

# Northumbria Research Link

Citation: Deloughry, B., Hudson, P. and Phillips, Steve (2020) The Role of Local Authorities in Catalysing the Adaptive Re-use of Buildings in London. In: ARCOM 2020: Building A Common Good in Construction, 7-8 September 2020, Technological University Dublin, Dublin. (Unpublished)

URL:

This version was downloaded from Northumbria Research Link:  
<http://nrl.northumbria.ac.uk/id/eprint/44173/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)

# **THE ROLE OF LOCAL AUTHORITIES IN CATALYSING THE ADAPTIVE RE-USE OF BUILDINGS IN LONDON.**

During an unprecedented period of urbanisation, the need to re-evaluate how the built environment is managed and re-used within the UK has grown ever timelier. Due to the global sustainability agenda a fundamental shift in attitudes towards conservation presents opportunities for local authorities to consider new uses for neglected buildings that might otherwise be demolished. These new adaptive re-use approaches should benefit the environment by conserving natural resources and minimising the need for new materials. Given that 80% of the current building stock in the UK is expected to be still in use in 2050, the adaptive re-use of existing buildings will become a key method of sustainable development. This research should therefore be of interest to all actors within the UK construction industry supply chain.

A critical review of key literature explores the fundamental principles of adaptive re-use in the urban environment. The inquiry appraises the key barriers and underlying issues faced by building owners, developers, and local authorities in assessing the case for demolition or adaptive re-use. 20 London-based local authority planning professionals from 14 London borough councils completed a questionnaire survey, which recorded their attitude towards the drivers, barriers, and proposed solutions to the implementation of adaptive re-use, as revealed through the literature review process.

The study concludes that there is an appetite amongst local authorities to increase their scope of influence beyond the current conservation area / listed building criteria system. However, despite these changing attitudes and advances in planning policy guidance, adaptive re-use remains an undervalued approach to sustainable development. It is suggested that the key to its future success is a coordinated approach from national to local level of monitoring, understanding, and influencing how existing building stocks can be rehabilitated in a sustainable way.

Keywords:

Adaptive Re-use, Planning, Sustainability.

## Introduction

In an era of global population growth, rapid urbanisation, technological advancement and economic flux, urban planning and construction is in a state of constant evolution, while its fundamental ethos is under persistent scrutiny and debate. With the intensification of urban land use comes a need for more rigorous controls on the environment, and greater responsibilities in sustaining social well-being and economic prosperity.

Consequently, national governments and local authorities within the UK are tasked with the consideration of the long-term effects of the design and management of the built environment, which has manifested in sustainability-led policies filtering down to local authority level (DCLG, 2019). A shift in attitudes away from a throw-away society, instigated by the current global sustainability agenda, is extending to the disposal of buildings, with a growing acknowledgement of buildings as physical stocks of embodied energy extracted and processed from the natural environment (Hassler, 2009; Kohler & Yang, 2007; Power, 2008).

The UK construction industry and planning system is fraught with possible misconceptions of value on which demolition and re-use potential is primarily decided, largely derived from the short-term cyclic nature of the property industry and the capitalist system as a whole. Whilst the local authority has a statutory responsibility to regulate development through the formulation and implementation of policy strategies in the interests of environmental, social, cultural and economic well-being (HMSO, 2000), it is attested that the decision-making processes frequently underestimate or entirely overlook the potential current and long-term social and cultural value of existing buildings (Dyson et al., 2015; Hassler, 2009; Historic England, 2018a).

This suggests that planning policies, local authority guidance and industry practice lack an aggregate understanding of continual and long-term change in the existing building stock. It is therefore argued that, although demolition may often be justified, the balance of judgement to this end may be inadequately informed resulting in the premature replacement of buildings. This presents a profound challenge for sustainable development, to which adaptive re-use could play an essential role.

### Adaptive Re-use and Sustainability

Building adaptation is a broad term that can encompass any works to alter or improve a building's fabric or functionality (Douglas, 2002). The practice of adaptive re-use mitigates underuse, dereliction, decay and subsequent demolition of buildings, through alterations and enhancements resulting from a comprehensive assessment of present and future economic, social and environmental implications (Douglas, 2002; Hill, 2016; Kohler & Yang, 2007).

