



Scottish Government Building Standards Division
Almondvale Business Park
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Livingston
West Lothian EH54 6GA

2 October 2009

Dear Sirs

Proposed amendments to the Building (Scotland) Regulations 2004: A Review of Guidance in the Technical Handbooks on Section1: Structure

Proposed amendments to the Building (Scotland) Regulations 2004: A Review of Guidance in the Technical Handbooks on Section 6: Energy; Reducing Co2 Emissions and Energy Demand (incorporating minor changes to Section 3: Environment; Ventilation Guidance)

Building (Scotland) Regulations 2004: Compliance

Introduction

Homes for Scotland is the representative body of the Scottish homebuilding industry, with over 200 full and associate members. Its members build around 95% of all new homes for sale built each year, as well as a significant proportion of the affordable housing output annually. Homes for Scotland makes policy submissions on National and Local Government policy issues affecting the industry, and its views are endorsed by the relevant local committees and technical advisory groups consisting of key representatives drawn from within our members.

We recently received copies of the various Consultation documents noted above together with an invitation to submit a response on behalf of our Members. Homes for Scotland welcomes the opportunity to comment on these documents. Homes for Scotland would be happy to discuss further any of the issues raised in this response. It also wishes to be kept advised of the process of taking these consultations forward together with the full timescales of their anticipated implementation.

The purpose of this correspondence is to set out the industries wider views on this policy agenda beyond those specific consultation questions, as set within the consultation framework, each of which have been answered in detail.



For the avoidance of doubt the house building industry is fully supportive of the sustainability agenda, particularly the need to reduce energy consumption together with controlling or limiting further growth in Carbon emissions, which clearly are major contributors to climate change. However for the reasons outlined below, we believe that a relaxation of the pace of change within Scottish Governments policy in these areas is a necessary step at this time to enable a return to sustainable economic growth and for important developments or regeneration projects to continue to progress.

The industry's performance

The house building industry is leading the way in achieving reductions in CO2 emissions within its product range. This has been achieved in no small part by constantly improving and regularly reviewed Building Standards throughout the last twenty years.

Recent research by the Scottish Government –“Comparison of the level of CO2 emissions from buildings built in 1990 and 2008” – BRE - confirmed that average CO2 emissions from new dwellings are already 61% less in 2008 than was the case in 1990 - the base year against which all current carbon reduction and climate change policy targets have been set.

Therefore, clearly the new house building industry is currently achieving very high standards and has already made significant progress toward low carbon policy targets in comparison to almost all other industry sectors.

The current economic climate

The house building industry has been at the forefront of the dramatic impact of the credit crunch with a national reduction in sales to about half of its previously normalized trend levels. Huge jobs and skills losses have been incurred as a result.

National targets set by Scottish government (35,000 new homes per year by the middle of the next decade) are not likely to be realized for a considerable period of time. Indeed Homes for Scotland has predicted that to return to previous trend levels (25,000 per year) could even take until 2025 (at 5% compound growth /year). This will be predicated on a return to more freely available mortgage finance, but crucially, isn't likely to be subject to the kind of year on year double digit house price inflation trends that have characterized the last sixteen years.

Average house prices, especially those related to new build homes, have been significantly falling throughout the past eighteen months and whilst early signs of stability in the market are now appearing the industry is by no means in full recovery mode yet. Therefore for the foreseeable future the industry's focus will simply be on re-growing baseline supply, and meeting consumers expressed core needs, in a trading environment where affordability (in its widest sense) is significantly constrained.



Costs

At present most house builders are still to construct houses which comply with even the current 2007 regulations, and as such, we have still to test what impacts those extra costs will have on overall sales and project viability. Costs to achieve these proposed new standards are predicted by Scottish Government to add approx within the range of £3,000 to £8,000 onto the build costs for each and every new build home. It is interesting to note that these costs will also apply to the publicly funded “Affordable Housing Investment Program” and to our knowledge this has yet to be factored into Scottish Government budgets from 2010 onwards.

It is simply not possible for the industry to absorb costs of this magnitude at present.

Especially is this so when projects of this nature are also additionally burdened with developer contributions for education, affordable housing and the like which are constantly being added to by rampant or over exuberant Local Authority sponsored supplementary planning guidance.

