

Climate Change, Energy & Sustainable Development Questionnaire

The Glen, Mill Lane, Pirbright

Prepared by Ivan Ball

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Applicant's name:	Alex Greenwood
Agent's name:	OSP Architecture (Peter Morgan)
Site Address:	The Glen, Mill Lane, Pirbright
Application reference (if known):	
Description of proposal: (e.g. total and types of units/floorspace)	Demolition of the existing light industrial unit and erection of a new building on a similar footprint to comprise three new dwellings.
Questionnaire prepared by: (name and qualification/job title)	Ivan Ball – Bluesky Unlimited – Sustainability Consultant
Signature of above:	
Energy information prepared by: (name and qualification/job title):	Ivan Ball – Bluesky Unlimited – Sustainability Consultant
Signature of above:	

Part 1: Sustainable design, construction and climate change adaptation

1. Efficient use of minerals, use of secondary aggregates, waste minimisation and reuse of material from excavation and demolition (Policy D2 1a & 1b). See 'Error! Reference source not found.' in the sustainable design and construction guide in section 5 of the SPD.

1.a Will the use of primary minerals be minimised through e.g. the use of renewable materials, recycled and secondary aggregates, and other recycled and reused materials? Please provide details.

Recycled and secondary aggregates will be used where feasible.

1b. Will demolition/excavation material from the proposed works be reused on site? Please provide details of where material will be derived and where it will be used.

Any demolition material will be reused on site where feasible.

1c. Will unused mineral waste be sent for reuse or recycling? Please provide details.

Any mineral waste will be stored separately from general waste and will be reused or recycled.

1d. Will non-mineral construction waste (e.g. packaging, timber, plastics) be minimised? Please provide details.

Any non-mineral waste will be minimised and will be segregated from general waste and will be recycled where applicable.

1e. Will locally sourced materials be used? Please provide details.

Decisions regarding the external materials have yet to be finalised but exterior cladding, the roof coverings and external landscaping will be appropriate to the location. Where practical locally sourced materials will be specified.

1f. Will materials be sustainably sourced (e.g. FSC certified timber)? Please provide details.

All structural timber will be FSC or PEFC certified.

2. Low energy design: landform, layout, building orientation, massing and landscaping (Policy D2 1c and 2). See 'Error! Reference source not found.' and 'Error! Reference source not found.' in the sustainable design and construction guide in section 5 of the SPD.

2a. Will operational energy demand be minimised through low energy design and the use of energy efficient fabric? Please provide details. This information should align with the energy data provided in parts 2a and 2b of this questionnaire.

The fabric specification of the houses will follow good practice standards and the emissions calculations, which are summarised below are based on the following;

Ground floor U-value = 0.13 W/m²K

External Walls U-value = 0.18 W/m²K

Roofs (cold) U-value = 0.10 W/m²K

Windows U-value = 1.20 W/m²K

Air Tightness = 50% improvement on Building Regulations = 5.0 m³/hr/m².

2b. Has the layout of the site, landscaping and orientation of buildings taken account of solar receipts and other environmental factors to reduce the need for mechanical heating and artificial lighting in the development? Please provide details.

The layout of the houses within the site have been designed within the context of the surrounding development. However, all houses are designed with aspects towards the northwest and southeast but additionally Plots 1 and 3 also have orientations towards the southwest and northeast respectively. All houses have good solar orientation.

2c. Will the internal layout of buildings make best use of solar gain and natural light? Please provide details.

See 2B above.

2d. Will passive cooling/ventilation measures be incorporated into the scheme? Please provide details.

The design of the houses includes passive cooling methods. The traditional construction of the houses provides for high thermal mass and all windows will be openable to provide purge ventilation in summer periods.

2e. Will the scheme include mechanical cooling (e.g. air conditioning)? If so, explain why passive measures would not be adequate.

The design of the houses provides for cross ventilation and large window openings.

3. Water efficiency (Policy D2 1d). See 'Error! Reference source not found.' in the sustainable design and construction guide in section 5 of the SPD.

3a. If the scheme includes new dwellings, will these be designed to the national optional building regulation water efficiency standard of 110 litres per person per day (regulation 36(2b))? The relevant Water Efficiency Calculation (s) (Part G) for the new dwellings should be submitted to the Council prior to occupation.

Yes. An outline specification is attached to this Questionnaire.

3b. For all developments, will water efficiency measures be incorporated into the scheme to reduce the demand for water? Please provide details.

See above.

3c. For all developments, will water harvesting measures be incorporated into the scheme? Please provide details.

Rainwater harvesting will be provided for landscape maintenance.

4. Measures that enable sustainable lifestyles for building occupants (Policy D2 1e). See 'Error! Reference source not found.' in the sustainable design and construction guide in section 5 of the SPD.

4a. Will measures that enable sustainable lifestyles for building occupants be incorporated into the scheme? Please provide details.

The houses are within the vicinity of existing developed areas and are close to community, retail and leisure facilities.

