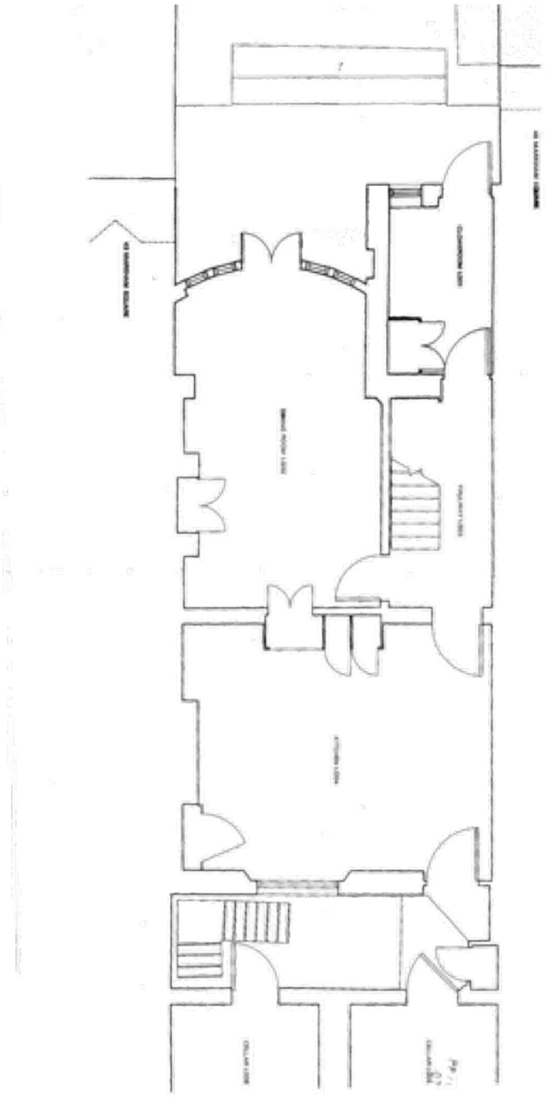
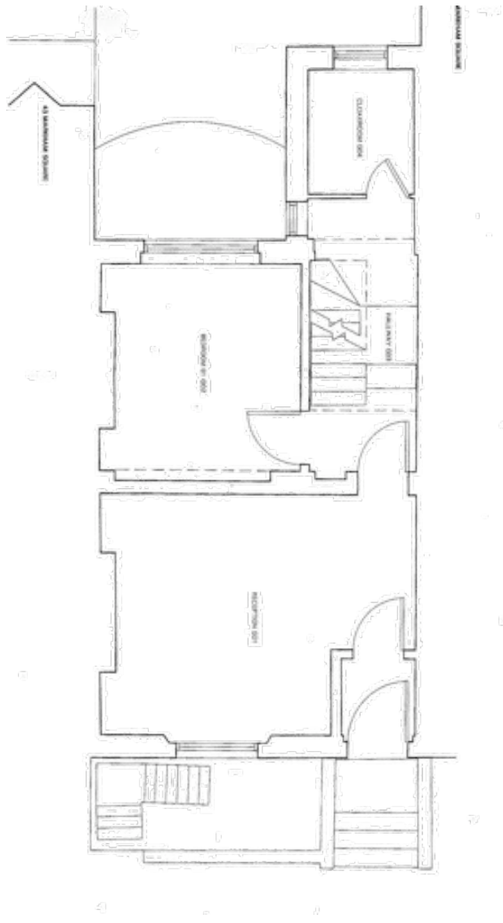
N

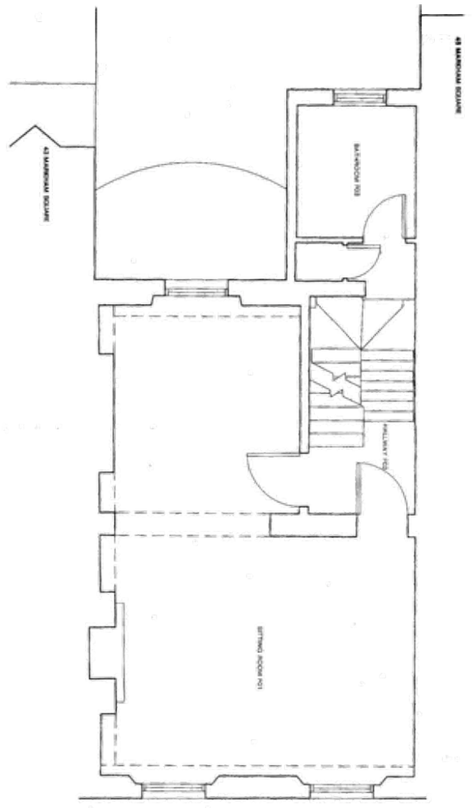
Example 3
Existing plans



A Existing basement floor plan



B Existing ground floor plan



C Existing first floor plan

0 2 4 6 (M)

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Revisions
Rev A - Spelling ammendment - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes
1. Existing drawings used with permission from Timothy Hatton Architects

Project Address
RBKC EH Feasibility
44 Markham Square

Drawing
Existing basement, ground and first floor plans

Drawing status
For Discussion Purposes Only

Date
01.10.09

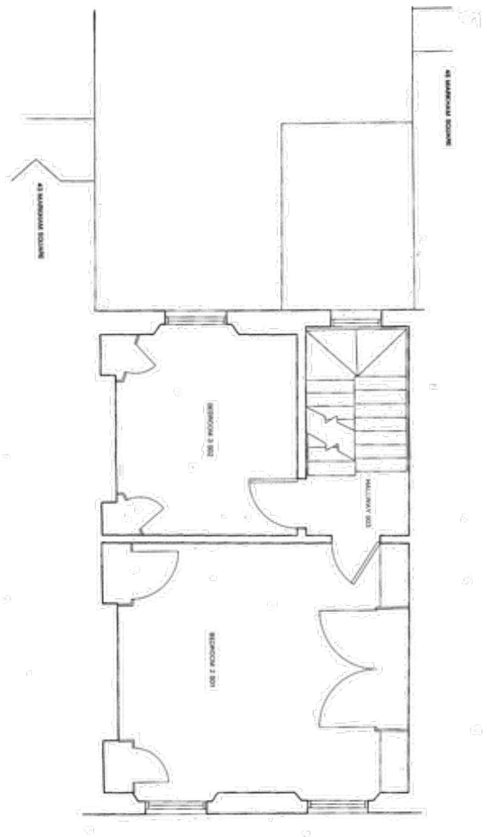
Scale
1:100 @ A3

Drawing number
0915 MS01

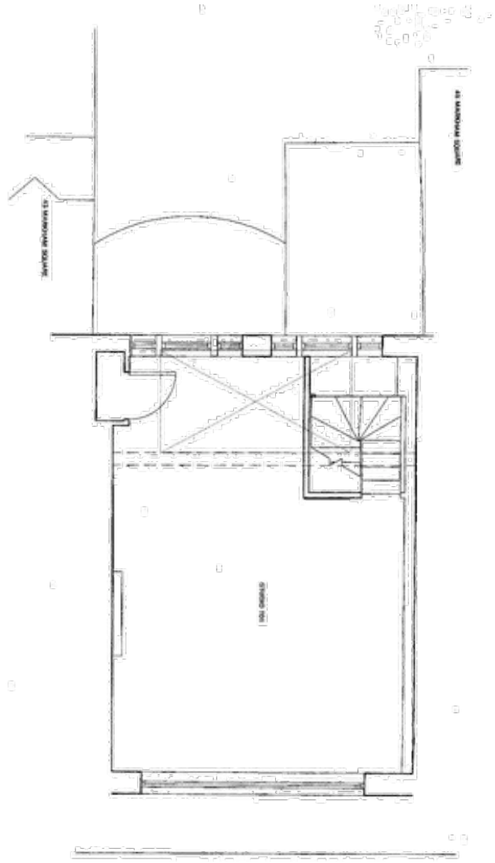
Revision
B

N

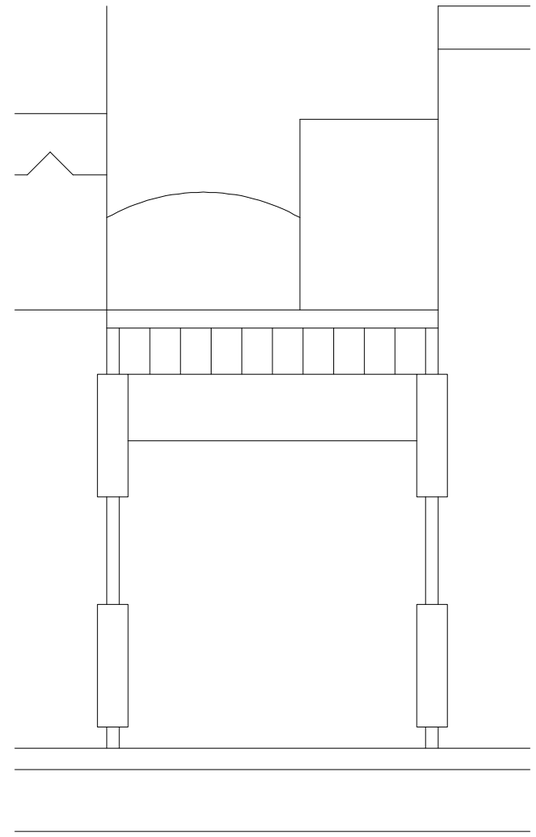
Example 3
Existing plans



A Existing second floor plan



B Existing third floor plan



C Existing roof plan

0 2 4 6 (M)

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General Notes

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4. Read in conjunction with all relevant structural and mechanical & electrical engineers drawings.
5. Dimensions critical to proposed building works must be checked on site before building works commences, as certain assumptions have been made due to lack of accessibility and anomalies in the existing building.

