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SUSTAINABLE LOW-ENERGY STATEMENT

IN SUPPORT OF

**PROPOSED CONVERSION OF EXISTING
BARN TO "LIVE-WORK" ACCOMMODATION**

AT

**STABLE YARD, MAIN STREET, SIBFORD
FERRIS, CHIPPING NORTON, OXON.**

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INTRODUCTION

This Sustainable Low-Energy Statement is submitted to Cherwell District Council in support of a full Planning Application for the conversion of a redundant small barn into "live-work" accommodation at Stable Yard, Main Street, Sibford Ferris, Chipping Norton, Oxfordshire.

The purpose of this statement is to demonstrate the applicants intention to comply with the Government's objective to cut the UK's carbon emissions by 60% by 2050, with real progress being made towards this by 2020. The Government has produced several documents setting out significant measures to tackle climate change through the Planning and Building Control processes. These documents comprise the Code for Sustainable Homes (2006), Building a Green Future: Towards Carbon Zero Development (2006), Planning Policy Statement: Planning and Climate Change, Supplement to PPS 1, (2006), in addition to the relevant policies contained within the Cherwell District Council Local Plan 2006 - 2031: Submission (January 2014), and of course, the N.P.P.F. (National Planning Policy Framework).

The applicants clear intention to comply with all relevant policies in respect of reducing carbon emissions associated with both the construction and running of this small "live-work" proposal are demonstrated by the following principles:

1. SUSTAINABLE DRAINAGE SYSTEM AND WATER CONSERVATION

The proposed scheme has been designed to "harvest" roof rainwater "run-off", by incorporating water butts, (fitted with child-proof lids), onto the rainwater downpipes. These butts will also be fitted with "overflow diverters", in order that any excess rainwater will be piped into underground sustainable soakaways, sited at least 5 metres from the barn conversion.

2. SITE LAYOUT AND BUILDING DESIGN

The potential for increasing passive solar gain is clearly demonstrated by the location of all (albeit small) glazed elements on the south elevation, and ensuring that there is no "overshadowing" by taller buildings or trees to the south of the barn conversion.

The existing layout of the building utilises the landform and landscape, (site gradient), in order to provide shelter and shade to the north elevation, and the internal layout maximises the capture and use of passive solar energy by only having glazing on the south elevation.

The existing thick stone walls also contribute to the significant provision of "thermal massing", in addition to the "live-work" studio being located on the south side of the building, with the heat producing kitchen area sited against the cooler north side. The existing roof, (which is being replaced with reclaimed clay tiles in lieu of the poorer and thermally inefficient metal sheeting), will have a good eaves overhang in order to prevent excess solar gain.

Natural ventilation is also provided by the large opening lights which are incorporated into the top section of the "stable" doors, with small unobtrusive "trickle" ventilation slots being located at high level within the frames, to provide secure night ventilation.

3. RENEWABLE ENERGY

Due to the sensitive location of the building within the Sibford Ferris Conservation Area, and in order to comply with the requirements of the Cherwell District Council "Design Guide for the conversion of farm buildings", the provision of roof mounted "solar panels" was felt to be inappropriate, for aesthetic reasons, and in order to protect the character of the area. The provision of both "biomass" boilers and wind turbine generation were also discounted, due to their size and visual aspects respectively.

In order to replace at least 10% of the carbon emissions of the development with "on-site" renewable, the most appropriate form of equipment which would comply with all the relevant criteria for this site, is the Worcester Bosch "Greensource" air-to-air heat pump. This unit is eminently suitable for this small "live-work" unit, as it is visually unobtrusive, is up to 500% energy efficient, utilises "ion" air purification technology, (ideal for asthma sufferers), and also has the added advantage that it can be operated "in reverse", to provide cool air during the summer months. (Refer to details in Appendix "A").

Draft SAP calculations for the scheme demonstrate that predicted carbon dioxide emissions from the proposed development would not exceed target figures of 12.92 kg CO₂/m²/yr (TER), and 12.06 kg CO₂/m²/yr (DER).

