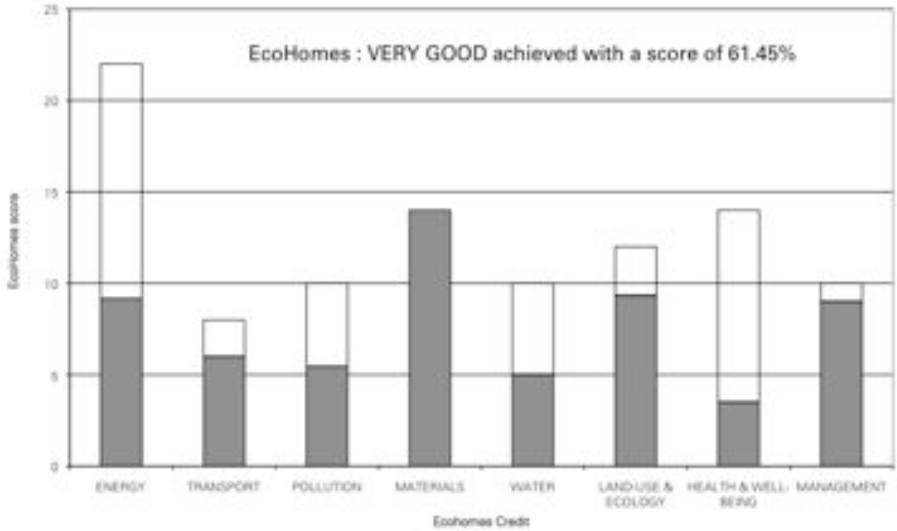


# 5. Carbon Savings Analysis

## EcoHomes Analysis of RBKC LDF

Example 1:  
Carbon saving measures and EcoHomes rating

Example 1 at 48 Addison Avenue		Baseline DER = 128.53			Urban Design Implications	
Building Element	Description of Measure	DER (kgCO2/m2/yr)	DER Saving	ktonne CO2 saved	High	Low
Wall Insulation	50mm internal and lining to the front and 50mm internal and lining to the rear (U-Value = 0.5 W/m2K)	107.67	30.86	-126	Yes	
Roof Insulation	200mm of mineral fibre insulation to roof space (U-Value = 0.11 W/m2K)	92.42	16.25	-145		Yes
Floor Insulation	100mm insulation in suspended timber flooring (U-Value = 0.35 W/m2K)	85.75	6.67	-136		Yes
Window type A	Replacement Glazing within existing sash windows (U-Value = 2.5 W/m2K)	69.55	16.2	307	Yes	
Rooflight	Replace rooflight to Building Regulations minimum standards (U-Value = 3.3 W/m2K)	69.38	0.17	2,282		Yes
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10	62.04	7.34	-15		Yes
Boiler	Install 92% efficient system boiler	37.43	24.61	714		Yes
Renewables	Install 5.2 m2 (0.75 Wp) photovoltaic panel	35.67	1.36	1056	Yes	
	Install 5.2 m2 Solar Hot Water panel	34.26	1.41	688	Yes	
Other	Infill and cap existing chimneys	33.12	1.14	144	Yes	
<b>Resulting DER</b>		<b>33.12</b>	<b>Equates to 2 EcoHomes credits scored</b>			

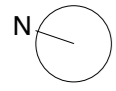


# 5. Carbon Savings Analysis

## EcoHomes Analysis of RBKC LDF

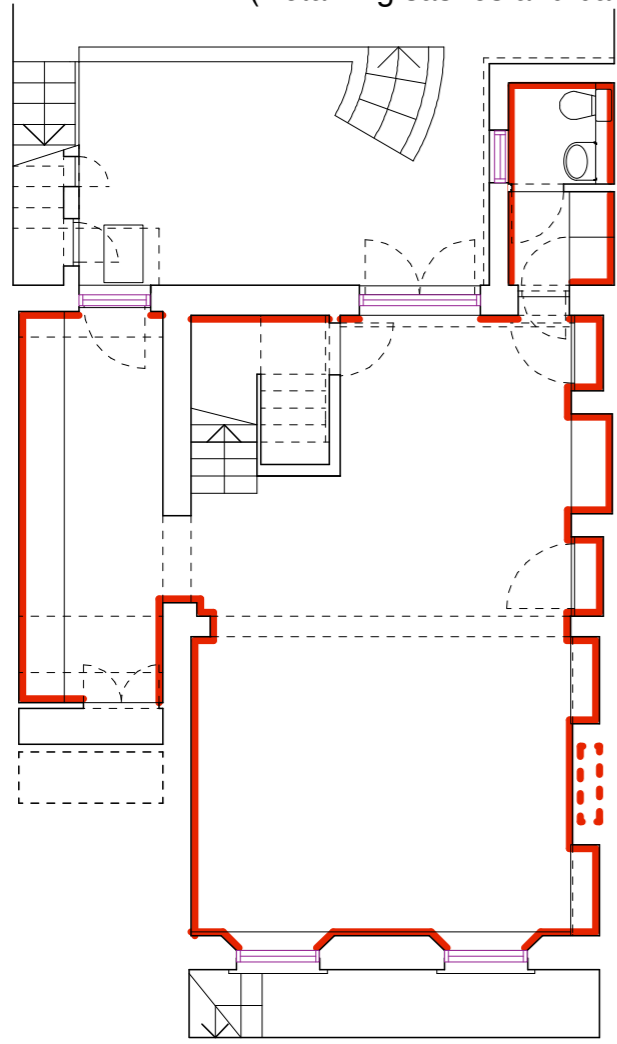
### Example 1: Cost Effectiveness Analysis

