OXFORD HEET CASE STUDY 4: 6 NELSON STREET, JERICHO, OXFORD

BUILDING DESCRIPTION

A traditional 'two up two down' terrace house within the Jericho Conservation Area, subject to an article 4 direction that curtails householder permitted development rights. It benefits from a later single storey extension and covered passage to the rear

The main building has uninsulated solid brick walls, topped by a slate covered roof with loft insulation. The front elevation has salt glazed headers, red brick surrounds to windows and the door, and a string course at first floor level. A chemical damp proof course has been injected but the wall remains damp at low level internally. The rear walls are rendered with a portland cement mixed and painted; and are also damp inside. The single storey extension is of cavity blockwork construction with an uninsulated lean-to roof.

The main entrance door is in solid timber, with space for a draught lobby immediately inside it; however the inner door has been removed.

Windows to the front elevation are historic timber sashes, protected by the article 4 direction, and high performance double glazed UPVC units to the rear. There is also a small single glazed window over the staircase to the rear. A translucent roof covers the rear passage; a double glazed UPVC framed door provides access to the rear garden.

An old gas fired combination boiler provides central heating and hot water, with control via a digital display programmer. Distribution pipework is not lagged and radiators do not have thermostatic radiator valves (TRVs). The boiler flue penetration through the uninsulated roof to the rear extension is not sealed.

Lighting is controlled by simple wall switching in individual rooms. Low energy fluorescent lamps are fitted to the bathroom and staircase landing, whilst all others are filament bulbs.

The chimney remains open although the fireplaces have been sealed. There are small vents fitted to the fireplaces internally.

There is also dampness on the first floor ceiling, immediately beneath an uninsulated section of the main roof. Further dampness appears on the bathroom ceiling, where the extract grille is covered in dust. These two instances of damp suggest problems with condensation.

The rear of the property is directly south facing, not visible form the street and well screened from the grounds of Worcester college, offering excellent potential to harness solar energy for hot water or photovoltaics, without negatively impacting on the surrounding area.

There is the added benefit of adjoining properties to the east and west, shielding the main building from the elements and limiting heat loss through the sidewalls.

HERITAGE VALUE

Two storey terraced property in a street of similar buildings. No.6 is one of a pair with no.5. Façade is principally of salt-glazed headers with red bricks used for jambs, quoins and as a decorative band at first floor level. No.6 appears to retain its original sash windows (6/6 sashes without horns). It lies within the Jericho Conservation Area and is subject to an article 4 direction principally to retain the current appearance of the frontages. The Hoggar map (reproduced in the city Council's Conservation Area Designation Study ["The Study" October 2010]), demonstrates that no.6 was in existence by 1850. It is not specifically listed in the Study as a designated heritage asset or as a building of Local Architectural and Historic Interest.

Aesthetic Value: '*Value deriving from the ways in which people draw sensory and intellectual stimulation from a place'*

Building	Setting
Apparently unaltered, integral part of important element in this distinctive area, sharing most important features identified in its character area in The Study. Chequer appearance of facing brickwork is noted as a feature of older properties in its character area.	Integral part of distinctive street patter. Located at an important confluence of roads, so part of a slightly wider and memorable triangular area in a location where narrow streets are predominant. Important role with no.5 as establishing distinctive 'Jericho character' at the end of Richmond Road (against larger houses and the nearby Oxford Synagogue). Important element terminating longer view along Walton Street.

Communal Value: *'Value deriving from meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory'*

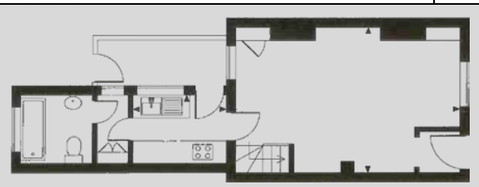
Distinct history of working class housing in the area.	Strong links to industrial, light industrial and transport employment and with the nearby University Press.

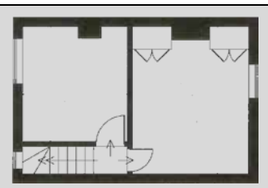
Evidential Value: *'Value deriving from the potential of a place to yield evidence about past human activity'*

Good example of modest scale typical of this location and its history.	Integral part of an area of Oxford with a distinct history of working class housing, with strong links to historic employment sites.

