

# Re-using existing buildings towards sustainable regeneration

School of Architecture: Place Culture & Identity Group working paper

Dr Aylin Orbasli, BArch, DPhil  
March 2009

**Key words:** regeneration, adaptive reuse, sustainability

## Abstract

*Heritage or conservation-led regeneration has now become an accepted and recognised approach to the conservation, economic and social development of historic areas. The benefits of re-using the existing building stock, however, can be much wider and should not be confined to strictly 'heritage' areas or those perceived as having a 'historic' character. Reuse and adaptation contributes to regeneration and sustainability at many levels. The paper will consider benefits ranging from tangible environmental benefits to less tangible benefits such as place identity and social cohesion. It is not possible, feasible or desirable to conserve and reuse all buildings that have been passed down to us, and part of the renewal process is through new buildings. There are nonetheless lessons to be learnt for designing buildings that have the capacity and flexibility for future adaptation.*

## Introduction

The existing building stock includes a broad range of buildings from highly significant historic buildings where conservation is the essence to buildings that are less important in their own right but contribute to the character of an area. Existing buildings, whether they are of great historic significance or not, form a significant part of the real estate asset with opportunities for change and reuse. Pressures on land and increasing density in city centre locations can result in buildings being demolished and replaced every 50 years, and as often as every 20 years in places of rapid urban change. Furthermore, the 'development' process is often seen in the context of new build, while policies that encourage building on inner city brown-field sites can also increase the pressure for demolition and replacement. In many cases, demolition and new build is seen as a more straightforward option for development than reusing the existing assets. Added to this is a misconception that new build is more economical than adapting an existing building. Another emerging argument against reuse is that a new building would be more energy efficient than an existing building.

The reasons for keeping, maintaining and reusing existing buildings are manifold. The benefits of reuse range from the intangible benefits of heritage to society and cultural identity to measurable economic and environmental advantages. The potential and value of the existing building stock has to be recognised as part of sustainable development. Sustainable development concerns not only environmental targets but also economic, social and cultural ones. In recent years there has been a growing body of literature, studies and reports supporting the value of historic and existing buildings in building sustainable communities. The purpose of this paper is to review this literature and the evidence base that it presents to evaluate the economic, environmental and social benefits that can be derived from the imaginative and efficient reuse of the existing building stock.

## Conservation-led regeneration

Although the role of heritage as a significant player in urban and area based regeneration has been recognised since the late 1970s, particular policies and initiatives in this respect are much more recent. A 1998 report by English Heritage set out the concept of conservation-led regeneration, re-defining its own role in this field, including in establishing working partnerships with the Regional Development Agencies.<sup>i</sup> Regeneration itself has been identified as a growth industry.<sup>ii</sup> English Heritage's work, which is outlined in its annual Heritage Counts<sup>iii</sup> reports, has often focused on the revitalisation of high streets and businesses and where economic benefits and job creation can be demonstrated. Heritage-led regeneration is also a term that is interchangeably used with conservation-led regeneration and now accepted as a recognised approach to regeneration (Figure 1). There are numerous examples where the heritage assets of a town or urban area have played a major role in urban regeneration. Grainger Town in Newcastle-upon-Tyne has become one of the most cited examples of heritage-led regeneration.<sup>iv</sup> Started in 1993 and completed in 2003 the regeneration of this historic quarter in the heart of Newcastle is often held up as a best-practice example of heritage-led regeneration and the benefits it can bring to a community and the economic development of a city. Championed by English Heritage and Newcastle City Council, the Grainger Town regeneration project was largely funded by national and regional regeneration agencies, including English Partnerships, and private investors. The project was developed through a Gateway methodology which is currently being applied to a number of European towns through the INHERIT project with European Union Interreg funding.<sup>v</sup>



**Figure 1:** *Heritage-led regeneration in Norwich, overseen by Norwich HEART, the Norwich Heritage, Economic and Regeneration Trust*