Example 1 at 49 Addison Avenue		Baseline DER = 128.83														Cost Effectiveness Analysis	
Building Element	Description of Measure	Initial U-Value W/m <sup>2</sup> K	Improved U-Value W/m <sup>2</sup> K	DER	DER Savings	Kg CO <sub>2</sub> saved	W/m <sup>2</sup> reduction of measure	kwh savings	Fuel savings per year	Total fuel savings over 60 years	Lifecycle	Replacement cycle	cost per replacement cycle (total or m <sup>2</sup> )	60 year cost of measure	CO <sub>2</sub> saved from measure over 60 years (tonnes)	Home CO <sub>2</sub> saved	
Wall Insulation	50mm insulation and lining to the front and 50mm insulation and lining to the rear. U-Value = 0.5 W/m <sup>2</sup> K	2.3	0.5	107.67	30.96	6057.16	36689.26	13200.16	£952.39	£57,143.49	60	1	47	£ 10,450.92	373	-125	
Roof Insulation	200mm of mineral fibre insulation to roof space. U-Value = 0.11 W/m <sup>2</sup> K	2.4	0.11	92.42	15.25	3141.5	32180.2	4509.06	£489.63	£28,177.72	60	1	22	£ 1,454.88	184	-145	
Floor Insulation	100mm insulation in suspended timber flooring. U-Value = 0.35 W/m <sup>2</sup> K	1.2	0.35	85.75	6.67	1374.02	29330.31	2849.89	£206.62	£12,337.17	60	1	22	£ 1,267.40	81	-136	
Window type A	Replacement Glazing within existing sash windows. U-Value = 2.5 W/m <sup>2</sup> K	4.8	2.5	69.55	16.2	3337.2	22433.35	6896.96	£497.62	£29,856.94	30	2	1250	£ 48,000.00	196	307	
Rooflight	Replace rooflight to Building Regulations minimum standards. U-Value = 3.3 W/m <sup>2</sup> K	4.8	3.3	69.38	0.17	35.02	22362.35	71	£5.12	£307.36	30	2	1250	£ 2,500.00	2	2,282	
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10			62.04	7.34	1512.04	19232.46	2129.89	£225.62	£13,549.29	20	3	1000	£ 3,000.00	298	-15	
Boiler	Install 92% efficient system boiler			37.43	24.61	5069.66	17247.39	1985.07	£143.22	£8,893.37	10	6	2000	£ 12,000.00	89	714	
Renewables	Install 5.2 m <sup>2</sup> (6.75 kWp) photovoltaic panel			35.67	1.76	362.56	19621.8	625.59	£117.24	£7,034.13	30	2	7500	£ 15,000.00	22	1096	
	Install 5.2 m <sup>2</sup> Solar Hot Water panel			34.26	1.41	290.46	15754.54	1467.26	£105.86	£6,351.77	30	2	4500	£ 9,000.00	17	688	
Other	Infill and cap existing chimneys			33.32	1.14	234.84	18514.05	107.75	£7.77	£466.45	60	1	1250	£ 2,500.00	17	144	
				<b>33.12</b>						<b>£2,750.30</b>				<b>£ 102,263.18</b>	<b>1279 tonnes CO<sub>2</sub></b>	<b>79.36</b>	