Historical Value: *'Value derived from the ways in which past people, events and aspects of life can be connected through a place to the present'*

Value from the survival of the buildings in essence on the road frontage.	Historic street scene and associated detail of collective street façade.





OXFORD HEET CASE STUDY 4: 6 NELSON STREET, JERICHO, OXFORD								
Element	Assessment	Maintenance Issues	Retrofit Options	Heritage Impact		Planning Permission/LBC required	Advice Required	Recommendations/Comments
FABRIC								
Pitched Roofs	Timber structure with non-permeable underlay felt and slate covering flashed into brick chimneys along flank walls to the main building. The roof has 100mm rockwool insulation at ceiling level generally, but this is omitted along the party wall with no.5, creating a cold bridge. Dampness in ceiling below the uninsulated section of the roof.	Absence of ventilation and potential cold bridging in roof space with non-permeable underlay increases the risk of condensation as warm air from the rooms below comes into contact with cold surfaces. This is evidenced by dampness on the ceiling in this instance. The front roof slope is also bowed over the party wall; as a result about a dozen slates are loose.	Increase insulation to 300mm depth	Low	☺			A cost effective and quick way to reduce heat loss.
	South facing polycarbonate roof to covered passage to the rear of the building, with flashed into rendered brick wall.	There is a build-up of leaves that reduces the amount of daylight available to the passage below, and could cause damp trapped between them to penetrate the wall above the flashing. There is also a redundant SVP (soil and vent pipe) penetrating the roof along the line of the flashing. This unnecessary penetration could lead to water ingress and damp penetration through the back wall.	Keep roof clean and consider installing ceramic tiles to floor beneath to create a suntrap. Install roof blinds to manage summer overheating.	Low	☺			Redundant penetrations through the roof can be a source of water ingress when flashings fail. It may be best to remove them altogether to avoid future problems. Roofs should be kept clear of debris as this could block gutters, again leading to water ingress and associated problems with damp.
	Monopitch timber structure with underlay felt and slate covering flashed into party wall to modern rear extension.	Insulation has been delivered to the lean-to is yet to be installed.	Insulate to a thickness of 300mm.	Low	☺			A cost effective and quick way to reduce heat loss.
		The boiler flue through the roof is unsealed, with daylight visible through the gap.	Properly seal roof penetration	Low	☺			Gaps in penetrations through the buildings walls or roof could lead to water ingress and air leakage.
External Walls	The main building has solid brick walls (one brick thick), fair faced with salt glazed headers, red brick window and door jambs, and a decorative string course to the front (north elevation).	Whilst glazed headers are impervious, there are mortared perpends, through which penetrating damp gets into the wall. Regular holes through the brickwork at low level, visible externally, suggests that an injected damp proof course has been installed. This appears to be ineffective as there is damp on the internal face of the wall.	Insulate walls	High – External insulation would hide historic brickwork	☹	Planning permission	Architect, Conservation specialist	Applying wall insulation offers a high potential energy saving, but would be extremely damaging to internal and external decorative features. There is also an increased condensation risk, particularly around window and door jambs. Not recommended in this instance.
				High - Internal insulation would reduce floor space and hide historic internal detailing.	☹			

