

Executive Summary

Addressing the sustainability challenges of historic, mixed-use city core areas and resulting carbon emissions from existing commercial buildings, is a neglected policy issue that requires urgent attention.

An exemplar in Soho and Chinatown, demonstrating how greater sustainability can be achieved and put into practice in the West End would, by the visibility of the location, quickly disseminate such best practice widely.

A considerable amount could be done to improve the sustainability of Soho and Chinatown, and other similar areas, including reducing local carbon emissions and improving resource use efficiency more generally.

Key findings of the study are:

- Energy use, particularly electricity use is very high because of the intensity of development and nature of building usage in Soho, Chinatown, and other similar historic, mixed-use commercial core areas.
- However such areas are of high value in economic and cultural terms and offer considerable potential for retrofitting greater sustainability through energy and resource conservation and a reduction in carbon emissions.
- The existing buildings are generally very adaptable to a range of uses. Many have extended lifetimes and represent an efficient use of embodied energy and other resources.
- The challenges to retrofitting buildings in such historic conservation areas are not as big as might be supposed.
- There are extensive areas of flat and sloping roof that lie hidden from the public view that could be adapted for retrofitting measures such as green roofs and solar panels.
- Many buildings in Soho and Chinatown are not listed or of historic merit, and the rear of non-listed buildings can be adapted.
- There are also ample opportunities for retrofitting and upgrading inside buildings, in particular improving the efficiency of plant, equipment, fittings and appliances, control mechanisms and meters and in the way that occupants use buildings.
- An integrated approach to retrofitting is essential and one that works with the intrinsic characteristics of historic buildings.
- A main challenge is getting the building occupants to become more conscious of energy and resource use.
- A further challenge is to overcome the issue of split incentives whereby landlords are unwilling to invest in sustainability measures that benefit occupiers but cannot be recouped through increased rentals.
- The greatest benefits are to be achieved through scaling up to community wide solutions, such as a district Combined Heat and Power network or measures to increase recycling that are appropriate to the unique character of the area. The complexity of ownership and occupancy patterns presents a hurdle but this is not insuperable.
- While buildings are the main source of energy consumption and carbon emissions attention should be

INSIDE FRONT COVER
BLANK (NOT PRINTED)

given to rationalising and improving the efficiency of the use of the very limited space in and around buildings to match the intensive demands of vehicles, pedestrians, street based activities, deliveries, waste storage and disposal.

Landlords need to become familiar with measures, explained in this report, such as ‘green leases’ and ‘smart meters’ that will enable them to ensure that their tenants play their part in making retrofitting measures work, and that there is a return on investment in retrofitting through increased rentals. Without this, there is no financial incentive for landlords to invest in improving the performance of their buildings when the tenants are the main beneficiaries.

While considerable information on retrofitting solutions exists online or in print, the diversity of sources is confusing and sometimes contradictory. It is not always easy or obvious how to access relevant advice, skills and expertise that is balanced and disinterested.

Energy Performance Certificates are being gradually introduced as properties are sold and let and will give new owners and tenants guidance on how building thermal performance can be improved. However, this guidance is very general and gives little indication of how occupants and owners can take an integrated approach to sustainability in a mixed-use, multi-occupant context.

There is a need for coherent guidance to existing sources of information for owners and tenants/users in Soho, Chinatown and other similar mixed use, historic core areas. Additionally, the guidance currently available from Westminster City Council and English Heritage on retrofitting, whilst helpful, is insufficient to deal with the large variety of building types within Soho and Chinatown and similar historic areas.

We outline how an urban design and typological approach could ensure that significant measures to improve the sustainability of buildings in Soho and Chinatown could take place whilst maintaining, and enhancing, the historic character of the area. It would enable building owners and planning officers to establish, at an early date in any development proposals, the opportunities for and constraints upon retrofitting and sustainable refurbishment in particular locations.

The biggest single measure that would reduce energy use and carbon emissions from the area, with minimal impact of the historic built fabric, would be to install a district-wide Combined Heat and Power system, with additional gains to be made by incorporating cooling as part of the approach. There are opportunities to do this by promoting and linking together CHP units and Aquifer Thermal Energy Storage boreholes sited in major developments that are planned or being undertaken in the area, including new developments along the Eastern end of Oxford Street associated with Crossrail. It may even be possible to make use of redundant main water pipes to minimise associated street works.