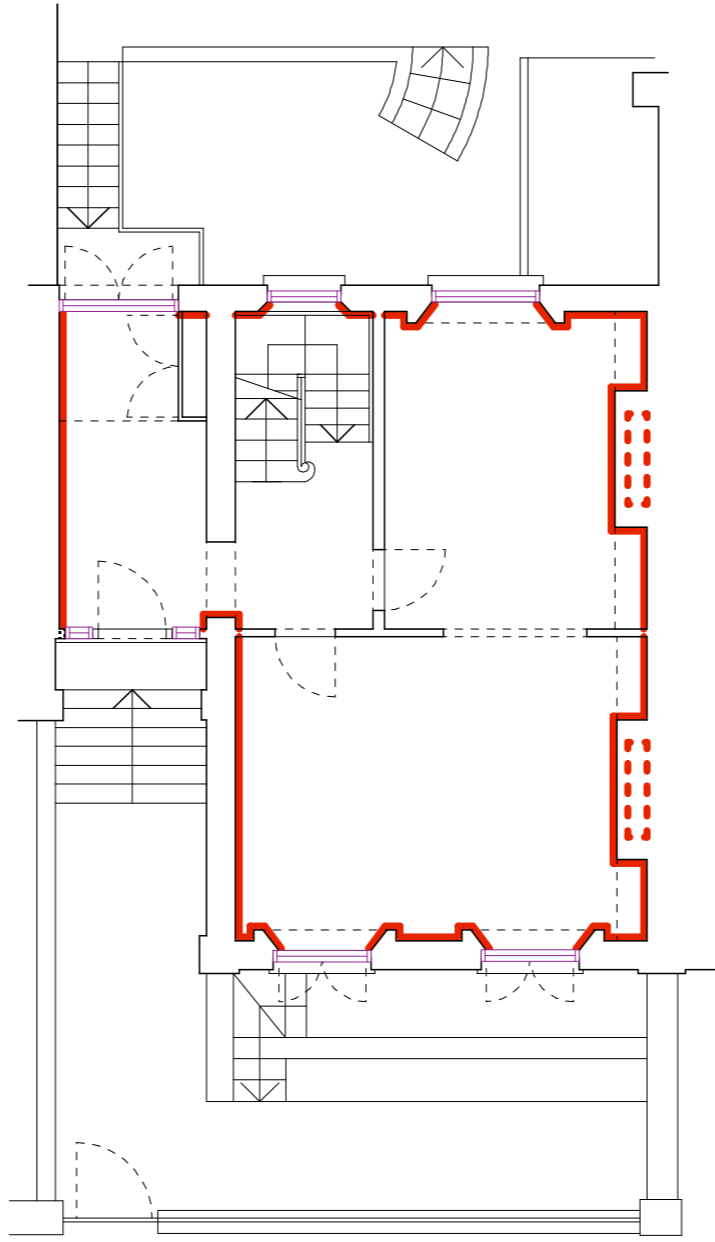


- Key**
- 50mm insulation & lining
  - - - - infilling chimneys
  - Upgrade glazing to existing windows (Retaining sashes and bars)

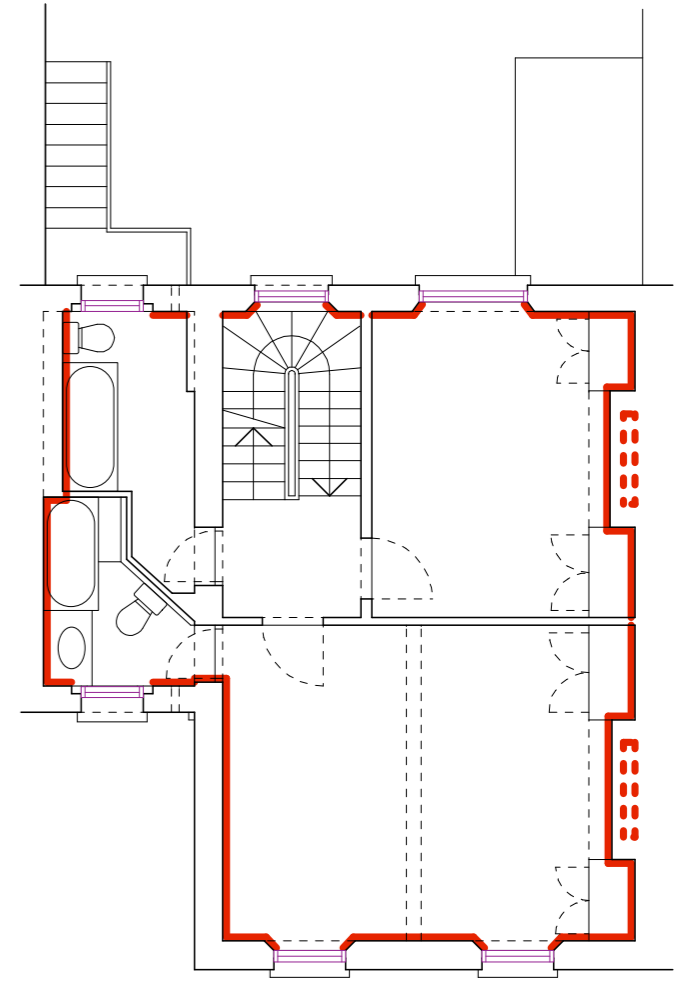
## Example 1 - Listed Building Proposed plans



**A** Proposed lower ground floor plan



**B** Proposed upper ground floor plan



**C** Proposed first floor plan



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  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 include double glazed window units - 08.10.09
  - Rev B - Notes amended - 28.10.09

