



Sustainability Assessment

Proposed Mixed Use Development.

1 Cyprus Road,
Burgess Hill,
West Sussex
RH15 8DX.

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RDJW Architects Limited

Quoin House
9-11 East Park
Crawley
WEST SUSSEX
RH10 6AN

T: +44 (0)1293 404 300

E: info@rdjw.co.uk

W: www.rdjw.co.uk

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Introduction

This Energy Statement outlines our proposals to minimise carbon emissions from the new proposals. The details provided in this statement propose to reduce the predicted carbon dioxide emissions below the current Building Regulations standard.

It is proposed that this reduction could be achieved primarily through the incorporation of excellent energy efficient building standards and design, high performance and thermal efficient insulation to the floor, walls and roof, high performance thermally efficient external windows and doors and low energy light and electrical fittings. Should it be required, several on-site renewable energies such as photovoltaics, solar water heating could also be employed.

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Proposals

The proposal is for a mixed use development comprising of a restaurant and retail space on the ground floor and 12 flats on the upper floors. The building will have a gross internal floor area of approximately 1433 m². The primary heat source will be through mains gas.

The site is located at the rear of a cinema surrounded by a car park.

To ensure that the proposals will achieve an increased thermal performance above the 2013 Part L1A guidelines, we are proposing to use high performance insulating materials. To the ground floor we would be looking to achieve a u value 0.15w/m²k, to the walls 0.20w/m²k, to the roof 0.13w/m²k and to the windows and doors, 1.5w/m²k.

Photovoltaics

Because of the large flat roof area we believe that that we could accommodate approx. 75 units covering an area of 112msq (units are approximately 1500x100mm, Suntech, 250 watt, crystalline silicon solar module or similar).

Solar electricity is a green renewable energy and doesn't release any harmful carbon dioxide (CO₂) or other pollutants. A typical household solar PV system could save over a tonne of CO₂ per year whilst generating over 2,500 kilowatt hours of electricity a year, around three quarters of a typical household's electricity needs. Because of the large number of photovoltaics we can accommodate, we will be able to produce a significant amount of renewable energy.

Solar Hot Water

A system of evacuated tubes could also be positioned on the roof of the building.

Typical carbon savings for a solar hot water system are around 230kgCO₂/year when replacing gas and 510kgCO₂/year when replacing electric immersion heating.

Air Source Heat Pump

As this system is relatively unobtrusive, it could be installed to the premises. Air source heat pumps absorb heat from the outside air. This heat can then be used to heat radiators, underfloor heating systems, or warm air convectors and hot water in your home. An air source heat pump extracts heat from the outside air in the same way that a fridge extracts heat from its inside. It can get heat from the air even when the temperature is as low as -15° C. Heat pumps have some impact on the environment as they need electricity to run, but the heat they extract from the ground, air, or water is constantly being renewed naturally. Residential air source heat pumps can save more than 2 tonnes of carbon a year, emitting up to 20% less than gas boilers and up to 70% less than electric systems.

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Combined Heat & Power

We do not believe that CHP is suitable for this site, as we are unaware of any CHP studies undertaken for the Mid Sussex area, furthermore, there is not sufficient space on the site to house a plant room.

Ground Source Heat Pump

Because of the small site area we do not have the capacity for ground coils to be installed and so believe that a GSHP would not be suitable for the development.

Biomass

Currently there are high capital costs and long payback periods for relatively low outputs associated with this technology. The location of storage for wood pellets would be a problem, along with the size of boiler and position of a plant room, therefore we do not think that Biomass is a suitable technology for this site.

Wind turbine

Currently high capital costs and long payback periods for relatively low outputs are associated with this technology. Planning, noise, structural issues all need to be considered therefore we do not think that wind turbines are a suitable technology for this site.

Design

- The scheme aims to achieve 10% improvement of the dwelling Emission Rate (DER) over the Target Emission Rate (TER) based on SAP 2005 or any subsequent amendment in effect at the time of implementation of the scheme.
- The scheme aims to use space and water heating system with NO_x emission of less than 40 gm/Kwh. Or a high efficiency Class 5 boilers with low NO_x burners will be installed with 90% efficiency.

- The majority of the flats will have floor to ceiling glazing which will provide good natural lighting within the occupied areas, which will improve comfort and reduce the requirement for artificial lighting. The recessed balconies not only provide amenity space but act a shading device reducing the effect of solar gain helping to achieve a desired internal environment.
- Any mechanical ventilation units will have an efficiency rate of 85%, 1W/(ls) specific fan power
- We would look to achieve an air-tightness rate of between 5-7m³/hr.m².
- Efficient appliances will be installed in order to reduce the energy and water demands of the development.
- Building materials where possible will be sourced locally to reduce transportation pollution & support the local economy. Any timber used will be purchased from responsible forest sources.
- Recycling facilities will be provided to reduce waste during operation.

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Design

- Water use will be minimised by the specification of water efficient taps, shower heads, dual flush toilets and low water use appliances such as washing machines.
- Through the use of thermally efficient and high performance insulation and external elements and generating a proportion of the developments' energy requirements (if necessary) through renewable energy technologies (PV), it is our intention that the proposals could achieve a minimum improvement of over 10% on the currently required Building Regulations requirements.