Carbon emissions from vehicles are high per unit of area (although low as a proportion of the total as the emissions from commercial buildings are so great) and means need to be explored to reduce the traffic in the area. Westminster City Council is leading the way in the provision of electric charging points and this should be extended to Soho. Further opportunities for electric vehicles should be promoted.

The continuing heavy movement of traffic through the area creates noise and local air pollution and this reduces the opportunity for building occupants to use natural means for ventilating and cooling. Further pedestrianisation of the area is possible although this tends to encourage further use of streets for noisy recreational uses at night and can be counter-productive.

Opportunities for waste storage and recycling in the area are currently very limited. The City Council and a

wide range of private companies run an efficient service picking up waste and recycle from the street several times a day. However, this adds to the level of service traffic and is not the best solution in the long term. A review of waste and recycling collections should be undertaken to minimise their local impacts. This and other aspects of the use of the public realm need to be managed in a co-ordinated way through an integrated public realm strategy.

Major national and local players represented on the Steering Committee of this study – Westminster City Council, English Heritage, the Soho Community Environment Fund, The Crown Estate and Shaftesbury PLC and others could form the nucleus of a formally created working group involving wider stakeholder interests possibly under the umbrella of the Westminster Carbon Reduction Alliance, the new city-wide initiative being developed to work with businesses and the community to reduce emissions of greenhouse gases.

This public-private initiative would have to be driven by the promise of quick wins through the implementation of practical projects in the short to medium term. Below we list the range of recommended short and medium term actions that such a strategic group and/or its members could seek to prioritise, promote, sponsor or otherwise seek to implement.



The Study Area, including Soho and Chinatown
(Source: Max Lock Centre on Google Earth image)



Clockwise from top left
Piccadilly Circus, Carnaby Street, St Anne's Church, Chinatown (Gerrard Street),
Old Compton Street, Golden Square.

Mike Theis and Budhi Mulyawan

Priority Recommendations

1. Establish a mechanism to clarify and promote green leases, smart meters, and landlords' energy allowances in commercial core areas; and to make the best use of Energy Performance Certificates and other measures to overcome the issues of split incentives and the 'vicious circle of blame' in areas achieving more sustainable buildings¹.
2. Commission a feasibility study into community-wide individual and networked heat and power solutions for Soho and Chinatown as a test bed for such solutions for similar commercial and mixed-use core areas.
3. Establish new sustainable urban design guidance for mixed-use, mixed-age historic areas like Soho and Chinatown beginning with an audit of building typology in the study area.
4. Carry out a study to identify the potential for small and larger scale, local solutions (through commercial enterprise, public-private partnership and/or developers contributions) to enhance the efficiency of recycling of local waste such as anaerobic digestion of food waste and large-scale waste separation.
5. Implement a demonstration flagship commercial, mixed-use building retrofit – this could also include model landlord-tenant agreements linked to smart metering.

Further recommendations

6. Carry out sample building surveys and energy audits to establish baseline performance of different building types identified in **3** above.
7. Carry out a sample owner/occupant survey to identify current good practice, in sustainable refurbishment, fit out and resource management.
8. Carry out visual, photographic and thermo imaging surveys, including aerial or high level photographic surveys of the built forms of Soho and Chinatown for mapping the building envelopes for applying substantiality solutions, particularly at roof level.
9. Promote a programme of awareness raising on measures to improve energy and resource use efficiency through focused publicity programmes, workshops and seminars for business, including smaller landlords and occupants.
10. Promote and publicise retrofit and new infill development as sustainability beacons. As an extension of **3** above, set up performance benchmarks for sustainable, contemporary building design making a positive contribution to the morphology, townscape and essential character of the area.
11. Explore the potential for a more co-ordinated and integrated public realm strategy. This should address linked issues such as traffic management, facilitating electric vehicles, delivery of supplies, waste collection, pedestrian routes, linkages and area legibility, street lighting, furniture and signage, noise and pollution, which constrain the natural ventilation and cooling of buildings.
12. Explore and develop sustainability appraisal methodologies more tailored to the needs of retrofitting mixed-use commercial building in historic core areas.

1. RICS, 2008, 'Breaking the Vicious Circle of Blame – Making the Business Case for Sustainable Buildings', *FiBRE: Findings in Built and Rural Environments*, RICS Research, June.