Revisions

Rev A - Example upgraded to show rooflight. change to spelling - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes

1. Existing drawings used with permission from Timothy Hatton Architects
2. Roof plan assumed as no existing drawings supplied.

Project Address

RBKC EH Feasibility
44 Markham Square

Drawing

Existing second and third floor and roof plans

Drawing status

For Information

Date
01.10.09

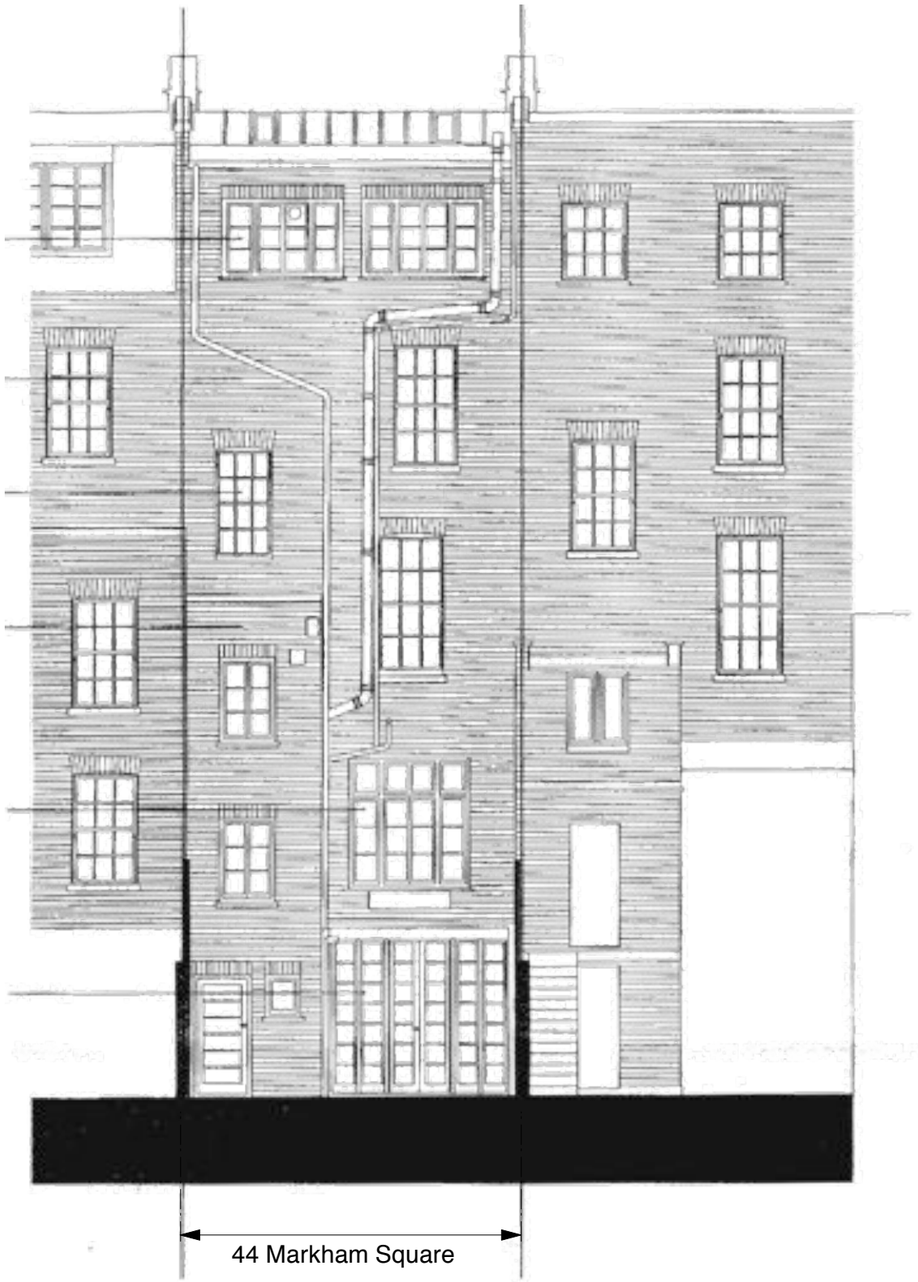
Scale
1:100 @ A3

Drawing number
0915 MS02

Revision
B

Example 3
Existing elevations

A Existing Front elevation



B Existing Rear elevation

0 2 4 6 (M)

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Revisions
Rev A - Spelling ammendment - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes
1. Existing drawings used with permission from Timothy Hatton Architects

Project Address
RBKC EH Feasibility
44 Markham Square

Drawing
Existing front and rear elevations

Drawing status
For Discussion Purposes Only

Date
01.10.09

Scale
1:100 @ A3

Drawing number
0915 MS03

Revision
B

Example 3
Existing photographs

A Photo from South East corner of Markham Square

B Photo from South West corner of Markham Square

C Photo from South West over communal garden

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Revisions
Rev A - Spelling amendment - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes

Project Address
RBKC EH Feasibility
44 Markham Square

Drawing
Existing photographs

Drawing status
For Discussion Purposes Only

Date
01.10.09

Scale
n.t.s.

Drawing number
0915 MS04

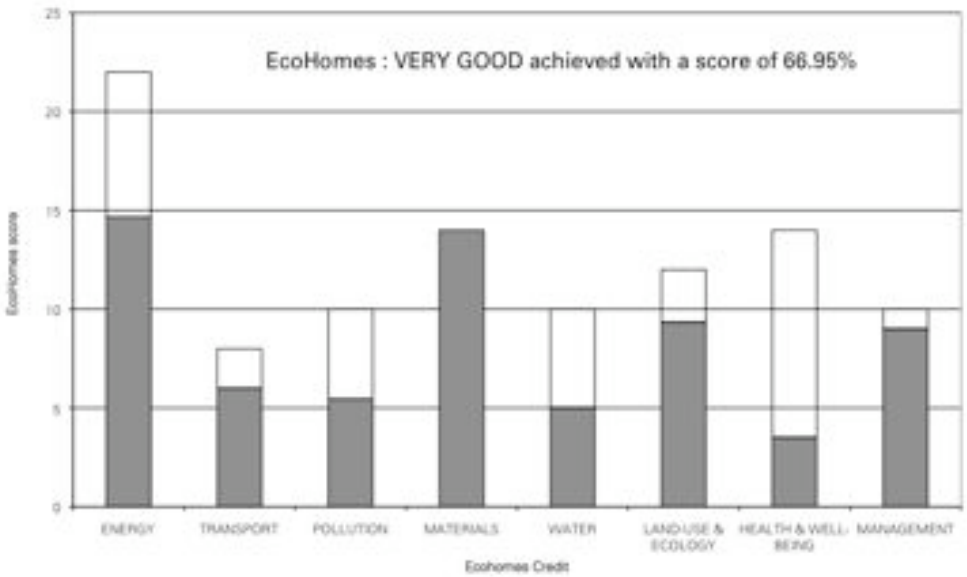
Revision
B

5. Carbon Savings Analysis

EcoHomes Analysis of RBKC LDF

Example 3:
Carbon Savings and EcoHomes rating

Example 3 at 44 Markham Square		Baseline DER = 116.1				
					Urban Design Implications	
Building Element	Description of Measure	DER (kgCO2/m2/yr)	DER Saving	£/tonne CO2 saved	High	Low
Wall Insulation	50mm internal to front elevation and 100mm lining to the rear elevation (U-Value = 0.44 and 0.35 W/m2K)	87	29.1	-123		Yes
Roof Insulation	200mm of mineral fibre insulation (U-Value = 0.2 W/m2K)	80.25	6.75	-144		Yes
Floor Insulation	100mm insulation in suspended timber flooring (U-Value = 0.2 W/m2K)	74.36	5.89	-136		Yes
Window type B	Replace window frames as existing and use double glazing (U-Value = 1.5 W/m2K)	57.76	16.6	349		Yes
Rooflight	Replace rooflight to Building Regulations minimum standards (U-Value = 3.3 W/m2K)	57.46	0.3	1395		Yes
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10	45.52	11.94	-80		Yes
Renewables	Install a Ground Source Heat Pump with a COP of 3.0 (300%) to provide for heating and hot water	24.26	21.26	149		Yes
Other	Infill and cap existing chimneys	23.84	0.42	121		Yes
Resulting DER		23.84	Equates to 8 EcoHomes credits scored			



