

B9485 CAMBRIDGE CITY COUNCIL – OPTION APPRAISALS



Report by Energy Assessor- Paul Rai

The Energy efficiency consultation (February-March 2020)

1.0 Introduction & Reference Terms

The consultation with regard to energy efficiency, or projected health of the subject properties was completed at Ekin Road, Cambridge in the CB5 postcode area.

The requirement of the energy efficiency analysis has been proposed to go hand in hand with, a building condition consultation to find whether and how viable the current housing stock condition is, at the subject site of Ekin Road.

The model of comparison to obtain the required statistics, is to be based on current property results with results expected of projected new build properties.

It is paramount to note that this report does not consider condition, structure or defects; solely thermal & energy consumption values.

1.1

Semi-Detached 3 Bedroom Houses

The energy efficiency of 21 very similar houses to be assessed and recorded.

1.2

Semi-Detached & Detached Flats (Determined by Party Walls & Unheated Corridors)

The energy efficiency of 70 flats, that would fall in to 2 energy categories, based on their placement in the block.

1.3

Semi-Detached Bungalows

The energy efficiency of 9 very similar bungalows to be assessed and recorded.

2.0 Procedures

The methodology used to enable accurate & uniform results to be collated, is known as 'Reduced Data Standard Assessment Procedure' (RDSAP)

This is perfectly suited to assess existing dwellings and through experience and knowledge, of the Energy Assessor, can be used to project changes potentially by making improvements classified by building regulations & guidelines.

We will be assuming theoretical building material, service changes & relevant improvements, in order to project better or improved results.

A number of organised physical visits to the site & properties have been conducted throughout February & March of 2020.

During these visits' information is collected using relevant equipment, based on physical and visual data collection.

2.1

Semi-Detached 3 Bedroom House

2.11

Property type, age, build specification, cubic size & structures which are relative to RDSAP.

A visual & demographic analysis of property style and internal measurements, which will determine what can be expected to be present & potential improvements too.

2.12

Wall Type

Type of style determining what measures can be applied to improve thermal values.

Visual assessment, wall thickness measurements and study of pointing/mortar.

Heat-loss from walls is generically set at 35%.

2.13

Floor Type

A physical determination of whether the ground floor is solid or suspended timber.

This will enable what measures can be applied with relation to thermal values.

2.14

Glazing Type

An inspection of glazed windows, to determine the quality based on thickness of reveal.

Determination of u-values to predict heat loss, and to determine what improvements are on offer thermally.

Heat-loss from glazing is generically set at 15%.

2.15

Roof Structure & Type

The style and structure of roof type will lead to what is present and what can potentially be added, to improve the thermal values and restrict heat-loss.

Access is made to loft spaces etc

Heat-loss from roofs is generically set at 25%.

2.16

Lighting

The type of lighting fitted, determines energy consumption saving, and has a minor impact on the environment.

The fittings are actually checked & accounted.

2.17

Domestic Heating & Hot Water Services

A visual recording of what system is in place, and how it is controlled and provides service to the property.

A reference material, namely 'SEDBUK' provides class ratings for Gas Boilers, providing efficiency percentages.

The controls present will impact on how efficient the usage can be maximised too.

The Hot Water efficiency is fully dependant on how the main system feeds the provision of hot water, and how it is controlled.

The energy supply has a paramount impact on efficiency results, mostly due to cost.

2.2

Semi-Detached Bungalow

2.21

Property type, age, build specification, cubic size & structures which are relative to RDSAP.

A visual & demographic analysis of property style and internal measurements, which will determine what can be expected to be present & potential improvements too.

2.22

Wall Type

Type of style determining what measures can be applied to improve thermal values.

Visual assessment, wall thickness measurements and study of pointing/mortar.

Heat-loss from walls is generically set at 35%.

2.23

Floor Type

A physical determination of whether the ground floor is solid or suspended timber.

This will enable what measures can be applied with relation to thermal values.

2.24

Glazing Type

An inspection of glazed windows, to determine the quality based on thickness of reveal.

Determination of u-values to predict heat loss, and to determine what improvements are on offer thermally.

Heat-loss from glazing is generically set at 15%.

2.25

Roof Structure & Type

The style and structure of roof type will lead to what is present and what can potentially be added, to improve the thermal values and restrict heat-loss.

Access is made to loft spaces etc

Heat-loss from roofs is generically set at 25%.

2.26

Lighting

The type of lighting fitted, determines energy consumption saving, and has a minor impact on the environment.

The fittings are actually checked & accounted.

2.27

Domestic Heating & Hot Water Services

A visual recording of what system is in place, and how it is controlled and provides service to the property.

A reference material, namely 'SEDBUK' provides class ratings for Gas Boilers, providing efficiency percentages.

The controls present will impact on how efficient the usage can be maximised too.

The Hot Water efficiency is fully dependant on how the main system feeds the provision of hot water, and how it is controlled.

The energy supply has a paramount impact on efficiency results, mostly due to cost.

2.3

Flats (Detached & Semi-Detached)

2.31

Property type, age, build specification, cubic size & structures which are relative to RDSAP.

A visual & demographic analysis of property style and internal measurements, which will determine what can be expected to be present & potential improvements too.

2.32

Wall Type

To establish type of wall structure and what can be implemented to improve thermal values.

Establishment of wall thickness, and whether the property is semi-detached or detached.

In this case some of the flats have 3 external heat loss walls and, a heat-loss unheated corridor wall; these are classed as detached.