Consumers are demonstrably not willing at present to incur a premium for low carbon living, or “bolt-on renewables”, which at present offer little in the way of pay back, may prove difficult to understand and operate, or are untried with regards to long term performance and maintenance. Property valuations undertaken for mortgage lenders have also been tightened with new properties no longer achieving any “new build premium” and a view being taken that energy saving equipment will not add value to the property.

This leaves the house builders involved with no mechanism to recover the significant additional costs incurred, which will inevitably lead to a substantial reduction in housing supply as a legitimate reaction if this particular circle can't be squared.

In this context the industry is already facing a significant challenge to comply with the next planned change in standards. So whilst supporting environmental and climate change enhancements in principle, it is seeking to challenge the timing of the implementation of the standards. The industry requires breathing space to adopt these onerous standards and as such the need for them should be delayed until more stable and viable economic conditions return for the industry.

Building Standards & The Sullivan report – “A low Carbon Buildings Standards Strategy for Scotland”

The new standards follow the route map as laid out in the Sullivan Report and will seek to improve current standards broadly speaking by another 30% reduction in CO2 by October 2010.

One of the many recommendations of this report was:



“That the requirement for on-site low and zero carbon equipment should be reviewed and probably removed from the Scottish Planning Policy 6 (Renewable Energy) as the very low standards are introduced in 2013”.

Another recommendation was:

“That the energy standards for buildings should only be set at national level under the building regulations”.

These recommendations were particularly welcomed by the industry and seen as a sensible way forward. However, we would propose in light of the current economic climate and the unprecedented conditions that house builders find themselves in, that these recommendations should be accelerated and implemented now to remove unrealistic or unduly onerous additional local planning obligations over and above the stretching targets already contained within the proposed Building Standards.

Is new build the only answer?

The high levels of CO2 reduction already achieved, the impending change in building standards and the inability to absorb any further immediate rise in costs questions the role of the new build house in achieving the overall carbon reduction and Climate Change targets set by Scottish Government within this key policy area. New build is already performing at a high level in comparison to the existing built environment and has a clear route forward regarding higher standards. For the reasons outlined above, annual new build supply is likely to remain constrained below 1% of the existing built environment for a considerable period of time to come.

Therefore much greater emphasis needs to be placed on systematically improving the carbon performance and energy efficiency of existing dwellings.

Further enhancements applying only to new build homes as proposed under these consultations will only marginally reduce Scotland’s overall carbon footprint and may in the process delay the provision of essential new housing to meet both private and social needs.

As an alternative strategy there may be merit in exploring with the industry an approach where rather than a house builder incurring very high costs to achieve a marginal improvement in limited new build stock they contribute towards the improvement of existing housing stock in the immediate area where more efficient and easy to deliver carbon emissions reductions can be achieved. This would also thereby assist in the realization of the Scottish Governments overall Carbon emission reduction targets across the whole of the residential built environment, (arguably to even better or quicker standards), where bigger reductions in CO2 would be achieved with much less significant per unit costs.



Conclusion

In summary, in an attempt to assist a beleaguered industry and to facilitate progress with the construction of much needed new housing, particularly family and affordable housing, the Scottish Government would do well to seriously consider the very real and substantive progress already made by the home building industry in reducing the Carbon footprint of its products to date, and as a result, slow down or significantly reduce the speed with which it moves to implement very low carbon new homes.

I look forward to your response and I am available to meet to discuss any aspect of this letter or our associated consultation responses that you may consider to be appropriate.

Yours

A handwritten signature in black ink, appearing to read "Jonathan Fair".

Jonathan Fair
Chief Executive
Homes for Scotland

improving living in scotland



**RESPONSE TO SCOTTISH GOVERNMENT CONSULTATION ON
PROPOSED AMENDMENTS TO THE BUILDING (SCOTLAND)
REGULATIONS 2004: A REVIEW OF STANDARDS AND GUIDANCE
IN THE TECHNICAL HANDBOOKS ON SECTION 6:
ENERGY; REDUCING Co2 EMISSIONS AND ENERGY DEMAND
(INCORPORATING MINOR CHANGES TO SECTION 3:
ENVIRONMENT; VENTILATION GUIDANCE)**

Reducing carbon dioxide emission and energy demand in new buildings - proposed amendment of the Building (Scotland) Regulations 2004 and accompanying standards and guidance within Section 6: Energy and Section 3: Environment of the Building Standards Division Technical Handbooks.