Heritage-led regeneration has also played a role in the revitalisation and redevelopment of post-industrial waterfronts such as in Baltimore, Washington and Cape Town in South Africa.<sup>vi</sup> Large clusters of industrial buildings are both a major challenge and opportunity for reuse and the regeneration. Previously referred to as non-heritage<sup>vii</sup>, it is only in the 1980s and 1990s that industrial structures were recognised as having 'heritage' value and discernible character. Industrial buildings are often robust by nature and offer various opportunities for imaginative adaptive reuse from office buildings to loft apartments.<sup>viii</sup> Some of the earliest successful conversions of industrial buildings in New York's Soho and the docksides of London have proven how trendy, unique and desirable environments can be generated through adaptive reuse (Figure 2). Like with any real estate, location plays a part in options available for regeneration too and areas with large numbers of former industrial buildings in economically depressed parts of north England will be more difficult to regenerate. It is not surprising that a

larger proportion of historic buildings registered as being at risk are found in depressed inner-city locations.<sup>ix</sup> Nonetheless, schemes that are imaginative in design and integrated in approach prove the added value existing buildings can bring to regeneration even in challenging situations. Projects such as Bradford's Salt Mills for example have created an alternative destination from the heritage asset, successfully combining residential, arts, leisure and retail uses. The social and economic benefits of such projects are clearly visible. Furthermore the better use of town centres increases safety and supports social cohesion, while reducing the demand for building on out of town green field sites and increased transport infrastructure.



**Figure 2:** *A combination of adaptive reuse, extensions and new buildings at Butlers Wharf in London*

Heritage-led regeneration is concerned with area-wide strategies where the economies of scale, grants and budgets, partnership schemes, infrastructure and urban realm works are considered. It is, however, often more difficult to make the case for the reuse of individual buildings, especially in the confines of the planning and development control process. It is important to balance the economic value for individual buildings with the regeneration benefits being achieved at area level.<sup>x</sup> However, alongside the contribution a building makes to a district or neighbourhood, there are explicit sustainability benefits that can be measured for the individual building as well.

### **Intangible and social benefits of reuse**

Regeneration is about change and conservation is often defined as the management of change.<sup>xi</sup> Good urban revitalisation not only involves diversifying economic activities but also harnessing the heritage value and preservation of the social fabric. In a 2005 study, Randell Mason argues that although the field of historic conservation maintains a strong research agenda in techniques and theory, this is not being supported by research and understanding into the benefits of cultural heritage conservation.<sup>xii</sup> The intangible values of cultural heritage are almost impossible to calculate in monetary terms and it has to be recognised that conservation is also in the 'public good'.<sup>xiii</sup> Historic buildings add value to a place through their variety, character and a sense of familiarity which will increase its use and improve safety. Even in a relatively modest environment historic buildings contribute to the character of a street and townscape, and help define a sense of place (Figure 3).

In regeneration projects heritage buildings can also be a focal point, a familiar and well-loved building or even a landmark with a distinctive identity. Such buildings attract tenants or occupiers seeking distinctive buildings,<sup>xiv</sup> which may also be seen as a way of expressing a business' brand identity. As communication technologies dictate work practices, 'the relationship between work and place grows increasingly arbitrary'<sup>xv</sup>, adding value to

distinguishable spaces over those that are standard or mundane in character. Changing working practices in the information age also means more choice, especially in where people choose to work. As wireless technology allows office workers to work from hotel lobbies and coffee shops, an attractive environment has become an important consideration for a more mobile workforce. A historic building, place or environment can often provide the desired unique or character laden setting, thus not only providing intangible benefits but also making sound financial sense as well (Figure 4). Amongst a jungle of high-rise office blocks in Shanghai or Beijing, small pockets of preserved historic buildings, often converted into cafes and bars, have become popular destinations. This is also an indication that there will be economic benefits in maintaining and reusing historic buildings.



**Figure 3:** *Old wine stores in Paris have been converted to shops creating a desirable shopping location amidst new higher rise buildings*



**Figure 4:** *A café in an old ice factory in Sweden provides a unique and popular environment for nearby office workers*

Buildings are not just conserved for posterity and their survival relies on them having a relevant new use. Time has proven that there is a viable new use for most buildings and over the years some very imaginative solutions have emerged<sup>xvi</sup>, and it is often a case of finding uses and occupiers that suite the type and style of building. Depending on the condition of the existing building adaptive reuse may require substantial intervention and upgrading of facilities. However, where a proposed intervention outweighs the character and value of the building then

it probably isn't the most appropriate new use for that building or building type. Landmark projects such as those undertaken in Ancoats in Manchester have illustrated the local and city-wide benefits of creative adaptation of historic buildings.

