Written Submission from Stone Federation Great Britain

Properties Impacted by and on Climate Change

The latter part of the 20th century was characterised by overall warming with wetter winters, drier summers and increased frequency of extreme and unpredictable weather including heavy rain and storm events. Data in Scotland’s Climate Trends Handbook indicates that since the 1960s average precipitation has increased by 27 per cent, and in north and west Scotland winter precipitation has increased by over 70 per cent.

Changes in climate are projected to continue (highlighted in the 2012 UK Climate Change Risk Assessment Report) and intensify through the present century, creating challenges for existing buildings.

Changing weather patterns are likely to result in a greater wind and water loading on structures of all types and in different locations. Traditional buildings are generally resilient but can be vulnerable to greater stress if they have been altered or neglected. 52% of Scotland’s traditionally built homes are deemed to have disrepair to critical element, therefore not wind and watertight. Increased precipitation and wind will increase the rate of disrepair and buildings need to be regularly maintained to ensure they are wind and watertight and remain so.

Existing rainwater disposal from traditional buildings might not be sufficient, creating overflowing water from gutters down the stone facia resulting in increased saturation of stone and therefore increased erosion/deterioration. Should the gutters and/or downpipes be partially, or totally, blocked then this will further increase.

With warmer temperatures and wetter winters predicted, this may result in increased vegetation growth (e.g. moss on roofs, overhanging trees etc.) with potential to block rainwater goods further adding to the problem of water run-off.

Alterations for modern living, such as hard landscaping close to buildings and development leading to loss of gardens, have inadvertently led to increased water run-off and splash back, resulting in high moisture levels in external walls or adjacent areas.

The gritting of roads and pavements can adversely affect buildings especially those which do not have a garden area between the building and the public realm.
Low Carbon Impact
Residential sector accounts for 33% of carbon emissions in Scotland and therefore Stone Federation GB (SFGB) believes housing must play an important part of any strategy for reducing Scotland’s carbon emissions.

SFGB believes that this should take a two pronged approached to the Climate Change Plan to address existing homes and new homes.

Existing Homes
Of the existing domestic structures we have today, 85% will still be in use by 2050. Climate Change (Scotland) Act has specified an 80% reduction in carbon emissions.

For properties to be energy efficient, SFGB believes the condition of Scotland’s properties needs to be urgently addressed by undertaking repairs to failed critical elements then ongoing maintenance to ensure they do not reoccur. Particular attention should be paid to traditional homes (pre 1919) due to highest level of disrepair and of fuel poverty.

Historic Scotland Environment Bill (HES) states a function of HES being to care for historic environment. Stone Federation GB feels that it should be more specific and state “repairing and maintaining the Historic Environment”. Caring for could be construed as cutting the grass and cleaning the windows but far more needs to be done at this time.

The Scottish Government’s Our Place in Time states:
33% of the industry’s annual £9.6 billion turnover comes from the repair and maintenance of existing building stock, with an estimated £0.6 billion spent on pre 1919 buildings each year.

Condition of Scotland’s Properties
The current condition of Scotland’s properties is poor but property owners are not aware of the full extent of their buildings’ disrepair.

The Scottish Housing Condition Survey 2015 states:
Over half (52%) of dwellings in Scotland have some disrepair to critical elements which make them wind and watertight. Older dwellings are more likely to have some form of disrepair with 68% of those built before 1919 having disrepair to critical elements.
**Scottish Small Towns Report**
The Scottish Small Towns Report stated that “every town surveyed had instance of serious disrepair.” The survey results suggested that some towns had a higher incidence of disrepair where in excess of 80% of the properties surveyed required some form of maintenance. The towns surveyed which fared better, still needed between 50% and 75% requiring maintenance.

The report suggested that approximately **70% of the properties** surveyed would benefit from or will be required to have works carried out to remove **serious** defects.

**Scottish Stone Liaison Group’s (SSLG) “Safeguarding Glasgow’s Stone-built Heritage” (the “Glasgow Project”)**
Traditionally constructed dwellings, generally classified as those dating to before 1919, make up approximately 20% (446,000 dwellings in all) of Scotland’s building stock.

“**97% of stone buildings in Glasgow would require some repairs by 2020.**”

**Low Carbon Impact**
Residential sector accounts for 33% of carbon emissions in Scotland. Of the existing domestic structures we have today, 85% will still be in use by 2050. Climate Change (Scotland) Act has specified an 80% reduction in carbon emissions.

The Scottish Government issued “HOMES THAT DON’T COST THE EARTH” “A consultation on Scotland’s Sustainable Housing Strategy”.

Within this consultation it outlined a hierarch of needs to look after properties.

Looking after your home - a hierarchy of needs
Looking after your home: What is most important?

1. Make sure that your home is wind and watertight and that it is structurally sound; make sure that it stays that way by carrying out regular maintenance.
2. Make sure that work is done properly because poor quality repairs may be ineffective and can cost more in the long run.
3. Consider retrofitting appropriate insulation.
4. Make sure that your home is properly ventilated because this is essential to keep it healthy.
5. Review your boiler to ensure that it is efficient.
6. Ensure that points 1-5 have been addressed before considering micro renewable technology.

The Confidential Reporting on Structural Safety for Scottish Buildings report stated “When damage does occur to the envelope of a building, the energy performance of the building may be reduced, but opportunities could be taken with repair and maintenance programmes to install energy improving measures”.