4. BUILDING REGULATIONS

The energy performance standards required by Central Government are very likely to increase substantially in the near future, as evidenced by a 20% improvement in the current Part "L" of The Building Regulations compared to the previous edition.

In order to ensure that forthcoming insulation standards are met, the current thickness of insulation required will be increased by at least 20%, to ensure energy efficiency, and compliance with the Code for Sustainable Homes, (Code Level 6).

5. BUILDING FOR THE FUTURE

It should be noted that the location and gradient of the site and it's adjacent land demonstrate that it is not liable to the effects of either flooding or soil subsidence, and the improvements in construction which will be incorporated into the conversion, will also ensure that the building will be resilient to predicted future climate change conditions. The construction will, wherever possible, incorporate materials with reduced energy input, such as reclaimed hardcore, (floor slab), natural (wool) insulation materials, and other materials sourced through the B.R.E. "Green Guide".

The scheme also demonstrates compliance with the need to design buildings which are adaptable in future in terms of their use, and the future incorporation of energy saving technologies, in accordance with the Lifetime Homes Standard.

APPENDIX "A"

(Details of Worcester Bosch
air-to-air heat pump.)

Renewable technologies from Worcester.

Home heating and hot water
needs from clean, renewable
sources of energy.



 **WORCESTER**
Bosch Group

Dedicated to heating comfort

Greensource air to air heat pumps.

Air to air heat pumps work in a similar way to air to water heat pumps, but instead of generating hot water, the heat from the compressed refrigerant solution is turned into hot air by the indoor unit which is distributed into the property. In addition, Greensource air to air heat pumps can also operate as an air cooler during warmer months and advanced air purification technology is particularly beneficial to allergy sufferers.

Air to air heat pumps are an attractive alternative where external space is limited as they require nothing more than a suitable outside wall, making them ideal for a wide range of property types, including apartments and smaller homes.

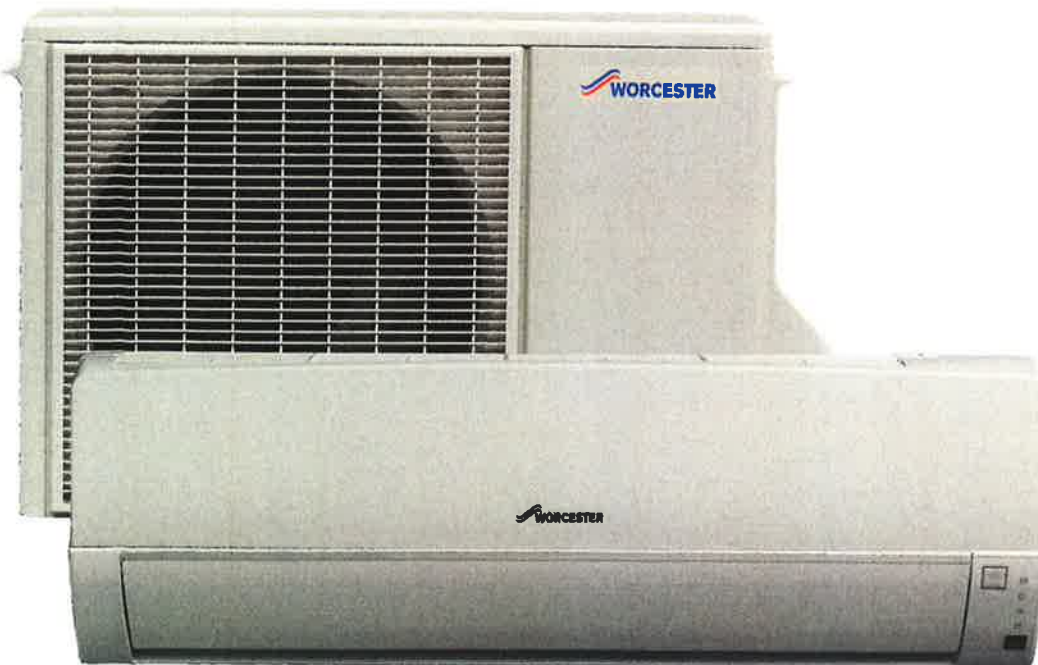
The indoor unit is designed for quiet operation and the system is operated using a remote control with an easy to read LCD display.

