their rights and have the same tenancy agreement, including rent levels, in the new neighbourhood as they do now.

Tenants should also receive home loss and disturbance payments plus financial assistance with moving home. Older and vulnerable residents should receive additional support as required. All existing residents should have the option of moving back to their neighbourhood and no tenant who is affected by decant should have to move outside of their Local Authority area or to an inconvenient location for services such as schools.

Disagreements and conflict inevitably arise, especially in the initial stages of exploring regeneration where there is a greater amount of uncertainty about the proposals and how this will affect existing residents. Evidence should be provided of the condition of the existing homes to help residents understand why we are undertaking regeneration in the first place.

An Independent Tenant and Resident Advisor may be appointed (with input from some residents) to act as an arbiter between the developer and residents to resolve disputes. A process of one-to-one liaison, negotiation and compromise on both sides is required to secure the best possible outcome for all parties concerned. It is also important to provide evidence of residents' comments and feedback and to demonstrate how their views are being taken on board throughout the consultation process.

With regards to funding regeneration, as a not-for-profit housing association, we reinvest any surplus we make into existing homes and neighbourhoods, or future regeneration projects. It is a challenge to convince some residents that regeneration is in many cases a loss-making venture, which is the case with the Merton Regeneration Project, which will be funded by Circle Housing if it goes ahead. Circle Housing does not intend to bid for the £150 million regeneration fund.

Early engagement with the GLA and the Mayor of London helps to make sure that London-wide policies for housing growth are factored in. Similarly, policies and initiatives as outlined in the London Plan and the Mayor's Housing Strategy could help to support or inform the regeneration objectives (for example. the identification of areas for housing growth and public land available for development, targets for new private and affordable housing, the housing design standards, First Steps and other programmes to help people on low incomes access homeownership, pan-London mobility scheme)

Further details of our consultation with residents for the Merton Regeneration Project and Orchard Village are outlined below.

Case Studies

CASE STUDY 1: Orchard Village

Partners: Old Ford Housing Association, London Borough of Havering, Willmott Dixon Housing

Background: Old Ford (part of Circle Housing) began work on Orchard Village in 2008. It replaces the Mardyke Estate which was originally built in the 1960s to house the Ford Factory

workers in Dagenham and became known over the decades as one of Greater London's most disadvantaged estates.

Residents were consulted at every stage of the development, including estate and home design. This engagement has continued with the establishment of the Orchard Village Neighbourhood Board and Residents' Committee. Orchard Village was also chosen by residents as the name for the newly regenerated neighbourhood. It reflects the area to the north of the estate, which used to be an orchard that provided fruit for the famous Tiptree jam company.

Listed as one of the country's top five housing developments by planning minister, Nick Boles MP, Orchard Village was also named one of Inside Housing's 'top 50 affordable housing developments.'

Delivering: The £80m regeneration project will see most of the existing properties demolished and replaced with modern, high quality, low-rise homes.

- Phase one started in August 2009 and completed in July 2011, with 121 new homes for rent built on the estate
- Phase two handover to residents of 178 new homes for rent was completed in April 2013
- Phase three will see the development of 88 new shared ownership and affordable rent homes, along with new commercial properties and a new Old Ford neighbourhood office on the estate. Negotiations are also under way with Havering Primary Care Trust to provide an on-site GP surgery
- Phase Four will see the development of 130 shared ownership and private homes for sale on the estate

As well as starting work on phase three during 2013/14, We will further regenerate the green space to the north of the estate and begin work on the new community hub, providing green space, shops, an NHS walk-in centre, a new Neighbourhood Office and car parking facilities. Heat and hot water are provided by gas boilers in an energy centre and a combined heat and power plant will be installed in phase four. We have also formed excellent relationships with the nearby Newtons Primary School before the stock transfer with the funding of a breakfast club. Pupils have been invited to see the progress of the regeneration and get involved in naming roads and planting a garden as well as joining residents for Carol singing. The school has received funding, most notably for classroom equipment and its multi-use games area, and has been involved in the consultation at each phase of building work.

