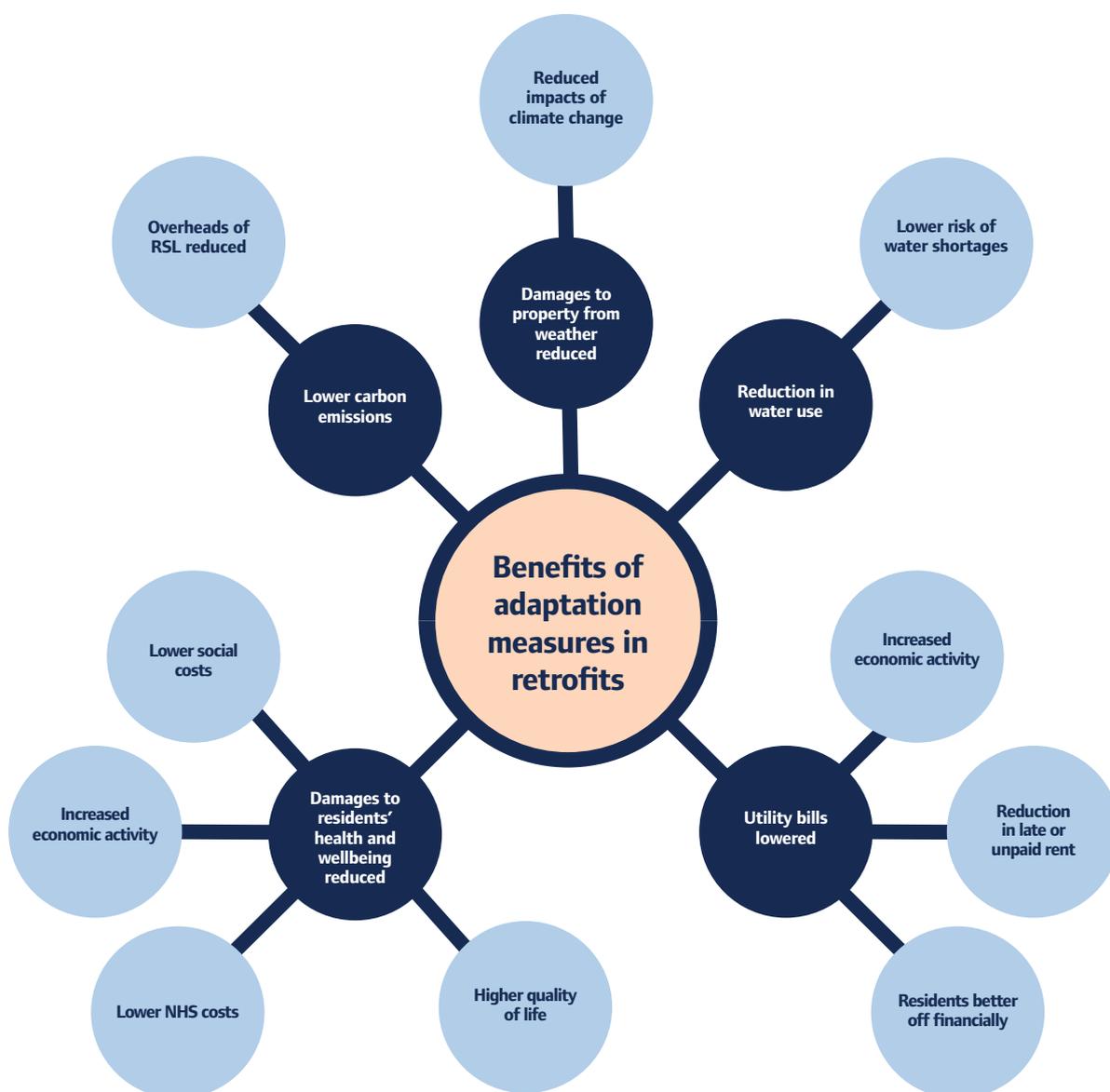


A guide for Registered Social Landlords

The Business Case: Incorporating adaptation measures in retrofits

Adaptation measures in retrofits – the financial case

Weather already has a financial impact on social housing that we can measure. Direct impacts such as building damage from flooding, and indirect impacts, such as damage to residents' health from stress or extreme temperatures, are here to stay, and they are set to increase as a result of  **climate change**. Adaptation will be a 'must do' so combining it early with other works is a saving not just for society but also for Registered Social Landlords (RSLs).