There are also flats that have a party wall with an adjacent flat, 2 external heat-loss walls and, then a heat-loss unheated corridor wall; these are classed a semi-detached.

2.33

Floor Type

Assessment of the structure is implemented, to whether thermal improvements can be made.

There are two classifications of floor; Solid heat loss ground floor and above another dwelling for the elevated properties.

2.34

Glazing Type

An inspection of glazed windows, to determine the quality based on thickness of reveal.

Determination of u-values to predict heat loss, and to determine what improvements are on offer thermally.

Heat-loss from glazing is generically set at 15%.

2.35

Roof Structure & Type

The style and structure of roof type will lead to what is present and what can potentially be added, to improve the thermal values and restrict heat-loss.

Access is made to loft spaces etc

In relation to a 'Flat' the above is relevant for the 'top floor flat only' and that the 'ground' & 'mid-floor' flats do actually have another dwelling above.

2.36

Lighting

The type of lighting fitted, determines energy consumption saving, and has a minor impact on the environment.

The fittings are actually checked & accounted.

2.37

Domestic Heating & Hot Water Services

A visual recording of what system is in place, and how it is controlled and provides service to the property.

A reference material, namely 'SEDBUK' provides class ratings for Gas Boilers, providing efficiency percentages.

The controls present will impact on how efficient the usage can be maximised too.

The Hot Water efficiency is fully dependant on how the main system feeds the provision of hot water, and how it is controlled.

The energy supply has a paramount impact on efficiency results, mostly due to cost.

3.0 Findings

3.1

Semi-Detached House

3.11

The houses are 1950's Cavity build/ traditional stretcher-bond brick construction.

All houses are identical in style & size.

Each floor measuring approximately 39 metres squared; resulting in total floor area of approx. 78 metres squared.

The floor to ceiling heights average between 2.27m & 2.3m.

3.12

Wall Type

The houses have 260mm thick cavity brick construction, which have been filled with mineral rockwool.

It is expected that the thickness of the insulation would be 30mm within the 30mm cavity.

The u-value assumed is 0.7, in comparison to new-build which is approx. 0.35.

New Build usually has a minimum 50mm insulation thickness.

The party wall is not expected to be insulated, due to it not being classed a heat-loss wall.

The after-market insulation is clear from multiple drill holes in the mortar, spread evenly over all external walls.

(Physical testing has been administered upon this site by me personally using a Borescope & camera)

3.13

Floor Type

The floors have solid concrete construction with no expected insulation, with regard to building regulations at the time of build.

Classified as a heat-loss floor. Average u-value expected to be 0.68

Floors are only based on the 'Ground Floor Level' and not the suspended first floor, which has no relevance to heat-loss.

3.14

Glazing Type

All houses are fitted with uniform upvc double glazing windows, potentially installed in the 90's or early 2000's.

The gap between glazing is approx. 12mm, which results in an expected u-value of 2.8 and a g-value of 0.76

3.15

Roof Structure & Type

The properties have pitch roofed construction and have loft access, so to assess what type of insulation is present.

The insulation which has been installed at joist level, is mineral rockwool and has an average thickness of 250mm, which is considered to be more than adequate, to achieve best thermal heat-loss protection.

The u-value is expected to be 0.17

3.16

Lighting

The majority of lighting was found to be either LED or Compact Florescent (CFL) and is actually of the tenant's personal choice.

It is best to assume 100% energy lighting, which is a very low-cost measure, which can easily be implemented as a uniform upgrade.

It has a very minor impact on the overall energy efficiency ratings; ranged between 1-2% overall for a complete household.

3.17

Domestic Heating & Hot Water Services

All properties have been fitted with 'Mains Gas' Condensing Combi Boilers, which are classed as 'A' rated; best on the energy efficiency scale.

The majority of properties have been fitted with Glow-worm Ultracom 30cxi boilers, so this can be considered uniform.

Hot water is supplied on direct demand which is the most efficiently rated with a Heating/Hot Water system.

All properties have full controls, comprising of Room Thermostat, Programmer & Thermostatic Radiator Valves; resulting in a capacity to fully achieve maximum energy efficiency.

The SEDBUK boiler efficiency rating is 88.5%, which is considerable for Mains Gas.

The highest is usually to be found to be approximately 91% and is usually the costliest boilers on the market, sourced from Germany. (E.g. Worcester Bosch & Viessmann)

3.2

Semi-Detached Bungalow

3.21

The Bungalows are 1950's Cavity build/ traditional stretcher-bond brick construction.

All Bungalows are identical in style & size.

The floor space measuring approximately 39-40 metres squared.

The floor to ceiling heights average between 2.3m – 2.32m

3.22

Wall Type

The Bungalows have 270mm thick cavity brick construction, which have been filled with mineral rockwool.

It is expected that the thickness of the insulation would be 40mm within the 40mm cavity.

The u-value assumed is 0.7, in comparison to new-build which is approx. 0.35.

New Build usually has a minimum 50mm insulation thickness.

The party wall is not expected to be insulated, due to it not being classed a heat-loss wall.

The after-market insulation is clear from multiple drill holes in the mortar, spread evenly over all external walls.

(Physical testing has been administered upon this site by me personally using a Borescope & camera)

3.23

Floor Type

The floors have solid concrete construction with no expected insulation, with regard to building regulations at the time of build.

Classified as a heat-loss floor. Average u-value expected to be 0.78

Floors are based on the 'Ground Floor Level' of these single level properties.

3.24

Glazing Type

All Bungalows are fitted with uniform upvc double glazing windows, potentially installed in the 90's or early 2000's.