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	Painted cement/sand render on solid brick to the rear (south elevation).	The impervious render extends down to the adjoining ground level, creating a bridge for moisture to migrate up the brickwork. This is also evidenced by mould and high internal damp meter readings at low level along this wall.	Insulate walls	High – insulation could increase damp build-up and cold bridging at windows leading to condensation	☹			Benefit would be limited as most of the rear elevation at ground floor adjoins the rear passage 'sun trap'.
	The single storey rear extension is in cavity blockwork, also finished with painted cement/sand render.	These walls do not appear to be insulated and there is evidence of internal damp in the bathroom.		Low- Insulation can be injected into the cavity	☺			
Ground Floor	Solid concrete floor with no evidence of floor insulation.	Evidence of damp at floor/external wall abutments	Insulate floor	High – applying insulted floor lining would compromise ground floor headroom and useability of the space.	☹			
Windows	Original 6 x 6 single glazed, timber sash windows to the front elevation.	The window frames need painting and the windows are difficult to operate without finger pulls. The upstairs front window has a cracked pane in need of replacement, and because the window lock has come away from the frame, it does not shut properly.	New double glazing	Medium	😐	Planning Permission	Architect, Conservation specialist	The replacement would have to be like for like in style due to article 4 direction covering this are of Jericho. Though available, double glazed sash windows are currently very expensive.
			Secondary glazing	Low	☺		Architect, Conservation specialist	Consider ease of operation and impact on internal features.
			Draught stripping	Low	☺		Architect, Conservation specialist	Draught stripping is a relatively simple and cost effective measure, especially as a general overhaul of the windows is required.
			Secondary glazing and draught stripping	Medium	😐		Architect, Conservation specialist	In addition to respective issues above, take care to address increased condensation risk in air space between old and new panes.
	Single glazed fixed light to rear over the staircase. Window appears original, but as it is located on the rear of the building, it is not subject to the article 4 direction.	Provides valuable daylight to the stairwell, but being single glazed, it is prone to condensation.	Install new double glazing	Medium	😐		Architect, Conservation specialist	Careful selection of replacement in terms of style is recommended.
			Secondary glazing	Low				Consider impact on internal features. As the window is fixed operation is not an issue.
	UPVC framed double glazed windows to the rear.	Ground floor window opening into covered passage to the rear is not properly sealed into adjoining wall.	Seal window/wall junctions	Low	☺		Architect	Though thermally high performing, these are not sympathetic to the historic character of the building. Poorly installed windows contributed to air leakage and potentially, water ingress.

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Front Door	Partially glazed, timber panelled door with draught excluder fitted to letterbox, but no draught stripping to the door itself. There is a small space immediately inside that could serve as a draught lobby, but the inner door has been removed.	The door appears to be in good order.	Draught stripping	Low	☺		Architect, Conservation specialist	Draught stripping is a relatively simple and cost effective measure. Seals could be vulnerable to damage hence detail needs careful consideration.
			Re-install inner door to create draught lobby	Low	☺			The door would have to be hung to swing into the front room due to the limited length of the resultant lobby.
Rear Door	Half double-glazed, UPVC framed entrance door, off the covered passage to the rear.	The door appears to be in good order.	None					The door opens into the covered rear passage, which is effectively a draught lobby.
Fireplaces and chimneys	Fireplaces are currently sealed off internally, and have small internal vents. Chimney pots are uncapped.	Uncapped chimney pots are a potential source of water ingress and consequent issues with damp. Vents need to be kept clear so that there is adequate ventilation of the chimney to prevent damp.	Install chimney pots	Low	☺	Planning permission	Conservation specialist	Impact of this measure on thermal performance may only be minimal, but the measure prevents deterioration of fabric. Style of the chimney should complement the historic character of the street.