5. Carbon Savings Analysis

EcoHomes Analysis of RBKC LDF

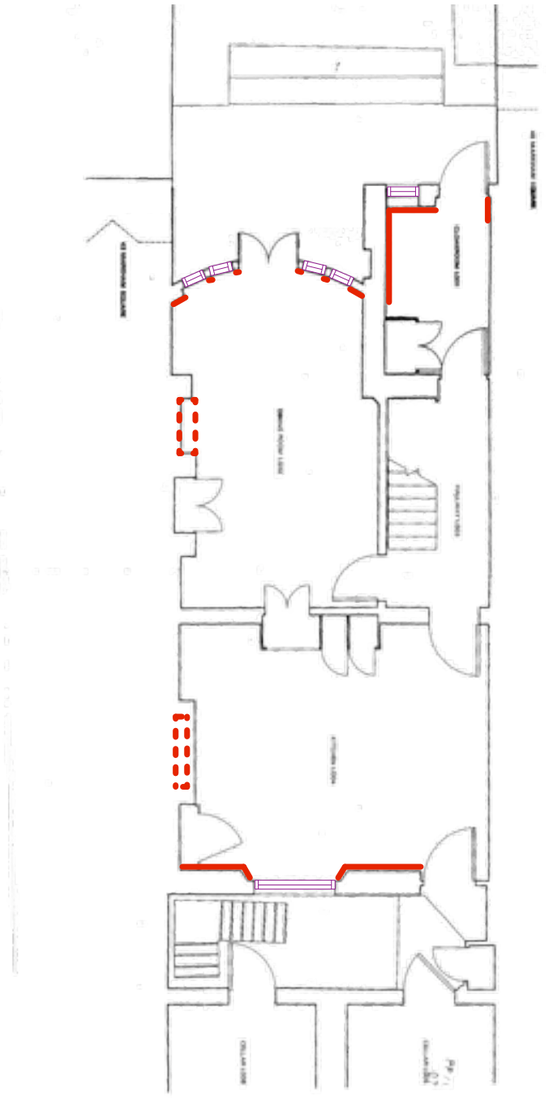
Example 3:
Cost Effectiveness Analysis

Example 3 at 44 Marlcham Square				Baseline DER is 1.16.1													
																Cost Effectiveness Analysis	
Building Element	Description of Measure	Initial U-Value W/m2K	U-Value W/m2K	DER	DER Savings	Kg CO2 saved	kWh reduction of measure	kwh savings	Total £ saved	Total Fuel Savings over 60 years	Lifecycle	Replacement cycle	cost per replacement cycle (total or m2)	60 year cost of measure	CO2 saved from measure over 60 years (tonnes)	£/tonne CO2 saved
Wall Insulation	50mm internal to front elevation and 100mm internal lining to the rear elevation (U-Value = 0.44 and 0.35 W/m2K)	2.3	0.44 & 0.35	87	29.1	5238.582	26270.18	11101.02	£800.84	£48,056.32	60	1	47	£ 9,248.13	314	-123
Roof Insulation	200mm of mineral fibre insulation (U-Value = 0.2 W/m2K)	2.4	0.2	90.25	6.75	1215.135	22700	2570.18	£185.44	£11,126.31	60	1	22	£ 624.27	73	-144
Floor Insulation	100mm insulation in suspended timber flooring (U Value = 0.2 W/m2K)	1.2	0.2	74.36	5.89	1060.3170	21454.96	2245.04	£161.98	£9,718.70	60	1	22	£ 1,066.54	64	-136
Window type B	Replace window 1 arrres as existing and use double glazing (U-Value = 1.8 W/m2K)	4.8	1.5	57.76	16.6	2988.332	15130.91	6324.05	£456.28	£27,376.81	30	2	1250	£ 45,000.00	179	349
Rooflight	Replace rooflight to Building Regulations minimum standards (U-Value = 3.3 W/m2K)	4.8	3.3	57.46	0.3	54.006	15019.09	111.82	£8.07	£484.07	30	2	1250	£ 2,500.00	3	1396
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10			45.52	11.94	2149.4388	10486.13	4532.96	£327.05	£19,623.18	20	3	1000	£ 3,000.00	132	-80
Renewables	Install a Ground Source Heat Pump with a COP of 3.0 (300%) to provide for heating and hot water			24.26	21.26	3827.2252		10486.13	£756.57	£45,394.46	15	4	2000	£ 8,000.00	260	149
Other	Infill and cap existing chimneys			23.84	0.42	75.6084	10539.69	63.56	£3.86	£231.86	60	1	1250	£ 2,500.00	5	121
				23.84					£2,032.47	£161,949.06				£ 71,939.74	1020	70.83

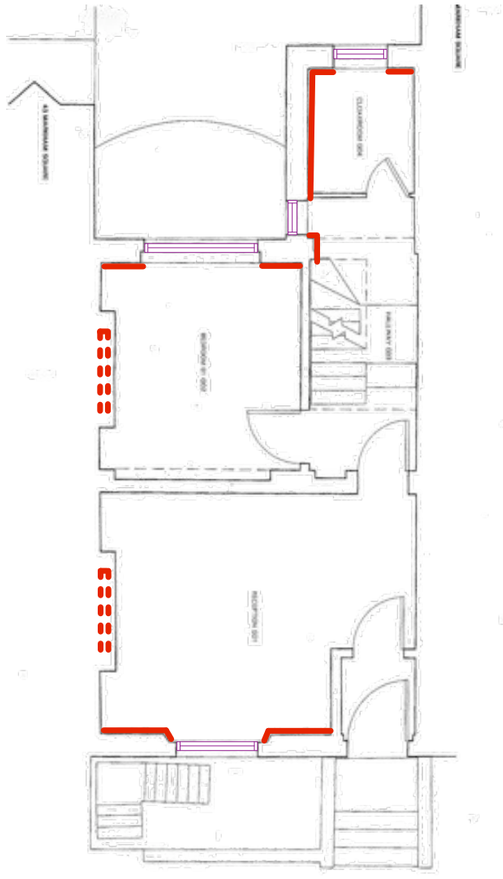
N

Key
- 50mm internal insulation & lining
- infilling chimneys, remove chimney pots and cap
- Replacement with new double glazed sash / or secondary glazing

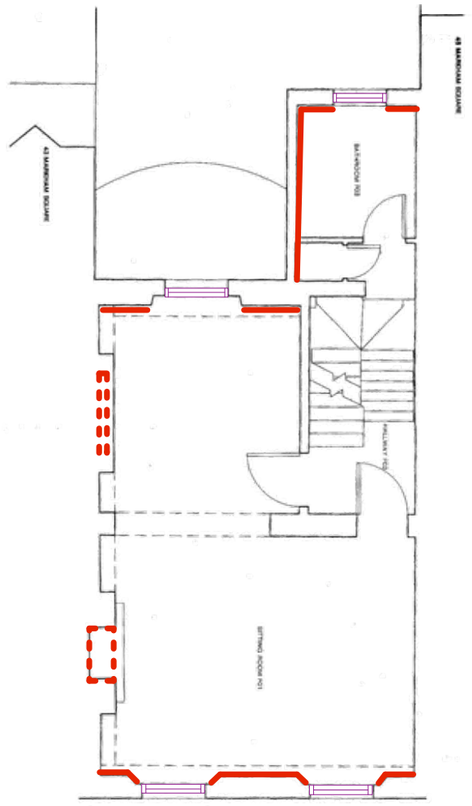
Example 3
Proposed plans



A Proposed basement floor plan



B Proposed ground floor plan



C Proposed first floor plan

0 2 4 6 (M)

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Revisions

Rev A - External insulation to rear ammended to internal. Change to spelling - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes

1. Existing drawings used with permission from Timothy Hatton Architects

Project Address

RBKC EH Feasibility
44 Markham Square

Drawing

Proposed basement, ground and first floor plans

Drawing status

For Information

Date

01.10.09

Scale

1:100 @ A3

Drawing number

0915 MS05

Revision

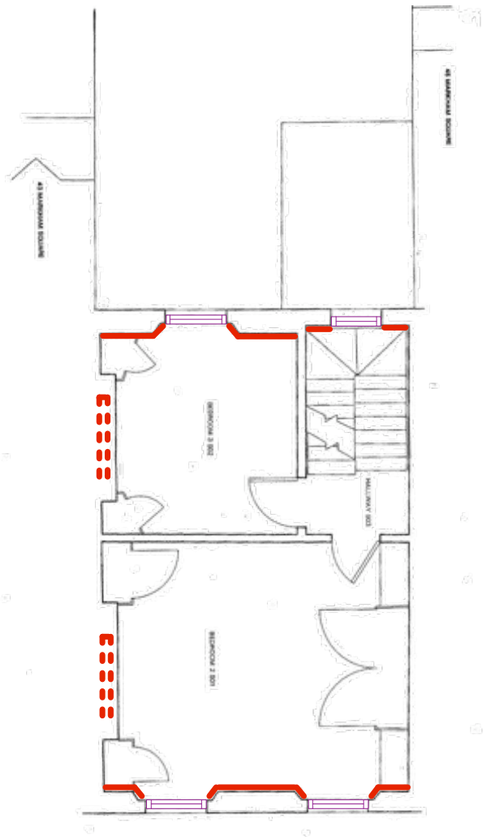
B

Example 3
Proposed plans

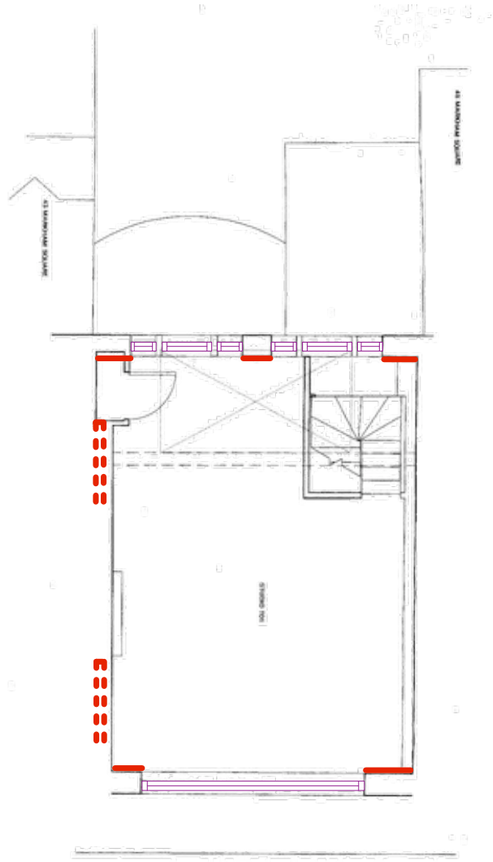
N

Key

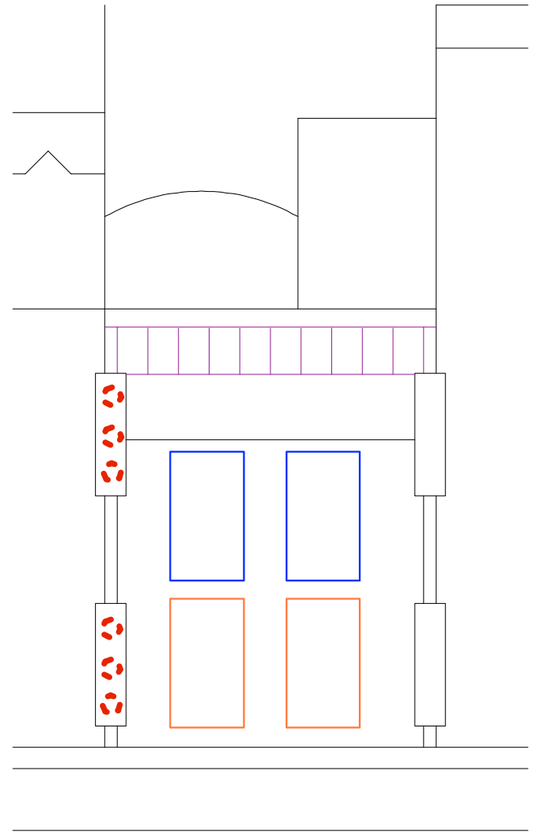
- 50mm insulation & lining
- infilling chimneys, cap and replace chimney pots
- Photovoltaic panels (PVs) 5.2m2
- Solar Hot Water (SHW) 5.2m2
- Replacement with new double glazed sash / or secondary glazing / rooflight



A Proposed second floor plan



B Proposed third floor plan



C Proposed roof plan

0 2 4 6 (M)

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Revisions
Rev A - Rooflight shown, amended chimney note - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes

1. Existing drawings used with permission from Timothy Hatton Architects
2. Roof plan assumed as no existing drawings supplied.