The gap between glazing is approx. 12mm, which results in an expected u-value of 2.8 and a g-value of 0.76

3.25

Roof Structure & Type

The properties have pitch roofed construction and have loft access, so to assess what type of insulation is present.

The insulation which has been installed at joist level, is mineral rockwool and has an average thickness of 250mm, which is considered to be more than adequate, to achieve best thermal heat-loss protection.

The u-value is expected to be 0.17

3.26

Lighting

The majority of lighting was found to be either LED or Compact Florescent (CFL) and is actually of the tenant's personal choice.

It is best to assume 100% energy lighting, which is a very low-cost measure, which can easily be implemented as a uniform upgrade.

It has a very minor impact on the overall energy efficiency ratings; ranged between 1-2% overall for a complete household.

3.27

Domestic Heating & Hot Water Services

All properties have been fitted with 'Mains Gas' Condensing Combi Boilers, which are classed as 'A' rated; best on the energy efficiency scale.

The majority of properties have been fitted with Glow-worm Ultracom 30cxi boilers, so this can be considered uniform.

Hot water is supplied on direct demand which is the most efficiently rated with a Heating/Hot Water system.

All properties have full controls, comprising of Room Thermostat, Programmer & Thermostatic Radiator Valves; resulting in a capacity to fully achieve maximum energy efficiency.

The SEDBUK boiler efficiency rating is 88.5%, which is considerable for Mains Gas.

The highest is usually to be found to be approximately 91% and is usually the costliest boilers on the market, sourced from Germany. (E.g. Worcester Bosch & Viessmann)

3.3

Flats (Semi-Detached & Detached)

3.31

The Flats are 1950's Cavity build/ non- traditional steel/concrete construction frame (classified as 'System Built')

All Flats are identical in style & size, with only a difference of party wall connections.

The floor space measuring approximately 60 metres squared.

The floor to ceiling heights average between 2.4-2.45m

3.32

Wall Type

The flats have 270mm thick cavity construction, which have been filled with mineral rockwool.

The structure is non-traditional, concrete structure/ potential steel frames etc.

This type of construction is recorded as 'System Built'

It is expected that the thickness of the insulation would be 40mm within the 40mm cavity.

The u-value assumed is 0.7, in comparison to new-build which is approx. 0.35.

The unheated corridor wall which may not be insulated would rate at 0.94 u-value, whereas the party wall will be rated at u-value 0.25-0 for the semi-detached flats.

New Build usually has a minimum 50mm insulation thickness.

The party wall is not expected to be insulated, due to it not being classed a heat-loss wall.

The after-market insulation is clear from multiple drill holes in the mortar, spread evenly over all external walls.

(Physical testing has been administered upon this site by me personally using a Borescope & camera)

3.33

Floor Type

The floors have solid concrete construction with no expected insulation, with regard to building regulations at the time of build. This being at Ground floor level.

Classified as a heat-loss floor. Average u-value expected to be 0.73

The floor for the elevated flats e.g. level 1 & 2 are classified as 'non heat loss' and have full u-value rating of 0. (Other dwelling below)

3.34

Glazing Type

All flats are fitted with uniform upvc double glazing windows, potentially installed in the 90's or early 2000's.

The gap between glazing is approx. 12mm, which results in an expected u-value of 2.8 and a g-value of 0.76

3.35

Roof Structure & Type

The properties have pitch roofed construction and have loft access, so to assess what type of insulation is present. This is only relevant to 'top floor flats – level 2'

The insulation which has been installed at joist level, is mineral rockwool and has an average thickness of 250mm, which is considered to be more than adequate, to achieve best thermal heat-loss protection.

The u-value is expected to be 0.17

The roof u-value for the 'Ground Floor' & 'Mid Floor' flats is the maximum of '0' which is considered as no heat-loss. Recorded as another dwelling above.

3.36

Lighting

The majority of lighting was found to be either LED or Compact Florescent (CFL) and is actually of the tenant's personal choice.

It is best to assume 100% energy lighting, which is a very low-cost measure, which can easily be implemented as a uniform upgrade.

It has a very minor impact on the overall energy efficiency ratings; ranged between 1-2% overall for a complete household.

3.37

Domestic Heating & Hot Water Services

All properties have been fitted with 'Mains Gas' Condensing Combi Boilers, which are classed as 'A' rated; best on the energy efficiency scale.

The majority of properties have been fitted with Glow-worm Ultracom 30cxi boilers, so this can be considered uniform.

Hot water is supplied on direct demand which is the most efficiently rated with a Heating/Hot Water system.

All properties have full controls, comprising of Room Thermostat, Programmer & Thermostatic Radiator Valves; resulting in a capacity to fully achieve maximum energy efficiency.

The SEDBUK boiler efficiency rating is 88.5%, which is considerable for Mains Gas.

The highest is usually to be found to be approximately 91% and is usually the costliest boilers on the market, sourced from Germany. (E.g. Worcester Bosch & Viessmann)

4.0 Conclusions

The energy efficiency ratings for all types of consulted properties: -

4.1 Semi-Detached House

4.2 Semi-Detached Bungalow

4.3 Semi-Detached & Detached Flat

Currently it must be concluded that the energy efficiency ratings are very good for the age and type of properties under consultation, for all of the above property types.

The measures available to attempt to improve the energy ratings for the above properties, with an attempt to reach 'new build ratings' will be demonstrated graphically.

The current energy efficiency ratings of all property types will be illustrated, then the reasonable measures that can be applied will be added and illustrated to demonstrate viability.