Bullen & Love (2009) define adaptive re-use as a sustainable process in which embodied energy and original building qualities are retained and improved, enabling it to meet new requirements. The existing building stock is under constant pressure to serve the dynamics of societal change, often resulting in obsolescence leading to dereliction, and in turn, demolition (Tam & Hao, 2018). On a citywide scale, underuse and dereliction can have a contagious socio-economic effect on neighbourhoods and districts (Power & Mumford, 1999; Power, 2008; Historic England, 2018). Adaptive re-use can reverse this process, revitalising urban areas while retaining their sense of place and cultural significance. This can drive urban intensification which has demonstrated wider and longer-term environmental and socio-economic benefits (Ravetz, 2008; Remoy & Wilkinson, 2012; Shipley et al., 2006).

Changing approaches to both new development and the treatment of the historic environment have raised awareness and interest in adaptive re-use of existing buildings as a key method of sustainable development (Ball, 2002; Bullen & Love, 2011a; Douglas, 2002; Hill, 2016). Hill (2016) claims that the future vision for

sustainability in the built environment is becoming less associated with new construction. This shift in attitudes is timely as it is estimated that up to three-quarters of the building stock in the year 2050 is already in existence today (Crockford 2014; Ravetz, 2008).

### Barriers to Implementation

Despite the sustainable benefits of adapting buildings for re-use, there is widespread agreement that cost is its primary inhibitor, leading to demolition to make way for new development (Bullen & Love, 2010; Bullen & Love, 2011b; Douglas, 2002; Shipley et al., 2006). These studies found cost to be a crucial factor in relation to refurbishment, long-term performance and maintenance when evaluating demolition against re-use.

On the issue of profitability, Douglas (2002) states that adapted buildings seldom match up to new builds due to their inherent inferior performance. Others argue that the re-use of historic assets and authentic materials is a costly undertaking (Been et al., 2016; Hein & Houck, 2008) with limited returns on investment, which is linked to an insufficient evidence base to quantify its value (Historic England, 2018; Wilkinson, 2006).

Dyson et al. (2016) observed economic value frequently taking precedence over sustainability objectives, ultimately leading to the demolition of heritage buildings. Ravetz (2008) concludes that common perceptions of high adaptation costs are a deterrent and are often based on inaccurate assumptions. Shipley et al. (2006) maintain that local councils often only use developers' or owners' cost appraisals, resulting in inaccurate decisions and that such perceptions are also held by banks and financial institutions, which can hinder owners and developers obtaining financing for adaptive re-use projects.

In essence, there appears to be fundamental inconsistencies in the understanding, assessment and weighing of value that lies beyond that which is immediately quantifiable. The balance of argument suggests that buildings have two levels of intrinsic value. Firstly, aesthetic value, including the potential value of material authenticity and visual impact of heritage on place-making and local economy. Secondly, the building's intangible embedded value; including embodied energy of materials, and socio-cultural identification with familiarity. The former is more prescribed in its assessment, based on institutional appraisals of what constitutes 'significance'. The latter, however, is more complex and variable, and it is suggested that current assessment protocols do not extend to the assessment and realisation of their inherent value.

Much of the current discourse around the implementation of adaptive re-use relates the freedom of building owners and developers in carrying out premature demolition or inappropriate alteration to inadequate and inconsistent planning policy and local authority influence. It is advocated that developers are often at liberty to make short-sighted decisions through their own loose interpretations of local planning requirements, while certain local authorities have been seen to prioritise economic progress over re-use and conservation (Wilkinson, 2006). Bullen & Love (2010) link insufficient powers of local authority planners to balance developer's demands and sustainable outcomes, while Shipley et al. (2006) conclude that heritage is often regarded as a barrier to progress by planners and politicians. One of the solutions to

these issues could be for planning professionals have a more proactive role in the decision-making process and for them to do this it necessary to understand adaptive re-use in terms of current UK planning policies.

#### UK national, regional and local planning context

Sustainability and conservation initiatives have become more explicit in the UK planning system. Efforts have gained significant traction within the past decade, with increased acknowledgement and understanding of heritage as a “dynamic force”, with a need for heritage locations to be “used, re-used, adapted and developed if they are to have a future” (Historic England, 2018).

