Case Study | Rising Bridge Business & Enterprise Village

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Local Authority:

Rossendale Borough Council

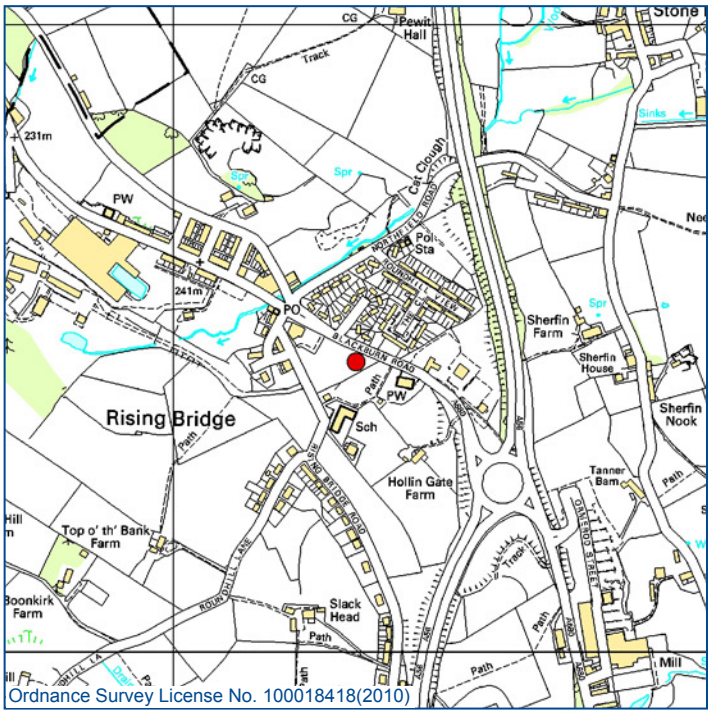
Location:

Rising Bridge, Blackburn Road, Haslingden, Rossendale. BB5 2SN

OS Grid Reference: 378291, 425459

Development type:

Mixed use office/retail development



Location Plan

Description

Rising bridge business park is located 4 kilometres south east of Accrington town centre, in the rural fringe village of Rising Bridge.

The village is surrounded by rugged moorland and agricultural land and is set within a valley below the South Pennine moors. The village is relatively small and of a linear pattern, enclosed within the valley landscape.

The A680 is a dominant feature that cuts through the centre of Rising Bridge. There is a mixture of traditional stone terraces, small housing estates, businesses and industry.

The local primary school and church near to the site are prominent historical features within the village. Rising Bridge is surrounded by green belt land with an employment site to the south west of the village and an employment area to the west of the village. An important wildlife site also lies to the west of the village on the Rossendale authority boundary.

Rising bridge business park is a small mixed use office development consisting of 9 business units within three separate buildings. A total of 3,021m² of office space with 64 parking spaces has been consented on brownfield land.

The development is currently being constructed. The buildings are south westerly facing and are being built in a typical metal framed building with block and faced with natural stone and finished with a natural slate roof.

A boundary wall of natural stone and railing top will surround the site. A small amount of landscaping of grassed margins, shrubs and trees are proposed around the edge of the site.

Extract from the developer's masterplan for Rising Bridge Business Park

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Development

Area (m²)	**3,011**
Gas Good Benchmark (kWh/m2/year) (1)	**79**
Electricity Good Benchmark (kWh/m2/year) (1)	**54**
Estimated Annual Gas Consumption (kWh/year)	**237,869**
Estimated Annual Electricity Consumption (kWh/year)	**162,594**
Development cost (£)	**2,500,000 - 3,000,000 (2)**

Notes
1. Commercial consumption figures based on published energy benchmarks and are only a guide. (Integrating Renewables into New Development: A Toolkit for Planners, Developers and Consultants. London Renewables 2005) and the area of each type of land use.
2. Build cost based on an indicative cost of £85 per sq ft. Actual costs may vary

Energy requirements, emissions and targets

Estimated total energy requirements	**400,463**	kWh/year
Total CO_2 Emissions ($kgCO_2$/yr)	**114,761**	$kgCO_2$/year
10% Renewable Energy Contribution	**40,046**	kWhe
20% Renewable Energy Contribution	**80,093**	kWhe

Technology

The site is a small office development with 9 units laid out around a central car park. Buildings are oriented south westerly meaning that approximately half the roof space is potentially usable for solar technologies.

External space within the development boundary is limited and fronts Blackburn Road to the north and Rising Bridge road to the south west.

Restricted space within the development limits technology choice however a variety of suitable options have been considered. The most suitable technologies are likely to be those that have a small footprint or that can be accommodated beneath the central car park space such as ground source heating.

Approximately 800m² of roof space could be used for solar power which could allow a substantial solar array to be installed to contribute towards achieving and onsite renewable energy target.

The developer's marketing brochure explains the development is aiming to achieve a BREEAM 'Excellent' rating for sustainability and that air source heat pumps are being used to provide cooling and heating. Technology has been selected to compliment measures already proposed.

Technology Mix Option 1

Renewable energy technology	No of units	Estimated Annual Yield (kWh)	Estimated Installed Cost (£)	FIT/RHI Revenue (£)	10% RE Contribution	20% RE Contribution
GSHP (1)	1	17,520 (2)	6,400 - 12,000 (3)	1,226	44	22
Biomass boiler (4)	1	70,080 (5)	5,000 - 10,000 (6)	6,307	175	87
Estimated Maximum Totals		**87,600**	**11,400 - 22,000**	**7,534**	**218**	**109**

Notes
1. 8kW Ground source heat pump - borehole
2. Based on a 0.25 load factor
3. Based on £800-£1,500 per kW installed cost
4. Assume 20kW boiler
5. Based on a 0.4 load factor
6. Based on a £250-£500 per kW installed cost (econergy 2006)

Technology Mix Option 2

Renewable energy technology	No of units/ System size	Estimated Annual Yield (kWh)	Estimated Installed Cost (£)	FIT/RHI Revenue (£)	10% RE Contribution	20% RE Contribution
Solar PV	40kW	30,000 (1)	140,000 - 210,000 (2)	9,420	75	37
GSHP (3)	3 no.	52,560 (4)	19,200 - 36,000 (5)	3,679	131	66
Estimated Maximum Totals		**82,560**	**159,200 - 246,000**	**13,099**	**206**	**103**

Notes
1. 750kWh/year per kWp installed (Burnley RenewEL 2005)
2. Installed cost £5,000 - £7,500 (Microgeneration Certification Scheme 2009) with an assumed manufacturers discount
3. 8kW Ground source heat pump
4. Based on a 0.25 load factor
5. Based on £800-£1,500 per kW installed cost for a borehole system.

Summary

The Rising Bridge Business & Enterprise village is a small office development of 9 units.

Technology Mix Option 1 could meet a 20% target for an additional cost of £22,000 which represents less than 1% of the estimated build cost with a payback period of up to 3 years based on incoming revenue alone.

Technology Mix Option 2 meets a 20% for an estimated additional development cost of up to £204,000 which represents a 7% increase in development costs with a payback period of up to 19 years based on incoming revenue alone.

The additional cost of Option 2 is likely to render this option economically unviable. A balance between Option 1 and Option 2 may be preferable in order to provide mix of technologies that provide heat and power.

All technologies have been selected so as to be suitable for installation in confined areas. A 20kW log boiler could be located in a small plant room and would provide additional space heating for the development.