4.1.1

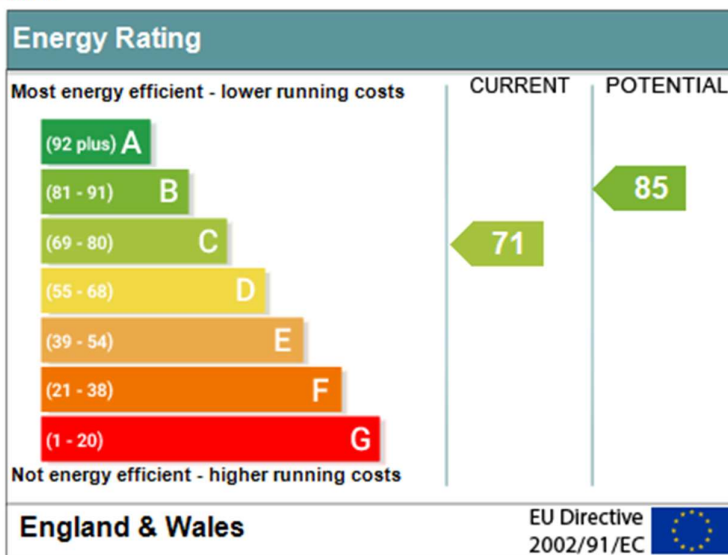
Current Energy Rating of Semi-Detached House

I.e. 57 Ekin Road

Relative to 3.1 -3.17 of Report

Address: 57, Ekin Road, CAMBRIDGE, CB5 8PS

RRN:

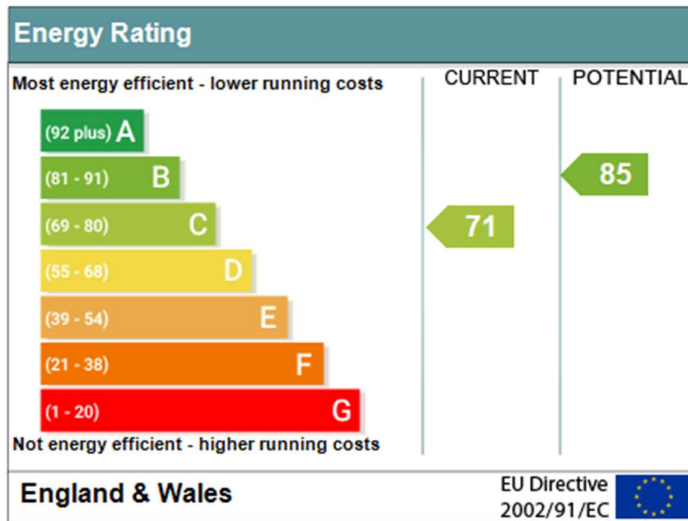


4.12

Projected Energy Rating of Semi-Detached House

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing and to insulate the current solid non-insulated floors; which would potentially be the requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £20,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 57, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



There would be no shift at all in the energy ratings, what-so-ever.

4.21

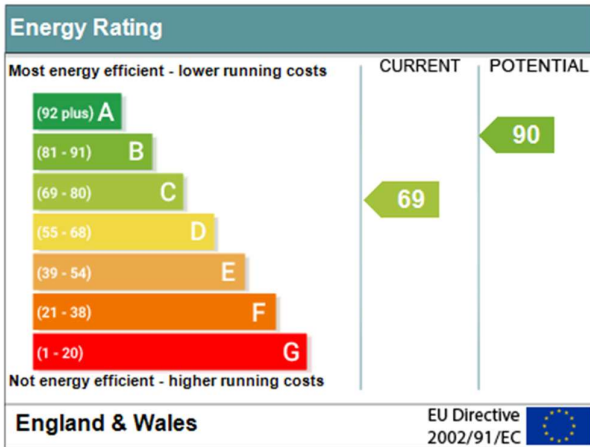
Semi-Detached Bungalow

Current Energy Rating

i.e. 75 Ekin Road

Relative to 3.2 – 3.27 of Report

Address: 75, Ekin Road, CAMBRIDGE, CB5 8PT
RRN:

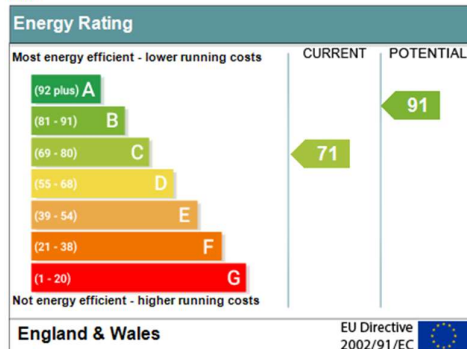


4.22

Projected Energy Rating of Semi-Detached Bungalow

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing and to insulate the current solid non-insulated floors; which would potentially be the requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £20,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 75, Ekin Road, CAMBRIDGE, CB5 8PT
RRN:



An slight improvement is projected, however will not change the energy banding.
So needs to be evaluated against cost, considering the improvement per unit etc.