Consultation Questions - Specific issues where comment is requested.

This proposed revision to Section 6 (Energy) and guidance to standard 3.14 in Section 3 (Environment) retain the familiar layout, structure and current methodologies introduced in May 2007. Accordingly, guidance is updated or expanded only where required to assist in the delivery of improved building performance.

Note that to avoid duplication of responses, questions are arranged in three sections – those relevant to all buildings, followed by questions relevant only to domestic or to non-domestic buildings.

Consultees are invited to respond on any aspect of the proposals and space for this is provided at the end of this document. However, Scottish Ministers would welcome specific comment on the following issues within proposals.

ISSUES RELEVANT TO ALL BUILDINGS

The following questions are relevant to all buildings, Domestic and Non-domestic. References to standards and guidance are given with the prefix D or ND to indicate the location of relevant text in the consultation document.

Q.1 Review of current UK methodologies and National emission factors

As noted in the introduction to Annex B of this consultation, the Scottish Government will be maintaining dialogue with the UK Government on the review of SAP 2009, National fuel emission factors and the review of the SEDBUK scale. Consultees are invited to share any comments they have on the DECC review as this relates to Scottish building standards and guidance and within standard 6.1 in particular.

Q.1 Are there any issues arising from the DECC consultation that you wish to highlight relative to this review? Yes No

Comments:

There has not been a sufficient time limit to allow a thorough examination of the proposed SAP 2009 software or the impact this will have on incorporation of new systems, technologies etc reflecting Scottish Building Standards.

The following additional issues should also be considered within the software: the linkage with effective passive cross and mechanical ventilation, solar management, potential use of new smart metering and recognition of adaptive comfort to suit seasonal changes.

Q.2 6.2.1 D & 6.2.1 ND – Guidance on thermal performance of cavity separating walls

Research has identified that previously unanticipated heat losses can occur through cavity separating walls between buildings unless action is taken to limit air movement. This issue is being addressed within revisions to the UK calculation methodologies and revised guidance on limiting heat loss in such constructions will be provided within the Technical Handbooks.

Given that information on both the extent of this issue and the degree to which it can be mitigated by construction solutions is still being gathered, comment from consultees is welcomed.

Q.2 Do consultees wish to offer comment on this issue? Yes No

Comments:

It is proven that heat loss occurs at these junctions, however the loss is substantially lower with timber frame dwellings than with conventional masonry built properties. We would recommend the introduction of a separate default value for timber frames within the calculations.

We wish to highlight the rather complicated and specialist knowledge needed to apply specific Y values, when modelling heat loss calculations through junctions. If this requirement remains then consideration must be given to educating/training designers in these specific respects.

A more straight forward way of dealing with this issue would be to incorporate appropriate covering Y value factors within Approved Accredited Construction Details.

Q.3 6.2.3 D & 6.2.5 ND – Use of ‘Accredited Construction Details’ – determining Y-value.

For low-rise domestic buildings, or non-domestic buildings using similar forms of construction, previous guidance included the option of ascribing a design Y-value of 0.08 within SAP or SBEM for heat loss from non-repeating thermal bridging, where it could be shown that the recommendations within the ‘Accredited Construction Details’ (ACD) document are followed.

It is proposed that a simple approach be retained but that, instead of a single default value, the Y-value should be calculated using the lengths of each thermal bridging element and Ψ (psi)-values for individual junction details, as set out in a revised ACD document. This will provide a more representative value for heat loss through non-repeating thermal bridging and also encourage more understanding of the principles involved in both design and construction of buildings to address this issue.

Q.3 Do consultees agree with this approach? Yes No

If no, please give your reasons:

Q.4 6.2.3 D & 6.2.5 ND – ‘Accredited Construction Details’ – revised guidance document.

The Accredited Construction Details document, used primarily for domestic buildings, will be revised to provide better information on both the principles behind limiting non-repeating thermal bridging and air infiltration and on how these can be applied and demonstrated to allow specified performance levels to be claimed. The focus is now more on application of principles in both design and construction and less on use of specific details.