Other notes

Project Address  
RBKC EH Feasibility  
48 Addison Avenue

Drawing  
Proposed lower and upper  
ground floor and first floor  
plans

Drawing status  
For Information

Date  
01.10.09

Scale  
1:100 @ A3

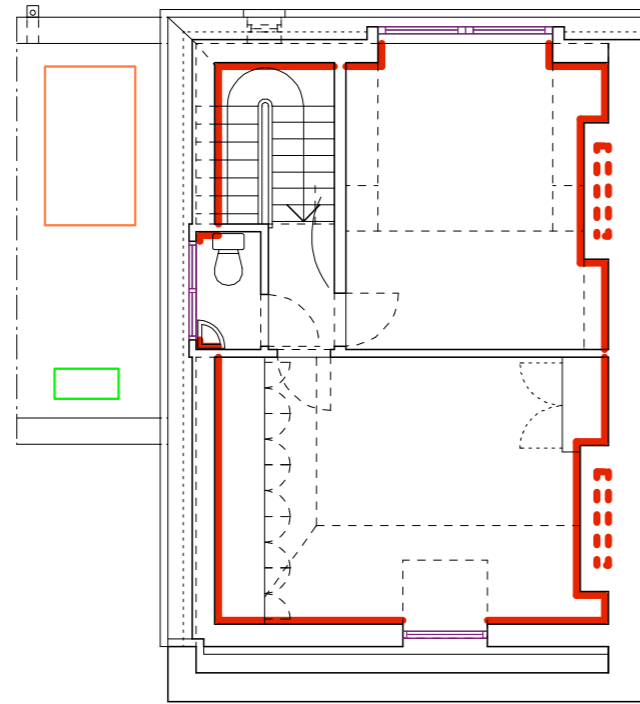
Drawing number  
0915 AA05

Revision  
B

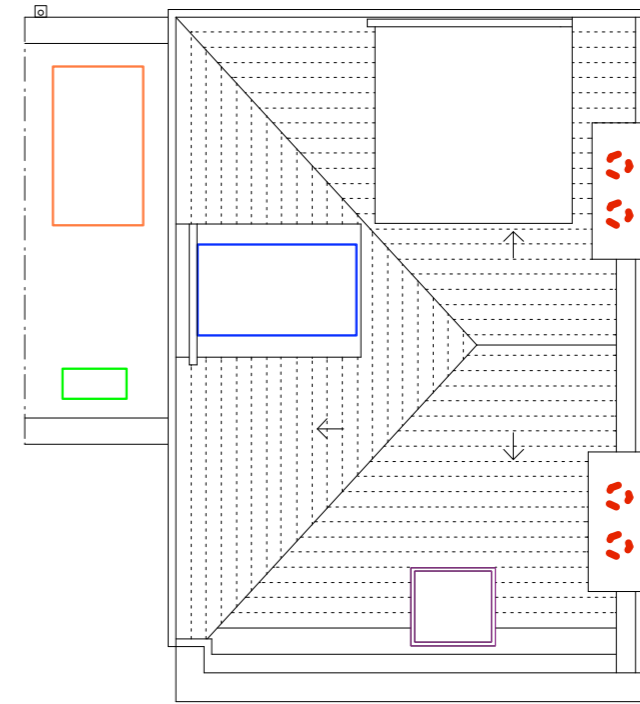


- Key**
- 50mm insulation & lining
  - - - - infilling chimneys, remove chimney pots and cap
  - Photovoltaic panels (PVs) 2.6m<sup>2</sup>
  - Solar Hot Water (SHW) 2.6m<sup>2</sup>
  - Air/air source heat pump
  - Upgrade glazing to existing windows and rooflight (Retaining sashes and bars)

## Example 1 - Listed Building Proposed plans



**A** Proposed second floor plan



**B** Proposed roof plan



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**Revisions**

- Rev A - Example upgraded to include double glazing window units and rooflight - 08.10.09
- Rev B - Notes amended - 28.10.09

**Other notes**

**Project Address**

RBKC EH Feasibility  
48 Addison Avenue

**Drawing**

Proposed second floor plan  
and roof plan

**Drawing status**

For Information

Date  
01.10.09

Drawing number  
0915 AA06

Scale  
1:100 @ A3

Revision  
B

# Example 1 - Listed Building Proposed elevations

- Key
- Photovoltaic panels (PVs) 2.6m<sup>2</sup>
  - Solar Hot Water (SHW) 2.6m<sup>2</sup>
  - Air/air source heat pump
  - Chimneys capped and replaced



48 Addison Avenue

**A** Proposed Front Elevation



**B** Proposed Rear Elevation



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Revisions

- Rev A - Example upgraded to include chimneys capped and replaced - 08.10.09
- Rev B - Notes amended - 28.10.09

Other notes

Project Address

RBKC EH Feasibility  
48 Addison Avenue

Drawing

Proposed front and rear  
elevations

Drawing status

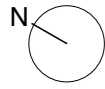
For Information

Date  
01.10.09

Drawing number  
0915 AA07

Scale  
1:100 @ A3

Revision  
B



# Example 2 Existing plans



**A** Existing basement floor plan

**B** Existing ground floor plan

**C** Existing first floor plan

**D** Existing second floor plan

**E** Existing roof plan



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### Revisions

Rev A - Notes amended - 28.10.09

### Other notes

1. Existing drawings supplied by Eight Associates

### Project Address

RBKC EH Feasibility  
100-102 Princedale Road

### Drawing

Existing basement, ground,  
first and second floor and  
roof plans

### Drawing status

For Discussion Purposes Only

Date  
01.10.09

Scale  
1:100 @ A3

Drawing number  
0915 PR01

Revision  
A



**A** Existing front elevation



**B** Existing rear elevation



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Revisions

Rev A - Notes amended - 28.10.09

Other notes

Existing drawings supplied by Eight Associates

Project Address

RBKCEH Feasibility  
100-102 Princesdale Road

Drawing

Existing front and rear  
elevations

Drawing status

For Discussion Purposes Only

Date  
01.10.09

Scale  
1:100 @ A3

Drawing number  
0915 PR02

Revision  
A



**A** Photo from Princesdale Road



**B** Photo of rear elevation

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Revisions

Rev A - Notes amended - 28.10.09

Other notes

Project Address

RBKC EH Feasibility  
100-102 Princesdale Road

Drawing

Existing photographs

Drawing status

For Discussion Purposes Only

Date  
01.10.09

Scale  
n.t.s.