5. Climate change adaptation (Policy D2 4 and P4). See 'Error! Reference source not found.' in the sustainable design and construction guide in section 5 of the SPD.

5a. Will the scheme incorporate adaptations for the full range of expected climate impacts including: hotter/drier summers, warmer/wetter winters, more frequent and severe heatwaves and overheating, and more frequent and severe heavy rainfall events and flooding? Please provide details.

The houses will be constructed using traditional methods and will include brick and medium density blockwork cavity walls and concrete floors. The heavy weight structure will provide for cooling conditions within the summer period and the large openable windows provide for cross ventilation during the night-time periods. Glazing will be double glazed and the 'g' value (solar transmittance) will be optimised to balance maximising winter solar gain versus minimising summer overheating. External paving will be permeable to minimise runoff from hard surfaces. Provision will be made for EV charging points.

5b. Will the use of soft landscaping and permeable surfaces be maximised (as opposed to hard surfacing)? Please provide details.

There is no new soft landscaping or surfacing. The building replaces an existing building on the same site.

5c. Will surface water be managed by Sustainable Drainage Systems (SuDS)? Please provide details.

There will be no rainwater runoff off site and any rainwater runoff will discharge to soakaways, which will allow it's slow release back into the ground.

6. Any further information

6. Please provide information about any other sustainable design, construction and climate change measures that will be incorporated into the scheme.

See above.

Part 2a: Energy

7. Combined (Cooling) Heating and Power ((C)CHP) networks (Policy D2 6, 7 and 8).

7a. Will the development fall within the vicinity of a (C)CHP/heat distribution network (of any scale from single building to district heat)? If so, please list the identified networks.

The site is not within the vicinity of a heat distribution network.

7b. If the development will fall within the vicinity of a (C)CHP/heat distribution network, will the proposed development connect to it or be connection-ready? If not, please set out a clear justification.

N/A

7c. Is the development within a Heat Priority Area? If so, is a (C)CHP or heat distribution network proposed as the primary source of energy for the development? If not, please set out a clear justification.

We do not believe the site is within the vicinity of a heat priority area.

7d. If a new (C)CHP or heat distribution network is proposed, is it designed in accordance with the CIBSE Heat Networks Code of Practice? If not, please provide a clear justification.

N/A

8. Low and zero carbon energy

8. If the scheme includes the provision of low and zero carbon technologies, provide details of the proposed energy systems here including: type of technology, location of installation and predicted energy yield.

It is proposed to install air source heat pumps to all houses.

9. New buildings: Carbon reduction calculation

9a. Will the proposed scheme deliver any new buildings (net or gross)?

Yes.

9b. If the answer to 9a is yes, please complete the following carbon reduction calculation template in part 2b.

Part 2b: Carbon reduction calculation

For guidance on how to complete this table, see section '**Error! Reference source not found.**' in section **Error! Reference source not found.** of the SPD. Add more rows as appropriate.

1. Reference	2. Target Emission Rate (TER)	3. Dwelling Emission Rate (DER) or Building Emission Rate (BER)	4. % carbon reduction from TER
Plots 1 & 3	21.38	12.71	40.55%
Plot 2	18.01	10.39	42.31%

SAP calculations have been prepared for Plots 1 and 2, which are presented as representative of all three units. The Regulations Compliance Reports for these units are attached, which confirm the results in Part 2b table above.

Water efficiency measures

In excess of 20% of the UK's water is used domestically with over 50% of this used for flushing WCs and washing (source: Environment Agency). The majority of this comes from drinking quality standard or potable water.

The water efficiency measures included will ensure that the water use target of 110 litres per person per day is achieved for the houses. This is the standard set by the optional requirements of the Building Regulations (Part G – 2016) and exceeds the requirements of the planning policy.

Water efficient devices will be fully evaluated, and installed, wherever possible. The specification of such devices will be considered at detailed design stage and each will be subject to an evaluation based on technical performance, cost and market appeal, together with compliance with the water use regulations.

The following devices will be incorporated within the houses:

- water efficient taps;
- water efficient toilets;
- low output showers;
- flow restrictors to manage water pressures to achieve optimum levels and
- water meters.

Below is a typical specification, which would achieve the 105 Litres per person per year target (excluding five litres per person per day allowance for external water use).

Schedule of Appliance Water Consumption		
Appliance	Flow rate or capacity	Total Litres
WC	6/36 litres dual flush	17.64
Basin	2.0 litres/min.	4.74
Shower	9.0 litres/min	39.33
Bath	175 litres	19.25
Sink	5.0 litres/min	12.56
Washing Machine	6.75 litres/kg	14.18
Dishwasher	1.25 litres/places	4.50
		112.20
	Normalisation Factor	0.91
		102.10

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 30 March 2022 at 10:30:50

Project Information:

Assessed By: Bluesky Unlimited

Building Type: End-terrace House

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 137.4m²

Site Reference : The Glen, Pirbright

Plot Reference: 3BH END 137

Address :

Client Details:

Name: OSP

Address :

This report covers items included within the SAP calculations.