Greensource air to air features and benefits:

- Energy efficient – efficiency of up to 500% with a CoP of up to 5
- Compact design requiring only an outside wall
- Suitable for a wide variety of property types, including apartments and conservatories
- Quiet operation
- Easy to install and maintain by a qualified refrigeration engineer
- Can be used to provide cool air in the summer
- Active Ion-technology air purification technology, ideal for allergy sufferers
- Inverter technology – modulates with high demand, making it more effective
- Low maintenance
- Comprehensive 2 year* warranty

** Terms and conditions apply*

The Greensource air to air heat pump outdoor unit



The Greensource air to air heat pump indoor unit



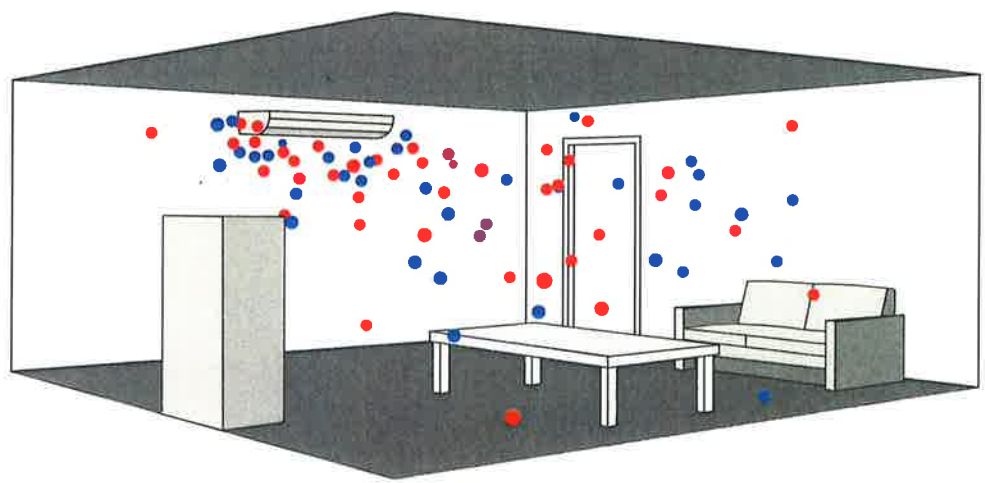
Greensource air to air heat pump remote control

This information is for guidance only. We always recommend you consult a qualified installer.

More technical information can be found on page 27.



Benefit of Greensource air to air heat pump: Plasmacluster Ion-technology



The Green source heat pump's unique active air purification system emulates nature's own air purification process. It emits positive and negative Plasmacluster ions (positive hydrogen ions and negative oxygen ions are surrounded by multiple water molecules to form a cluster, hence the description "cluster ions") that spread throughout the room to purify the air by attacking harmful airborne substances such as bacteria, viruses and allergens, including cigarette smoke. These ions are the same as those found in nature; they are completely safe.

GreenSource air to air heat pump technical overview.

GreenSource air to air heat pump outdoor unit

Dimensions (mm - w x h x d)	780x540x265
Weight (kg)	39
Single phase voltage	220-240V

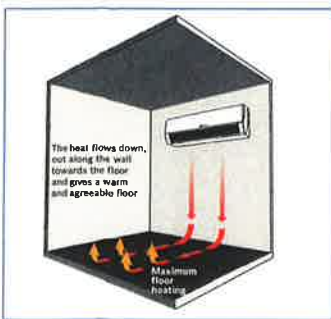
GreenSource air to air heat pump indoor unit

Dimensions (mm - w x h x d)	860x292x205
Weight (kg)	9
Max heat output	6.0kW
Max cooling effect	3.5kW
Single phase voltage	220-240V
CoP (EN 14511)	4.5

Output data applies at 7°C outdoors, wet bulb 20°C indoor temperature.