Drawing number  
0915 PR03

Revision  
A

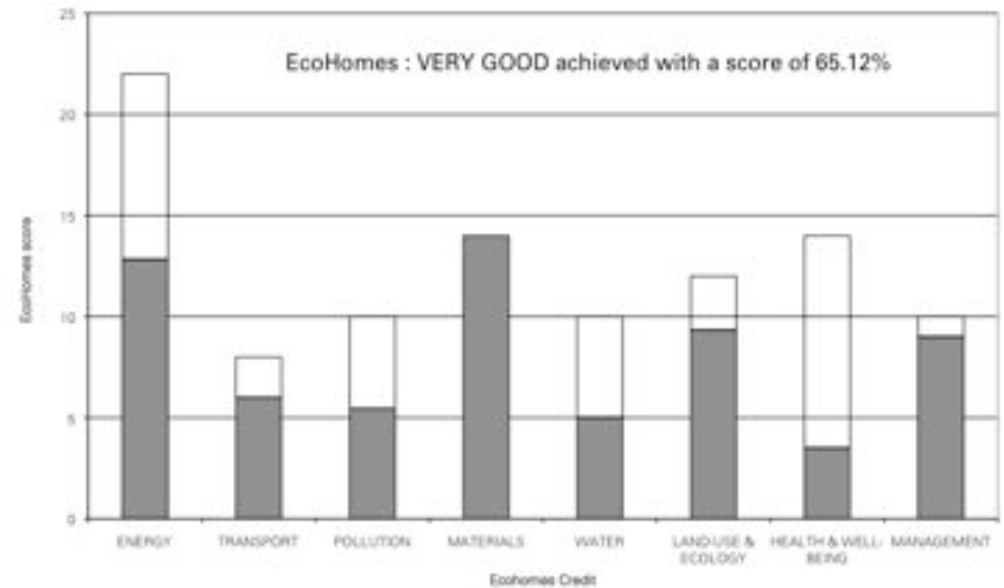


# 5. Carbon Savings Analysis

## EcoHomes Analysis of RBKC LDF

Example 2 (Option 1):  
Carbon saving measures and EcoHomes rating

Example 2 - Option 1 at 102 Princedale Road		Baseline DER = 93.91			Urban Design Implications	
Building Element	Description of Measure	DER (kgCO2/m2/yr)	DER Saving	E/tonne CO2 saved	High	Low
Wall Insulation	Wall Insulation - 50mm internal and lining to the front and 50mm internal and lining to the rear (U-Value = 0.5 W/m2K)	76.73	17.18	-142		Yes
Roof Insulation	Roof Insulation - 200mm of mineral fibre insulation (U-Value = 0.11 W/m2K)	65.38	11.35	-166		Yes
Floor Insulation	Floor Insulation - 100mm insulation in suspended timber flooring (U-Value = 0.35 W/m2K)	55.69	9.69	-165		Yes
Window	Windows type B - Replace window frames as existing and use double glazing (U-Value = 1.86 W/m2K)	46.72	8.97	799		Yes
Boiler	Install 92% efficient system boiler	32.35	14.37	517		Yes
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10	29.67	2.68	259		Yes
Renewables	Install 0.2 m2 Solar Hot Water panel	27.53	2.14	275		Yes
Other	Infill and cap existing chimneys	25.41	2.12	137		Yes
<b>Resulting DER</b>		<b>25.41</b>		<b>Equates to 6 EcoHomes credits scored</b>		

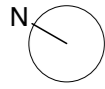


# 5. Carbon Savings Analysis

## EcoHomes Analysis of RBKC LDF

### Example 2 (Option 1): Cost Effectiveness Analysis

Example 2 - Option 1 at 182 Privetown Road															Baseline DER = 93.91	
Building Element	Description of Measure	Initial U-Value W/m <sup>2</sup> K	U-Value W/m <sup>2</sup> K	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)	Capital Cost	Cost Effectiveness Analysis	
															CO2 saved from measure over 60 years (tonnes)	£/tonne CO2 saved
Wall Insulation	Wall Insulation - 50mm insulation and lining to the front and 50mm insulation and render to the rear (U-Value = 0.5 W/m <sup>2</sup> K)	2.3	0.5	76.72	17.18	1968.4944	19618.48	4757.3	£242.28	£20,596.39	60	1	47	£ 3,836.14	118	-142
Floor Insulation	Floor Insulation - 200mm of mineral fibre insulation (U-Value = 0.11 W/m <sup>2</sup> K)	2.4	0.11	65.38	11.35	1300.483	12476.64	3141.84	£236.68	£13,601.53	60	1	22	£ 640.86	78	-166
Floor Insulation	Floor Insulation - 100mm insulation in suspended timber flooring (U-Value = 0.35 W/m <sup>2</sup> K)	1.2	0.35	55.69	9.69	1116.2882	9799.62	2677.02	£193.15	£11,588.82	60	1	22	£ 584.76	67	-165
Window	Windows type 2 - Replace window frames as existing and use double glazing (U-Value = 1.86 W/m <sup>2</sup> K)	4.8	1.86	46.72	9.97	1627.7626	7325.77	2473.88	£178.49	£10,709.30	30	2	1250	£ 30,000.00	62	799
Boiler	Install 92% efficient system boiler			32.35	14.37	1646.5146	6641.79	663.98	£49.35	£2,960.95	10	6	1500	£ 9,000.00	90	517
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10			28.67	2.68	307.0744	5667.69	974.1	£70.28	£4,218.88	20	3	1000	£ 3,000.00	18	259
Renewables	Install 5.2 m2 Solar Hot Water panel			27.59	2.14	245.2012	4762.97	914.72	£66.00	£3,958.92	30	2	2000	£ 4,000.00	15	275
Other	Infill and cap existing chimneys			25.41	2.12	242.9096	4974.19	490.5	£50.04	£1,900.16	60	1	1250	£ 2,500.00	15	137
				<b>26.41</b>					<b>£1,177.27</b>	<b>£70,605.99</b>				<b>£ 93,967.76</b>	<b>472</b>	<b>-113.86</b>