All four phases of the project will be completed in 2016.

CASE STUDY 2: The Merton Regeneration Project

PLEASE NOTE: The decision to proceed with the Merton Regeneration Project is subject to further consultation with residents, and planning approval from London Borough of Merton.

Eastfields, High Path and Ravensbury consultation overview, July 2013 - present

- The initial consultation with residents started on 4 July and finished at the end of September 2013

- From the start we have been open about the possibility of regeneration, listened to the views of residents and given them as many opportunities as possible to feedback their views.
- We have talked about regeneration on High Path and Eastfields and part regeneration / part refurbishment on Ravensbury to residents, businesses and other stakeholders including councillors and officers at LB Merton
- Our conversations include looking at the problems residents face with their housing (many of which are associated with structural issues), the layout of their neighbourhoods and the quality of the open spaces
- Based on the consultation undertaken so far we believe that regeneration is the best way to deal with the range of issues and problems that residents told us about.
- We are in the early stages of exploring regeneration and no final decision will be made without involving residents in our proposals
- Residents are contacted through written communications, one-to-one meetings and phonecalls and are invited to consultation exhibitions and workshops
- We also engage directly with hard to reach groups including the elderly and vulnerable, single parents and young people by door knocking and organising targeted events
- In October 2013 the Circle Housing Merton Priory Board decided to explore regeneration further in consultation with residents. The consultation on masterplanning started in June and will conclude in October 2014 when the first iteration of the masterplan (with options) is presented to residents. We aim to submit a planning application in early 2015
- We appointed three teams of architects in March 2014 to produce masterplans for each neighbourhood in consultation with residents
- An Independent Tenant and Resident Advisor has been appointed to provide objective advice and support
- There have been positive comments about the opportunities that regeneration would offer alongside understandable concerns about the impact on individuals.
- The London Borough of Merton's Cabinet Members have supported our regeneration proposals by agreeing to a suspension of the Merton Decent Homes Standard work on the three neighbourhoods in question and making a commitment to scrutinising our progress and the approach we adopt

Process

- Newsletters and letters are delivered to all households, including absentee landlords, at least every two months. Posters and leaflets are sent out informing residents of upcoming consultation events and information is also available on the regularly updated website, mertonregen.org.uk
- We keep a record of correspondence with residents and produce summaries of feedback after each consultation event which will be uploaded to our website
- We are in regular contact with local businesses, community leaders and nearby residents

- We brief the local media, elected and opposition councillors and have a close working relationship with council officers at the London Borough of Merton

Residents and stakeholders and communication methods

To ensure effective, targeted communications, **residents** have been segmented into groups according to tenure (tenant, leaseholder, freeholder, landlord) and needs (older and vulnerable people, young families / single mothers, young people).

In addition to face-to-face contact with residents through exhibitions and workshops (including activities for children), we hold coffee mornings for older residents, liaise with the community mental health team, translate publications and make them available in large print or Braille if required. We will also be targeting local schools, mother and baby groups, youth and community groups and influential local stakeholders as part of our autumn consultation.

Key stakeholders have been identified and prioritised and our stakeholder engagement strategy is regularly reviewed.

Feedback mechanisms include:

- Questionnaires from our architects and independent advisor and post-it notes filled in at each event
- Records of conversations with all residents who have been contacted
- Emails and letters collated and responded to

The case for regeneration

If regeneration goes ahead it would:

- Provide well-designed homes for all residents
- Bring an end to over-crowding
- Provide better insulated homes which use less energy
- Bring new and improved green spaces to the area
- Improve safety, access, parking and bin storage

Regeneration could support wider ambitions for Merton by helping to support business growth, job creation and the provision of new community facilities.

It also has the potential to contribute to environmental sustainability in the borough by delivering modern, energy efficient homes that are more cost-effective to run.