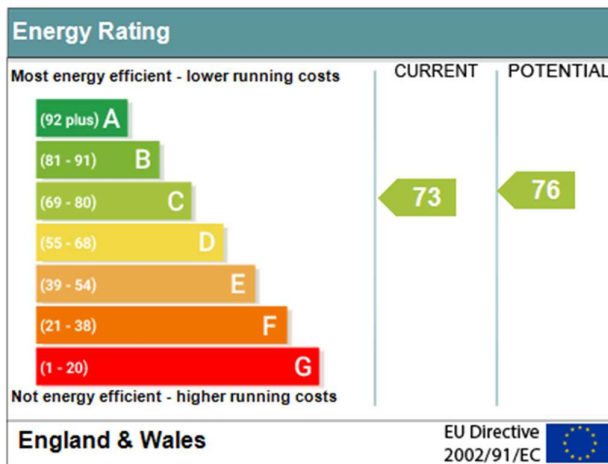
4.31

Semi Detached Flat

Current Rating - Ground Floor Flat

i.e. 7 Ekin Road

Address: 7, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



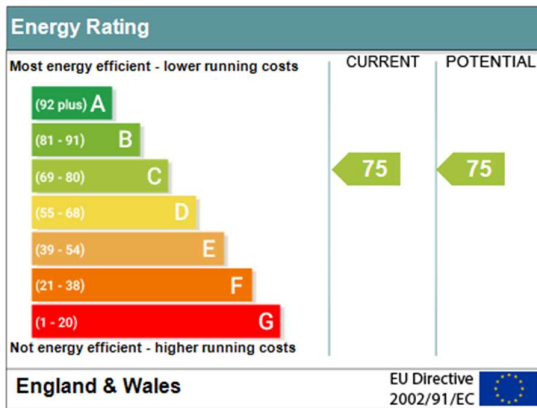
This rating is based on a non-insulated solid floor

4.32

Projected Energy Rating of Semi-Detached Flat (Ground Floor)

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing and to insulate the current solid non-insulated floors; which would potentially be the requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £20,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 7, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



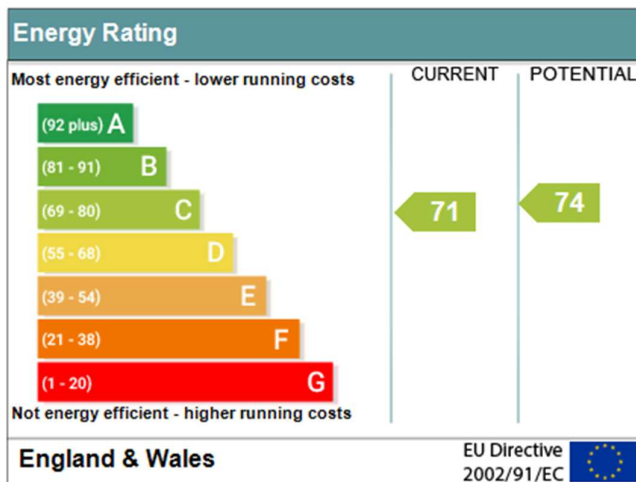
4.33

Detached Flat

Current Rating of Ground Floor Flat

i.e. 11 Ekin Road

Address: 11, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



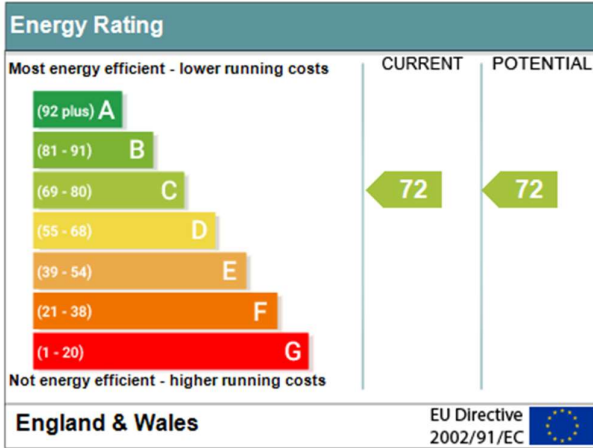
4.34

Projected Energy Rating of Detached Flat (Ground Floor)

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing and to insulate the current solid non-insulated floors; which would potentially be the

requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £20,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 11, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



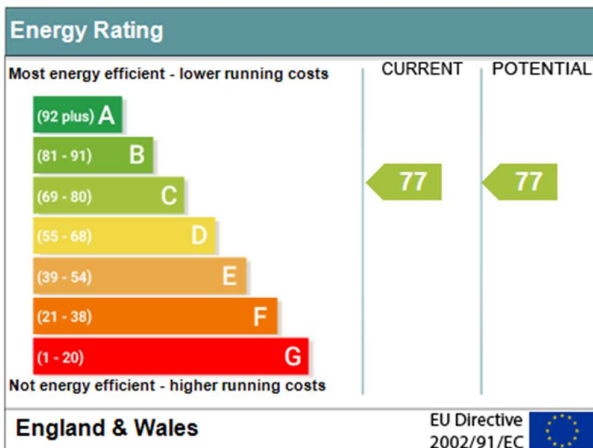
4.35

Mid-Floor Detached Flat

Current Rating of Mid-Floor Flat

i.e. 11a Ekin Road

Address: 11a, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:

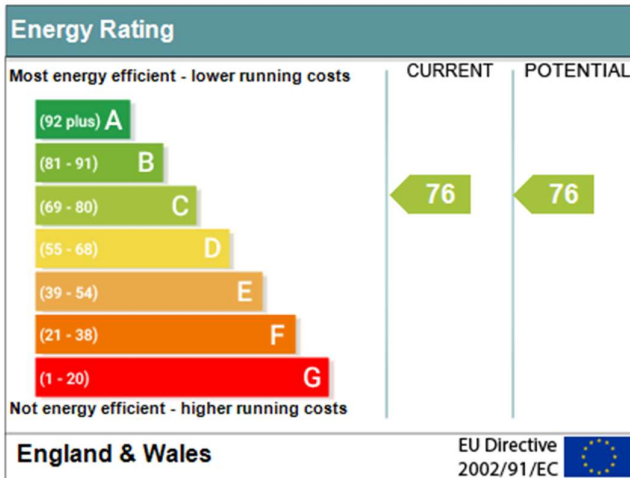


4.36

Mid-Floor Flat Detached

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing, which would potentially be the requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £12,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 11a, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