A draft of the revised introduction to the document forms an annex to amended domestic guidance and comment on the form and content of the document are invited. It is intended that the option of a simple approach to these construction issues should be retained, focussing upon explaining clearly and concisely what needs to be considered to allow designer, builder and verifier to apply and assess these principles successfully and address heat lost in this manner whilst also addressing the related issue of condensation.

Q.4a Does this document clearly explain the issues which have to be addressed? Yes No

Q.4b Does this document give clear guidance on how to address those issues? Yes No

If no to either of the above, please identify where improvement should be made. General comments are also requested.

The accredited details as design principles in this format are acceptable, however there are a number of issues with the details themselves which require further clarification, and cross referencing with other guidance would be advantageous. It is imperative that the Accredited Construction Details (ACD) reflect current industry practice.

Example: The use of insulated cavity closers at vertical window jambs in timber frame construction could lead to fixing issues with the windows themselves.

Furthermore, the ACD's only currently address heat loss at junctions in framed buildings and should be extended to address other forms of construction.

Q.5 6.2.5 D & 6.2.7 ND – Airtightness testing as an aid to determining compliance.

To assist in determining compliance with both energy standards and ventilation provision, guidance for 2010 proposes the introduction of sample airtightness testing for all new buildings.

Q.5 Do consultees consider the recommendations given on testing regime, advice on test method and on those who should carry out testing are appropriate? Yes No

If no, please give your reasons:

Note: Current evaluations in the majority of the new build in Scotland, namely timber frame construction has highlighted that low air permeability can be achieved. From the consultation, further guidance is required on the impact of different types of construction to any testing regime, as at the moment determination is very much verifier dependant.

As building fabric insulation levels improve, heat loss through gaps in the building envelope becomes proportionally greater.

- 1) Dwellings built in Timber frame to the Accredited details generally achieve 5 – 7 m³/m² h @ 50pa
- 2) If stated that a dwelling is not built to the Accredited details then the air tightness assumes the increased default value of 15m³/m²h @ 50pa. This position will unfortunately penalise the SAP calculation heavily and make compliance more difficult.
- 3) Whilst it is possible to achieve air infiltration rates less than (status 1) i.e. less than 5 m³/m² h @ 50pa this may benefit the energy performance calculation but is likely to introduce problems for the occupants or the building fabric and as a result additional measures need may to be introduced to supply fresh air into the dwelling.

Where either status 1) or 3) is to be adopted then air tightness testing will be required on one in every 20 dwellings. Unfortunately it is also being suggested that in large developments it is advisable to test one example of *each* dwelling type being completed at different stages in the overall development. In our view this is unnecessary, costly work (the anticipated cost of air testing is to be around £300 - £400) because it is the workmanship that is being tested, and not the house type design.

With reference to 3) above, clarity is requested on what might happen if the test indicates results that fall below 5 m³/m² h @ 50pa, e.g. in this instance where an unexpectedly air tight building has been produced, will the developer be expected to retrofit mechanical ventilation to deal with potential indoor air quality problems or to artificially decrease the fabric, such as by installing air bricks?

Inclusion within the technical standards of examples of the type of people, organisations

and qualifications that are deemed acceptable for testing would also be very helpful.

Q.6 Standards 6.3 to 6.6 Domestic & Non-domestic – specification of equipment efficiencies and controls.

Following the principle adopted in 2007, recommendations on efficiency and controls for building services in guidance to standards 6.3 to 6.6 reproduce information, developed for the building service compliance guides which support building regulations in England & Wales. Recommendations prepared by the Department for Communities and Local Government (DCLG) follow discussion & development with UK industry. The intent remains to provide a consistent set of performance recommendations, representative of practices achievable within the current UK/European manufacturing base.

Q.6a Standard 6.3 - would it be beneficial to have guidance on any other forms of heating provision? Yes No

If yes, please give details:

Micro CHP systems which are not presently listed within SAP Appendix Q.

There are other new technologies that are still progressing through initial development testing but none the less even at this early stage are proving to be encouraging. If continual improvement and innovation are to be encouraged by the Government with renewable technologies then further research and recognition within SAP for these new products, working in tandem with manufacturers, suppliers etc, are essential.

Q.6b In addition to specific questions identified under these standards, comment on any aspect of the revised information presented in proposals is welcomed.