At the same time as Circle Housing Merton Priory is working on the designs we will be developing the financial options for people who own their homes. We want to retain and enhance the strong community that's already in place on these neighbourhoods and will provide as much support as we can to enable homeowners to stay.

ENDS

Demolition and Refurbishment of Social Housing Estates in London

Thank-you for giving Royal Greenwich the opportunity to comment on the London Assembly's research on the demolition and refurbishment of social housing estates in London; in response to your questions:

- **What is the purpose of regeneration programmes and who benefits?**

The purpose of estate regeneration is not only to improve the physical fabric of the housing but also to look at integrating the areas into the wider neighbourhoods, in relation to developing mixed tenure estates which promote social mobility, economic growth and a long-term sustainable community.

The benefits are twofold:

- for the new occupants – some of whom will be the original community, in terms of improved housing; and
- for the wider communities with the socio-economic benefits delivered by the scheme.

Estate regeneration is often fundamental to wider area regeneration, as it is with Woolwich's Town Centre.

In most cases this regeneration of estates will lead to an increase in density, providing much needed additional housing, although the full replacement or increase in affordable housing can be difficult to deliver, specifically where the existing estates have a relatively high density and a low land value – see point below.

- **Which factors are considered in the decision to refurbish, or demolish and rebuild?**

Regeneration is considered where the costs of refurbishment are excessive and/or these works will not address the wider issues of the estates, e.g. inherent design problems resulting in crime and anti-social behaviour; poor space standards and low levels of sustainability. There will also be a consideration in relation to whether the land is effectively being used, and whether there can be a better layout of homes to integrate the estate into the surrounding neighbourhoods and also increase density.

Generally estates are considered via an option appraisal process, which will include resident consultation. The cost and benefits are assessed against the authorities' corporate priorities as well as just a purely financial analysis via a viability test. As well as the financial test a key criteria for assessment is the authorities' ability to re-house tenants. An assessment of offering an 'option to return' also needs to be considered in relation to both affordable housing numbers on and off site, and also the timing of the 'decant' and delivery.

- **How are tenants and leaseholders involved or consulted and at what stages?**

Early consultation is always preferable, but there is also a balance where initial feasibility work needs to be carried out to give an overall indication of feasibility and political support before residents can be consulted on taking an estate forward for redevelopment.

Any decision to regenerate will require as a minimum consultation under Section 105 of the 1985 Housing Act. Good practice will however be more extensive with consultation taking place on options – including potentially design sessions with architectural support, and the setting up of resident project teams to consider issues affecting residents and the scheme.

The project/resident teams will continue throughout the appointment of a developer, the construction and occupation periods. What is important within this consultation is to be honest in relation to where residents have the capacity to change the proposals.

Even with pro-active consultation mechanisms it is difficult to engage with the majority of residents, and so representation and consultation methods always need to be considered.

- **How does the regeneration work and, in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?**

Once development partner has been procured, there will be a rolling programme for achieving vacant possession of the estate(s), handover and development. This timing will be dependent on the cash-flowing of the scheme by the developer and authority including the sales rates that can be achieved and the capacity to find alternative suitable accommodation.

Re-housing and buying back of leasehold interests are always the key areas of concern for residents – more than the development itself. There needs to be on-going consultation and information on the processes and again a level of honesty – length of programme, and using Ground 10A action for tenants and a CPO for leaseholders. Due to the sensitive and personal nature of individual cases there does need to be specialised teams in place on a large scale scheme to give advice and support through this process. Satisfaction with both the process and housing outcome needs to be reviewed and issues taken on board for future phases. This should be ‘standard stuff’, but the quality and accessibility of the support is crucial in relation to reducing stress for existing tenants, where being forced to move, maybe a life changing event.

In addition, the demolition and build process can be adjacent to occupied properties and the management of these needs to be tight, in relation to site access, noise, hours of work, etc. It is standard to have a resident liaison officer employed by the developer; in addition the authority needs to acknowledge there will also be construction related issues for the wider community the area and consultation/information here also needs to be addressed.