Project Address
RBKC EH Feasibility
44 Markham Square

Drawing
Proposed second, third floor and roof plans

Drawing status
For Information

Date
01.10.09

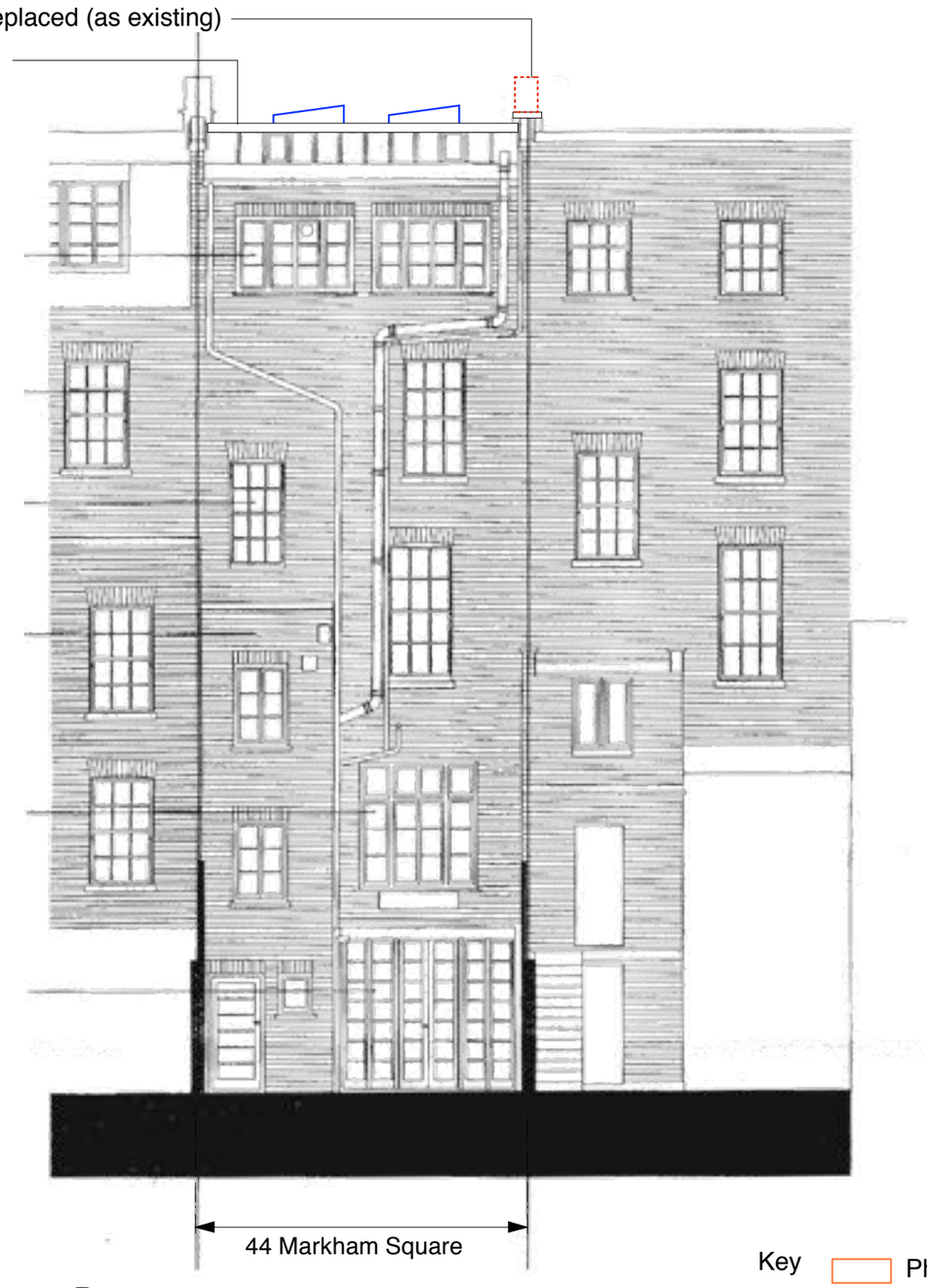
Scale
1:100 @ A3

Drawing number
0915 MS06

Revision
B

Example 3
Proposed elevations

A Proposed front elevation



B Proposed rear elevation (rendered insulation)

Key

- Photovoltaic panels (PVs) 5.2m2
- Solar Hot Water (SHW) 5.2m2

0 2 4 6 (M)

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General Notes

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4. Read in conjunction with all relevant structural and mechanical & electrical engineers drawings.
5. Dimensions critical to proposed building works must be checked on site before building works commences, as certain assumptions have been made due to lack of accessibility and anomalies in the existing building.

Revisions

Rev A - Example amended to show rear without rear externally rendered - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes

1. Existing drawings used with permission from Timothy Hatton Architects

Project Address

RBKC EH Feasibility
44 Markham Square

Drawing

Proposed front and rear elevations

Drawing status

For Information

Date
01.10.09

Scale
1:100 @ A3

Drawing number
0915 MS07

Revision
B

Example 3
Proposed photographs

A Proposed view from South West over communal garden showing PVs

B Proposed view from South West corner of Markham Square showing PVs

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Revisions
Rev A - Spelling amendment - 08.10.09
Rev B - Notes amended - 28.10.09

Other notes

Project Address
RBKC EH Feasibility
44 Markham Square

Drawing
Proposed view showing PVs

Drawing status
For Discussion Purposes Only

Date
01.10.09

Scale
n.t.s.

Drawing number
0915 MS08

Revision
B

6. Policy Recommendations

EcoHomes Analysis of RBKC LDF

Following both the EcoHomes Analysis and Carbon Savings Analysis for the case study dwellings within the borough, the following section summarises the results and provides recommendations of clauses and requirements that can be included within RBKC's Core Strategy Policy.

Key Recommendations

Key recommendations are as follows:

- EcoHomes VERY GOOD is a suitable target to promote best practice.
- Best practice will further be ensured through requiring developments to achieve at least 40% of the credits in each of the following EcoHomes sections: energy, water and materials credits.
- An EcoHomes preliminary assessment should be required at Planning Stage. In addition, schemes should provide a Design Stage certificate prior to work starting on site and a Post Construction Stage Assessment prior to occupancy.
- Carbon savings requirements in this report are achievable on the sites with current building materials, practices and technologies.
- The design and conservation implications of the current policy are predominantly low for the case studies in Conservation Areas and lower for those outside Conservation Areas. For Grade II listed buildings each scheme should be treated on a case by case basis.

Notwithstanding the below checklist each listed building will need to be assessed on its individual merits as what may be acceptable for one building may not be acceptable for another. Advice should always be sought form the Local Authority's Conservation and Design Section prior to undertaking any works to ascertain the acceptability of each measure and to determine which consents are required.