Proven steps can significantly reduce risks, lower building maintenance costs and improve quality of life for residents. Some measures can be easily absorbed into existing maintenance programmes, while other more complex and costly measures such as external wall insulation (EWI) require investment and planning. Many adaptation measures may be installed at little or no cost, and provide multiple benefits, from immediate savings on fuel bills, to reducing carbon emissions through reduced energy and water use.

Understanding how climate change will impact our homes, identifying priority risks and acting on them now can save landlords, residents and local services time, money and disruption. Coordinating action with existing refurbishments and maintenance offers opportunities for substantial efficiency savings for landlords.

Recognition of the financial benefits for stakeholders such as the NHS may offer routes to closer partnerships and funding opportunities.

LCCP's 2013 report [Your Social Housing in a Changing Climate \(YSHCC\)](#) analysed the costs and impacts of combining decent homes works with adaptation works to 200 homes in the Colne and Mersea tower blocks in Barking and Dagenham. Combining adaptation with Decent Homes refurbishments reduced the residual cost of adaptation measures by £920,000 – a 39% saving against carrying out adaptation works in isolation. £700,000 was saved on preliminary costs alone.

The case study included a wholesale refurbishment, combining cheaper measures such as water efficient fittings and external shading with more expensive measures such as external wall insulation (EWI).

Table 1: Residual costs of adaptation in YSHCC case study (once essential elements of Decent Homes works are deducted)

Measure	Total Cost	Cost of work required for Decent Homes	Residual cost of adaptation	Residual adaptation cost per home	Description of adaptation measures
Replacement bathrooms	£250,000	£220,000 (complete bathroom replacement)	£30,000 ¹	£150	Water efficient taps and WCs, new showers, water meters, small volume bath
Overheating protection	£2,000,000	£700,000 (Scaffolding, site offices and other prelims)	£1,300,000	£6,500	Triple glazing, external shading, EWI, mechanical extract ventilation, heat reflective exterior
Flood damage risk reduction	£110,000	Not required by decent homes	£110,000	£550	Rehabilitation of existing drainage systems, one-way drain valve, water resilient exterior
Total Cost	£2,360,000	£920,000	£1,440,000	£7,200	

Adaptation has significant financial and economic benefits

Adaptation measures have significant direct and indirect benefits. The tables below use existing evidence to estimate the financial impact of the YSHCC case study. Significant additional indirect impacts such as increased economic activity seem likely but are hard to quantify.

Table 2: Estimated impacts of YSHCC case study on NHS costs, and the cost of carbon emissions based on available evidence - the economic benefits.

The economic benefits of adaptation	£ total YSHCC impact / year	£ per property / year	Evidence
Avoided NHS costs for respiratory illnesses falls and stress	4,950	25	In a recent study in Nottingham, residents reported that newly insulated homes were more comfortable, anxiety around energy costs reduced and respiratory illness caused by damp and mould improved. These limited NHS savings were identified but further benefits were expected ² .
Reduced heat cramps and heatstroke	1,251 ³	6	Projected national NHS costs for additional hospital admissions during heatwaves range from £51million to £404million per year as a changing climate and aging population combined to increase our vulnerability ⁴ .
Reduced mental health costs through avoiding flooding (8 ground floor flats only, at 1% flood risk)	201	25	A DEFRA study of the potential benefits of climate resilience measures on avoiding severe flooding estimated that avoidance of the severe 2007 floods in Hull could save £2,513 per household in stress related mental health treatment ⁵ .
Avoidance of disruption to working days (8 ground floor flats only, at 1% flood risk)	252	31	The DEFRA study found that after severe floods residents averaged 26 days off work
Carbon savings • 223 tonnes avoided due to EWI and triple glazing • 23 tonnes avoided due to avoided air conditioning • 69 tonnes due to reduced hot water usage	28,428	142	DECC guidance on costing carbon benefits for policy purposes ⁶ ranges from £59 per tonne of carbon in 2013 to £170 per tonne in 2043, with prices increasing more rapidly from 2031. The yearly figure quoted here is an average over this 30 year time period ⁷ .
Total yearly economy savings	35,082	23	

Table 3: Estimated direct savings for landlords

Financial benefits for landlords in adaptation	£ total YSHCC impact / year	£ per property / year	Evidence
Flood damage risk reduction	1,790	224	Avoided costs of kitchen replacement estimated in YSHCC report, applied to 8 ground floor flats only at 1% flood risk.
Avoidance of temporary housing costs for flood victims	536	67	Based on DEFRA report on average costs of temporary housing during 2007 floods in Hull ⁸
Total landlord savings	2,326	291	

Additional indirect savings may include security of rental income, insurance costs and avoidance of service disruption.