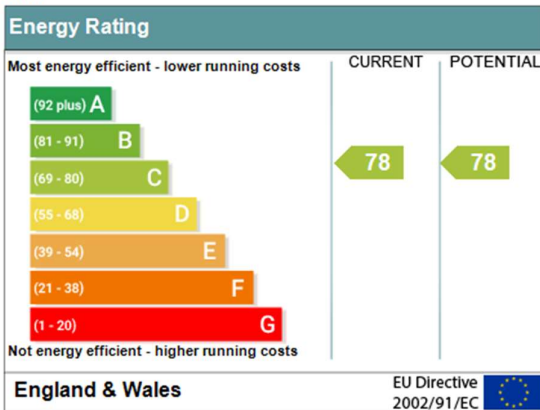
4.37

Mid-Floor Semi-Detached Flat

Current Rating

i.e. 7a Ekin Road

Address: 7a, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:

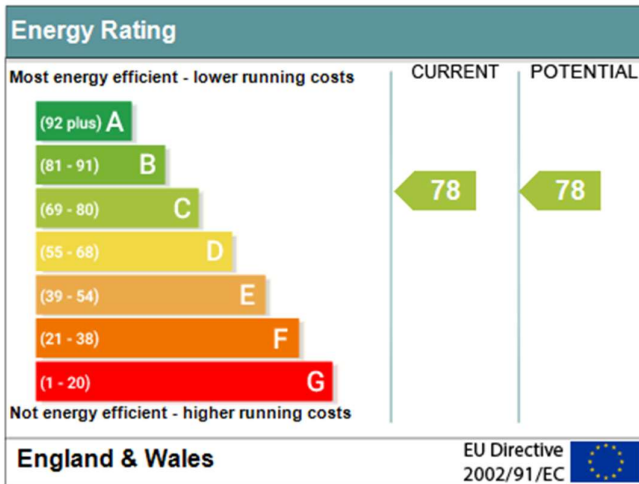


4.38

Mid-Floor Flat Semi-Detached

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing , which would potentially be the requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £12,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 7a, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



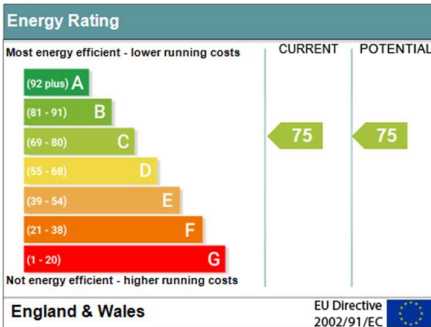
4.39

Top Floor Flat – Detached Flat

Current Rating

i.e. 11b Ekin Road

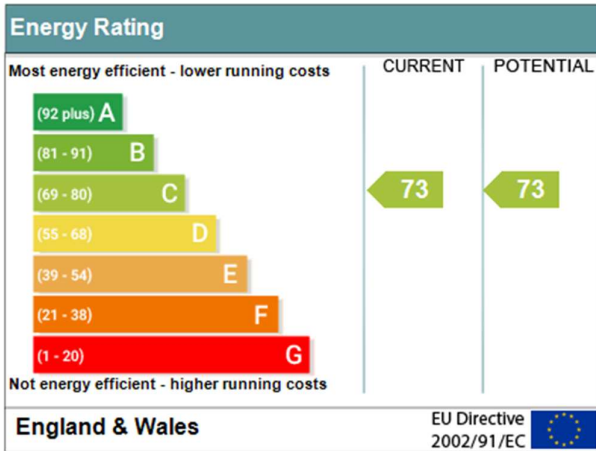
Address: 11b, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



4.4

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing , which would potentially be the requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £12,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 11b, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



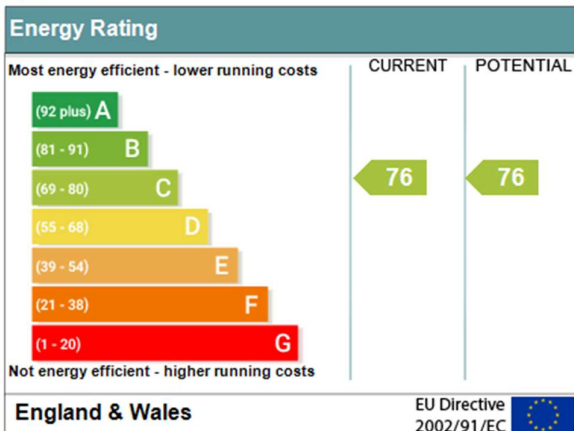
4.41

Top Floor Flat – Semi Detached

Current Rating

i.e. 7b Ekin Road

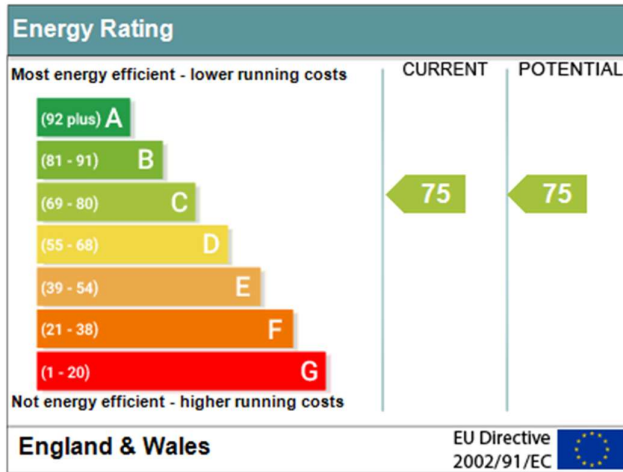
Address: 7b, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