### **Tangible (measurable) benefits of reuse**

In the realm of politics there will always be a demand to quantify the benefits of conservation and regeneration. Numerous studies have now proven that maintaining and reusing buildings can be as cost effective as replacing them with a new structure.<sup>xvii</sup> An Investment Property Databank survey of 2002 on office buildings in reused buildings confirms that investment in an existing building produces equal returns to new build with the added advantage of being 'green'.<sup>xviii</sup> The actual variance will always be case specific depending on both the quality and the size of the building. In areas of rapid development like in China where the replacement of a single storey traditional dwelling with a high-rise office development in a city centre that is becoming highly densified, the economic argument is most likely to be in favour of the new. But in most cases it is about striking a balance between the social and economic benefits of maintaining existing buildings and the level of intervention, change and new build that will be necessary to help achieve regeneration objectives. Shaw points out that 'one of the arts of large-scale conservation [is] to know when to allow demolition and when to fight for preservation'.<sup>xix</sup>

Whether the effects are measured directly as commercial returns or indirectly, historic preservation 'tends to yield significant benefits to the economy'.<sup>xx</sup> The economic benefit is in terms of value added to not only the property in question but also to those in its vicinity. Studies in the US and the UK have shown that property values increase in areas designated for protection.<sup>xxi</sup> In addition there are the benefits felt in the wider regional economy, through increased inward investment due to the attractiveness and increased safety of a place or the benefits of a growing tourism economy. These also translate into positive social benefits.

Architecturally, re-using existing buildings can also create exciting spaces in what Latham describes as creative reuse.<sup>xxii</sup> Existing buildings can be seen as a vast resource and opportunity for creative thinking. Each building is different and requires its own unique solutions, where 'the balance between the existing building and the new use is variable dependent upon character, condition and the needs of the use'.<sup>xxiii</sup> Where customising solutions to existing buildings may be seen as an additional cost, added value is achieved through the unique character of the spaces (Figure 5).



**Figure 5:** *The practice studio of the London Symphony Orchestra is a unique space created within the shell of St Luke's church*

## Reuse and environmental sustainability

In terms of energy consumption re-using or adapting an existing building also has a number of tangible environmental benefits. Using the existing stock reduces the use of new materials and the environmental impacts and CO<sub>2</sub> emissions connected to their production, while the embodied energy of the existing material is preserved and not wasted. Furthermore the substantial wastage from demolition that would otherwise go to landfill is also avoided, especially given that currently 24% of waste in the UK is building waste.<sup>xxiv</sup>

A recent study by the Empty Homes Agency found that refurbishing an existing house gave off 15 tonnes of embodied CO<sub>2</sub> compared to the 50 tonnes given off by a newly constructed house, a saving of 35 tonnes of CO<sub>2</sub>. While newer houses with better insulation are expected to make up for the higher carbon emissions from the construction phase through lower operational emissions, this could take as long as 50 years to achieve.<sup>xxv</sup> In another study BRE has found that in the case of offices, refurbishment is always environmentally more beneficial and cheaper than demolition and rebuilding as long as air conditioning is not used.<sup>xxvi</sup>

A study of the wide portfolio of buildings held by the Ministry of Justice estate has revealed that pre-1900 buildings use the least energy and less energy even than buildings built between 1990 and 2000.<sup>xxvii</sup> The same study also identified buildings built between 1940 and 1960 as being some of the poorest performers as well as the most difficult to refurbish or upgrade. This highlights the concern that some of the most inefficient building stock in terms of energy use and adaptability are those built in the immediate post-war period up to the 1960s. Problems are further compounded by building materials that have failed (e.g. on flat roofs) or have proven to be a health hazard, such as asbestos. This renders a large segment of buildings as poor performers and often ready for disposal following a life span of little more than 50 years.