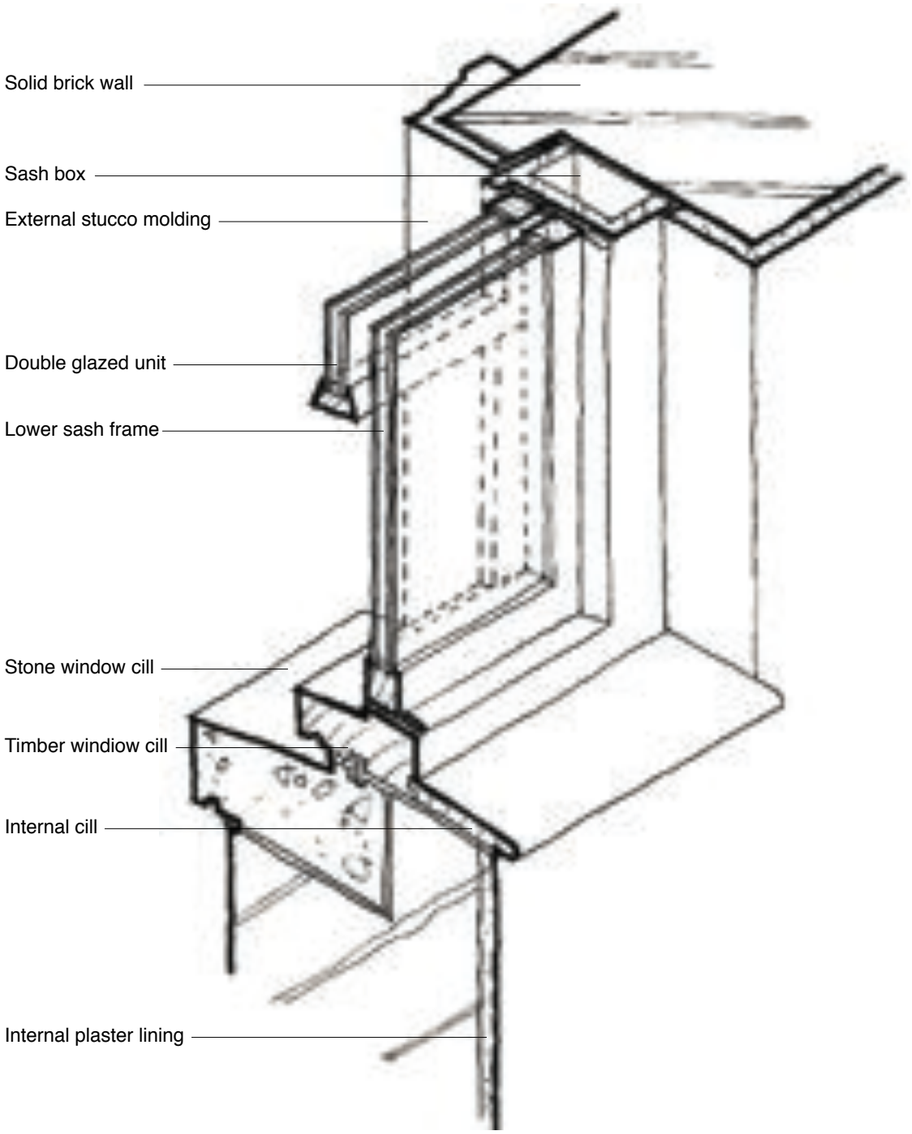
		Design and Conservation Implications		
Building Element	Description of Measure	Listed Buildings	Conservation Area	Non Conservation Area
Wall Insulation	50mm insulation and lining to the front (internal)	High	Low	Low
Wall Insulation	50mm insulation and lining to the rear (internal)	High	Low	Low
Wall Insulation	50mm insulation and render to the front (external)	High	High	Low
Wall Insulation	50mm insulation and render to the rear (external)	High	High	Low
Roof Insulation	200mm of mineral fibre insulation in roof space	Low	Low	Low
Floor Insulation	100mm insulation in suspended timber flooring	Low	Low	Low
Window Type A	Replacement 14mm glazing within existing frame and sash boxes	High	Low	Low
Window Type B	Replace window frames as existing and use 24mm double glazing	High	Low	Low
Window Type C	Replace with casement windows	High	High	Low
Doors	Replace entrance door	High	Low(1)	Low
Windows	Replace rooflights.	High	Low	Low
Boiler	Install 92% efficient system boiler	Low	Low	Low
Other	Infill and cap existing chimneys	High	Low(2)	Low
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10	Low	Low	Low
Ventilation	Install Mechanical Ventilation with Heat Recovery	Low	Low	Low
Renewables	Install 5.2 m2 Solar Hot Water panel to the front	High	High	Low
Renewables	Install 5.2 m2 Solar Hot Water panel to the rear	High	Low	Low
Renewables	Install 5.2 m2 (0.75 kWp) photovoltaic panel to the front	High	High	Low
Renewables	Install 5.2 m2 (0.75 kWp) photovoltaic panel to the rear	High	Low	Low
Renewables	Install a Ground Source Heat Pump with a COP of 3.0 (300%) to provide for heating and hot water	Low	Low	Low
Renewables	Install a Wind Turbine	High	High	Low
Cooling	Install Comfort Cooling with plantwork to the front	High	High	Low
Cooling	Install Comfort Cooling with plantwork to the rear	High	High	Low

(1) Replacement may be acceptable subject to Design and Conservation comments or approval.
(2) Subject to replacement of chimney pots and detailed approval from Design and Conservation

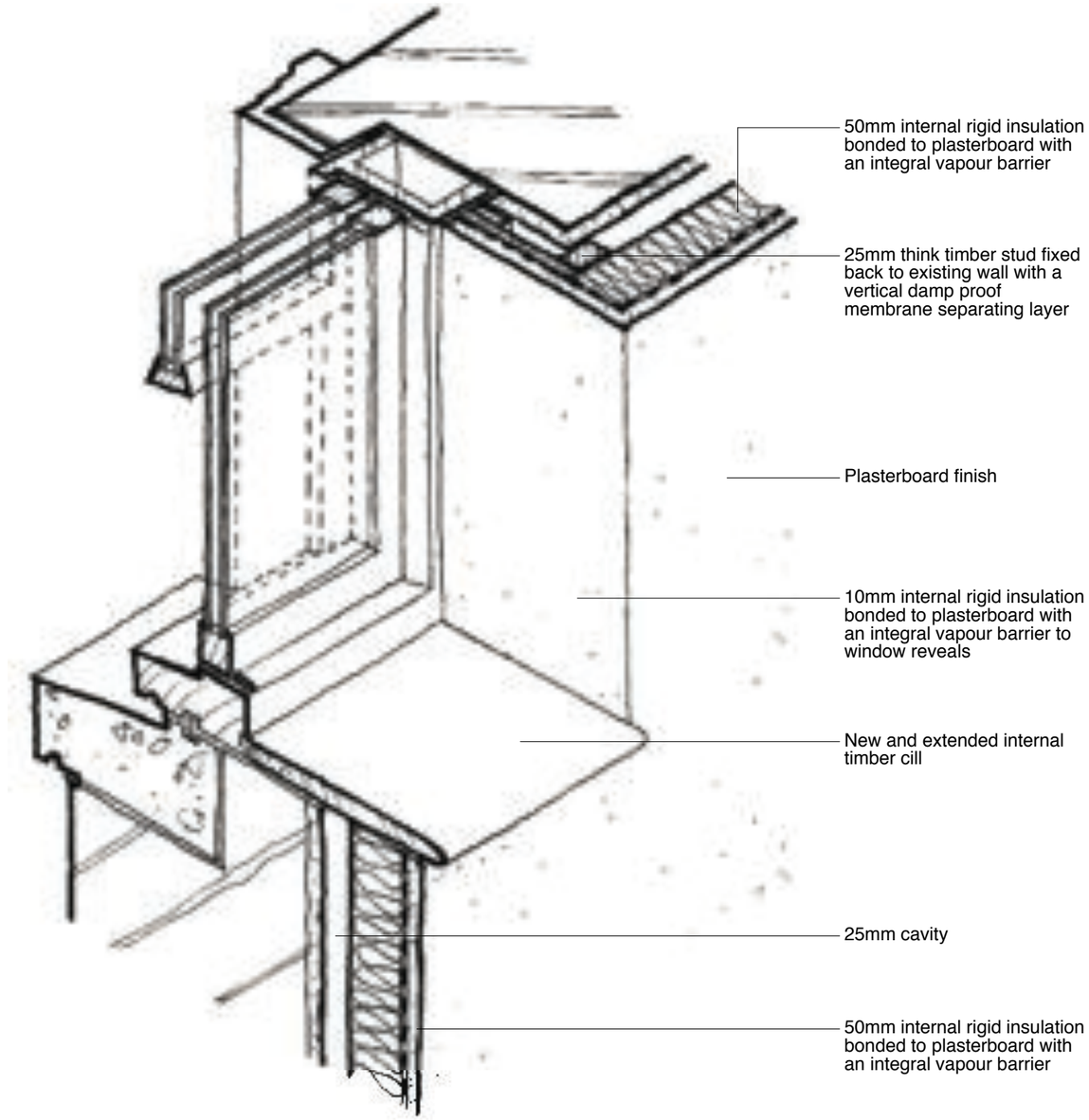
6. Policy Recommendations

EcoHomes Analysis of RBKC LDF

Typical details
Internal insulation



A Existing window/ wall detail - cut away axonometric (nts)



B Proposed window/ wall detail - cut away axonometric (nts)

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Revisions
Rev A - Notes amended - 28.10.09

Other notes
1. Typical sash window detail taken from Barry: The Construction of Buildings 2.