4.42

To replace Gas Central Heating with Air-Ground Source Heat Pumps, install new 2.0 u-value double glazing , which would potentially be the requirement to maximise environmental 'green measures' at a potential cost of approximately a minimum of £12,000 per property unit (decreasing on a mass installation scale); would achieve an energy rating assumption of the following:-

Address: 7b, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



Note*

The flats demonstrate a decline in energy efficiency if Gas Heating & Hot Water is replaced by Heat Pumps.

This despite having new Glazing installed

Summary Table – Conclusions

Semi Detached House (Per Unit)

Measure	Present Y/N	£ Cost of Installation if No	Current EPC Band	Potential EPC Band
Wall Insulation	Y	N/A	C	C
Roof Insulation	Y (250mm)	N/A	C	C
Floor Insulation	N	4-6000	C	C
Double Glazing	Y	5-10000 Upgrade	C	C
Heating/HW	Y Gas Combi Boiler	Heat Pumps/Cylinder 10-15000	C	C

Semi Detached Bungalow (Per Unit)

Measure	Present Y/N	£ Cost of Installation if No	Current EPC Band	Potential EPC Band
Wall Insulation	Y	N/A	C	C
Roof Insulation	Y (250mm)	N/A	C	C
Floor Insulation	N	4-6000	C	C
Double Glazing	Y	5-10000 Upgrade	C	C
Heating/HW	Y Gas Combi Boiler	Heat Pumps/Cylinder 10-15000	C	C

Flats (All Types/Levels)

Measure	Present Y/N	£ Cost of Installation if No	Current EPC Band	Potential EPC Band
Wall Insulation	Y	N/A	C	C
Roof Insulation	Y (250-300mm) to Level 2	N/A	C	C
Floor Insulation	N (Level 0 Only)	4-6000	C	C
Double Glazing	Y	5-10000 Upgrade	C	C
Heating/HW	Y Gas Combi Boiler	Heat Pumps/Cylinder 10-15000	C	C

Energy Performance Certificate (EPC)

75, Ekin Road, . . . CAMBRIDGE, CB5 8PT
27 March 2020 RRN: 0000-0000-0000-0000-0000

PREVIEW - NOT FOR ISSUE
Energy Performance Certificate

Recommendations

The measures below will improve the energy performance of your dwelling. The performance ratings after improvements listed below are cumulative; that is, they assume the improvements have been installed in the order that they appear in the table. To receive advice on what measures you can take to reduce your energy bills, visit www.simpleenergyadvice.org.uk or call freephone 0800 444202. Before installing measures, you should make sure you have secured the appropriate permissions, where necessary. Such permissions might include permission from your landlord (if you are a tenant) or approval under Building Regulations for certain types of work.

Recommended measures	Indicative cost	Typical savings per year	Rating after improvement
Floor insulation (solid floor)	£4,000 - £6,000	£ 38	C72
Solar water heating	£4,000 - £6,000	£ 25	C73
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£ 336	B89

Financial Support and the Green Deal

Green Deal Finance allows you to pay for some of the cost of your improvements in instalments under a Green Deal Plan (note that this is a credit agreement, but with instalments being added to the electricity bill for the property). The availability of a Green Deal Plan will depend upon your financial circumstances. There is a limit to how much Green Deal Finance can be used, which is determined by how much energy the improvements are estimated to **save** for a 'typical household'.

You may also be able to obtain support towards repairs or replacements of heating systems and/or basic insulation measures under the ECO scheme, provided that you are in receipt of qualifying benefits or tax credits. To learn more about this scheme and the rules about eligibility, visit www.simpleenergyadvice.org.uk or call freephone **0800 444202** for England and Wales.

The measures of improvement are triggered, once all data is input to the RDSAP software engine.

The above illustration highlights, the only reasonable measures available to the Houses & Bungalows.

It also indicates costs & projected improvement level.

Unfortunately, the Flats do not fall in this improvement criteria, mainly because of the multiple units per block and the complications expected to feed a Solar system to a shared structure.

The 'Ground Floor' level of the flats can be considered for the above floor insulation.

Summary Notes

- All properties under this consultation have been assessed using the same techniques & procedures; accounting for the different types and some non-applicable measures. RDSAP is the methodology used.
- There are 9 Bungalows, 70 Flats & 21 Houses which will have new EPCs available, so to compare and to potentially progress with any recommendations
- All reasonable measures have already been applied; such as Wall & Roof Insulation, Condensing Combi Boilers with Full Controls, Uniform Double Glazing & Low Energy Lighting.
- There are no small measures (£3500 max) available to improve energy rating or environmental impact.
- The properties are considerably good, with relation to energy efficiency considering age. In-fact will match some 'new build ratings' very closely.
- There is one measure which this report is going to recommend and elaborate upon (see 5.0 Recommendations) however this may not be suitable for the 70 flats in question.
- The RDSAP methodology doesn't recommend solar measure for multiple unit shared structures, due to complexity of distribution. The only method to establish further viability, would be to conduct a professional Solar appraisal from a reputable firm who can customise a system.
- The Solar recommendation to follow, will raise the energy efficiency & environmental impact to 'New Build Standards' and possibly beyond.