- Key
- 50mm internal insulation and lining / external insulation & render
  - infilling chimneys, remove chimney pots and cap
  - Solar Hot Water (SHW) 5.2m<sup>2</sup>
  - Replacement double glazed sash windows and doors

## Example 2 - Option 1 Proposed plans



**A** Proposed basement floor plan

**B** Proposed ground floor plan

**C** Proposed first floor plan

**D** Proposed second floor plan

**E** Proposed roof plan



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#### Revisions

- Rev A - Example upgraded to include internal insulation on front wall - 08.10.09  
Rev B - Notes amended - 28.10.09

#### Other notes

1. Existing drawings supplied by Eight Associates

#### Project Address

RBKC EH Feasibility  
100-102 Princedale Road

#### Drawing

Proposed basement, ground,  
first and second floor and  
roof plans (Option 1)

#### Drawing status

For Information



Date  
01.10.09

Drawing number  
0915 PR04

Scale  
1:100 @ A3

Revision  
B

Example 2 - Option 1  
Proposed elevations

Key  50mm insulation & render  
 Solar Hot Water (SHW) 5.2m2



**A** Proposed front elevation



**B** Proposed rear elevation



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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 - Notes amended - 28.10.09

Other notes  
 Existing drawings supplied by Eight Associates

Project Address  
 RBKC EH Feasibility  
 100-102 Princedale Road

Drawing  
 Proposed front and rear  
 elevations (Option 1)

Drawing status  
 For Discussion Purposes Only

Date  
 01.10.09

Scale  
 1:100 @ A3

Drawing number  
 0915 PR05

Revision  
 A



**A** Front elevation



**B** Rear elevation externally insulated and rendered

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Revisions

Rev A - Notes amended - 28.10.09

Other notes

Project Address

RBKC EH Feasibility  
100-102 Princedale Road

Drawing

Proposed photographs  
(Option 1)

Drawing status

For Discussion Purposes Only

Date  
01.10.09

Scale  
n.t.s.

Drawing number  
0915 PR06

Revision  
A

Example 2 - Option 1  
Proposed glazing  
photographs



**A** Street view from Princedale Road



**B** Typical new double glazed sash window with planted glazing bars & new sash boxes  
4/16/4 typical U value 1.9 W/(m2K)



**C** Detail of double glazed sash window with planted glazing bars & spacers  
4/16/4 typical U value 1.9 W/(m2K)

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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 - Notes amended - 28.10.09

Other notes

Project Address

RBKC EH Feasibility  
102 Princedale Road

Drawing

Images of windows  
(Option 1)

