

## **APPENDIX B : Building and Fire Safety Ministerial Working Group meeting – Paper on Reinforced Autoclaved Aerated Concrete (RAAC)**

### **Document 3 : Agenda item 4 - Paper on RAAC**

MWG-BFS (22) – Agenda Item 4

## **REINFORCED AUTOCLAVED AERATED CONCRETE PLANKS**

### **Key Issues**

1. The use of RAAC for construction of new buildings was discontinued in the late 1980s, but it is still found in many buildings across the UK. While RAAC may have had a number of advantages, panels are susceptible to moisture and water ingress which can promote corrosion of the embedded reinforcement leading to deterioration of the panel and ultimately structural failure.
2. RAAC panels are usually within the structure of the roof, wall or floor so their condition and any deterioration can be hidden. This makes visible assessment of their condition less accessible which may increase the risk of catastrophic failure without warning. It is the responsibility of building owners to manage their estate and ensure it is compliant with the relevant legislation, including their duties under health and safety legislation to maintain a safe workplace. Concerns have been expressed that owners are not taking sufficient action to identify RAAC and taking appropriate action to mitigate any risk.
3. The Health & Safety Executive is the UK-wide regulator for health and safety. This legislation is not devolved to the Scottish Government. The UK Government is carrying out research into buildings which contain RAAC. The research methodology is in the final stages of developing assessment tools to measure the risks associated with RAAC planks. We will monitor the research and apply the findings and recommendations appropriately.
4. See **Annex A** for more detailed information on RAAC and what guidance is available. **Annex B** provides a brief overview of recent parliamentary and media interest in RAAC.

### **Local authorities**

5. The Scottish Government is aware of the issues caused by the use of reinforced autoclaved aerated concrete (RAAC) following the failure of school roofs in England. Where RAAC construction is discovered a an intrusive survey should be carried out to ensure that it remains in good condition and safe. We expect local authorities to deliver a safe environment for all building users, including schools. We are assured that all local authorities are aware of RAAC and actions are being taken to identify RAAC and put in place remedial works where necessary. It is a matter for the local authority and their contractors to ensure safety of the premises whilst any remedial work is underway.

6. We are aware that West Lothian Council (WLC) has identified five schools as containing RAAC. WLC implemented a comprehensive risk-based research and structural survey programme, and is investing £10m to address RAAC issues within its schools. In addition, regular inspections by structural engineers continue at all WLC properties where RAAC is present.
7. Other local Authorities in Scotland, including East Lothian and Edinburgh, are undertaking assessments on school roofs to determine the condition and safety of RAAC panels. So far, we are aware that East Lothian Council (ELC) has identified two schools and two leisure/recreation buildings as containing RAAC.

### **Health Facilities Scotland**

8. Health Facilities Scotland have issued a [Safety Action Notice](#) to health boards in February 2023 on the risk of catastrophic structural failure of RAAC planks in building roofing, walls, and flooring.
9. A major study is underway on NHS buildings in Scotland. NHS Scotland Assure and partners are actively assessing NHS Scotland properties suspected to contain reinforced autoclaved aerated concrete (RAAC). A scope of works has been developed with a specialist and a survey partner has completed a desktop review of all properties. This review is being used to prioritise and inform the approach to more intrusive discovery surveys.
10. So far (as of May 2023) 402 properties have been categorised based on the likelihood of them containing RAAC. More detailed intrusive surveys are being targeted at those buildings with a high probability of containing RAAC as part of the 'discovery phase' of this work. The discovery intrusive surveys should identify whether any NHS properties contain RAAC and, if so, what remedial works are required along with their estimated costs.
11. We will continue to liaise with NHS Assure during the discovery phase of their work and report back to Ministers as required. We will update Parliament on the outcome of this investigation once it is completed.