In general terms, impact on heritage buildings is recognised within the National Planning Policy Framework 2019 (‘NPPF’), stipulating that the “significance” of designated heritage assets will determine the level of conservation required, where “any harm or loss should require clear and convincing justification” by an applicant due to their “irreplaceable” nature (DCLG, 2019: p.55).

At regional level, The London Plan 2016 sets out a number of sustainable design principles. It suggests that policymakers and developers should refer to the demolition protocol to inform their decisions to encourage waste reduction through re-use of existing buildings and materials from the outset of the process. Retrofitting of existing buildings is recommended to inform local policies and incentives “through the Building Regulations and other regulatory and funding mechanisms to improve the performance of London’s existing buildings” (GLA, 2016b: p. 186). Adaptive re-use is briefly referred to in a cultural context, stating that “development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate” (GLA, 2016b: p.295), which is explained further: “crucial to the preservation of this character is the careful protection and adaptive re-use of heritage buildings and their settings”.

Although national, regional and local planning requirements stipulate adaptive re-use within their local plans, a tendency to focus on environmental motives is evident. Apart from listed buildings and those within conservation areas, there is no reference to the current or potential embedded environmental, social or cultural value of existing buildings. Planners are not currently required to assess this (Hudson, 2016), thus their ability to justify the retention of non-listed buildings may be hampered.

Wilkinson (2006) suggests that conservation area protection offers no guarantee that buildings within them will be spared from demolition. In an article written on behalf of a longstanding amenity society, he links this to a lack of influence of conservation officers within local authorities, decisions made by local authorities favouring economic advancement, and indifference of certain developers to conservation. Moreover, he cites the Shimizu decision which exempted partial demolition from the conservation area consent procedure (Wilkinson, 2006). This continues to be the case, with amenity societies still required to campaign for the preservation of threatened buildings (Hudson, 2016).

Whilst it is acknowledged there have been changes within national and regional planning policies to recognise sustainable development, not least, as it is core to the philosophy of the NPPF, there is a clear lack of opportunity for planning professionals to influence the decision to demolish or re-use a building at local level, especially if the subject property is not listed or located within a conservation area. One of the

main objectives of this research was to investigate this apparent disconnect and assess if there is an appetite within local authorities in London to act as the catalyst for the adoption of adaptive re-use.

## RESEARCH AIM & METHODOLOGY

The overarching aim of the study was to investigate how local councils understand their changing relevance in the context of sustainable development, and how their policies and practice are influencing this process. Information gathered throughout the literature and policy review stages led to the formation of two primary research questions:

1. How much influence do local authorities have on catalysing adaptive re-use of buildings?
2. Are London's local authorities recognising how systematic recording of demolition, re-use and building attributes may slow the pace of change, extend building lifespans, and contribute to environmental and socio-economic well-being?

A questionnaire was produced and structured on a multiple-choice basis for ease and speed of response, with each choice carefully considered from relevant issues concluded from the literature. Additionally, each question provided the option of elaborating further within text fields after each set of response choices.

The questionnaire was grouped into three sections with questions relating to: (1) building demolition; (2) building re-use; and (3) building data recording. The questionnaires were issued to all 33 London borough planning departments. All invited respondents were in senior or management positions to ensure an experienced and comprehensive knowledge of the role. 20 responses were received covering 14 boroughs, constituting a 43% response coverage of London's local authorities. It is therefore possible to address the research questions using response data from planning professionals within almost half of London's local authorities, with a relatively consistent geographical spread of inner and outer boroughs.

Ordinal ranking scales were used to record individual respondents' views and level of perception of the key topics, while average levels of importance of influencing factors were calculated where necessary. Attitudinal qualitative response data was coded, quantified, and visualised to aid analysis. This demonstrated aggregate frequencies, averages, and overall percentages for the entire research sample, which were then broken down to each borough sample to demonstrate variations in views and influencing factors between boroughs. All data was then interpreted relative to the findings of the literature review and the core research questions in reaching conclusions and recommendations.

## MAIN FINDINGS

### Demolition

The research questionnaire opened with an assessment of the current thinking around demolition across London's local authorities. Most respondents felt that their local authority has a strong influence in reducing demolition and encouraging re-use of listed buildings. However, this confidence reduced to a quarter of respondents for unlisted buildings in conservation areas and even less for those not within

conservation areas. There was a consensus that local authorities may not have much control over the demolition of unlisted buildings that do not lie within conservation areas. It was noted that conservation officers are not required to consider non-protected buildings, and consequently they may be unaware of the extent of demolition outside of conservation areas.