Drawing status

For Discussion Purposes Only

Date  
01.10.09

Scale  
1:100 @ A3

Drawing number  
0915 PR07

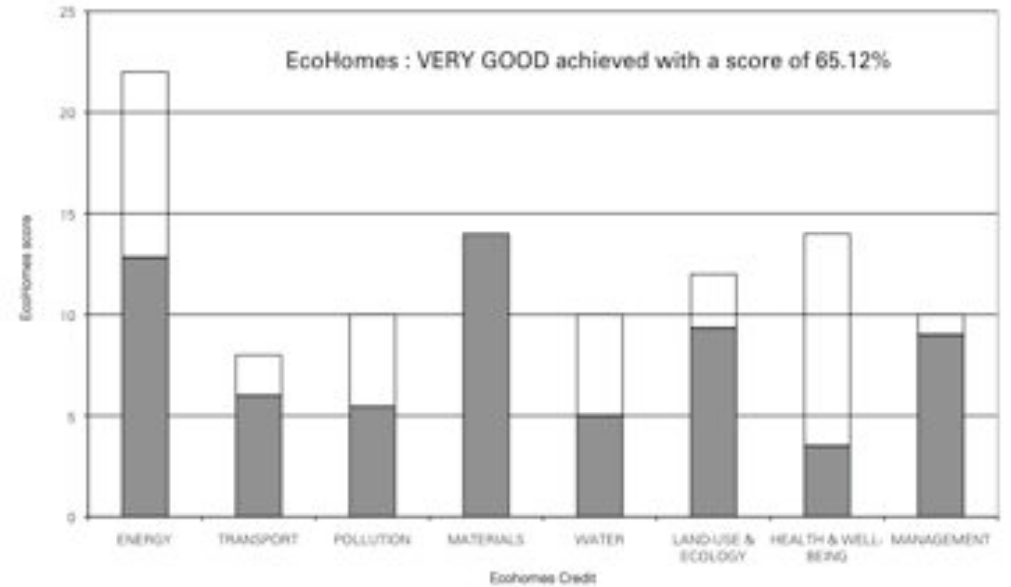
Revision  
A

# 5. Carbon Savings Analysis

## EcoHomes Analysis of RBKC LDF

Example 2 (Option 2):  
Carbon saving measures and EcoHomes rating

Example 2 - Option 2 at 102 Princedale Road		Baseline DER = 83.91			Urban Design Implications	
Building Element	Description of Measure	DER (kgCO2/m2/yr)	DER Saving	t/tonne CO2 saved	High	Low
Wall Insulation	Wall Insulation - 50mm insulation and render to the front and 50mm insulation and render to the rear (U-Value = 0.35 W/m2K)	75.29	18.62	-144	Yes	
Roof Insulation	Roof Insulation - 200mm of mineral fibre insulation (U-Value = 0.11 W/m2K)	63.83	11.46	-166		Yes
Floor Insulation	Floor Insulation - 100mm insulation in suspended timber flooring (U-Value = 0.2 W/m2K)	53.35	10.48	-166		Yes
Window	Windows type C - Replace window frames as existing and use double glazing (U-Value = 0.94 W/m2K)	41.34	12.01	553	Yes	
Rooflight	Install 92% efficient system boiler	28.94	12.4	685		Yes
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10	25.94	3	290		Yes
Renewables	Install 5.2 m2 Solar Hot Water panel	23.79	2.15	200		Yes
Other	Infill and cap existing chimneys	21.81	1.98	-45		Yes
<b>Resulting DER</b>		<b>21.81</b>		<b>Equates to 9 EcoHomes credits scored</b>		



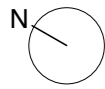
# 5. Carbon Savings Analysis

## EcoHomes Analysis of RBKC LDF

### Example 2 (Option 2): Cost Effectiveness Analysis

Example 2 - Option 2 at 102 Piccadilly Road															Baseline DER = 93.91		Cost Effectiveness Analysis	
Building Element	Description of Measure	Initial U-Value W/m <sup>2</sup> K	U-Value W/m <sup>2</sup> K	DER	DER Savings	Kg CO2 saved	with reduction of measure	kwh savings	Total £ saved	Total Fuel Savings over 60 years	Lifetime	Replacement cycle	cost per replacement cycle (total or m <sup>2</sup> )	Capital Cost	CO2 saved from measure over 60 years (tonnes)	Home CO2 saved		
Wall Insulation	Wall Insulation - 50mm insulation and render to the front and 50mm insulation and render to the rear. U-Value = 0.35 W/m <sup>2</sup> K	2.3	0.35	75.29	18.62	2133.4796	19218.89	5157.69	£372.13	£22,327.64	60	1	47	£ 3,836.14	128	-144		
Roof Insulation	Roof Insulation - 200mm of mineral fibre insulation. U-Value = 0.11 W/m <sup>2</sup> K	2.4	0.11	63.83	11.46	1313.0868	12549.24	3169.45	£228.68	£13,720.55	60	1	22	£ 640.86	79	-196		
Floor Insulation	Floor Insulation - 100mm insulation in suspended timber flooring. U-Value = 0.2 W/m <sup>2</sup> K	1.2	0.2	53.35	10.49	1200.7984	9153	2690.34	£208.96	£12,537.82	60	1	22	£ 594.78	72	-166		
Window type B	Windows type C - Install triple glazed units within a new dormer window. U-Value = 0.84 W/m <sup>2</sup> K	4.8	0.84	41.34	12.01	1376.1058	9841.71	3211.29	£238.91	£14,334.57	30	2	1250	£ 30,000.00	83	563		
Rooflight	Install 92% efficient system boiler			28.94	12.4	1420.730	6222.61	419.1	£44.67	£2,680.06	10	6	1500	£ 9,000.00	75	685		
Air Tightness	Carry out air tightness improvements on building fabric to achieve DAP of 10			25.94	3	343.74	4306.58	916.03	£66.09	£1,965.49	20	3	1000	£ 3,000.00	17	290		
Renewables	Install 6.2 m <sup>2</sup> Solar Hot Water panel			23.79	2.15	246.347	3140.67	1185.91	£84.12	£5,047.22	30	2	2000	£ 4,000.00	16	200		
Other	Fill and cap existing chimneys			21.81	1.98	226.8954	2694.48	722.1	£52.10	£3,125.97	60	1	1250	£ 2,500.00	14	-48		
				21.81					£1,295.88	£7,739.36				£3,967.76	403	-110.89		





- Key
- 50mm external insulation & render
  - - - infilling chimneys, remove chimney pots and cap
  - Solar Hot Water (SHW) 5.2m<sup>2</sup>
  - New casement windows and new doors

## Example 2 - Option 2 Proposed plans



**A** Proposed basement floor plan

**B** Proposed ground floor plan

**C** Proposed first floor plan

**D** Proposed second floor plan

**E** Proposed roof plan



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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 - Notes amended - 28.10.09

#### Other notes

1. Existing drawings supplied by Eight Associates

#### Project Address

RBKC EH Feasibility  
100-102 Princedale Road

#### Drawing

Proposed basement, ground,  
first and second floor and  
roof plans (Option 2)