### **Scottish Funding Council**

12. Colleges and universities are independent bodies and are responsible for the safe condition of their estates. **[Redact S30(b) and S29(1)(a)(b)].**

### **Scottish Police Authority**

16. A published paper titled '[Identification of Reinforced Autoclaved Aerated Concrete \(RAAC\) in the police estate](#)' was discussed by members at a recent Scottish Police Authority Resources Committee meeting on 9 May 2023.
17. Following the discovery of RAAC in Fettes (Edinburgh) on 6 April 2023 the fleet workshop and a number of other areas were closed following advice from structural engineers. This led to a wider review of the police estate which resulted in 65 locations across the country being identified as potentially

containing RAAC. Where the initial visual inspection confirmed suspected RAAC or where it was inconclusive, structural engineers attended those locations and undertook further detailed inspections. This assessment work concluded during the week commencing 1 May, and the results were as follows:

<b>Outcome of Assessment</b>	
RAAC not present	62
RAAC present	3
Total assessments undertaken	65

18. RAAC has been identified in Edinburgh, Perth and Dundee. In Perth, RAAC is limited to one small area of the site and has been graded as ‘green –low risk’ by the structural engineer. In Dundee there are two areas impacted – one of which has been graded as Red Critical, and as such the Police Authority have moved people out of the affected area. The other area in which RAAC is present has been graded as Medium – and no immediate action is required. The authority are arranging for the structural engineers to undertake an intrusive survey in both areas to identify any remedial works or longer term solutions. This approach taken is similar to the NHS Assure methodology.

### **Criticism of the Scottish Government**

19. [Redact S30(b)]. A number of Parliamentary Questions by Craig Hoy MSP and Donald Cameron MSP have been raised recently on the presence of RAAC across much of the public estate including hospitals, schools, offices, prisons, police stations, courts, care homes, culture and arts venues, libraries. Question include what funding has been provided by the government to remediate where necessary. The has also been recent press activity on this issue. See **Annex B** for more information.
20. The Scottish Government is taking this issue very seriously and will continue to be in close contact with local authorities and other public sector bodies to raise awareness and offer support where required.

### **Cost**

21. We have limited information of the cost of surveys by specialists or the cost of remediation. This information will be sector led.
22. West Lothian Council (WLC) have estimated that around £70-80m would be required to remediate RAAC. [Redact S30(b) and S29(1)(a)(b)].
23. The true cost of remediation can only be estimated in time as more RAAC is discovered and assessed across the various sectors within the built environment.

### **The Role of the Scottish Government**

24. RAAC has not been used as a construction material in the UK since the late 1980’s. If a RAAC failure is identified, the local authority may designate the

building as defective or dangerous under part 4 of the Building (Scotland) Act 2003 and take enforcement action to make it safe or serve a notice on the owner to do so.

25. [Redact S30(b) and S29(1)(a)(b)]
26. Funding for assessment and remediation where required, would be for relevant policy areas to discuss with stakeholders.

### **Next Steps**

27. Discussion has identified the importance of establishing mechanisms at a Scottish, as well as UK, level to support awareness and action on this issue across many sectors within the built environment.
28. Discovery of RAAC and mitigation will be reported to relevant Ministers, directly where necessary, and through the Building and Fire Safety Ministerial Working Group.
29. Officials will continue to work closely with relevant partners including the UK Government, HSE, Local Authorities, Scottish Fire and Rescue Service, Scottish Police Authority, NHS, SFC, other public sector bodies and the wider structural engineering community in relation to this matter.
30. Cross-sector working group on RAAC: SG officials are currently coordinating an initial meeting covering all public sector infrastructure areas (i.e. education, health, etc.). This will be chaired by SG officials and a date is being confirmed.

### **31. Recommendation**

Whilst building safety is a matter for the building owner, it is recommended that a more proactive role to engagement is adopted by the Scottish Government as outlined above.

### What is RAAC?

1. Reinforced Autoclaved Aerated Concrete (RAAC) is a lightweight construction material that was commonly used in construction mainly between the 1960s and late 1980s. RAAC was used in panel (or plank) form as a structural component in roofs, floors and walls of buildings. RAAC was manufactured in Scotland from about the late 1950s, with a Costain Concrete plant at Newarthill producing a product named Siporex. The panel sizes could be up to 24" (0.6 m) width and up to 20' lengths (6 m). Siporex was a Swedish company and Newarthill was the 23rd plant to open worldwide (under license to the Swedish company).
2. Autoclaved aerated concrete (AAC) is different from normal dense or lightweight concrete. It has no coarse or fine aggregate in its manufactured state, and is made in factories using very fine sand or pulverised fuel ash, cement, lime, fine aluminium powder and water, which reacts together to form an aerated cementitious mass with low strength after autoclaving. The finished product does not contain discernible aggregate. It is relatively weak with a low capacity for developing bond with embedded reinforcement. It was used in two main forms of structural elements; lightweight masonry blocks and structural units (such as roof planks, wall and floor units).
3. The protection of the reinforcement against corrosion is provided by a bituminous or a cement latex coating, which is applied to the reinforcement prior to casting the planks. The reinforcement mesh is then introduced into the formwork and the liquid AAC mix added.
4. It should be noted that lightweight masonry blocks that are unreinforced are a common construction material. In the unreinforced state it does not have the same susceptibility to failure and is safe where elements are properly designed and constructed.