In recognition of environmental benefits of retaining rather than replacing existing buildings there have been a number of studies evaluating the environmental performance of existing buildings and identifying ways in which improvements can be made. Historic buildings come in all shapes, sizes and types and the practicality and affordability of solutions will depend on building type and use. Interventions will always have to be case specific rather than generic as a number of these current studies have identified.<sup>xxviii</sup> In a joint project with the Royal Borough of Kensington and Chelsea, BRE has demonstrated ways in which a Victorian terrace house can be adapted for lower energy use through a series of relatively simple measures.<sup>xxix</sup>

Another parallel study undertaken in 2007 by the RICS and Cyril Sweett has investigated how the sustainability performance of existing commercial buildings (offices, hotels, retail and industrial uses) can be improved.<sup>xxx</sup> The study identifies a wide range of improvements that are feasible for the given building type. Most notable interventions involve upgrading glazing, draught proofing, adding roof, floor and wall insulation (cavity wall) and switching to low energy lighting. Shading devices are also identified as a means of reducing unnecessary heat gain. Other improvements are dependent on building type and users but include measures that improve the performance of heating and cooling systems, zoning energy use, better control of lighting and sanitary fittings that reduce water consumption. It is also possible to adapt existing buildings to use renewable sources of energy with additions such as solar panels, wind turbines or photovoltaic cells.<sup>xxxi</sup>

A major challenge will be the cost of an improvement and its short and long-term value to the occupant in terms of savings. The cost of installation may also be prohibitive, especially in situations where access is difficult. The RICS report also points out the need to design new energy saving additions or alterations with sensitivity and understanding of the existing building fabric and structure. Building stock constructed in the 1960s and 1970s continues to be the most challenging in terms of reuse, refurbishment and improvements to energy performance.

Even a cursory overview of recent planning applications in London shows that consent is being sought for the demolition and replacement of buildings from this period than any other.

Another obstacle to refurbishment and reuse in the UK has been the way VAT is applied to construction projects. Whereas a new build project will be zero rated for VAT purposes, work considered refurbishment or conservation is taxed at the full rate of 17.5%<sup>xxxii</sup>, adding a substantial cost to a project and weighting decisions against reuse.<sup>xxxiii</sup> Despite numerous national and international campaigns including by the Council of Europe, the government continues to uphold these regulations, which will continue to make it a prohibitive factor for refurbishment.

## Conclusion

Both qualitative and empirical studies have presented a strong case for the social, economic and environmental benefits of retaining and reusing existing buildings. This is not a conservationist approach, but a call for imaginative interventions that will not only make existing buildings suitable for current day uses but also better environmental performers. Retaining and reusing existing buildings is an essential part of sustainable development.

Despite studies that prove the sustainability benefits of reuse, there are a number of key issues that need to be recognised. Most notably:

- The piecemeal approach to development means each building is considered individually rather than in the context of a greater whole (neighbourhood, city).
- Increases in land costs and pressures for densification marginalise low-rise existing buildings.
- A large stock of buildings built between 1940 and 1970 are poor in quality, inflexible in design and poor energy performers.
- The way in which VAT is charged favours new build over refurbishment.

In order to harness the potential that existing buildings offer in terms of social, economic and environmental sustainability certain shifts in thinking need to be made at all levels. At national level it remains paramount that VAT regulations are adjusted in favour of refurbishment and reuse is supported with financial incentives and grants (e.g. for upgrades to better energy performance levels). At local planning level a holistic approach needs to be taken to regeneration and sustainability through strategic planning, thus identifying the potential of buildings to be reused within these frameworks. Furthermore the reuse of an individual building has to be seen as part of a larger area based strategy including improvements to the surrounding urban landscape and amenity space. The environmental value of retaining the existing stock and the potential that exists to improve its performance need to be recognised by all players in the development process and developers have to learn to readjust the perception of risk associated with developing existing buildings. Finally architects need to recognise the creative potential of reuse.

One of the common characteristics of buildings that have been successfully reused time and time again are their inbuilt flexibility to be changed and adapted. It is essential that in designing and building new and sustainable buildings, architects and engineers are designing with flexibility and ability for future changes in mind.