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SERVICES								
Boilers	Current boiler is circa 20 years old.	The age of the boiler suggests maximum efficiency of 81%. Typical service life is 20 years, beyond this time frame there may be more frequent breakdowns.	Replace with new, higher efficiency boilers. Modern condensing boilers can achieve 93-97%.	Low			HVAC Engineer	The existing plant appears to have exceeded its service life.
Heating Controls	Central heating programmer with time clock. There is no room thermostat installed		Install room thermostat	Low			HVAC Engineer	An appropriately sited room thermostat will ensure that the heating system switches itself off once the set temperature is achieved.
Distribution pipework	Distribution pipework is uninsulated.	Build-up of sludge and lime scale can cause corrosion and reduce efficiency over time.	Insulate pipework	Low			HVAC Engineer	Uninsulated pipework can undermine TRV control of radiators as these still give off heat when radiators are off. Where these pass through unheated spaces, this result is unnecessary transmission losses. Periodic power flushing of the system is recommended as part of regular maintenance cycle.
Heat Emitters	Predominantly pressed steel radiators without thermostatic radiator valves (TRVs).	Build-up of sludge and lime scale can cause corrosion and reduce efficiency over time.	Install TRVs	Low			HVAC Engineer	TRVs allow occupants to control heat output from individual radiators. Periodic power flushing of the system is recommended as part of regular maintenance cycle.
Domestic Hot Water	Domestic hot water is provided via the instantaneous combination boiler.		Replace boiler with more efficient modern one.	Low	☺		HVAC Engineer	The existing plant appears to have exceeded its service life.
	Distribution pipework is uninsulated.		Insulate pipework	Low	☺		HVAC Engineer	Uninsulated pipework results in unnecessary transmission losses.
Ventilation	Local mechanical extract to the kitchen is provided via a manually switched cooker hood, circa 20 years old.		Replace hood with more efficient one.	Low	☺			Management plan only for lower floors. In addition install thermally efficient, operable roof windows and improved thermal insulation to occupied roof space. This would provide better occupant control of summer conditions without recourse to electrically operated cooling units.
	There is a ceiling mounted extract fan with an overrun facility, controlled via the light switch in the bathroom. There is a back draught grille fitted to the extract fan.	The intake grille to this fan is clogged with dust. This will significantly reduce its effectiveness. This may be in part responsible for the mould growth on the ceiling as it is no longer able to provide sufficient ventilation to remove moisture form the room.	None					Extract fan ducts and grilles need to be cleaned periodically, to ensure that they can provide the required amount of airflow.
Lighting	Mixture of filament bulbs and low energy bulbs	Filament bulbs need replacing more frequently than low energy ones, whilst at the same time using more energy. Some pendants are loose, with exposed wires presenting danger of electrocution.	Fit low energy light bulbs throughout	Low	☺			Check pendants periodically to ensure that they are securely fixed and properly wired.

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MANAGEMENT								
Smart Metering	There are no smart meters installed in the building.		Install smart meters so that use patterns can be effectively monitored by occupants	Low	☺		Energy Supplier	Many Energy suppliers offer installation of smart meters to their customers at little or no cost.
RENEWABLE OPTIONS								
Solar Thermal Hot Water	Primary roof slope to the rear faces due south, offering excellent solar gain potential. Year round hot water use.			Low	☺		Renewables Consultant	The south facing roof slope does not impact on the historic street scene.
Photovoltaics	Primary roof slope to the rear faces due south, offering excellent solar gain potential.			Low	☺		Renewables Consultant	The south facing roof slope does not impact on the historic street scene. PVs can be expensive to install and a cost-benefit analysis is recommended.
Wind Turbines	Wind resource assessment required.			High	☹	Listed Building Consent	Conservation Specialist Renewables Consultant	This would impact historically important Oxford roofscape. Not recommended
Biomass Boilers	These could be considered as a boiler replacement option.			Medium	😐		Conservation Specialist Renewables Consultant	Heritage impact in relation to routing of flues. Carry out cost-benefit analysis prior to main boiler replacement, note issues around additional plant space and fuel storage.
Ground Source Heat Pump	Building size suggests the depth/ area of pipework would be substantial. Less efficient in historic buildings as these tend to have higher air change rates. Heat pumps work best on buildings with highly insulated, airtight envelopes that can be heated with relatively low temperature systems such as under floor heating. Resizing/additional heat emitters would be needed.			Medium	😐		Renewables Consultant HVAC Engineer	Heritage impact in relation to routing of larger pipework and heat emitters. Carry out cost-benefit analysis prior to main boiler replacement.
Air Source Heat Pump	Performance issues with heat pumps in historic buildings as noted above. Resizing/additional heat emitters would be necessary.			Medium	😐		Renewables Consultant HVAC Engineer	Heritage impact in relation to routing of larger pipework and heat emitters. Carry out cost-benefit analysis prior to main boiler replacement.
Micro Combined Heat and Power Unit	Year round hot water use means consistent heat demand to enable the CHP unit to run efficiently is possible. Also generates electricity for export to the mains grid. Relatively new to the UK market.	Shorter service interval than conventional boilers		Medium	😐		Renewables Consultant HVAC Engineer	Carry out cost-benefit analysis prior to main boiler replacement, note issues around additional plant space and flues.