### Guidance on RAAC

5. In 2019 the Standing Committee on Structural Safety (SCOSS) published a safety alert '[Failure of reinforced autoclaved aerated concrete \(RAAC\) planks \(cross-safety.org\)](#)' which identified concerns about the structural safety of this form of construction. This followed the collapse of RAAC planks in two schools in England. The Department for Education (DfE) issued [guidance](#) on RAAC in December 2022 to help school and college leaders, staff and governing bodies understand the process of assessing, investigating and developing a Reinforced Autoclaved Aerated Concrete (RAAC) management and remediation strategy. The guidance was also directed at specialists on the level of information to be provided to ensure a consistent approach to RAAC assessment. The Health and Safety Executive issued an [Education and schools eBulletin](#) in order to reinforce these key messages.
6. The Local Government Association (England) is [advising](#) its members to check as a matter of urgency whether or not any buildings in their estates have roofs, floors, cladding or walls made of Reinforced Autoclaved Aerated Concrete

(RAAC). DfE recently opened a survey in relation to RAAC in school roofs and the LGA is strongly advising all responsible bodies to respond to the survey as soon as possible.

7. In March 2022, the Institution of Structural Engineers (IStructE) published guidance titled '[Reinforced Autoclaved Aerated Concrete Panels – Investigation and Assessment](#)' and in April 2023 published [further guidance](#) on the critical risk factors associated with RAAC panel construction. It includes a proposed approach to the classification of these risk factors and how these may impact on the proposed remediation and management of RAAC.

**Recent media and parliamentary interest**

1. The Times asked a question on ‘any emergency action being taken by SG’ following FOI requests which indicated that 11 Scottish local authorities have identified RAAC as present within their schools estate. The response offered was:

“The UK Government is carrying out research into buildings which contain RAAC. The research is in the final stages of developing assessment tools to measure the risks associated with RAAC planks. We will monitor the research and apply the findings and recommendations appropriately.

“Local authorities are responsible for managing and maintaining schools and we expect them to provide a safe environment for all users. We recently issued guidance and background on RAAC to the Association of Directors of Education in Scotland (ADES) and Scottish Heads of Property Services (SHoPS) networks.

“Health and safety legislation is not devolved to the Scottish Government. The Health & Safety Executive is the UK-wide regulator for health and safety.”

2. On 5 June, the Scotsman asked a question in relation to RAAC in the schools estate and the response offered was:

“Health and safety legislation is not devolved to the Scottish Government. The Health & Safety Executive is the UK-wide regulator for health and safety. As such, the HSE, instructed by the UK Government, have been carrying out research into buildings which contain RAAC. We are advised that the research is in the final stages and the Scottish Government will apply the findings and recommendations appropriately.”

“Local authorities are responsible for managing and maintaining schools and we expect them to provide a safe environment for all users. We recently issued guidance and background on RAAC to the Association of Directors of Education in Scotland (ADES) and Scottish Heads of Property Services (SHoPS) networks.”

3. Also on 5 June BBC Scotland asked about RAAC in the NHS estate. The response offered was:

“NHS Scotland Assure and partners are actively assessing NHS Scotland properties suspected to contain reinforced autoclaved aerated concrete (RAAC).

“A scope of works has been developed with a RAAC specialist and a survey partner has completed a desktop review of all properties. This review is being used to prioritise and inform the approach to discovery surveys.

“Completion of the discovery surveys will provide information on any remedial works required and estimated costs.”

4. Nine recent written Parliamentary Questions about RAAC have been submitted by Craig Hoy MSP including funding and costs associated with RAAC, engagement with Local Authorities and COSLA, and the presence of RAAC in hospitals, schools, prisons, police stations, courts, care homes and SG offices.
5. Donald Cameron MSP has also submitted six similar Parliamentary Questions targeted at the following agency buildings: Scottish Library and Information Council, Historic Environment Scotland, Creative Scotland, National Galleries Scotland, National Museums Scotland and the National Records of Scotland.