

COMMENTS ON THE CONSULTATION ON PROPOSED CHANGES TO THE BUILDING REGULATIONS 2017

Background

In England and Wales the first set of national building standards were introduced by the Building Regulations 1965. These were a set of prescriptive or mandatory standards that had to be followed. The Building Act 1984 brought fundamental changes to the building regulations regime by replacing the prescriptive standards with functional performance standards.

In the Isle of Man prescriptive standards, in the form of the 1976 Building Byelaws, continued until 1993, when the prescriptive standards were replaced by functional performance standards. These functional performance standards were based upon the relevant standards applicable in England and Wales, but unusually continued to include some prescriptive standards.

A prescriptive system is where there are a very specific list of instructions around precisely how any building must be constructed, whatever purpose it is being used for and whoever will occupy it. These standards are effectively law, and require complete compliance, or where complete compliance is unachievable or unnecessary then a formal method of relaxing the 'law' is required.

A functional system sets performance based requirements which may also be described as 'goal-based' or 'substantive' requirements. These requirements set out the technical standards that building work must achieve once completed. The standards are written in terms of what is adequate, reasonable or appropriate.

An example is the requirement for 'toxic substances'. This reads *"If insulating material is inserted into a cavity in a cavity wall, reasonable precautions must be taken to prevent the subsequent permeation of any toxic fumes from that material into any part of the building occupied by people."* This statutory requirement only requires *reasonable precautions* to be taken. The level of reasonableness is not specified in law. The person undertaking the building work is required to demonstrate that reasonable precautions have been taken. Compliance with the law can be demonstrated by reference to various standards, for example British or European Standards, or technical standards based upon testing. HM Government has supported the statutory requirements with guidance in the form of Approved Documents. These documents provide practical guidance as to the standards expected in order to fulfill the functional requirements, and if the guidance is followed then the work is deemed to comply with the statutory functional standard. However, regardless of the method of showing compliance used; ultimately it is only a court of law which can decide if the functional requirements have been met.

The reason for changing from a prescriptive system to a functional system was to:

- make the standards more flexible
- encourage innovation through design and technologies
- make the system more efficient and effective
- support cost efficiency

As indicated above, the Island introduced functional standards in 1993. These standards reflected the standards which applied in England and Wales at that time. However, in addition to the functional requirements, unusually a number of prescriptive requirements were effectively carried over from the Building Byelaws. An example of this is Schedule 1 requirement B6. This requirement is not found in the equivalent requirements in the England and Wales functional standards. B6 states "The building must be fitted with one or more smoke and heat detectors in such a manner as to make adequate provision for the early detection of the outbreak of fire in the building."

The functional requirement for means of escape in the case of fire (B1) includes the requirement that "...there are appropriate provisions for the early warning of fire...". It can therefore be seen that the Island has both a functional and a prescriptive requirement which effectively relate to the same thing. However, the inclusion of a prescriptive requirement in the regulations makes it a legal requirement to fit one or more smoke and heat detectors, regardless of need. Whereas the functional requirement is that the person carrying out the work must demonstrate that appropriate provisions have been made for the early warning of fire, which will be based on a fundamental understanding of fire safety and a risk assessment.

When considering the Consultation Document it is important to appreciate the difference between functional and prescriptive requirements, and statutory regulation as opposed to guidance.

Consultation Executive Summary

The summary indicates that the reason for the proposed amendments is to help the Isle of Man Government *"achieve the requirements set out in the Programme for Government 2016 – 2021; and the Climate Challenge Mitigation Strategy 2016-2020. The suggested changes include increased air tightness requirements and the provision of Energy Performance Certificates. There are some other changes proposed to make it easier to provide high speed internet cabling in the future and provide for charging of electric vehicles. There are some other changes, minor in nature, which may be considered to be a tidying up exercise."*

It is important to note that the principal aim is to support the Island's Climate Change mitigation strategy.