As well as the re-development, there should be defined socio-economic benefits arising from the scheme for residents. For the Woolwich Estates scheme within Royal Greenwich there are contractual benefits for employment and training, as well as community fund and general skills such as IT and DIY. This needs to be consulted/communicated with the residents as a positive aspect of the scheme.

To ensure the new development remains well managed and maintained, occupants of the new mixed tenure schemes need to be included in taking forward cross-tenure management companies.

- **What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?**

Where estates are failing there are opportunities for both improving the quality of housing and increasing numbers. Both of which are key priorities for the GLA.

There are a number of issues that need to be considered/resolved in taking forward schemes:

Funding for the development

Overall viability will always be an issue; and public funding through grant or LA support may not be enough to bridge an investment gap for a scheme. It is likely in such cases the scheme will not go ahead, unless an increase in new build values can cross-subsidise the development. (This has happened in Woolwich).

Although schemes may overall be viable, there can be issues with an initial cashflow of the scheme which could mean the regeneration will not go ahead. This is a specific problem at the beginning of the scheme where vacant possession and demolition costs need to be forward funded before any development can commence.

Although the newly announced Regeneration Funding may assist with this, this is only reducing the interest on capital, not always giving the financial kick-start a scheme requires.

Buying Back Leaseholders

Although authorities can apply to the Secretary of State under paragraph 4 (2)(a) of Schedule 5A to the Housing Act 1985 to give initial demolition notices to restrict the level of RTB's, quite often this is too late. On estates where the levels of leaseholders are high, the cost of buying-back can be prohibitive in taking schemes forward. This is made worse by the changes to discount levels, increasing the numbers of RTB's and adding substantial costs to any demolition and re-build scheme.

There is also a specific problem highlighted in London where not only values can be high but where the authority is paying these values to non-resident leaseholders (including statutory compensation). A high percentage of leasehold units are bought as an investment interest, and private landlords are gaining from public investment to the estates.

RTB is a national policy and it maybe that it is difficult for the London Assembly to address the issue of restricting the sale of council homes; but there could be some consideration of how payments to non-resident leaseholders are made.

Levels of Rent

For existing communities who move to the new developments, there is an issue where affordable rents /ART are substantially more than secure rents. A higher percentage of social/target rental units need to be delivered to meet the needs of those being re-housed

from the scheme, potentially not meeting the average of 65% of market rent across a site/scheme.

Where there is an argument to justify a high proportion of social rents, this should be considered by the GLA. It is a way of retaining communities and community cohesion.

Level of Affordable Housing

Within the London Plan it is acknowledged that the new development should consider the development of mixed and balanced communities (Policy 3.9), however where there are high levels of affordable housing that will be demolished it is often difficult to have a viable scheme which replaces all affordable units. This is considered under Policy 3.14, where *'...any loss of housing, including affordable housing should be resisted...'*. The definition of loss should be extended beyond the immediate planning application and site, including any new affordable provision off-site, which means there is no overall reduction locally.

Funding to enable Local Authorities undertake large scale redevelopment

Although the changes to the HRA funding are giving authorities headroom to build new homes, it is generally not enough to enable authorities to become the affordable provider on a regeneration scale; the Registered Provider's access to levels of private finance is required here.

Any changes to grant levels and access to private finance for local authorities could improve the deliverability for LA's; which for current tenants would be positive.

As with rental values, the landlord can be an issue for the original community moving/staying within the development and LA's being in a position to develop on a large scale on their own land.

We hope that this assists you with your review.

Royal Borough of Greenwich

30th July 2014



London Assembly's Housing Committee

Investigation into demolition and refurbishment of
London's social housing estates

Response of CIH London Regional Board

July 2014

Introduction

1. The Chartered Institute of Housing (CIH) is the professional body for people working and with an interest in housing. We have over 22,000 members across the UK and Asia Pacific. We are the professional voice for housing and the home of professional standards. CIH's Regional Board in London (CIHLB) is a voluntary board seeking to raise awareness of the capital's housing issues through events, conferences, networking and lobbying activity. The issues and challenges of housing affordability, homelessness, the private rented sector and promoting quality standards are core priorities for our current work. CIH's London region has nearly 2,500 members.
2. CIHLB welcomes the opportunity to respond to the committee's investigation into demolition and refurbishment of social housing estates, and the approaches taken.