Comment:

Q.7 Standard 6.6 Domestic & Non-domestic – Mechanical ventilation and air conditioning

[note this issue is related to Q.18 (clause 6.1.8 ND) on target setting for non-domestic buildings]

Current Non-domestic guidance addresses system efficiency for air conditioning and non passive cooling technologies, whilst similar guidance is proposed for domestic buildings. Guidance in clause 6.6.1 offers advice on use of design solutions to mitigate the need for cooling. However, such solutions are less applicable when dealing with existing buildings. There is a view that more should be done to encourage low energy and passive cooling solutions, particularly with a Scottish climate which, alone, generates little need for cooling.

Q.7 Where cooling needs cannot be mitigated by other means, should this standard also consider guidance to limit the intensity of energy used for cooling? Any such guidance would be in addition to provisions made to meet standard 6.1. One example suggested is that cooling load (above a defined threshold) is offset by an equivalent capacity for on-site generation of electricity using Low Carbon Equipment (LCE). Yes No

If yes, what mechanisms might be appropriate in this respect and what parameters might be applied?

Q.8 Standard 6.6 – Mechanical ventilation and air conditioning. Guidance on ductwork design & installation.

The design of the ductwork can be a significant factor in the efficient operation of a ventilation system. Currently, this issue is not addressed in guidance to standard 6.6, other than recommendations on maximum pressure drops for non-domestic installations.

Q.8 Would consultees consider it beneficial for brief guidance on the design and installation of ductwork to be included in the Technical Handbook? Yes No

If no, please give your reasons

Q.9 Mechanisms for improving the energy performance of existing buildings when new building work is being undertaken

Details of these proposals, set in the context of wider policy development to address improvement in the energy performance of our existing building stock, can be found in Annex D of the consultation package, where these questions are also repeated.

Q.9a Principle of requiring improvement triggered by building works Yes No

These proposals introduce the principle of requiring additional improvements to the energy performance of an existing building, with new building work acting as a trigger. Do consultees agree with this premise?

Please comment on your choice.

Clear and concise information will require to be produced in order to make homeowners aware of the requirements for upgrading existing buildings.

Q.9b. Equitability Yes No

Do consultees agree that the mechanisms proposed for improving the energy performance of existing buildings when new building work is being undertaken are equitable and in the spirit of the Sullivan Report recommendation?

Please comment on your choice:

The principle of the upgrade of the existing stock is indeed adequate and equitable assuming that the necessary notice and guidance is given as noted in 9a above.

Q.9c. Extent of proposed improvements Yes No

If consultees agree with questions 1 and 2, are you content with the measures proposed?

If not, please give details of your concerns:

ISSUES RELEVANT TO DOMESTIC BUILDINGS

Q.10 Standard 6.1 - Emissions standards for smaller dwellings

Whilst recommending a 30% saving in carbon dioxide emissions, The Sullivan Report expressed concern over the effect such improvements might have on the affordability of certain house types, notably small flats purchased by key-workers and first time-buyers.

Q.10 In recognition of this, should guidance be considered on the application of a smaller emissions reduction to such dwellings in 2010? Yes No

If yes, please give your views on what size or form of dwelling should qualify for such a reduction and what amendment of current proposals might be appropriate:

We support this proposal in recognition of the disproportionate cost of achieving carbon reductions on house size/types, especially starter homes or smaller house sizes and types, particularly for the first time buyer market.

It is much more difficult and expensive to incorporate low carbon equipment/renewables into these house types. A more realistic target, for example, would be a 15% reduction which could be achieved using more passive design.

Q.11 6.1.2 – Fuel package tables (secondary heating).

In current consultation proposals, the application of default secondary heating (10% electric unless otherwise specified) when calculating Target Emissions Rate (TER) is maintained. On the basis that modern homes no longer require secondary heating, such a provision seems unnecessary and also misrepresents CO₂ emissions associated with new homes.

It is suggested that the application of a default 10% electric secondary heating is removed from both the target and design calculation. Accordingly, secondary heating would only be identified in target setting for oil and LPG fuels as a means of mitigating the TER and, in design (under clause 6.1.3), use of secondary heating would be solely at the discretion of the applicant.

Q.11 Would consultees agree with this approach? Do consultees w Yes No

If not, please give your reasons:

The removal of a default 10% electric secondary heating value would inhibit calculations and therefore would not be supported as the threshold to be achieved would be at a higher level.