#### Drawing status

For Discussion Purposes Only



Date  
01.10.09

Scale  
1:100 @ A3

Drawing number  
0915 PR08

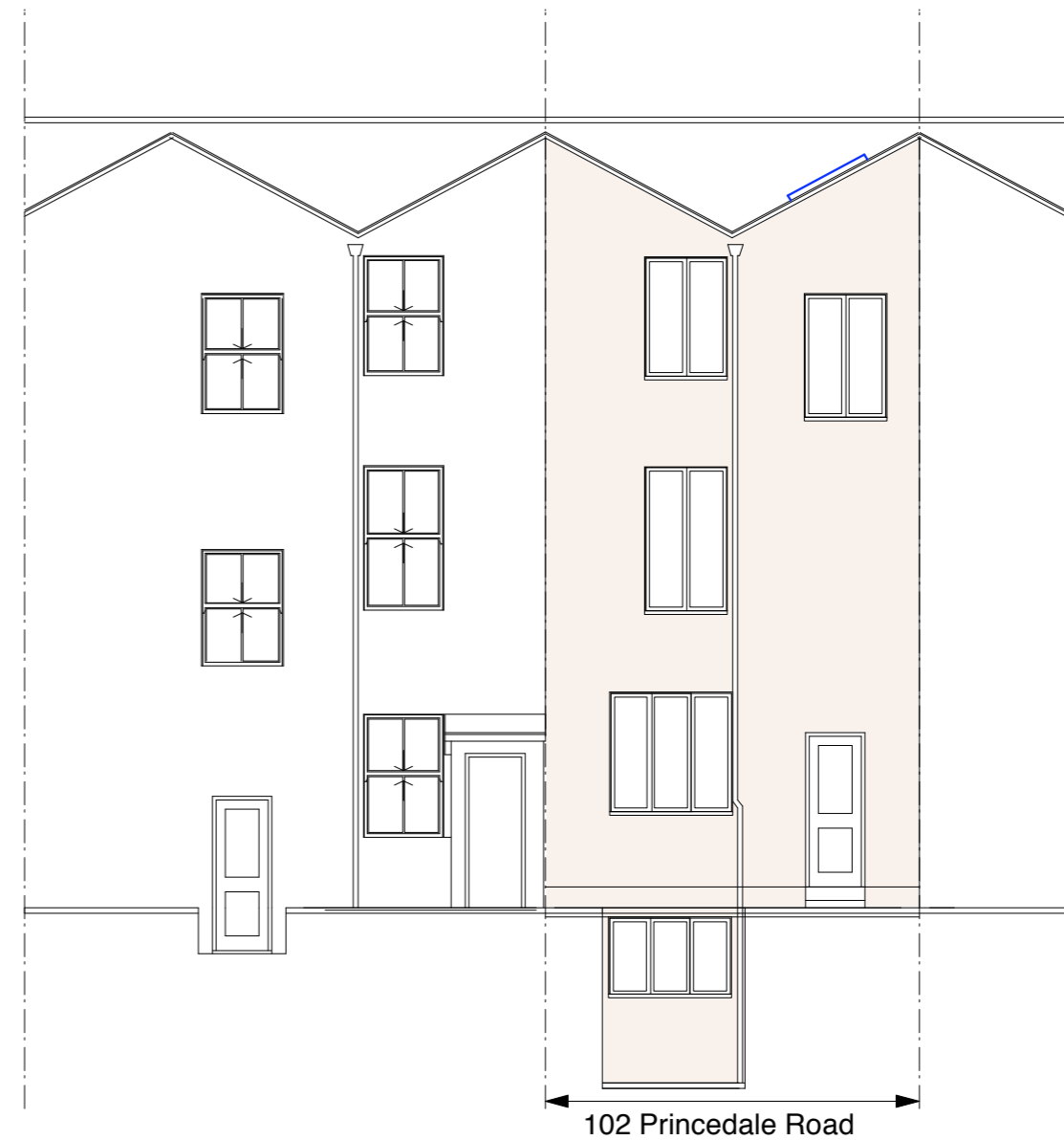
Revision  
A

Example 2 - Option 2  
Proposed elevations

Key  50mm insulation & render  
 Solar Hot Water (SHW) 5.2m2



**A** Front elevation - new casement windows & external rendered insulation



**B** Rear elevation - new casement windows and rendered insulation



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Revisions

Rev A - Notes amended - 28.10.09

Other notes

Existing drawings supplied by Eight Associates

Project Address

RBKCEH Feasibility  
100-102 Princedale Road

Drawing

Proposed front and rear  
elevations (Option 2)

Drawing status

For Discussion Purposes Only

Date  
01.10.09

Scale  
1:100 @ A3

Drawing number  
0915 PR09

Revision  
A



**A** Front elevation externally insulated and rendered, Casement windows



**B** Rear elevation externally insulated and rendered Casement windows

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Revisions

- Rev A - Ground floor front window amended to casement type - 08.10.09
- Rev B - Notes amended - 28.10.09

Other notes

Project Address

RBKC EH Feasibility  
100-102 Princedale Road

Drawing

Proposed photographs  
(Option 2)

Drawing status

For Discussion Purposes Only

Date  
01.10.09

Scale  
n.t.s.

Drawing number  
0915 PR10

Revision  
B