Coanda airflow system

The GreenSource indoor unit can be set to provide progressive airflow in both heating and cooling modes. When in the heating mode the airflow can be directed down the wall and across the floor, from where it rises to provide more evenly distributed heat. In cooling mode, the air can be directed upwards and across the ceiling from where it falls evenly without causing a draught.

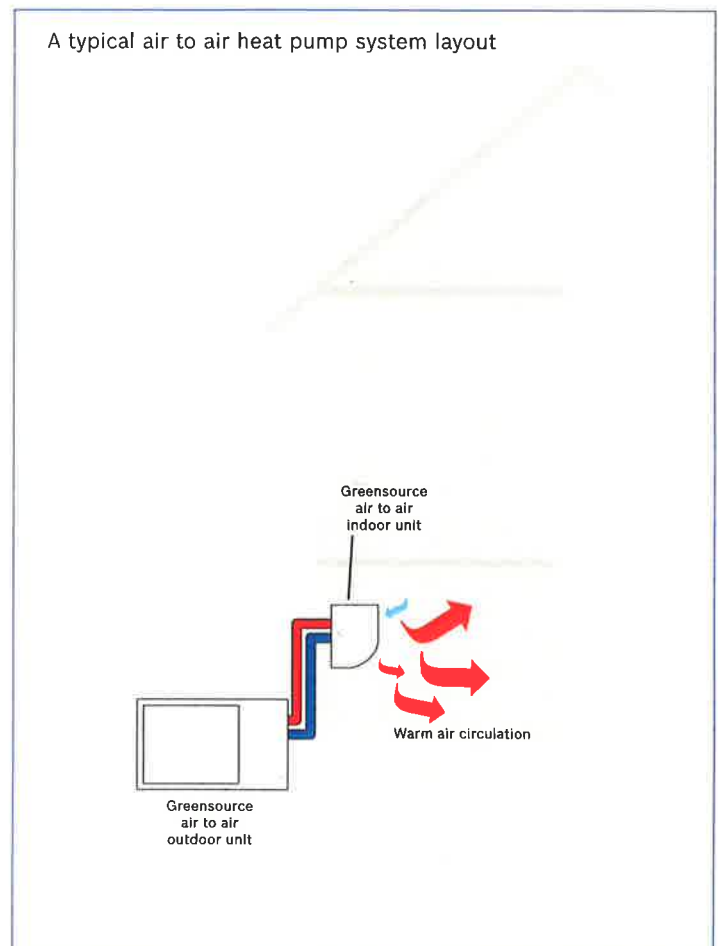


Warm air distribution in heating mode to prevent draughts



Cool air distribution in cooling mode

A typical air to air heat pump system layout



Please note: these products can only be purchased as a package and will not operate independently

Useful numbers

Consumer Helpline (Pre & Post Sales)

Tel: 0844 892 3366

Fax: 01905 752741

Renewables Technical Helpline

Email: renewable.energy@uk.bosch.com

or telephone 0844 892 4010

Literature

Email: literature@uk.bosch.com

or download instantly from our website

or telephone 0844 892 9800

Customer Service

Engineer Appointments

Email: appointment.worcester@uk.bosch.com

or telephone 0844 892 3000

Enquiries

Email: service.mailbox@uk.bosch.com

or telephone 0844 892 3000

Guarantee Registration

To register your Worcester guarantee,

please visit our website or

telephone 0844 892 2552

Calls to the listed 0844 numbers are charged at up to 3 pence per minute from BT land lines.
Calls from mobiles and some other networks may vary. Calls to and from Bosch Thermotechnology Ltd
may be recorded for training and quality assurance purposes.

www.worcester-bosch.co.uk



In partnership with



energy saving trust™



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