Background to the consultation

Again it is important to note that a principal aim of any changes to the regulations is to improve energy efficiency in buildings. It is also worth noting that the document

acknowledges that some of the changes will not require changing the Building Regulations.

The proposed changes to the Building Regulations

The document briefly describes 10 possible changes. These are;

1. Increasing air tightness in buildings;
2. All new buildings to be air tightness tested;
3. Extensions to buildings to be air tightness tested;
4. Not increasing levels of thermal insulation;
5. Requiring Energy Performance Certificates for all properties;
6. Providing electric charging points for new dwellings and commercial buildings;
7. Ducts for high speed cabling be provided in all new dwellings;
8. Fire alarm installations to be subject to certification;
9. The requirement for Carbon Monoxide alarms to be clarified;
10. The current Approved Documents to be updated.

Questions

The first question relates to increasing air tightness in buildings. Whilst air tightness in new buildings is important, there are many measures which together make up the energy performance of a building. What appears to be a relatively simple question needs detailed consideration.

On both the Island and in England and Wales the functional requirement for the conservation of fuel and power in buildings is the same, and is relatively straightforward. In essence this requires that *“Reasonable provision must be made for the conservation of fuel and power in buildings...”*. In order to meet the *reasonable provision* it is necessary to look at the requirements of the Building Regulations. In England and Wales, Building Regulation 24 states *“(1) The Secretary of State shall approve —*

(a) A methodology of calculation of the energy performance of buildings, including methods for calculating asset ratings and operational ratings of buildings; and

(b) Ways in which the energy performance of buildings, as calculated in accordance with the methodology, shall be expressed.”

Two methodologies have been approved by the Secretary of State, one relates to domestic buildings and is the Standard Assessment Procedure (SAP), and the other for non-domestic buildings is the Simplified Building Energy Model (SBEM). SAP works by assessing how much energy a dwelling will consume, when delivering a defined level of comfort and service provision. The assessment is based on standardised assumptions for occupancy and behavior. This enables a like-for-like comparison of dwelling performance. Related factors, such as fuel costs and

emissions of carbon dioxide (CO₂), can be determined from the assessment. The SBEM methodology is similar.

SAP quantifies a dwelling's performance in terms of: energy use per unit floor area, a fuel-cost-based energy efficiency rating (the SAP Rating) and emissions of CO₂ (the Environmental Impact Rating). These indicators of performance are based on estimates of annual energy consumption for the provision of space heating, domestic hot water, lighting and ventilation. Other SAP outputs include estimate of appliance energy use, the potential for overheating in summer and the resultant cooling load.

Having established the methodology a number of Approved Documents have been produced which details the practical guidance on the means of achieving the necessary standard. For all new buildings the Approved Documents only allow the efficiency of the building to be established by the use of thermal calculations.

On the Island there is no equivalent regulation to Regulation 24. Therefore there is no legal methodology for calculating the energy performance of buildings. The Island has a strange means of establishing the "reasonable provision" in relation to the conservation of fuel and power in new buildings. The Island has the same functional requirement, and has adopted the same Approved Documents. However, the Approved Documents Order which allows the use of the current Approved Documents contains a provision which effectively nullifies the guidance which relate to the conservation of fuel and power in new buildings. The Order introduces a methodology which is completely different from that used in the Approved Documents, and attempts to replace the calculation methodology with a simple elemental table.

Question A1 - Airtightness of dwellings to be less than 1m³/h.m² at 50 pa

Answer – **No**. Airtightness is only one part of energy performance and should not be considered in isolation. Air tightness figures should not be prescriptive but should form part of the guidance to achieving the overall standard for the building. The current SAP methodology which applies in the UK allows flexibility in design while achieving an overall efficiency for the building.

Airtightness of less 1m³/h.m² at 50 pa is difficult to achieve and will significantly add to the cost of construction. Has evidence been produced to show that by increasing airtightness this will improve the overall energy consumption or carbon emissions?

The standard of design and build required to achieve such low figures is high. Only a small percentage of new buildings on the Island have been tested, and the results have been very varied. It has been necessary to seek a number of relaxations for buildings which have not met the current standard of 5m³.