The Historic Scotland Traditional Building Skills Strategy stated “A well maintained building is one which is more energy efficient” and “The adaptation of Scotland’s
existing building stock and ongoing maintenance over wholesale replacement are critically important to achieving our low carbon objective” and “The focus of any action to reduce carbon emissions in Scotland therefore must focus heavily on the domestic stock”.

Historic Scotland’s Short Guide Fabric Improvements for Energy Efficiency in Traditional Buildings states: “It should be said that proper and regular maintenance is a prerequisite to undertaking energy efficiency improvements in a traditional building. If a building is not watertight there is little point in making energy efficiency upgrades”, such as the home insulation.

The Scottish Government has acknowledged that “Improving Condition Homes can only become more energy efficient if they are in a good state of repair.”

New Homes
Whole life cycle carbon costings of materials should be a key factor in new build homes and other buildings in Scotland.

Natural stone generally performs very well in a range of criteria employed in the Green Guide to Specification (http://www.thegreenguide.org.uk/), which was developed by Building Research Establishment (BRE) and provides online access to information about the environmental performance and impact of various construction materials throughout their ‘cradle to grave’ life cycle (see also Stone Federation’s publication Natural Stone: The Sustainable Solution.

Stone is a durable, long-lasting material with opportunities for re-use and recycling, and it takes less energy to produce stone than all other common construction materials: expressed as embodied carbon (which reflects the CO2 emissions arising from the production and distribution of the material), granite and sandstone require less than half the energy of concrete and brick, around a quarter of the energy needed for timber, and around one seventeenth of that needed for steel.

Embodied carbon in common construction materials (from SFGB, 2011)
Stone is naturally a heavy commodity, so transporting large volumes by sea, rail or road comes at a significant environmental cost.

Stone imported from countries such as China, India and Brazil can still be cheaper to purchase in the UK than locally quarried stone (because of relatively low labour costs and overheads in those countries, and the economies of scale that big operations can bring to bear), however this comes at an environmental cost of transporting such a heavy commodity over long distances.

In 2014, exported stone had an average value of roughly £550 per tonne and imported stone had an average value of roughly £150 per tonne (these figures should not necessarily be compared directly as they do not take into account factors such as the type and quality of the product, and taxation).

The value of stone imported by Scotland in 2014 was approximately £40.5m.

Sandstone imported into the UK from China has roughly six times as much embodied carbon as sandstone sourced in the UK.

Most of the English stone that is used in Scotland comes from quarries in the northern half of the country, so the distance stone must be transported to reach Scottish users is small compared to some of the stone imported from overseas.

Therefore specifying materials with full life cycle carbon costing and taking into account transportation emissions, will reduce the overall carbon emissions of new buildings.

It will, as well, stimulate the natural stone market in Scotland and it is calculated that roughly 1600 new jobs would be created if all the stone currently imported into Scotland was produced by the Scottish Stone industry.
Most new jobs created in the building stone industry would be skilled and many would be in rural areas.

Non-Domestic Buildings
The need to repair and maintain other buildings is equally important. In October 2016, Calum Steele, general secretary of the Scottish Police Federation (SPF), said decades of under-investment in infrastructure has left the force with a "crumbling police estate".

In a paper prepared by Audit Scotland in October 2016, The NHS estate had 66% deemed in good condition, with 29 per cent requiring investment to improve their condition. The remaining five per cent are in an unsatisfactory condition and required major investment or replacement.

The condition of NHS estate is not consistent across the country with NHS Ayrshire and Arran, Highland and Orkney, having more than 50% of buildings require some level of investment to improve their condition.

In 2015, the outstanding maintenance required to keep the NHS estate across Scotland up to a good standard amounted to £898 million. This is £101 million (13 per cent) more than in 2014.

High-risk and significant maintenance requirements reduced to 44% overall in 2015, compared to 47% 2014.

Again, maintenance backlog is not consistent across Scotland and in five boards, the level of high-risk and significant backlog maintenance is over 50%.

Audit Scotland stated
"Based on NHS boards’ property and asset management strategies, and depending on approval and availability of funding, around £2.8 billion investment in assets is planned over the next five years. This relates to property, medical equipment, IT equipment and vehicles and will combine capital and revenue funding. Of the total of £1.1 billion planned for investment in major projects, the majority of this is for new hospitals (70 per cent)."

"NHS boards need to balance maintaining high-quality hospitals with increasing investment into community-based care. A clear national strategy is required for capital investment that will support a shift in the balance of care. Boards can use revenue funding for major projects, rather than capital funding, to spread costs over a long period of time, such as non-profit distributing (NPD) projects. However, revenue budgets are under increasing pressure."

Conclusion

The changing climate in Scotland will add additional pressures such as increased rainfall, in particular wind driven rainfall.

The need for regular maintenance and appropriate repair of all buildings is often overlooked.
Existing Homes
33% of the industry’s annual £9.6 billion turnover comes from the repair and maintenance of existing building stock, with an estimated £0.6 billion spent on pre 1919 buildings each year.

Properties which are not wind and watertight cannot be carbon efficient. Older homes have higher incident of disrepair and higher incident level of fuel poverty.

For that reason, SFGB believes that the condition of Scotland’s properties needs to be urgently addressed as part of a larger strategy to reduce carbon emissions in Scotland and prepare existing buildings for increased rainfall and wind.

New Homes/Buildings
Full Carbon Life Cycle costing should be taken into account during design/planning. Low embodied carbon building materials should be used. Carbon emissions in the transportation of building materials should be taken into account. Economic benefits to using locally sourced materials.

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