Key questions

What is the purpose of regeneration programmes and who benefits?

3. Regeneration is about addressing areas of social, physical/ environmental and economic deprivation, to renew the physical and social fabric and develop resilient communities in well-connected places where people are happy to live and work. The physical needs of poor quality housing, buildings/ facilities and environments are typically accompanied by high incidence of social and economic pressures including high levels of worklessness, overcrowding, anti-social behaviour, significant health problems, low aspiration and educational achievement.
4. Regeneration causes significant upheaval. However, in the longer term, it brings benefits all round to local people, businesses and authorities. It provides the benefits of more decent housing for existing and new residents, connected to better facilities and business/ employment opportunities. Increasing the opportunities for work and effective connections to better health, education and other facilities all benefits the wellbeing of individuals, and the economic growth of the local area.
5. Increasing densities in estates through regeneration supports viability and cross subsidises social homes. Delivering a genuine mix of housing types, sizes and tenures, alongside measures to support community capacity, contributes to sustainable communities and social/ economic wellbeing. Improving standards, including energy efficiency measures, helps to reduce long term maintenance costs for landlords and costs of living in and running homes for residents.

Which factors are considered in the decision to refurbish or demolish and rebuild?

6. A complex range of factors need to be considered, and the approaches taken have to be tailored to each estate. The economic viability and effective life span delivered through refurbishment compared to rebuilding is a critical one in the overall investment appraisal.
7. Factors to be considered include:
 - Age, condition and structural design issues in current stock
 - Resident satisfaction and concerns
 - Management and maintenance issues
 - Impacts of tenure mix – numbers of leaseholders and volume of compulsory purchase orders
 - Best use of land and increasing density
 - Opportunities to plan in wider social value – Safer by Design, healthy cities etc.
 - Financing – availability of grant and alternative sources of funding; development finance at reasonable interest rates; capacity of housing association to borrow
 - Local housing markets and the opportunities to develop homes for sale and cross subsidise schemes
 - Capacity and costs of relocation/ decanting locally.

How are tenants and leaseholders involved/ consulted and at what stages?

8. Residents are key stakeholders to involve, as they are directly affected by the interventions and in turn will directly affect how successful the interventions are. They have unique information and insight into how their area works and therefore are a valuable source of ideas about how to make improvements. Housing providers should seek to involve residents at the earliest stage possible, balancing this with any risk of raising expectations that will not then be fulfilled.
9. Investment appraisals should be available to residents as part of the ongoing consultations, to enable them to participate in the decision making for their area.
10. Engagement and communication needs to be clear and continuous through the process. There should be a range of methods to communicate and engage with residents and to enable them to participate, from digital and online vehicles, through to face to face interviews. This should also enable providers to ensure they connect with 'harder to reach' groups in local communities.
11. Although unanimity is rarely achieved, the support of community leaders and others of influence in the area is required to help make progress in regeneration programmes. Measures to support

communities, to build their capacity to engage, and to communicate and manage expectations over the lifespan of the programme need to be factored into the process.

12. Listening to residents to understand and directly address their concerns from the outset is vital, as is finding shared solutions with local communities. Common concerns include the impact on existing communities, disruption, quality of properties following work, future availability of social homes, and security of tenure.
13. There are legal procedures required in respect of consultation with leaseholders, whose concerns may be different from tenants across the estate, and from each other, for example, if they are resident or commercial leaseholders. For demolition and rebuild, a mix of incentives (compensation packages etc.) and compulsion (compulsory purchase orders) may be required. However, compulsion should be seen as a last resort. Not only is it an expensive option but it can lead to delays in progressing the overall redevelopment programme, and, potentially, negative publicity for the programme and its aims
14. Similarly in cases of refurbishment, measures that help leaseholders to stagger payment of large bills may be necessary, particularly for resident leaseholders which may include those who have exercised the Right to Buy and are 'asset rich, but cash poor'.