Project Address
RBKC EH Feasibility Study

Drawing
Existing & proposed
Internal insulation detail

Drawing status
For Discusssion Purposes Only

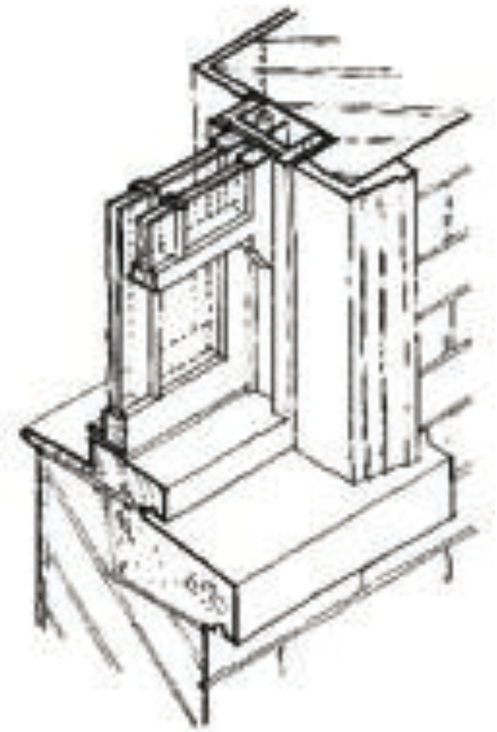
Date
03.10.09

Scale
nts @ A3

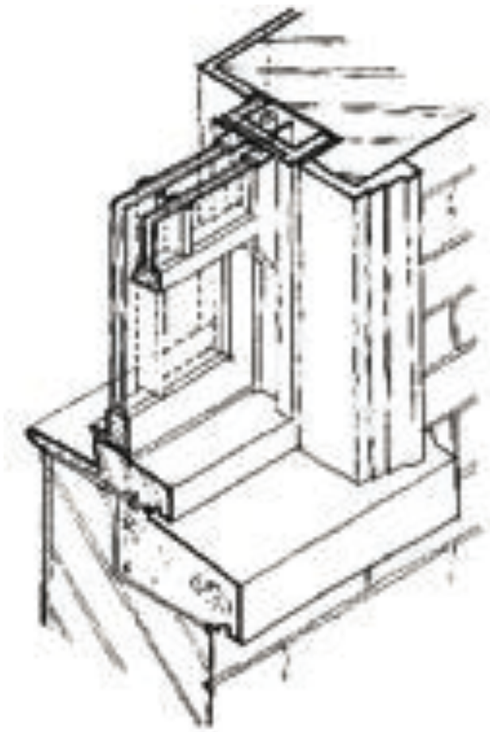
Drawing number
0915/DET02

Revision
A

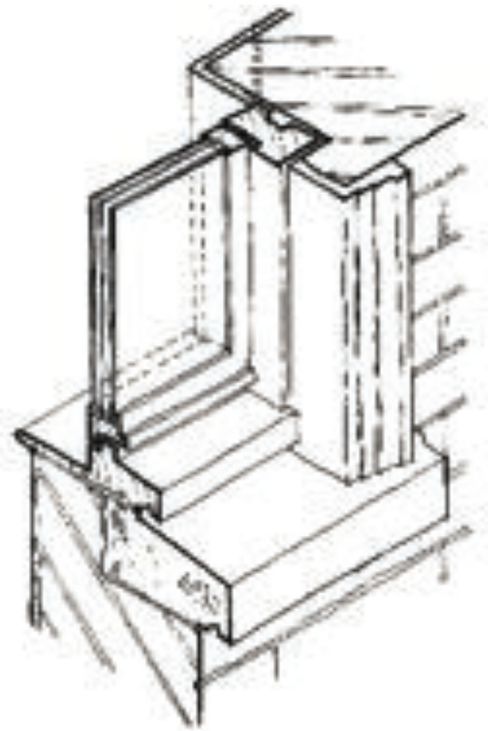
Typical details
Windows



A 14mm (4-6-4) double glazed unit in existing frame & sash boxes typical U value 2.5 W/(m2K)



B 24mm (4-16-4) double glazed unit in a new sash window typical U value 1.9-2.0 W/(m2K)



C 36mm (4-12-4-12-4) triple glazed unit in a new casement window typical U value 0.8-1.0 W/(m2K)

0 2 4 6 (M)

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Revisions
Rev A - Notes amended - 28.10.09

Other notes
Existing drawings supplied by Eight Associates

Project Address
RBKC EH Feasibility

Drawing
Glazing window options details

Drawing status
For Discussion Purposes Only

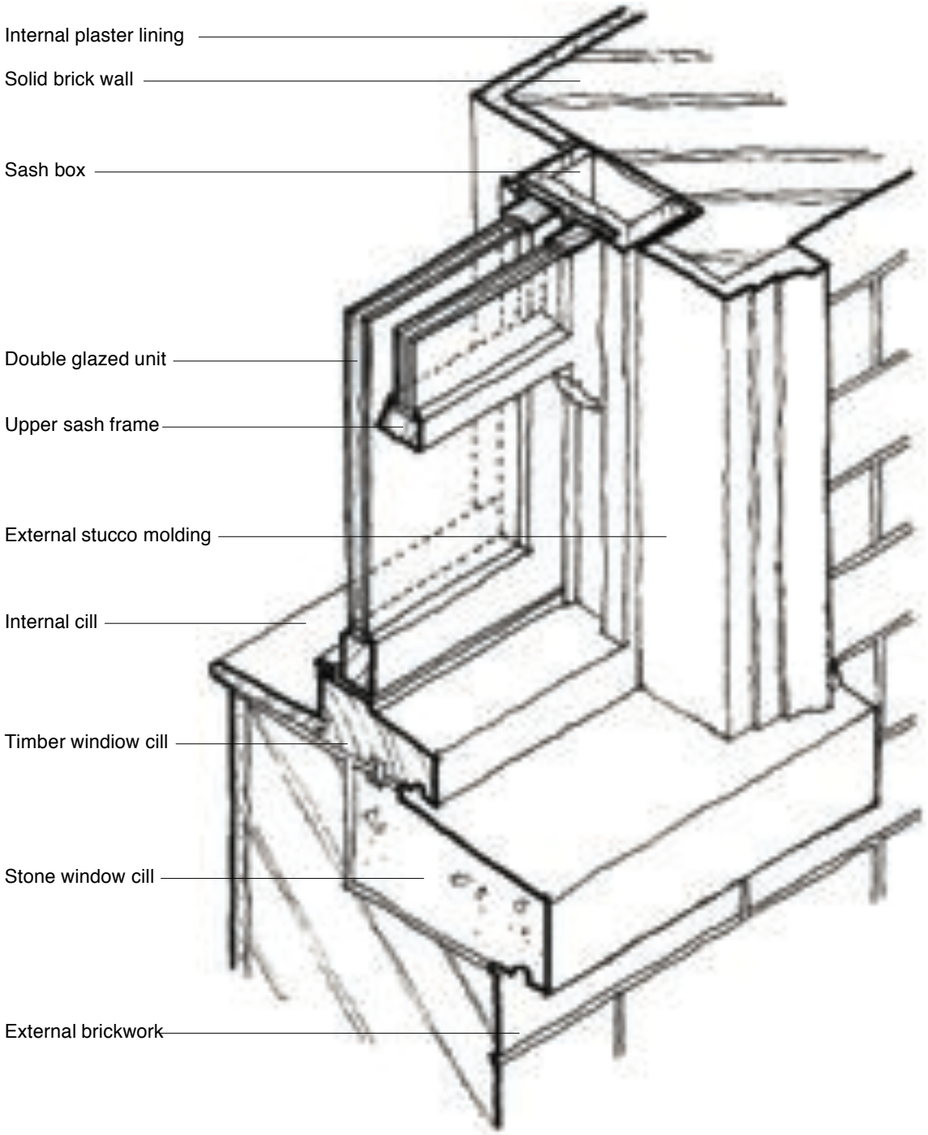
Date
01.10.09

Scale
N/A

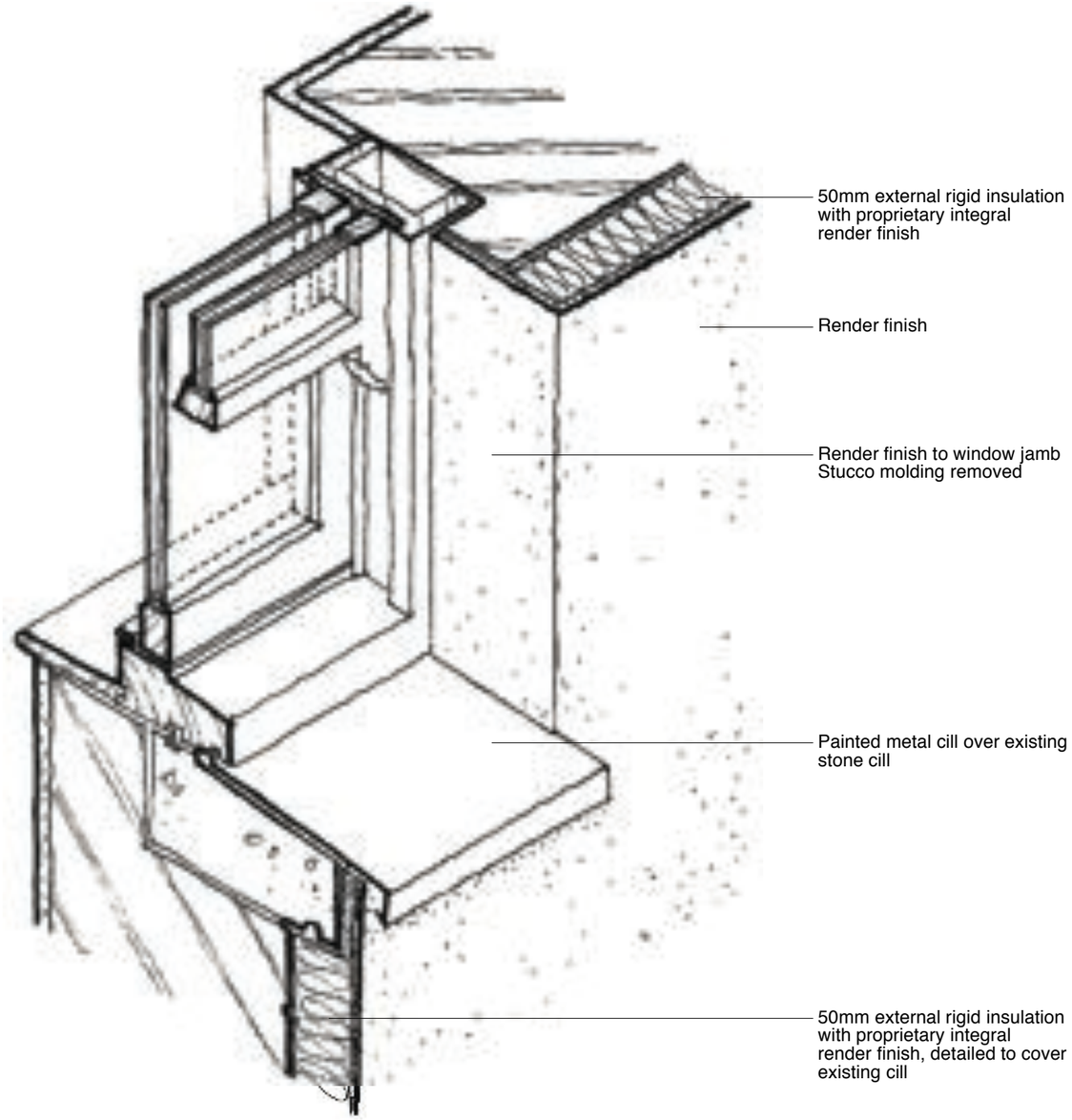
Drawing number
0915/DET03

Revision
A

Typical details
External insulation



A Existing window/ wall detail - cut away axonometric (nts)



B Proposed window/ wall detail - cut away axonometric (nts)

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Revisions
Rev A - Notes amended - 28.10.09

Other notes
1. Typical sash window detail taken from Barry: The Construction of Buildings 2.