Open-ended responses highlighted that inner London boroughs such as Westminster and Kensington & Chelsea, found to be characterised by high land values and a high number of both listed buildings and conservation areas, have lower control over non-listed buildings outside conservation areas. In these boroughs, retaining unprotected buildings may be more difficult due to limited land available for new development, thus increasing the need to demolish unlisted buildings that do not lie within conservation areas in order to support growth.

By contrast, responses from some outer London boroughs whose land values are on average less than 20% of those in Westminster per hectare (GLA, 2016a), less urbanised and geographically larger than inner London boroughs, indicated less pressure to redevelop land supply. Respondents from these local authorities claimed to have a “moderate” to “strong” influence on protection of unlisted buildings that are not in conservation areas.

"Maximising returns on new development" and the "cost of refurbishment" were almost unanimously rated as the most important factors in a building owner's decision to demolish and rebuild rather than to adapt for re-use. This conforms to much discourse on this subject identifying cost as the leading driver for demolition and redevelopment, despite the questionable accuracy of how costs are appraised.

Despite clear evidence of profit-led motives, almost three-quarters of the sample stated that their local authority ensures that all buildings' potential local significance or uniqueness is considered when in receipt of any demolition notice. However, it was expressed that the extent of this assessment will depend on the building's protection status. Responses were tentative on whether local authorities actively encourage developers to consider alternative options to demolition during the planning process. One respondent stated that their council has implemented a new sustainability policy specifically resisting demolition of existing buildings without strong justification, regardless of merit in the first instance.

#### Re-use

This section assessed the sample's understanding of adaptive re-use as an alternative option to demolition and redevelopment, and the degree to which it forms part of local policy, guidance, and regeneration strategies.

The theme of socio-cultural and economic importance of placemaking, as recommended by the NPPF, was generally considered a high priority amongst respondents. "Maximising uniqueness of the locality for both residents and potential investors" was perceived as local authorities' most significant driver to promote adaptation of existing buildings for new uses, with three-quarters of respondents seeing this as important.

Achieving housing targets was rated as the second most important driver for adaptive re-use and was more prevalent amongst respondents from outer London boroughs. Interestingly, environmental drivers such as reduction of waste and energy flows, achieving energy targets, and minimising short-term impact from demolition and construction, were understood by this sample as less important on average.

Opinions were divergent on façadism as an acceptable form of building re-use. Approximately half of the sample indicated that their local authority holds a neutral stance, implying that it is adopted in circumstances where its benefits may outweigh the material harm to the building. One respondent regarded it as "an unsatisfactory compromise on a demolition proposal where the nature of the conservation area protections makes it hard to defend the integrity of existing buildings beyond the visual contribution made by their exterior appearance". Inner London local authorities, such as Westminster expressed more positivity towards façadism as a necessary means to satisfy both heritage protection and new development. Overall, this discussion revealed a sense of limited authority amongst conservation officers in maximising preservation of historic buildings, citing shortfalls in national and local policies, even for listed buildings.

A broadly even split was noted in response to the question of whether best practice guidelines are provided for adapting local building types for new uses. Respondents from Inner London boroughs responded more negatively, whilst most from outer boroughs confirmed that some form of guidance on re-use is provided by their council. With a higher density of commercial properties in inner London boroughs, it may confirm the view that local authorities may be less willing to influence commercial owners. Evidently, best practice guidance for adaptive re-use is largely approached on an ad-hoc basis, warranting further consistency.

This section was concluded with strong agreement that planning policies should require the assessment of existing buildings' current and future socio-economic and environmental values prior to granting of permission to demolish and replace.

#### Building data recording

In fulfilment of the study's second core research question, this questionnaire section examined local authorities' current practice and understanding of how recording of localised building data can have long term benefits on sustainable development and facilitate the implementation of new policies.

Under the current system of demolition recording, it was ascertained that there is no accurate or consistent measurement of loss or successful re-use of buildings, whether protected or not. Almost half of the research sample stated that they are unsure if specific demolition records are kept by their local authority, while only one fifth of respondents indicated that demolition data is actively tracked.