Retrofitting Soho recommendations:
Matrix of suggested lead actors and key stakeholders

List of abbreviations

- WCCWestminster City Council
- EHEnglish Heritage
- BREBuilding Research Establishment
- SCEFSoho Community Environment Fund
- BIDsBusiness Improvement Districts – e.g. Heart of London Business Alliance and New West End Company
- RICSRoyal Institution of Chartered Surveyors

	WCC	EH	SCEF	Landlords	Occupants	BIDs	RICS	Energy charity
1. Establish a body to promote green leases, smart meters, landlords' energy allowances and to make the best use of Energy Performance Certificates and other measures	✓		✓	✓	✓	✓	✓	
2. Commission a feasibility study into community-wide, networked heat and power solutions for Soho and Chinatown	✓		✓	✓				✓
3. Establish new sustainable urban design guidance for mixed-use, mixed-age historic areas	✓	✓						
4. Carry out a study to identify potential for small and larger scale, local solutions (through commercial enterprise, public-private partnership and/or developers contributions) to enhance the efficiency of recycling of local waste	✓		✓	✓	✓	✓		
5. Implement a demonstration flagship commercial or mixed-use building retrofit	✓		✓	✓	✓	✓		
6. Carry out sample building surveys and energy audits to establish baseline performance of different building types identified in 3		✓		✓				
7. Carry out a sample owner/occupant survey to identify current practice, including good practice, in sustainable refurbishment, fit out and resource management			✓	✓	✓			
8. Carry out visual, photographic and thermo imaging surveys, including aerial or high level photographic surveys of the built forms of Soho and Chinatown for mapping the building envelopes	✓			✓				
9. Promote a programme of awareness raising	✓		✓	✓	✓	✓		
10. Promote and publicise retrofit and new infill development as sustainability beacons	✓		✓					
11. Explore the potential for a more co-ordinated and integrated public realm strategy	✓		✓					
12. Explore and develop sustainability appraisal methodologies more tailored to the needs of retrofitting mixed-use commercial building in historic core areas		✓						

A step by step approach to retrofitting buildings

The technical solutions to retrofitting buildings in the report can be divided into a number of levels depending on the resources and commitment required:

Level 1: ‘quick wins’ – low-cost, non-disruptive measures such as draught-proofing, secondary double glazing, loft insulation and replacing non energy-efficient lamps that can be applied in the short-term.

Level 2: ‘easy life cycle hits’ – may be applied even in listed buildings without raising conservation concerns but which may require a larger initial outlay. May not be cost effective unless part of the natural replacement or building cycle refurbishment process. Includes replacement and upgrading of boilers, appliances, fittings, controls and internal services systems.

Level 3: major refurbishment necessary to meet the standards of the Building Regulations, part L, includes the insulation of the building envelope (walls, roofs and floors), upgrading of windows and the installation of suitable controls. In Conservation areas meeting Building Regulation standards may not be possible in many cases.

Level 4: innovative retrofitting measures to the outsides of buildings, particularly at roof level. Includes solar thermal and photovoltaic panels, green roofs, rainwater harvesting and light tubes, roof-lights and atria to introduce natural lighting and ventilation to the interior of deep plan buildings. For some historic buildings, and parts of others, this may not be appropriate.

Level 5: shared or communal solutions – synergies can be achieved through adjoining property owners working together, for example, in sharing a heating or air conditioning system. Groups of property owners coming together to install a shared Combined Heat and Power (CHP) system or ground source heat or cooling pump, or carry out a linked refurbishment scheme.

Carbon emissions in Westminster and Soho

- Existing non-residential buildings nationally, account for up to 20% of all carbon emissions.
- In Westminster, which produced 2.8 million tonnes of CO₂ in 2003, non-domestic uses accounted for 72% of all emissions. In Soho, 83% of carbon emissions result from non-domestic building uses (72% of this from electricity use and most of the rest from gas for heating), 10% from transport and 7% from residential buildings.
- In 2003, Soho produced just over 100,000 tonnes of CO₂ over its relatively small area at an intensity (per unit area) 68% greater than that of Westminster as a whole and nearly eight times that of Greater London.
- With 78% of its building stock in conservation areas and around 89% of its emissions coming from the use of buildings, Westminster (property owners, occupiers, residents, businesses, organisations and the local authority) needs to address the issue of adapting its historic commercial core areas in mixed use for improved energy performance if it is to make any significant headway in reducing its carbon emissions.

(Source: Max Lock Centre using data from London Energy and CO₂ Inventory 2003 (Greater London Authority, 2006. London’s Carbon Emissions Inventory 2003 (LECI), Methodology Manual, London: Greater London Authority))