



SECTION

Proposed Earth Sheltered Dwelling
on Land Adjacent to
Homelands, Eugate Road, Whaplode Drove,
Spalding Lincs PE12 OSP

Drawing Title : Proposed Section
Client : Mr S. Jeffs
Date December 2018
Scale 1 to 100 at A3 Landscape
Drawing No JDA/2018/175.SECT.001



Stabalised Gravel Driveway



AIR SOURCE HEAT PUMPS

It is proposed to install 2no Air Source Heat Pumps - they will be located in the hardstanding areas shown
The units will be Mitsubishi Ecodan single phase PUAZ-W85VHA2 or equivalent.

SOUND PRESSURE LEVEL AT 1M (dBA) - 45The system will provide hot water and heating and, in summer months can be switched to provide cooling.

The GSHP Installation will comply with the Domestic Building Service Compliance Guide - Dept for Communities and Local Government 2001 and BS EN15450 Tables C1 & C2 with a Seasonal Performance Factor (SPF) of at least 2.7.

The heating system is to be underfloor with water supply temperatures in the range of 30c to 40c. The Coefficient of Performance (CoP) is to be not less than 2.2 for space heating and 2.0 for domestic hot water. The Seasonal Performance Factor will be no worse than as described in Table C1 of BS EN 15450. The system will meet the minimum requirements for installation and controls in Table 35 for heat pumps.

The water distribution system is to be arranged for reverse return operation or arranged with a low loss manifold system to maximize efficiency and ease commissioning and future maintenance. Pipework not contributing to the space heating system will be insulated to prevent heat loss. External pipework between the unit and the house to be insulated to the TIMSA Guide. The internal water distribution circuit should be protected by an anti freeze solution as recommended by the GSHP manufacturer.

For full heating, the GSHP and any supplementary domestic HW heating should be capable of supplying water in the range of 60c to 65c. The domestic hot water (DHW) system should include a tank thermostat and a time clock to optimise the time taken to heat the water.

Heat pump unit controls to include :

1. control of water pump operation (internal and external)
2. control of water temperature for the distribution system
3. control of outdoor fan operation
4. defrost control of external airside heat exchanger
5. protection for water flow failure
6. protection for high water temperature
7. protection for high refrigerant pressure
8. protection for air flow failure

External controls to include :

1. room thermostat to regulate the space temperature and interlocked with the heat pump operation
2. timer to maximize the operation of the heat pump

ON - SITE UTILITY BATTERY STORAGE

The renewable energy captured by the solar array will be stored in a Lithium Utility Battery - circa 6.4 kWh with 3.2kWh expansion pack - by LG or similar. This asset will be located in the extended barn.

Voltage Range : 45.2 V ~ 58.1 V
6000 cycles at 90% DoD (+25°C)
Maximum discharge current 110A
Nominal voltage (DC) 51.8V
Cooling via natural convection

Excess electricity will be exported to the Western Power mains system in Eugate Road via a 'two way Meter'. The connection will also provide emergency power back.

SOLAR ARRAY

A circa 30 sq m South facing photovoltaic array is proposed - see below.
The output from the array will be in the order of 4kW - 3,500 kWh. CO2 saved overt 25 years = 40 tons plus.



NOTES

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The Contractor is to check all dimensions on site and report any discrepancies PRIOR TO commencing work.

All details shown on this drawing are based upon typical site conditions related to the area. No responsibility can be accepted for abnormal conditions unless they have been reported in detail so that design amendments may be considered.

All works and materials are to be in full accordance with current British Standards, Building Regulations, Agreement Certificates and Manufacturers printed instructions.

All Building Regulations inspections are to be carried out at the appropriate stages of work.