In addition to the practicality of building to such close tolerances there is a significant cost to achieving such standards. It is unlikely that standard window and door systems will achieve such a standard. As this is not the current standard in the rest of the UK the windows and doors needed to meet the proposed standard would be specialised and consequently expensive. It is also likely that the building may need to be effectively wrapped with an impervious layer, which again adds to the cost. The cost of testing such buildings also needs to be considered. To achieve the close tolerances suggested it is a dangerous gamble to simply carry out a single test at the end of construction. The result of a test failure would be extremely difficult, if not impossible to rectify at the end of build process. Buildings currently built to such standards are usually tested twice, if not three times during construction with each test costing hundreds of pounds. The likelihood is that where buildings fail the test it may be a case of such buildings being incapable of occupation, or the most likely outcome is that relaxations of the regulations will be granted. This appears to be the current situation where buildings come close to the standard, but are not in compliance.

Having made the building air tight consideration then has to be given to introducing controlled air. Any figure of 3m^3 or less will require the building to be fitted with a whole house mechanical ventilation system to introduce fresh air and remove stale air. These systems are expensive to install and will require future expenditure in terms of running costs, maintenance and eventually replacement. In addition, the installation of solid fuel heat producing appliances (which the Government Climate Change Mitigation Strategy encourages) becomes problematic. To overcome the difficulties it would be necessary to install specialist appliances which are again an additional cost over standard equipment.

Question A2 - Airtightness of dwellings to be $3\text{m}^3/\text{h.m}^2$ at 50 pa

Answer – **No**. See above. Airtightness should not be taken in isolation but consideration needs to be given to improving the Island's current standards by adopting the standards which apply in the UK. The current standard in the UK is 10m^3 which at face value may seem high, but it should be viewed as only forming part of the methodology used to establish the overall rating for the building. The UK methodology considers other factors such as insulation, building orientation, amount of glazing, efficiency of services and equipment, and other factors which are equally as important as airtightness.

Question A3 - Airtightness of buildings other than dwellings to be $5\text{m}^3/\text{h.m}^2$ at 50 pa

Answer – **No**. See above. Again, it is important not to consider air tightness in isolation.

Question A4 - Airtightness testing for all dwellings

Answer – Yes. The question makes reference to a sample number of tests being carried out under the current policy. It is not clear what sample number is currently

being tested as the island's leading house builders are not required to carry out any testing. The current policy allows house builders to submit a set of design details and for these to be granted 'Approved Details' status. House builders are then permitted to effectively certify their own work and do not have to carry out any testing. The result is that the majority of the dwellings built on the Island since 2014 have not been air tightness tested. This would not be permitted in any other neighbouring jurisdiction.

Question A5 - Airtightness testing for extensions.

Answer – Yes and no. The guidance contained with the relevant Approved Documents advises that large extensions in buildings other than dwellings are better treated in the same manner as a new building. Therefore this type of large extension should be tested.

However, domestic extensions should **not** be tested. It would seem rather pointless to test an extension to a dwelling when the main dwelling itself does not achieve the same standard. The current trend is not to construct extensions which are a separate part of the dwelling. Most extensions consist of extensions to existing rooms, for example family rooms or kitchen diners. It would not be possible to test such extensions without including the existing dwelling. Conservatories make up a percentage of extensions, with these extensions being in modular form. Such extensions are inevitably brought to the Island from other jurisdictions, and are highly unlikely to meet an air permeability test which only applies to the Island. Finally, the cost of carrying out a pressure test runs into hundreds of pounds. This money would be better spent on carrying out thermal improvements to the existing dwelling.

Question B1 – Insulation standards.

Answer - Do not agree. It seems strange to suggest that the reduction in air permeability should be to the standard normally only found in low or zero carbon buildings, but insulation standards on the Island should be lower than that which currently exists in the UK. As referred to in the questions on air permeability, thermal insulation should not be treated in isolation but should form part of the overall thermal efficiency design and calculations for the building.