Table 4: Estimated resident savings through reduced utility bills in the YHSCC case study

Benefits – Financial case	Total estimated savings £ per year for all 200 homes	Household savings £ per year
Reduced water bills (due to water efficiency measures)	13,600	68
Reduced water heating (due to water efficiency measures)	11,800	59
Reduced space heating (due to EWI and triple-glazed windows)	44,000	220
Avoided cost of air-conditioning (due to EWI, shading and triple glazed windows)	5,600	28
Total resident savings	75,000	375

Net financial and economic impacts

Table 5 outlines the total figures from tables 1-4 and illustrates the total of the net present value calculation for the Colne and Mersea retrofit. It is important to note that the savings included in the table below are annual. The net present value calculation sums up these savings over the 30 year time period and then calculates the present value of those savings. It compares those savings with the costs of the project. The total for this project is a net benefit of over half a million pounds. It should be noted that the Colne and Mersea retrofit was an expensive project. The benefits over costs could be even higher in other projects.

Table 5: Aggregated costs and benefits of adaptation in the YSHCC case study.

Totals	£
Total residual costs of adaptation (table one)	-1,440,000
Total yearly economic savings (table two)	35,082
Total yearly landlord savings (table three)	2,326
Total yearly resident savings (table four)	75,000
Net present value over 30 years⁹	580,719

Funding for climate change adaptation

The YSHCC figures above demonstrate the wide social and economic value of climate adaptation. There are several ways to overcome funding shortfalls.

Include adaptation in existing maintenance programmes

Smart asset management strategies will identify and prioritise the properties and residents most at risk from climate change and will combine no and low cost adaptation measures with current maintenance programmes.

Decent Homes

Continuing Decent Homes works in many areas of London presents a major opportunity for integrating adaptation measures into existing programmes, thereby drastically reducing future costs. Replacement of kitchens and bathrooms is a prime opportunity to install water efficient fittings. Equally, improvements to thermal comfort may cost effectively be leveraged to go beyond minimum standards.



We have used the lessons we learnt in the YSHCC case study to maximise cost effectiveness by rolling out adaptation measures throughout our maintenance programmes

Roy Carden, Project Delivery Manager (Housing), London Borough of Barking and Dagenham



Utility companies and the Energy Company Obligation

The big energy companies are obliged to invest in the energy saving measures that wouldn't otherwise be viable. These target specific priorities including solid or hard to treat cavity walls, district heating systems and replacement boilers for low income and vulnerable groups. The  **Mayor of London's RE:NEW support team** aims to help social landlords to take up this funding.

The Green Deal

The Green Deal enables householders to pay for energy efficiency improvements through savings on their energy bills. Energy-saving improvements eligible for the Green Deal include insulation, heating, draught-proofing, double glazing, renewable energy technologies - e.g. solar panels or wind turbines. Although uptake among housing providers has been limited, this remains a key government policy and recent changes may aid take up. Again, the  **Mayor of London's RE:NEW support team** aims to help social landlords to take up this funding.

Health and Wellbeing Boards

Local Authority Health and Wellbeing Boards were established to develop integrated approaches to the determinants of health in local areas. While there is no specific NHS funding stream available for housing, Health and Wellbeing Boards should consider and collaborate with relevant partners including housing authorities. The financial impacts of housing adaptation noted above may support additional cooperation on this front and develop new routes to funding.

Endnotes

- 1  **Cost of building to the Code for Sustainable Homes**, Communities and Local Government (2011)
- 2  **Decent homes impact study**, Nottingham City Homes (2012)
Mid-range estimate calculated by dividing total NHS costs by a projected population of 69 million to 86 million and multiplied by an average of 2.3 people per property. This calculation assumes that the YSHCC improvements remove this vulnerability across all 200 flats but can only be tentative as heat-related hospital admissions may also occur outside the home.
- 4  **Climate change risk assessment health technical report**, DEFRA (2012) p115.
- 5  **The Economics of Climate Change Resilience: Appraising interventions to diminish the mental health impacts of flooding – a case study of Hull**, DEFRA (2013) p.22
- 6 A discount rate of 3.5% is used
- 7  **Carbon valuation in UK policy appraisal: A revised approach**, Department of Energy and Climate Change (2009)
- 8  **Economics of climate resilience**, DEFRA (2012)
- 9 A discount rate of 3.5% is used here in accordance with DECC and Mayor of London procedures



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City Hall
The Queen's Walk
More London
London SE1 2AA

www.climatelondon.org.uk
enquiries: info@climatelondon.org.uk
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www.sustainablehomes.co.uk

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