It is not a complete report of regulations compliance.

1a TER and DER

Fuel for main heating system: Electricity

Fuel factor: 1.55 (electricity)

Target Carbon Dioxide Emission Rate (TER)

21.38 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER)

12.71 kg/m²

OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)

47.3 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE)

42.6 kWh/m²

OK

2 Fabric U-values

Element

Average

Highest

External wall

0.18 (max. 0.30)

0.18 (max. 0.70)

OK

Party wall

0.00 (max. 0.20)

-

OK

Floor

0.13 (max. 0.25)

0.13 (max. 0.70)

OK

Roof

0.10 (max. 0.20)

0.10 (max. 0.35)

OK

Openings

1.18 (max. 2.00)

1.20 (max. 3.30)

OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals

5.00 (design value)

Maximum

10.0

OK

4 Heating efficiency

Main Heating system:

Heat pumps with radiators or underfloor heating - electric
Vaillant aroTHERM 5kW

Secondary heating system:

None

5 Cylinder insulation

Hot water Storage:

Measured cylinder loss: 1.20 kWh/day
Permitted by DBSCG: 2.10 kWh/day

OK

Regulations Compliance Report

Primary pipework insulated: Yes OK

6 Controls

Space heating controls	Time and temperature zone control by device in database	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	OK
Boiler interlock:	Yes	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings	100.0%	
Minimum	75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (South East England): Not significant OK

Based on:

Overshading:	Average or unknown
Windows facing: North West	1.9m ²
Windows facing: North West	1.44m ²
Windows facing: South West	0.96m ²
Windows facing: South East	0.95m ²
Windows facing: South East	5.25m ²
Windows facing: South East	0.95m ²
Windows facing: South East	1.44m ²
Windows facing: South West	2.52m ²
Windows facing: North West	1.9m ²
Windows facing: North West	1.26m ²
Ventilation rate:	8.00
Blinds/curtains:	None

10 Key features

Doors U-value	1 W/m ² K
Roofs U-value	0.1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	

Regulations Compliance Report

Approved Document L1A, 2013 Edition, England assessed by Stroma FSAP 2012 program, Version: 1.0.4.26
Printed on 30 March 2022 at 10:30:28

Project Information:

Assessed By: Bluesky Unlimited

Building Type: Mid-terrace House

Dwelling Details:

NEW DWELLING DESIGN STAGE

Total Floor Area: 232.3m²

Site Reference : The Glen, Pirbright

Plot Reference: 4BH MID 232

Address :

Client Details:

Name: OSP

Address :

**This report covers items included within the SAP calculations.
It is not a complete report of regulations compliance.**

1a TER and DER

Fuel for main heating system: Electricity

Fuel factor: 1.55 (electricity)

Target Carbon Dioxide Emission Rate (TER) 18.01 kg/m²

Dwelling Carbon Dioxide Emission Rate (DER) 10.39 kg/m² **OK**

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE) 44.7 kWh/m²

Dwelling Fabric Energy Efficiency (DFEE) 39.2 kWh/m² **OK**

2 Fabric U-values

Element	Average	Highest	
External wall	0.18 (max. 0.30)	0.18 (max. 0.70)	OK
Party wall	0.00 (max. 0.20)	-	OK
Floor	0.13 (max. 0.25)	0.13 (max. 0.70)	OK
Roof	0.10 (max. 0.20)	0.10 (max. 0.35)	OK
Openings	1.18 (max. 2.00)	1.20 (max. 3.30)	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals 5.00 (design value)

Maximum 10.0 **OK**

4 Heating efficiency

Main Heating system:

Heat pumps with radiators or underfloor heating - electric
Vaillant aroTHERM 5kW

Secondary heating system: None

5 Cylinder insulation

Hot water Storage: Measured cylinder loss: 1.20 kWh/day
Permitted by DBSCG: 2.10 kWh/day **OK**

Regulations Compliance Report

Primary pipework insulated: Yes OK

6 Controls

Space heating controls	Time and temperature zone control by device in database	OK
Hot water controls:	Cylinderstat	OK
	Independent timer for DHW	OK
Boiler interlock:	Yes	OK

7 Low energy lights

Percentage of fixed lights with low-energy fittings	100.0%	
Minimum	75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (South East England): Not significant OK

Based on:

Overshading:	Average or unknown
Windows facing: South East	2.88m ²
Windows facing: South East	5.25m ²
Windows facing: South East	1.9m ²
Windows facing: North West	4.32m ²
Windows facing: North West	5.04m ²
Windows facing: South East	2.52m ²
Windows facing: South East	5.25m ²
Windows facing: South East	1.89m ²
Windows facing: South East	0.95m ²
Ventilation rate:	8.00
Blinds/curtains:	None

10 Key features

Doors U-value	1 W/m ² K
Roofs U-value	0.1 W/m ² K
Party Walls U-value	0 W/m ² K
Photovoltaic array	