Question C1 – Energy Performance Certificates.

Answer - conditional yes. The principle of introducing Energy Performance Certificates should be supported. However, the consultation paper has little detail on any potential introduction. In England Energy Performance Certificates are required when a property is placed on the market, or is subject to commercial letting. An EPC is valid for 10 years, with Energy Performance Certificates being placed on a UK Government run register. The Island is not currently in a position to introduce EPC's, there is no approved methodology for calculating the certificates, no accredited Energy Assessors, and no central register.

If Energy Performance Certificates were to be introduced it would seem sensible to use the same calculation methodology which applies in the UK.

The introduction of EPC's will have a cost implication, both to those who would require a certificate, and in running a register. Factors such as additional cost for social housing landlords would need to be considered.

Question D1 – Electric vehicle charging points.

Answer - conditional yes. While the idea of providing electric vehicle charging points may be a good idea, such a provision does not form part of the existing functional requirements which are derived from the requirements applying to England and Wales. Indeed it is not clear how the provision of vehicle charging points can be quantified in relation to the conservation of fuel and power in buildings, as such charging points relate to vehicles which fall outside the requirements of the Building Regulations. To bring them into the Isle of Man Building Regulations would entail either a prescriptive requirement, which is not advisable, or would need guidance to be produced which is specific to the Isle of Man. A better solution would be to make provision for such charging points under other legislation, for example planning. Additionally, any cost implication needs to be assessed.

Question D2 – Electric vehicle charging points in commercial buildings.

Answer - conditional yes. As above.

Question E1 – Cable Ductwork.

Answer - yes. This requirement forms part of the Building Regulations in England and Wales. As such the requirements and guidance are clear and unambiguous. The actual physical work requires little more than a duct to be installed through the external wall.

Question F1 – Fire Alarm and Emergency Lighting Certification.

Answer – yes, but this is already covered by the Building Regulations. The guidance contained within Approved Document B (Fire Safety) on page 18 states "An electrically operated fire alarm system should comply with **BS 5839 -1** Fire detection and alarm systems for buildings, Codes of practice for system design, installation and servicing." Furthermore, on page 19 the Approved Document states "It is essential that fire detection and fire warning systems are properly designed, installed and maintained. Where a fire alarm system is installed, an installation and commissioning certificate should be provided."

There is no justification for Building Control Officers failing to obtain certification for fire alarm and emergency lighting installations given that adequate enforcement powers already exist.

Question G1 – Carbon Monoxide Detectors.

Answer – yes. The consultation document refers to the guidance to the functional requirement. Approved Document J is produced by England to provide guidance to support the English functional requirement. If the Island wished to produce its own guidance to support the Island's functional requirement it can do so. It is understood that the Department (DEFA) has received legal advice on this matter, and therefore the simplest solution is for the Department to issue formal additional guidance to that contained within the Approved Document. There would appear to be no reason to seek any change in the regulations which provide the functional requirement.

Question H1 – Updating the Approved Documents.

Answer – Yes. While it is true to say that the Island has not adopted the latest Approved Documents applicable in England, a number of the documents have only been updated to reflect minor changes in legislation, and therefore the technical guidance contained within the documents has not changed. However, a number of documents have not been updated for many years, and therefore the technical guidance is behind that applicable in England. It should be noted that all Industry Consultants, manufacturer's specifications and technical details refer to the latest Approved Documents.

If the Approved Documents produced by England are to be used it is important that the Island's functional requirements are the same as those applicable in England. If the Island produced functional requirements which are different, or adds prescriptive requirements to the functional requirements, this is likely to have a direct impact upon the guidance contained within the documents.

Reference is made in the consultation document to confusion being caused to design teams from off Island by a failure to adopt the latest Approved Documents. Far greater confusion is caused when the Island introduces prescriptive requirements into a system designed around functional requirements. It is therefore important to ensure that prescriptive requirements are not introduced.