5.0 Recommendations

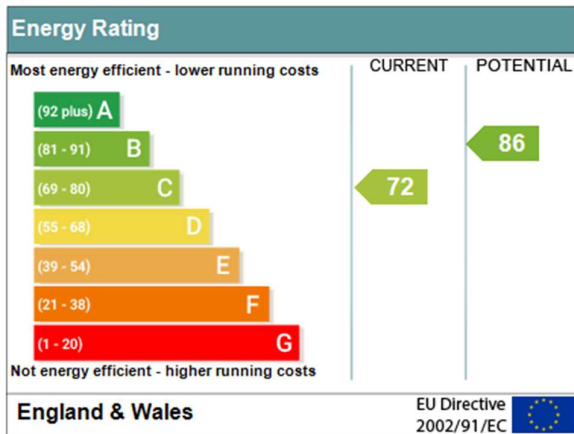
The recommendation is to install approximately 2KW Solar PV Panels, to the Houses & Bungalows.
(6 -8 Panels to the best orientation; closest to South facing)

In order to harmonise the system and benefit from Hot Water from solar; a Domestic Hot Water Cylinder or similar will be required.

There will potentially be a need to upgrade or add to the current 'Electricity Meter' to provide for the added equipment.

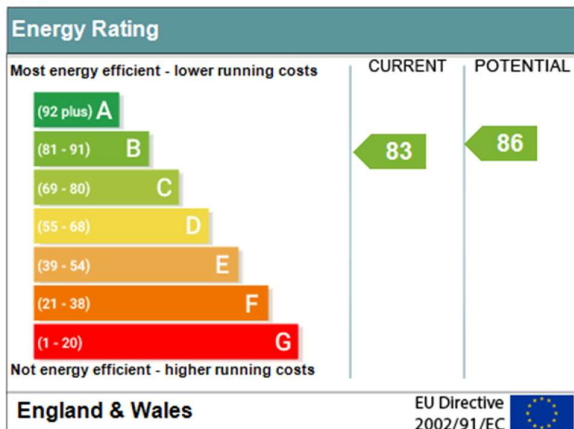
Current House

Address: 57, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



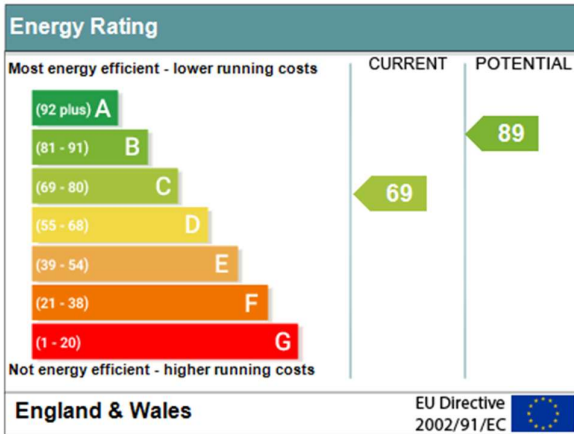
House with 2KW Solar PV Panels

Address: 57, Ekin Road, CAMBRIDGE, CB5 8PS
RRN:



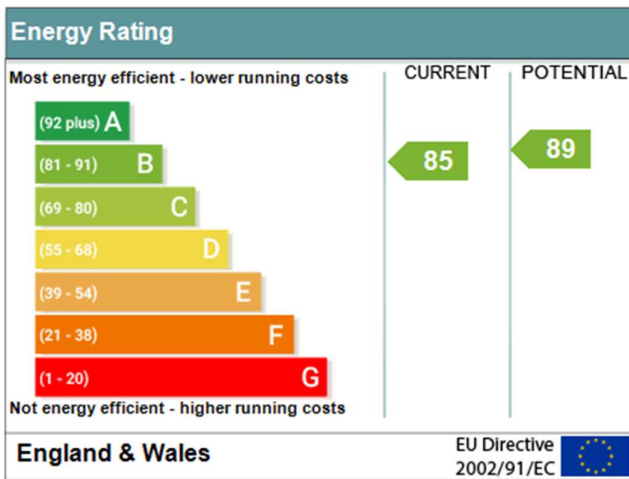
Current Bungalow

Address: 75, Ekin Road, CAMBRIDGE, CB5 8PT
RRN:



Bungalow with 2KW Solar PV Panels

Address: 75, Ekin Road, CAMBRIDGE, CB5 8PT
RRN:



Recommendation Summary

- The cost is estimated £3000-6000 for up-to a 2.5KW system.
- The cost should be scaled down due to bulk order & installation etc
- The householders will benefit from a supply of Hot Water
- It is expected that the PV Panels will produce surplus KW, which can be sold back to the 'Energy Grid' at profit.
- The life expectancy of the system is 25 years; expected to pay for itself easily.
- The system which has been demonstrated in this section is actually based on 2KW, so maybe scaled up for further improvement & output.
- The EPC Rating will match or better 'New Build' construction.
- The PV Panels are the sole added recommendation; any insulation, glazing & heat pumps have been disregarded/removed.
- The disruption level for live-in persons, is acceptable for these works.
- Government & Commercially backed grants & incentives may be available to counter cost; i.e. Renewable Heat Incentive (RHI)