None of the respondents categorically stated that their local authority records buildings that have been adapted for new uses. This may necessitate further attention, as demonstrating examples of successful re-use schemes has been seen to increase the chances of other developers following suit. It may also suggest that local authorities may not be fully aware of overall patterns and rates of change in their locality's building stock.

Only two respondents indicated that their local authority has future intentions for the utilisation of new methods of tracking and visualising building attributes, demolition and re-use. It was expressed that the current capabilities of databases and mapping services used by local authorities may be hampering data collection and provision. As concluded by several studies, an innovative approach to data collection, visualisation and dissemination may change the way local authorities, developers and building owners understand the dynamics of buildings, the value of building diversity, and clarification on investment concerns.



## CONCLUSIONS

The demands of the built environment will increase in complexity as sustainable requirements become more stringent. An increased balance of localised influence, coordinated with regional and national initiatives must become more central in the planning, development, and conservation process to keep up with this. Moving forward from this study, the following points necessitate further consideration from policymakers, planning professionals and developers:

### Local Knowledge

This study's policy review and primary research revealed much variation across local authorities' policies, practice, and levels of influence over its building stocks. As localities will always have different influences and agendas, effective sustainable development must be led by local knowledge, including current and projected economic trends, current and future societal needs, local, cultural, and historical significance, and specialist knowledge of local building types. The decision-making process should maximise inclusivity, with further weight given to local input from specialists, businesses, and residents.

### Systematic data collection and dissemination

This research showed that there are currently no initiatives or systematic frameworks in place to collect localised micro-data, let alone to assemble citywide macro-data to understand the long-term patterns and implications of change in building stocks. Local knowledge should be systematically recorded, particularly at a time of increased transparency and capabilities for knowledge-sharing. This should be supported by a coordinated framework to collate this data to influence policies, regeneration strategies and industry perceptions. Wide-scale and long-term efforts must be supported by small-scale data, while individual efforts should be undertaken with broader regard to impacts and outcomes. If building stocks are seen as repositories of embedded socio-cultural and economic value, can the age of technology be used to digitise these repositories for the benefit of sustainable development?

### Policy review

Policies should continue to be coordinated nationally, however the importance of locality must not be underestimated. This balance has become increasingly effective in recent years; however, this study has found that there is scope for further requirement and explicitness regarding the value of re-using the existing building stock as a whole.

At present, conservation area protection and listing is insufficient as an overarching system to propagate the potential scope of adaptive re-use. Moreover, it was found that conservation officers, the very people who have the skills and experience in appraising buildings' potential for preservation and re-use, are not consulted with regard to development impacting buildings outside the scope of heritage protection. While simply lowering the criteria for conservation area designation or listed status would be unfeasible, the limits of responsibilities of conservation officers could be extended to appraise the potential for adaptive re-use of unprotected buildings. This could be assessed using a benchmarking system that also considers characteristics such as age, material lifespans, occupancy history, structural integrity and physical capacity for re-use.

## Further study

This research has reviewed an extensive range of leading literature on this subject and has initiated a line of investigation specific to London, an area that currently suffers a shortage of published research. In light of the limitations of this study it could be extended to include the following:

1. Larger sample coverage of London's local authorities to strengthen the response data and observations, including open-ended interviews.
2. Inclusion of other parties involved in adaptive re-use schemes, such as owners, occupants, developers, architects, and surveyors in order to give a more balanced understanding of influences on the development decision-making process.
3. An expanded comparative review of national, regional, and local planning policies to identify areas warranting further consideration.

