



Department for Environment and Community Services

Memorandum to: Jonathan Ryan

from: Mark Letcher

Cc: Nicola Melville

Date: 08-04-2022

Your Reference: PI Ref: P22/01300/O

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Response from Environmental Policy and Climate Change Team

Site: Land At Sodbury Road Wickwar South Gloucestershire GL12 8PG

Proposal: Erection of up to 180 dwellings, a local shop and associated infrastructure (Outline) with access to be determined; all other matters reserved.

Comments

Fabric efficiency: With the exception of Insulation at Joists (U-value $0.11\text{W/m}^2\cdot\text{K}$) the U-values of other key elements (including external walls) are significantly higher (i.e. worse) than values regarded as indicative of very low carbon design (see below) and in the case of the ground floor and external walls are only a marginal improvement on Building Regulation requirements. (The proposed value for Insulation at rafters is worse than value set in the Building Regulations.

- Walls 0.13 - 0.15
- Floor 0.08 - 0.10
- Roof 0.10 - 0.12
- Exposed ceilings/floors 0.13 - 0.18
- Windows 0.80 (triple glazing)
- Doors 1.00

I strongly encourage the applicant to review the specification and improve the fabric U-values as the simplest and most cost effective means of permanently reducing energy demand and energy running costs in this scheme.

Reducing air permeability to $3\text{m}^3/\text{m}^2\cdot\text{hr}$ @50Pa and the specification of whole-house MVHR is also encouraged.

Heating and hot water: The specification of gas fired boilers is particularly disappointing in the current climate of steeply rising energy prices and widespread availability of higher efficiency renewable heat alternatives – air and ground source heat pumps. Heat pumps have a seasonal efficiency 2 to 3 times higher than gas boilers.

The government has stated that the sale of new gas boilers will end in 2035. This means that householders will be faced with the cost and disruption of retrofitting renewable heating - which could have been installed from the outset - once the gas boilers come to the end of their operational life.

Currie and Brown estimate retrofit costs for heat pumps to be in the order of £9000 to £26,000 (2019 prices) depending on the level of additional improvements required to fabric efficiency¹.

In addition to replacement of the boiler, retrofitting may require replacement of radiators, and secondary pipework (to accommodate higher flow rates). Where gas combination boilers are specified, space will be required to accommodate a domestic hot water cylinder.

The Energy Statement refers to heat pump trials by the University of Ulster, and reliance on immersion heaters. I am not sure to which study this refers but if it is the paper by Abid et al, 2021² the comparison is not valid as the Ulster paper considers heat pumps retrofitted into mid 1900's terraced dwellings in Belfast. Where heat pumps are correctly specified, sized, installed, and commissioned in new dwellings the immersion heat should only be required as back up in case of breakdown.

I strongly encourage the applicant to revise their heating and hot water strategy and specify renewable heating for this scheme.

Should the heating strategy remain unchanged I recommend including the following advisory wording in the decision notice:

The dwellings in this development are planned to be heated by gas boilers. Purchasers should be aware that from 2035 the government intends to phase out the installation of new natural gas boilers. Purchasers should seek independent advice regarding the likely costs of updating the heating systems and necessary structural alterations to accommodate modern zero carbon heat sources such as air source heat pumps.

¹ [The costs and benefits of tighter standards for new buildings \(Currie & Brown and AECOM\) - Climate Change Committee \(theccc.org.uk\)](https://theccc.org.uk)

² Domestic Retrofit Assessment of the Heat Pump System Considering the Impact of Heat Supply Temperature and Operating Mode of Control—A Case Study, Abid et al, 2021

On-site renewables: The proposal to install roof-mounted PV is supported.

I encourage the applicant to maximise PV on dwellings according to unshaded roof area of suitable orientation to minimise demand for grid electricity and energy running costs.

Provision of internal space for internal battery energy storage is also encouraged.

Further details of PV will be required at the subsequent stages of the planning process. These can be secured by condition if necessary.

Reduction in residual emissions: Figures demonstrating compliance with PSP should be summarised in Energy Table 1 available here: <https://beta.southglos.gov.uk/static/f64e0a9ef3980cd90a0177fb917d9e2e/Energy-in-Planning-Applications-V6-18072019-web.pdf>

From the information presented in section 10 of the Energy Statement the reduction in residual emissions appears to have accounted for regulated emissions only and excluded unregulated emissions. As set out in the guidance above and Energy Table 1, the reduction in residual emissions is based on regulated and unregulated emissions.

As proposed the scheme does not comply with PSP6.

Please amend the calculations and resubmit.

Please note that renewable heating (ASHP and GSHP) count towards the reduction in residual emissions required under PSP6.

Climate adaptation and resilience to over-heating: I would like to request assurance that the scheme will not be liable to overheating over the lifetime of the development.

This should be demonstrated using dynamic thermal modelling of dwellings under current and future weather files (2020, 2050 and 2080) assuming a 60-year design life.

The assessment of overheating risk should be made using a recognised methodology such as CIBSE TM59 or appropriate equivalent.

Where 'fails' are identified these should be addressed through amendments to the design.

We strongly encourage the use of fixed and moveable shading to reduce solar gain and the use of green infrastructure to provide cooler external spaces and seasonal shading.

EV charging: Details of EV charging provision should be included in the Energy Statement or a link/reference provided if these are provided in other submissions.

The applicant is encouraged to meet SGC's emerging policy and provide one charge point per dwelling with suitable provision (ducting and cabling) to allow a charge point to be added in the remaining spaces.

Charge points should have a minimum power output of 7kW.

The power supply to the scheme as a whole should have sufficient capacity and headroom to accommodate heat pumps and EV charging across the scheme.