

Energy Statement

Date: 29 March 2013
Address: Flats 1 – 7, 210 Richmond Road, Teddington, TW11 9JF
Client: Frontdoor Properties Ltd
Proposal: New build of 7 flats

Requirements/policies:

Sustainable construction checklist
Sustainable construction checklist guidance document August 2011
40% reduction co2 by incorporation of renewable energy
CO2 reducing carbon emissions

Details of this report

This report contains ancillary information to support and justify the sustainable construction checklist results which include baseline co2, co2 emissions without renewable energy and co2 emissions with renewable energy.

The Statement

Demonstrate a reduction in non regulated CO2 through the installation of renewables

Carbon Dioxide Emissions

Percentage of non-regulated CO2 emissions detailed below showing Building Regulations target level through all low carbon measures

Energy Efficient Measures

SAP calculations carried out demonstrate the energy efficient measures taken to reduce the dwelling emission rates of CO2 below the current Building Regulations

The energy efficient measures taken include the following:

Element	U values adjusted to enable scheme to meet SAP calculations and current building regulations
Heat loss walls	0.16u
Openings/windows	1.2u
Roof flats 5, 6, 7	0.12u
Air permeability	3 m3 hm2 @ 50Pa

Other

Programmers, room stat and TRV's

Default accredited construction details will be adopted unless the developer/architect supplies the accredited values

The results are as follows:

Results of Energy Efficient details in order to gain a minimum of 40% non-regulated local authority planning requirement:-

Flats 1 – 7, 210 Kingston Road, Teddington, TW11 9JF	Target Emission rate kg/co2 m2 per annum	Dwelling emission rate kg/co2 m2 per annum	Baseline TER (TER x floor area) without renewables	DER no renewables	DER with renewables	Reduction from low and zero carbon technologies % using ENE 7 spreadsheet	PV panels - kw
Flat 1	18.00	6.37	900	903.50	318.50	40	8
Flat 2	16.57	6.38	977.63	1011.85	376.42	40	9
Flat 3	15.17	5.73	1168.09	1221.99	441.21	40	11
Flat 4	15.18	6.08	1244.76	1211.96	498.56	40	11
Flat 5	17.86	5.00	1464.52	1349.72	410.00	40	12
Flat 6	17.77	5.41	1314.98	1272.80	400.34	40	11
Flat 7	20.63	5.65	1361.58	1296.90	372.90	41	11

PV's

PV collector	Suntech or other to be advised
Collector area	100.45 M2
Collector type	Suntech or other to be advised
Module Efficiency	Approximately 15%
Total System Efficiency	Approximately 90%

Energy

Potential Annual Energy Generated	21952.56 KWh/yr
Potential Energy Generation per metre	187.60 KWh/ms
Installed power	25.55 KWp
Percentage of Electricity Generated	14.60%

Costs

Grant Available	None
Capital cost per KWp	£1975 /KWp
Total Capital cost - approx	£50,461
Potential Electricity Savings	£6509 approx/year

Potential Income from feed in tariffs	£2625 /yr
Simple payback period	12.8 Yrs

Emissions

Potential annual co2 savings	12187 KGCO2/yr
Potential emissions reduction – non regulated using ENE 7 spreadsheet	40 %

Renewable Energy 40% CO2 reduction

A 40% decrease of regulated CO2 emissions are detailed below on building regulation target levels through all low carbon measures.

Details of renewables available are detailed below:

- Ground Source Heat pump – not suitable

The site is not practical for this type of technology, due to limited space for either ground source loops or boreholes

- Air Source Heat pumps – not suitable

The efficiency and even credit worthiness of Air Source Heat Pumps are currently in dispute. Their use of grid supplied electricity even taking into account their efficiencies make them little more renewable than a gas boiler. Siting of the units for servicing would require them to be located to the side of the dwelling. This in itself would cause noise pollution issues not only to the resident of this proposed development but also the neighbouring properties.

- Combined Heat and power – not suitable

The area is not large enough to make the most efficient use of a CHP unit and any unit would have to be powered by mains gas as there are not enough renewable options available to the site to power any CHP

- Community Heating – not suitable

There is currently no scheme operating within this area

- Wind turbine – not suitable

Due to the lack of and unreliability of wind caused by the surrounding urban landscape and potential issues with over shading to local residents, a wind turbine is not considered appropriate

- Biomass Boiler – not suitable

Issues with the storage of fuel, the management costs for this development make this technology unfeasible

- Solar Water Heating – suitable

However, solar water heating alone cannot supply the necessary 40% reduction in CO2

- Photo Voltaic Panels – suitable

The roof has sufficient area and good orientation to be used for the installation of PV panels. This area available is sufficient for the area of the panels needed to supply the required 40% reduction in non regulated CO2 emissions

As the above results demonstrate, by installing the respective number of PV panels required to the proposed development, the non regulated CO2 emissions are reduced by a minimum of 40%.

The total area of PV panels required for the above is approximately 100.45 sq. metres either in an easterly, southerly or westerly direction which is 73 panels. The type of panels give high performance of 350 watt output per panel.

Conclusion

Photovoltaic Panels are considered the most suitable, practical and feasible renewable energy to use at this proposed development.

Further information

This report was prepared by:

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Enclosures within this report:

- SAP 2009 building regulation checklists for energy efficient measures and 40% renewable measures
- SAP worksheets
- CSH worksheets
- ENE 7
- Pre-assessment spreadsheet