How does the regeneration work and what are the key problems for estate residents during the process?

15. Relocating residents whilst work is in progress is a critical issue and the disturbance is one of the main factors causing problems and distress for residents. So having identified staff, clear communications and other processes, and adequate support and compensation for residents are priorities to mitigate this. Support packages must have sufficient flexibility to be able to meet the varied requirements of different households in the community.
16. Decisions to demolish and rebuild will also depend on the capacity in the local and neighbouring areas to support people being moved and ideally only once. Effective working with other local housing partners will play an important part in making this happen effectively.
17. Depending on the size of the regeneration scheme, it may be phased with the capacity to move people within the estate in the different phasings. This enables residents to see progress, although it also means they live for an extensive amount of time with considerable disturbance.
18. Careful choice of contractor is important, reflecting their experience of handling regeneration work, and capacity and experience in resident liaison. There should also be clear benefits for local communities, for

example, through contractors' commitment to employ local people and work experience and apprenticeship opportunities for local residents and young people.

What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?

19. Large regeneration projects have significant up-front costs, including masterplanning and leasehold buy back, which can be extremely difficult to fund. A fund to support these early costs, which could then be recycled following the later stages of the programme would be a valuable support. In particular it would help address residents concerns where programmes become delayed or stall due to funding problems. The Mayor could work with CIHLB and other key public and private sector stakeholders to explore innovative models to fund regeneration and facilitate access to affordable finance. CIHLB is keen to work with the Mayor to progress discussions around these two core issues and welcomes the opportunity to engage further to explore sustainable solutions for regeneration projects in the capital.
20. The current discount levels for Right to Buy (RTB) have led to an increase in applications. The numbers of leaseholders, including those who have exercised RTB, is a factor in the costs and capacity to undertake regeneration. Apart from this complication, we are concerned that the current system of RTB receipts is not providing the one to one replacement as intended, with negative impacts for the ongoing delivery of suitable homes.
21. The Mayor could facilitate a one-step discussion/ consultation with GLA and relevant local authorities to speed up the planning process.
22. Similarly more coordinated work across the GLA and local boroughs on some of the more complex and politically sensitive issues (such as compulsory purchase orders) would also help to simplify regeneration programmes
23. The Mayor could usefully support organisations by bringing together professionals, sharing best practice and ideas of how to improve and simplify the process and deliver better experiences and outcomes for local people. CIHLB would be happy to support the Mayor in this; our events and activities are focused on supporting housing professionals in the capital. We are keen to progress discussions around this and all issues raised in this response.

For more information on the members and work of CIH London Board see [CIH website](#).

Chair: Lynda Hance

Policy: Michelle Chivunga

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LONDON BOROUGH OF WALTHAM FOREST

RESPONSE TO CALL FOR EVIDENCE

Demolition and Refurbishment of London's Social Housing
Estates

Contact: Joan Murphy

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Response to GLA call for evidence on – Demolition and refurbishment of London's Social Housing estates

Introduction

The London Borough of Waltham Forest has been asked to provide a response to a London Housing Assembly Committee in relation to a review being carried out regarding the demolition or refurbishment of London's Social Housing Estates.

We are actively working on the regeneration of two large social housing estates: Marlowe Road which consists of 10 blocks and 218 homes, and Montague Road which consist of two high rise blocks with 234 homes.

We hope that this is the beginning of a wider refurbishment/regeneration programme of Council homes that will bring all of our estates up to a high quality.

We have been asked to provide responses to a series of questions which are set out below.

What is the purpose of regeneration programmes and who benefits?

