



**Inquiry into Sustainable Construction and the Green Deal – Call for Evidence
3rd January 2012**

Introduction

As the world leader in designing, manufacturing and distributing construction materials, Saint-Gobain is committed to meeting some of the fundamental challenges faced by the world today: reducing energy consumption, limiting our impact on the environment, and creating a new generation of buildings which are safe, comfortable and energy efficient. It employs over 190,000 people, 17,200 of which are in the UK and Ireland, and operates in 64 countries.

Globally we spend over £350 million every year on R&D and have a network of R&D centres which employ 3500 researchers.

In the UK and Ireland, some of the best known and respected companies in the construction sector are part of the Group, including British Gypsum, Isover, Glassolutions, Weber, Saint-Gobain Glass, Celotex, Saint-Gobain PAM, Jewson, Graham and Ecophon. They operate from a network of over 1000 distribution sites and 80 manufacturing plants. Together they offer a range of high performance energy-saving products and solutions to help create a more sustainable built environment. The comprehensive product range spans glass and glazing products, building insulation (exterior, cavity, loft and internal wall), timber products, plasterboard and drylining systems, photovoltaic glass, water supply systems, solar solutions and many other building products.

Saint-Gobain strongly supports the Green Deal and its aims to tackle climate change and fuel poverty, and is working to ensure its success.

The response below is being submitted on behalf of Saint-Gobain's Glazing businesses in the UK.

Evidence of Best Practice – Using Modern Low-Emissivity Glass to Upgrade Existing Windows

It is generally accepted that a fabric-first approach is the correct strategy for improving the built environment in the UK – it is relevant for both private dwellings and commercial buildings. The Green Deal strategy is based on this premise, which we support.



Glass and glass sealed-units fitted into windows have a significant role to play in achieving an effective building fabric – and as a consequence reduce energy consumption and reduce carbon emissions.

The thermal insulation performance of existing windows can be significantly improved by replacing just the original old and poorly performing glass sealed-units, rather than replacing the complete window frame – the existing PVC-u frame is retained in the building. The benefits of doing this are:

- Modern glass sealed-units with the latest generation of energy saving low-emissivity coatings can be fitted. There is an enormous difference between the u-value of modern glass sealed units compared to that of glass sealed-units fitted before the Building Regulations were changed in 2002 (typically 2.7 u-value compared to 1.0 u-value).
- Much lower cost of replacing just the glass sealed-units compared to replacing the whole window.
- Quicker payback – the cost of replacing the glass sealed-unit is paid back in approximately 8 years on an average home.
- The existing window frame is saved – which is a significant sustainability benefit.
- The old glass removed can be recycled.

Some social housing providers are already upgrading existing PVC-u windows in this way.

The hinges, locking systems and weatherseals of windows are typically renovated at the same time as the replacement glass sealed-units are fitted; drafts around windows are therefore reduced which further improves energy performance and insulation.

More social housing providers and private home owners should be encouraged to do the same under the mechanism of the Green Deal and Energy Company Obligation.

It must be stressed that modern high-performance glass sealed-units have a significantly higher level of insulation performance compared to glass-sealed units fitted just a few years ago, despite the fact that they typically look very similar.

Why This Matters.

There are close to 13 million homes in the UK (including 2.5 million in the social housing sector) with PVC-u windows fitted before 2002 – these windows are typically G-Rated windows with a 2.7 u-value.



An average house can save over £200 in their energy bill if the windows were upgraded to A-rated equivalent 1.5 u-value windows.

This £200 saving equates to 377Kg of CO₂ saved per house per year. If the 13million homes were upgraded in this way it would save 4.85million tonnes of CO₂ per year, equivalent to 2% of the UK output of CO₂ from buildings.

Based on industry figures for the cost of installing glass sealed-unit upgrades, it costs £4.25 per Kg of CO₂ saved in just the first year, which represents 'good value-for-money' in terms of carbon saving.

When the CO₂ savings across the 8 year payback period are considered, it costs £0.53 per Kg of CO₂ saved.

Modern glass sealed-units have an expected lifespan of at least twenty years – the energy and carbon saving over that period is clearly much greater than these figures quoted.

The BRE scoping study on the life expectancy of windows states that PVC-u windows have a lifespan of at least 35 years as long as the glass sealed units are replaced and the weather seals, hinges and locking systems are maintained; it therefore makes logical sense to upgrade the performance of the windows during their lifetime.

Barriers - Green Deal and Energy Company Obligation (ECO)

The Statutory Instrument covering the calculation of ECO points makes the assumption that all existing windows are C-rated. This is obviously not the case and consequently the UK is missing out on a cost-effective simple and quick way to reduce CO₂ emissions and improve the sustainability of the existing building stock.

The Statutory Instrument should be changed to reflect the actual performance of existing windows and also rectify the inconsistency between the methodology between ECO and Green Deal.

Existing windows in the UK housing stock are unlikely to be upgraded in this way unless the Statutory Instrument is changed; the market will not do this without help.

The identification of the current installed product performance and SAP calculation method/data used are also issues. Within RdSAP there is an acknowledgement that not all glazing is the same. Glazing is classified into either "single glazing" or "multiple glazing". Multiple glazing comprises pre 2002 double glazing, post 2002 double glazing, secondary glazing or triple glazing. Differentiating between old and new double glazing is a problem for assessors. This could have led to the judgement



in Appendix T that double glazing is only to be considered when the existing dwelling has single glazed windows present. Windows would then be only recommended if double glazing comprised less than 50% of the glazing in the property. There is a significant opportunity to cut carbon through replacing old pre-2002 double glazing with new high-performance double glazing as discussed, but these issues with the assessment need to be addressed.

Take-up of Green Deal

Evidence exists that homeowners want windows and glazing to be part of Green Deal and ECO funded measures, at the moment legislation in restricting the ability of the glazing industry to contribute to the effectiveness of the fabric-first approach. This is again inconsistent.

We recently conducted four focus groups, which (among many other things) determined attitudes towards the Green Deal among consumers. Findings showed that awareness was non-existent and needs to be rectified to get any sort of take-up. Consumers were interested in the proposition, but upon explaining the Green Deal, many did appear to be most concerned about buying/selling homes with Green Deal loans attached to them.

Key Points:

- The performance of existing windows can be significantly improved, and at much lower cost, by replacing just the glass
- If the potential 13 million homes were improved in this way it would save 4.85 million tonnes of CO₂
- The 'barrier' to achieving this is the ECO calculation methodology as required by the Statutory Instrument as currently worded.

Further Information

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