Q.12 6.1.2 – Fuel package tables (solar thermal specification).

The setting of the Target Emissions Rate in each fuel package now incorporates an element of low carbon equipment. Recognising the need to promote reduction in energy demand for hot water, the element specified is a solar thermal installation. For consultation purposes, the same area of solar panel is applied, regardless of dwelling size.

Q.12 Should this element be revised to be proportionate, providing a greater contribution to reduce TER in larger dwellings, where the number of occupants will generally result in greater hot water demand? Yes No

If yes, please give your views on how the varying size of the installation might reasonably be determined:

Calculation of water usage per person in volume terms should be easily determined based on bed space / accommodation standards. This should be calculated by the volume of hot water usage by person. This should be easy to calculate from bedroom accommodation and space standards.

We do not believe that only solar thermal LCE should be used, alternatives can be adopted which provide the same result, including exhaust air heat pumps, heat pumps and GSHP. The industry would encourage energy efficiency as a first step through pushing the fabric performance as far as is practical and cost effective. This reduces energy demand in the first place. In addition to this encouraging user changes in energy efficiency will yield greater benefits, before we begin a programme of offsetting inefficiency with Solar energy solutions which may not be best placed for the Scottish climate.

Q.13 Clause 6.1.6 – A simplified approach

The fuel package tables in clause 6.1.2 provide a package of measures that, if followed, are considered to achieve compliance with standard 6.1 without the need for a SAP calculation and TER/DER comparison. Clause 6.1.6 details how this option should be applied. It is proposed to retain this simplified approach in guidance, allowing circumstances where use of SAP is not required to demonstrate compliance with standard 6.1.

Q.13 Do consultees agree with this approach? Yes No

If no, please give your reasons:

This would indeed be a benefit. The above suggests a more passive energy assessment approach, which is more practical than the current SAP process.

Q.14 6.2.4 – Revised guidance on limiting air infiltration and revision of guidance on ventilation under standard 3.14

Proposed guidance notes the revised target value for infiltration of 7m³/m².h and promotes adoption of improved performance in design. Guidance does not set a backstop for infiltration rate except where designing to better than 5m³/m².h, where additional ventilation would have to be considered under standard 3.14.

Q.14a Do consultees agree with this approach? Yes No

If no, please identify your comments or concerns:

The proposed default targets of lowering from 10 to 7 is a workable and practical solution and one which we would support. Industry data already collected demonstrates that these figures are indeed achievable.

We remain concerned as to what might happen where buildings designed to have higher values show, when tested, results that fall below 5 m³/m² h @ 50pa and an unexpectedly air tight building has been produced. Clarification on the responsibility of the developer is required.

Q.14b Does the guidance within the revised clauses to standard 3.14, provided in an annex to amended domestic guidance, provide clarity on what should be achieved where designing to better than 5m³/m².h? Yes No

If no, please identify your comments or concerns:

Further information would be helpful in relation to passive ventilation and the impact that could provide, thus reducing the energy impact of a mechanical ventilation system.

Q.15 6.2.11 – Alterations to the insulation envelope.

Given the significant heat loss that occurs through such elements, it is proposed that, when forming additional doors, windows and other glazing within an existing dwelling, the recommendation on the maximum area of glazing should be reviewed and reduced from 25% to 20% of the overall dwelling floor area.

Q.15 Do consultees agree with this approach and the identified percentage? Yes No

If no, please give your reasons and any preferred solution:

This would restrict design flexibility and also 'trade off' could be utilised for other elements within the alteration.

There should an ability for 'trade off' if these new opening areas are proposed to be greater e.g. if insulation is increased to compensate or other measures in tandem are introduced to address the impact of creating the openings.

Q.16 6.2.12 - Conservatories.

To deliver improved energy performance when carrying out work to existing buildings, it is proposed that performance standards for glazing within conservatories be aligned more closely to that specified for other types of extension.

Revised guidance on conservatories no longer links U-value to floor area, citing instead a single, area-weighted average U-value for glazed elements of 1.8, offering practical improvement on the previous U-values for conservatories of 2.2 & 3.3.

Q.16 Do consultees agree with this approach? Yes No

If no, please give your reasons