Project Address
RBKC EH Feasibility Study

Drawing
Existing & proposed
External insulation detail

Drawing status
For Discusssion Purposes Only

Date
03.10.09

Scale
nts @ A3

Drawing number
0901/DET01

Revision
A

Royal Borough of Kensington and Chelsea

Viability and feasibility study of achieving the Council's required Code for Sustainable Homes standards for existing residential buildings

Brief for consultants – 16 September 2009

Background

The Royal Borough of Kensington and Chelsea has a statuary duty *"to contribute to the mitigation of, and adaptation to, climate change*[1]*"*. Government planning policy requires local authorities to *"ensure that development plans contribute to global sustainability by addressing the causes and potential impacts of climate change – through policies which reduce energy use, reduce emissions, promote the development of renewable energy resources and take climate change impacts into account in the location and design of development*[2]*"*.

The Council's planning policies for climate change are set out in the draft Publication version of the Core Strategy[3], which is being published for the final 'soundness' consultation (Regulation 27) in October 2009. The Council proposes to use the Code for Sustainable Homes (CfSH) to set the environmental performance levels for residential development and BREEAM standards to set the environmental performance levels of non-residential development. This policy applies to all new buildings, all extensions and conversions defined as major development, the entire dwelling where subterranean extensions are proposed and other development identified in due course. However, the purpose of this study is to determine the viability and feasibility to which existing residential buildings can be retrofitted to meet the Council's required CfSH standards. The study will not consider non-residential development as the BREEAM standards have already been reduced to aid viability and feasibility in existing non-residential buildings.

The Royal Borough has an exceptional historic townscape, with over 4,000 listed buildings and over 70% of the Borough is afforded conservation area status. The Council acknowledges that measures to mitigate, and adapt to, climate change, must be sensitive to the historic townscape. However, it is unclear how existing residential buildings can be retrofitted to achieve the required CfSH standards and what might be an acceptable impact on townscape.

The aim of this study is therefore **to consider the viability and feasibility to which existing residential buildings can be retrofitted to meet the Council's required Code for Sustainable Homes standards, without an unacceptable impact on townscape.**

This study will be used as evidence in support of the Council's policies in the Core Strategy.

Methodology

In order to assess viability and feasibility to which existing residential buildings can be retrofitted to meet the CfSH standards, the Council has set out the following project methodology:

[1] Planning Act 2008
[2] Planning Policy Statement 1: Delivering Sustainable Development, para 13. Key Principle ii.
[3] Draft Core Strategy for the Royal Borough with a particular focus on North Kensington, as Submitted to Cabinet on 24 September 2009

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1. The Council, together with the consultants, will identify 3 or 4 'practice examples' of residential buildings typical of the Royal Borough. These must include one listed building and examples within conservation areas. Gaining access to private dwellings within the project timescales will prove difficult. A desktop study and modelling using images and floorplans will therefore be required, where any assumptions about the internal arrangements and building structure will need to be clearly stated.
2. Identify all the environmental measures which will ensure that each building meets the required CfSH level, in accordance with the Publication draft Core Strategy. The consultant will then be required to identify the additional environmental measures to ensure that the development meets future CfSH levels in the Core Strategy. The consultant will be required to identify the potential saving from each measure proposed (such as KWh for energy and gas, litres for water and potential CO^2 savings).
3. Critically analyse the visual impact of each environmental measure (identified in 2 above) on the building and surrounding townscape, having regard to the impact on the historical environment while maximising the potential of the measures proposed (south facing for PV, etc). Consultant to provide qualified advice on which measures might, or might not, be acceptable in various locations, ranking the measures in terms of their impact on townscape. The Council will offer Conservation Area and Listed Building advice, in the form of a workshop session. The consultant may also wish to involve English Heritage in this workshop. The consultant would be required to prepare graphic material (plans, sketches and photographs) showing the potential impact of the measures, especially those with a visible townscape impact.
4. Identify cost for each environmental measure, with a total for each example to meet each of the standards in the Core Strategy. This must consider the capital cost, less cost savings from energy savings and funds available for selling energy back to the grid.
5. Revise the environmental measures proposed in 2, having regard to the impact on townscape (findings from 3 above) and cost (findings from 4 above), recommending which environmental measures would be preferred to meet the CfSH standards at the various stages in the Core Strategy. The ranking proposed in 3 will also need to be revised to reflect these findings. This might be presented in the form of a matrix or chart, comparing cost, carbon reduction and townscape implications, in relation to the required CfSH level.
6. Make recommendations on the feasibility and viability of requiring existing residential buildings to meet the CfSH standards as set out in the Council's emerging Core Strategy.
7. Present study, findings and recommendations in draft and final report, in electronic and hard copy format.

Timescales

The timescales in this project are unfortunately very tight. This is mainly to ensure that the recommendations of the study can be used to inform the Core Strategy, which is scheduled for Publication on the 20th October 2009.

The detailed timescales are set out as follows:

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Milestone 1: Project inception meeting and discussion on proposed 'practice examples' (item 1 above) **[22 Sept 09]**

Milestone 2: Consultant to identify certain 'show stoppers' which would result in the Council's CfSH levels being unachievable, unduly onerous or unreasonable. **[25 Sept 09]**

Milestone 3: Project team workshop to discuss the environmental measures required to meet the Council's CfSH standards (item 2 above), with specific emphasise placed on assessing the impact on townscape (item 3 above). **[2 Oct 09]**

Milestone 4: Consultant to submit draft final report, highlighting findings and recommendations **[12 Oct 09]**

Milestone 5: Project team meeting to discuss draft final report **[14 Oct 09]**

Milestone 6: Consultant to submit final report **[19 Oct 09]**

Outputs

The output of this study is a **report** identifying the environmental measures required to achieve the Council's required Code for Sustainable Homes standards over the duration of the Plan and identify the impact such measures might have on townscape. This report must also identify the capital costs expected to meet the Council's requirements and also consider payback and potential savings over the life of the building. The report would need to conclude whether the Council's emerging policy is viable and feasible.

Budget

A budget of £4,950 excluding VAT is available for this project. This will include sub-contracting, such as appointing a certified Code for Sustainable Homes assessor. However, the Council will support the consultant to obtain match funding to supplement this budget, should the need arise.

Useful information, available upon request:

- draft Core Strategy with a focus on North Kensington
- The Code for Sustainable Homes, technical guide
- Cracking the Code, How to achieve code level 3 and above, Sustainable Homes
- Cost Analysis of the Code for Sustainable Homes, Final Report
- Retrofitting Soho, Improving the Sustainability of the Historic Core Areas.
- Conservation Area Appraisals
- English Heritage guidance

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36 Respecting Environmental Limits

Climate change, flooding, waste, biodiversity, air quality and noise and vibration

36.1 Introduction

36.1.1 *"The Council recognises the scientific consensus that climate change and global warming is happening; that human activity is contributing to it significantly; and that it has potentially damaging environmental, social and economic impacts"* (RBKC Climate Change Strategy 2008 – 2015).

36.1.2 *"Development plans should contribute to global sustainability by addressing the causes and potential impacts of climate change, through policies which reduce energy use, reduce emissions, promote the development of renewable energy resources, and take climate change impacts into account in the location and design of development"* (Planning Policy Statement 1, Delivering Sustainable Development, 2005).

36.1.3 Across the planet, we use too many natural resources too quickly, and beyond the capacity of one planet to replenish them at the same rate. It is important that we all play our part to reduce the impact of human activity on the global and local environment. Respecting Environmental Limits is therefore about ensuring that we live within our means and make decisions to help future generations meet their needs. This will contribute to achieving the environmental elements of sustainable development.

36.1.4 The social, economic and other environmental elements of sustainable development are considered elsewhere in the Core Strategy, including encouraging the use of public transport, sustainable economic growth, providing local employment opportunities, providing a diversity of housing, providing community facilities and opportunities within walkable neighbourhoods, protecting open space and encouraging greater opportunities for pedestrians and cyclists.

36.1.5 Most of our energy and fuel, including for the production and transportation of food, comes from non-renewable fossil fuels (coal, oil and gas) which emit carbon dioxide when burned. Carbon dioxide is one of the six principal greenhouse gases, which contributes to global warming resulting in ***climate change***. This leads to less predictable weather conditions and more extreme weather events, which may reduce food production and increase the risk of ***flooding***. Over two thirds of our ***waste*** is currently transported by barge down the River Thames to landfill, although this will change when the Belvedere Energy from Waste plant is fully commissioned in 2011. The remaining waste is either composted and recycled. The loss of ***biodiversity*** we are currently experiencing on a global scale, is considered by many, to be the greatest since the mass extinction of the dinosaurs[1].

36.1.6 In addition to the global concerns mentioned above, there are several important local concerns. Vehicles, including those vehicles passing through the Borough, the heating and cooling of buildings, especially the use of old inefficient boilers and comfort cooling, produce gases (some of which are also greenhouse gases) and increase ***air pollution***. The ambient ***noise*** levels in many parts of the Borough are high, which are exacerbated by noise from plant and equipment attached to buildings, road traffic, construction, noisy neighbours and pubs/clubs. ***Vibration*** is also an issue in the Borough, mostly caused by surface and underground trains, but also by plant and equipment which has not been properly attenuated.

36.1.7 Respecting Environmental Limits is an integral part of the Royal Borough's vision of *Building on Success*. Tackling these issues is central in upholding our residents quality of life.

CO 1.7

Strategic Objective for Respecting Environmental Limits

Our strategic objective to **respect environmental limits** is to contribute to the mitigation of, and adaption to, climate change; significantly reduce carbon dioxide emissions; maintain low and further reduce car use; carefully manage flood risk and waste; protect and attract biodiversity; improve air quality; and reduce and control noise within the Borough.