## REFERENCES

- Ball, R.M., (2002) Re-use potential and vacant industrial premises: revisiting the regeneration issue in Stoke-on-Trent, *Journal of Property Research*, 19(2), pp.93-110, DOI:10.1080/09599910210125223
- Been, V. Ellen, I., Gedal, M., Glaeser, E., McCabe, B. (2016) Preserving history or restricting development? The heterogeneous effects of historic districts on local housing markets in New York City, *Journal of Urban Economics*, 92(2016) pp.16-30, DOI:10.1016/j.jue.2015.12.002
- Bullen, A., Love, P. (2009) Residential regeneration and adaptive reuse: Learning from the experiences of Los Angeles, *Structural Survey*, 27(11), pp.351-360. DOI:10.1108/02630800911002611
- Bullen, A., Love, P. (2010) The rhetoric of adaptive reuse or reality of demolition: Views from the field, 27(2010), pp. 215-224
- Bullen, A., Love, P. (2011a) Adaptive reuse of heritage buildings, *Structural Survey*, 29(5), pp. 411-421. DOI:10.1108/02630801111182439
- Bullen, A., Love, P. (2011b) Factors influencing the adaptive re-use of buildings, *Journal of Engineering, Design and Technology*, 9(1), pp. 32-46. DOI: 10.1108/17260531111121459
- Crockford, D. (2014) Sustaining our heritage: the way forward for energy efficient historic housing stock, *The Historic Environment*, 5(2), pp. 196-209. DOI: 10.1179/1756750514Z.00000000051
- Department for Communities and Local Government (2019) National Planning Policy Framework. London: DCLG
- Douglas, J. (2002) *Building Adaptation*, Oxford: Butterworth-Heinemann
- Dyson, K., Matthew, J., Love, P. (2016) Critical success factors of adapting heritage buildings: an exploratory study, *Build Environment Project and Asset Management*, 6(1), pp.44-57. DOI: 10.1108/BEPAM-01-2015-0002

Greater London Authority (2016a) Economic Evidence Base for London: The value of land and housing in London. Available from: <https://www.london.gov.uk/> [Accessed 18 September 2018]

Greater London Authority (2016b) The London Plan. London: GLA. Available from: <https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan/london-plan-2016-pdf> [Accessed 20 March 2018]

Hassler, U., (2009) Long-term building stock survival and intergenerational management: the role of institutional regimes, 37(5-6) pp. 552-568. DOI: 10.1080/09613210903189533

Hein, M., Houck, K. (2008) Construction Challenges of Adaptive Reuse of Historical Buildings in Europe, *International Journal of Construction Education and Research*, 4(20), pp. 115-131, DOI: 10.1080/15578770802229466

Hill, S. (2016) Constructive conservation – a model for developing heritage assets, *Journal of Cultural Heritage Management and Sustainable Development*, 6(1), pp. 34-46. DOI: 10.1108/JCHMSD-04-2015-0013

Historic England (2018) Risky Business? Investing in Heritage at Risk. London: Historic England. Available from: <https://historicengland.org.uk/whats-new/in-your-area/London/investing-in-London-heritage-at-risk/> [Accessed 5 April 2018]

Hudson, P. (2016) Shifting gear in the conservation movement. Available from: <https://www.pollyhudson.net/single-post/2016/02/29/Shifting-gear-in-the-conservation-movement> [Accessed 15 July 2018]

HMSO (2000) Local Government Act 2000. London: HMSO. Available from: <https://www.legislation.gov.uk/ukpga/2000/22/contents> [Accessed 23 June 2018]

Kohler, N., Yang, W. (2007) Long-term management of building stocks, 35(4), pp. 351-362. DOI: 10.1080/0961320701308962

Power, A. (2008) Does demolition or refurbishment of old and inefficient homes help to increase our environmental, social, and economic viability? 36(12), pp. 4487-4501. DOI: 10.1016/j.enpol.2008.09.022

Power, A., Mumford, K. (1999) *The slow death of great cities? Urban abandonment or urban renaissance*, York: YPS

Ravetz, J. (2008) State of the stock – What do we know about existing buildings and their future prospects? *Energy Policy*, 36 (12) pp. 4462-4470. DOI: 10.1016/j.enpol.2008.09.026

Remøy, H., Wilkinson, T. (2012) Office building conversion and sustainable adaptation: a comparative study, *Property Management*, 30(3), pp.218-231. DOI:10.1108/02637471211233738

Shiple, R., Utz, S., Parsons, M. (2006) Does Adaptive Reuse Pay? A Study of the Business of Building Renovation in Ontario, Canada, *International Journal of Heritage Studies*, 12(6), pp.505-520. DOI: 0.1080/13527250600940181

Tam, V., Hao, J. (2018) Adaptive reuse in sustainable development, *International Journal of Construction Management*, DOI: 10.1080/15623599.2018.1459154

Wilkinson, A. (2006) SAVE Britain's Heritage and the Amenity Societies, *Journal of Architectural Conservation*, 12(3), pp.107-126, DOI: 10.1080/13556207.2006.10784981