We originally carried out a review of 27 of the Council's social housing estates in 2012 as we were aware that some of the estates required major intervention to bring them up to a quality standard. The review also looked at other indicators such as levels of anti-social behaviour, levels of satisfaction and the maintenance costs. The review was a snapshot in time that looked at stock condition, estate popularity, design and environmental conditions & socio economic conditions.

The purpose of the review was to create a framework for prioritising future regeneration investment and the review divided estates into levels of priority based on the need for investment and quality of life for residents.

Two estates were identified as being the highest priority and we have since been working on identifying regeneration opportunities for both these estates which can be achieved within the funding that is available.

Since the review was carried out, there has been a bigger focus on identifying development opportunities and regenerating estates as part of wider regeneration to facilitate a more attractive and prosperous borough. We are currently re-visiting some of the estates to also consider development potential, including opportunities to re-shape estates to increase overall density. This work is currently in progress.

In terms of the purpose of the regeneration programme and who benefits, there are a range of considerations and this will vary depending on the estate. Some of the potential/anticipated benefits are:

To replace/refurbish worn out or defective buildings - this was certainly one of the initial drivers for carrying out the review of the estates as the Council was incurring high repair costs to sustain buildings that were not to the standard that was required.

Tackle poor design to meet problems due to changing lifestyles - one of the estates we are considering regenerating has a specific problem with balconies which are also fire escapes. Changing lifestyles means that people are using these to store their items such as bikes and prams, resulting in high management costs as we have to carry out monthly inspections. Other examples are a need for an increased level of security which some older estates do not facilitate and a desire to remove bedsits and create larger homes.

Catalyst for positive change to a neglected area – One of the estates we are considering for regeneration is situated in an area which is predominantly Council housing and a key aspiration for us is to have high quality, attractive mixed tenure homes which we hope will act as a catalyst for developers and businesses to invest in the area.

Deal with problems of large mono-tenure areas to produce a more mixed and balanced community – Delivering growth is a key driver for Waltham Forest and we believe that mixed tenure areas are a way of ensuring that all residents benefit from this growth. Estate regeneration enables us to change areas or estates that are predominantly mono-tenure.

Increase density – this is becoming an increasing priority, particularly for Waltham Forest where most of the borough has already been developed.

In terms of who benefits from estate regeneration:

- existing and future residents of the estate will obviously benefit by having improved living conditions and an improved environment
- the Council benefits from lower maintenance costs and higher levels of residents satisfaction
- All residents of the borough benefit from more attractive surroundings
- Local businesses can benefit from a more diverse community if some residents have higher incomes

Which factors are considered in the decision to refurbish or demolish and rebuild?

We will consider the following factors are considered when deciding when to refurbish or demolish or re-build:

Property Condition – we will consider factors such as whether the property is structurally sound or not, what are the current and future maintenance costs, what is its life span etc.

Financial Viability – this is a major issue for us and is one of the reasons that we have had to delay the regeneration of several of our estates.

We will look at whether density can be increased to provide cross-subsidy, what funding is available, what decanting opportunities there are and how many leaseholders need to be bought out.

Visual Assessment – we will consider whether the Estate is attractive and whether it fits in with the surrounding area. In particular, we would want to change a design that is having a negative impact on the area.

Socio-Economic Conditions – factors will include issues such as whether the estate is predominantly mono-tenure, resident satisfaction levels, ASB and levels of crime, levels of overcrowding etc.

Popularity – this will include whether the estate is difficult to let and whether there are high levels of void turnover, although the reality is that all properties in London are now relatively easy to let. However, if an estate is popular, it can be difficult to persuade residents that blocks should be demolished.

How are tenants and leaseholders involved or consulted and at which stages?

Tenants and leaseholders are involved at the start of the process and throughout.