## Notes

---

<sup>i</sup> ENGLISH HERITAGE. *Conservation-led Regeneration: The Work of English Heritage*, English Heritage, London, 1998

<sup>ii</sup> ENGLISH HERITAGE, ROYAL INSTITUTE OF CHARTERED SURVEYORS and DRIVERS JONAS. *Heritage Works*, no date.

- 
- iii Heritage Counts is published as an annual survey by English Heritage since 2002. See also <http://www.english-heritage.org.uk/hc/> (Accessed July 2008).
- iv See also English Heritage 1998; Tiesdell *et al* 1996 amongst others.
- v See <http://www.inheritproject.net/> (Accessed June 2008)
- vi MARSHALL, R. ed. *Waterfronts in Post-Industrial Cities*, Spon Press, London, 2001.
- vii COUNCIL OF EUROPE. *Heritage and Successful Town Regeneration* Report of the Halifax Colloquy, Council of Europe, Strasbourg, p.15.
- viii ELEY, P. and WORTHINGTON, J. *Industrial Rehabilitation*. Architectural Press, Oxford, 1984.
- ix ENGLISH HERITAGE, *op cit*, p. 4.
- x TIESDELL, S., OC, T. and HEATH, T. *Revitalising Historic Urban Quarters*, Architectural Press, Oxford, 1996.
- xi FEILDEN, B. *Conservation of Historic Buildings*, Architectural Press, Oxford, 2003 (third edition); ORBASLI, A. *Architectural Conservation*, Blackwell Publishing, 2008, amongst others.
- xii MASON, R. *Economics and Historic Preservation: a Guide and Review of the Literature - A Discussion Paper*, Pennsylvania, The Brookings Institution Metropolitan Policy Program, 2005.
- xiii Ibid
- xiv ENGLISH HERITAGE, ROYAL INSTITUTE OF CHARTERED SURVEYORS and DRIVERS JONAS. *Heritage Works*, no date.
- xv STRINGER, H. The Changing Workplace In *Making Heritage Industrial Buildings Work, proceedings of conference held in Swindon*, 1999, 28 – 30, p. 28.
- xvi TIESDEL *et al*, *op cit*.
- xvii See also LATHAM, D. *Creative Reuse of Buildings*, Donhead, Shaftesbury, 2000, Volume 1, and MASON *op cit*. for a summary of literature to date on this.
- xviii ENGLISH HERITAGE *et al*, *op cit*, p. 9.
- xix SHAW, B. History at the water's edge In *Waterfronts in Post-Industrial Cities*. Marshall, R. (ed.) Spon Press, London, 2001, 160-172. p.162
- xx MASON *op cit*
- xxi Ibid
- xxii LATHAM, *op cit*
- xxiii Ibid, preface.
- xxiv GOVERNMENT HISTORIC ESTATES UNIT. *Cutting Down on Carbon: Improving the Energy Efficiency of Historic Buildings*, Annual Seminar, Building Research Establishment, Garston 7 October 2007
- xxv EMPTY HOMES AGENCY. *New Tricks with Old Bricks: how reusing old buildings can cut carbon emissions* (report), 2008.
- xxvi GOVERNMENT HISTORIC ESTATES UNIT, *op cit*
- xxvii WALLSGROVE, J. The justice estate's energy use, *Context*, No 103, March 2008, 19 – 20.
- xxviii The RICS study is based on case studies.
- xxix See <http://www.rbkc.gov.uk/flagshiphome/general/> (Accessed July 2008)
- xxx MCALLISTER, I. *Transforming existing buildings: the Green Challenge* final report, RICS and Cyril Sweett, 2007. See <http://www.rics.org/NR/rdonlyres/381CCB81-EF08-45B9-B42C-54735E0ABF20/0/TransformingExistingBuildingsTheGreenChallenge.pdf>) for further details (accessed July 2008).
- xxxi CADE, M. (2008) Renewable energy for historic buildings, *Context*, No 103, March 2008, 15 – 17.
- xxxii This rate will be lower if a property has not been occupied for a period of more than two years.
- xxxiii The Empty Homes Agency report (2008) has calculated this to represent an additional sum of £10,000 for the refurbishment of a house.