1 Global Biodiversity Outlook 2 Report, United Nations, 2006

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36.2 What this means for the Borough

36.2.1 We have one of the most cherished historic townscapes in London. If we do not adapt to and limit climate change the historic assets will be irreparably damaged, and the cultural, social and economic benefits will be lost[2]. We have a statutory duty to contribute to the mitigation of, and adaptation to, climate change[3]. Therefore, we need to carefully manage development to ensure that the natural and historic environments do not conflict but complement one another.

36.2.2 The Borough is designated as an Area Quality Management Area due to exceeding levels of nitrogen dioxide and particulate matter. The Council will therefore take action to carefully control emissions, including emissions from alternative fuel sources.

36.3 Planning Policies

Climate Change

36.3.1 The United Kingdom emitted 532,373,000 tonnes of carbon dioxide in 2005, compared to approximately 556,000,000 tonnes in 1990. This constitutes an approximate 4.5% saving from 1990. The Royal Borough emitted approximately 1,417,000 tonnes of carbon dioxide in 2005[4]. The Climate Change Act 2008 requires a reduction in CO_2 emissions of at least 26% by 2020 and 60% by 2050, against a 1990 baseline. The government has recently increased to this target to 80% by 2050, which will require far aggressive measures to reduce CO_2 emissions.

36.3.2 Global average temperatures have risen by nearly 0.8 °C since the late 19th century and risen by about 0.2 °C per decade over the past 25 years. This warming is, in part, from the greenhouse effect, i.e the result of the interaction of certain atmospheric gases with solar and terrestrial radiation[5].

36.3.3 In 2005, the Royal Borough emitted an estimated 6.06 tonnes of CO_2 per capita, which is above the London average of 6.45 tonnes but below the national average of 8.84 tonnes[6].

36.3.4 The Climate Change Strategy 2008 to 2015 states that 57% of the Royal Borough's carbon dioxide emissions are from commercial uses (including shops, offices and hotels), compared to 45% nationally; 28% from domestic sources, compared to 27% nationally; and 15% from road transport, compared to 28% nationally.

36.3.5 Although a higher proportion of the Borough's emissions arise from industrial and commercial uses, DEFRA's projections show that a significant proportion of CO_2 savings can be made within the domestic sector[7].

36.3.6 Environmental policy suggests that greenhouse gas emissions can be greatly reduced by significantly reducing the amount of heat and energy we use in our buildings, through energy efficient design, materials and construction, such as maximising natural heating and ventilation. Supplying the heat and energy we require locally, through decentralised district heat and energy networks and renewable sources, also minimises greenhouse gas emissions, minimises heat and energy lost during its transportation and contributes to securing heat and energy supply for the future.

36.3.7 Using well-established tools such as the Code for Sustainable Homes and BREEAM, a meaningful contribution to carbon reduction can be made. These tools also provide a means of achieving increasing carbon savings by raising the standards expected over time, and the type of developments to which the standards apply. s106 contributions could also have a role to play in the future to achieve further carbon reductions.

36.3.8 Achieving Code for Sustainable Homes Level 4 will cost approximately 7% more than delivering to current Building Regulations standards[8]. Refurbishment of existing dwellings to

2 Climate Change and the Historic Environment, English Heritage, January 2008
3 Planning Act 2008
4 Department for the Environment and Rural Affairs (Defra) / AEA Technology Plc Environmental Statistics 2005/06. No figures exist for carbon dioxide emissions in the Borough in 1990.
5 RBKC Climate Change Strategy, 2008 - 2015
6 Department for the Environment and Rural Affairs (DEFRA) / AEA Technology Plc Environmental Statistics 2005/06
7 Analysis to support climate change indicators for local authorities, April 2008. Prepared by AEA Technology PLC for the Department for Environment, Food and Rural Affairs.
8 Cost Analysis of The Code for Sustainable Homes, CLG, July 2008. Example used for a flat in the best case scenario

EcoHomes Very Good is considered reasonable[9]. The government also intends for all new homes to be zero carbon by 2016 with a major progressive tightening of the energy efficiency building regulations; up to 25% (Code 3) in 2010, 44% (Code 4) in 2013 and zero carbon (Code 6) in 2016[10].

36.3.9 The Borough currently consumes an average of 159 litres of water per person per day, which is greater than the average for England and Wales (149 litres per person per day) but less than the London average (162 litres per person per day)[11].

36.3.10 The Royal Borough contains over 4,000 listed buildings and over 70% of the Borough has conservation area status. Re-using historic buildings may significantly reduce energy consumption as existing buildings represent the 'embodied' energy used to produce them; whereas demolishing a brick building wastes the embodied energy and uses up more energy in demolition and rebuilding. The embodied energy in the bricks of a typical Victorian terraced house would drive a car more than ten times around the world[12].

36.3.11 English Heritage acknowledge the importance of making reasonable alterations to the existing building stock to mitigate climate change and state that often the energy efficiency of the historic buildings can be increased in ways sympathetic to their historic character[13].

36.3.12 Planning applications for subterranean development in the Borough are increasing, with 64 in 2003, 89 in 2004, 85 in 2005, 110 in 2006, 192 in 2007 and 212 in 2008. This type of development produces a significant amount of greenhouse gases through the excavation and transportation of spoil, use of concrete, ventilation and lighting. It is right for the planning system to address this environmental impact. Given the nature of subterranean developments and the complexity of calculating and assessing C02 emissions and savings, as a proxy the Council will take a pragmatic approach and using the Code for Sustainable Homes (5)or BREEAM to achieve energy savings across the whole of the original building. In most circumstances this will secure a substantial carbon saving, while will not penalising the owners of properties that already have a low carbon footprint.

36.3.13 The ecological footprint in the Borough is 6.39 global hectares per capita, which is the 2nd highest in London (The London average is 5.48 and national average is 5.30). The primary contributors in the Borough are food (28%) and housing (21%)[14]. This, together with the greenhouse gases emitted during the transportation of food and manufacture of packaging, makes food production close to its consumption an important consideration for the Borough. There is opportunity, even in small developments, to use private garden space, green / living roofs and sheds to facilitate small scale on-site food production, and larger developments present different opportunities.

36.3.14 The evidence on climate change shows that we need a policy to ensure that development mitigates against, and adapts to, climate change without unacceptable impacts on air quality. The Council also intends to take a leading role in identifying new and existing opportunities for decentralised heat and energy networks through heat and energy masterplanning.

Policy CE 1

Climate Change

The Council recognises the Government's targets to reduce national carbon dioxide emissions by 26% against 1990 levels by 2020 in order to meet a 60% reduction by 2050 and will require development to make a significant contribution towards this target.

To deliver this the Council will:

a. require an assessment to demonstrate that all new buildings and extensions defined as major development achieves the following Code for Sustainable Homes / BREEAM standards:

   i. **Residential Development:** Code for Sustainable Homes

9 Residential Evidence Base Report for Planning Policy CE1, 21 October 2009
10 Building a Greener Future, CLG, July 2007
11 Environment Agency, RBKC Fact Sheet, prepared as part of the Environment Agency's State of the Environment - London
12 http://www.NF.org.uk/FutureTechsandfigures.html
13 Climate Change and the Historic Environment, English Heritage, January 2008 and draft Planning Policy Statement 15
14 Environment Agency: RBKC Environmental summary factsheet, quoting REAP (Resources and Energy Analysis Programme) 2004

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- Up to 2012: Level Four;
- 2013 to 2015: Level Five;
- 2016 onwards: Level Six.

ii. **Non Residential Development:** Relevant BREEAM Assessment
- Up to 2015: Excellent;
- 2016 onwards: Outstanding.

b. require an assessment to demonstrate that conversions and refurbishment defined as major development achieves the following relevant BREEAM standards:

i. **Residential Development:** EcoHomes Very Good (at design and post construction) with 40% of credits achieved under the Energy, Water and Materials sections, or comparable when BREEAM for refurbishment is published;

ii. **Non Residential Development:**
- Up to 2015: Very Good (with 40% of credits achieved under the Energy, Water and Materials sections);
- 2016 onwards: Excellent (with 40% of credits achieved under the Energy, Water and Materials sections);

c. require an assessment to demonstrate that the entire dwelling where subterranean extensions are proposed achieves Code for Sustainable Homes Level Four;

d. require that carbon dioxide and other greenhouse gas emissions, including those from energy, heating and cooling, are reduced to meet the Code for Sustainable Homes and BREEAM standards in accordance with the following hierarchy:

i. energy efficient building design, construction and materials, including the use of passive design, natural heating and natural ventilation;

ii. decentralised heating, cooling and energy supply, through Combined Cooling Heat and Power (CCHP) or similar, whilst ensuring that heat and energy production does not result in unacceptable levels of air pollution;

iii. on-site renewable and low-carbon energy sources;

e. require the provision of a Combined Cooling, Heat and Power plant, or similar, which is of a suitable size to service the planned development and contribute as part of a district heat and energy network for:

i. strategic site allocations at Kensal, Wornington Green, North Kensington Sports Centre and Earl's Court; and

ii. significant redevelopment and regeneration proposals at Notting Hill Gate and Latimer as set out in the places section of this document;

f. require all CCHP plant or similar to connect to, or be able to connect to, other existing or planned CCHP plant or similar to form a district heat and energy network;

g. require development to connect into any existing district heat and energy network, where the necessary service or utility infrastructure is accessible to that development;

h. require development to incorporate measures that will contribute to on-site sustainable food production commensurate with the scale of development;

i. require, in due course, development to further reduce carbon dioxide emissions and mitigate or adapt to climate change, especially from the existing building stock, through financial contributions, planning conditions and extending or raising the Code for Sustainable Homes and BREEAM standards for other types of development.