Start of process

This will include:

- A main consultation event to get general feedback and identify residents who want to be actively involved and be part of a steering group
- Door to door surveys of all residents to get their views on what they think of the estate, what they like and don't like about living there and to identify housing needs and levels of overcrowding

- A steering group of residents appointed who work with us to decide the way forward

Developing proposals

- Working with steering group to develop and look at options
- Training steering group on issues such as contracts prior to interviewing with developers
- Newsletters and face to face consultation events and meetings with wider groups of residents throughout

Once chosen option has been agreed

- Developing decanting and buy-back options with residents
- Involving steering group in interviews and general decision-making
- Involving steering group in the selection of the development partner
- Further consultation with wider community through the planning process, with additional consultation events, and fun-days. Dedicated decant staff appointed to work one to one with residents and assist in moves
- Local presence for drop in sessions

When on site

- Maintaining presence on site for management and other day to day issues.
- Developer appointing Resident Liaison Officer
- Steering group developing into a contract monitoring group
- Regular newsletters sent throughout all the stages.

How does the regeneration work and, in particular, what are the key problems for estate residents during the process? How are these best managed and resolved?

Some of the key problems for residents are as follows:

Uncertainty and inability to plan

The prospect of having to move home, uncertainly about when this will happen and not knowing where they can move to can be very unsettling for residents. In any regeneration scheme, there will be some who oppose what is being planned and these people can stoke disquiet among residents and add to the inevitable concerns that others may have.

This can be best managed by:

- Using the right kind of people to do the consultation - people who listen, communicate well and have empathy with residents' concerns.
- Maintaining effective and regular communication with everyone through a variety of means
- Using the steering group as communicators
- Providing reassurances and having a site presence
- Giving residents the choice wherever possible

Making choices about the future

Residents will often be given a range of options about where to move to, a right to return involving a two stage moving process etc.

This can be best managed by:

- Giving a range of alternatives where this is possible and communicating alternatives in a way that is simple to understand
- Learning from previous resident feedback on what is important to them such as security and dealing with overcrowding
- Ensuring phasing allows for those who want to stay on the estate with one move
- Providing a show home at earliest stage
- Offering choices of colours and finishes

Living in a part empty block or living on a building site for a long period of time

This can best be managed by:

- Additional security presence on the estate during the decanting process
- Providing on-site management and developer resident liaison officer during process
- Ensuring that planning conditions re hours of operation and delivery are adhered to
- Allowing access through the site where possible and keep residents informed of temporary closures
- Offering respite homes at difficult periods
- Offering temporary moves with right to return

What more could the Mayor do to support effective regeneration whilst maintaining mixed communities?

Funding – funding is a major issue for the Council. While we are happy to form partnerships with private developers, there is a danger that too much reliance on these partners will not

ultimately lead to the best deal for residents and for the Council. Providing up-front funding to allow the Council to involve architects and consultants would make sure that the Council and residents interests are better protected and would also allow us to work with residents at the earliest stage. It would also allow us to set out the developer brief rather than leaving it to developers.

Allow use of RTB receipts on regeneration schemes – at the moment it can only be used for additional homes. This should be extended so that we can also use it to finance estate regeneration.

Leaseholders – Buying out leaseholders is a major financial burden and we inevitably see a surge in RTB sales shortly after consultation commences on potential future options for the an estate. We would like an embargo to be put on Right to Buy at an earlier stage once options are being considered and would also like more innovative alternatives for leaseholders who are bought out so that they can stay in the community.

Prioritise and support regeneration – By making regeneration of mono tenure estates a priority in the mayor's strategy and providing funding for this purpose.

Robust frameworks – Having a framework that Local Authorities can use is a potentially valuable tool for us but it needs to be robust and well supported by the GLA to avoid delays, abortive costs and potential legal challenges.

Fast Track CPOs and Possession Orders – A single tenant or leaseholder who needs to be decanted can frustrate the process and risk the council incurring substantial financial penalties by making unreasonable demands. Often, Councils will give in to these demands because of the length of time required to obtain a CPO or a Possession Order. It would be helpful if the Mayor could lobby the Government to bring in legislation to fast track these actions where it is risking the success of estate regeneration.