

Safety Action Notice

Reference: SAN2302

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Reinforced autoclaved aerated concrete (RAAC) planks in building roofing, walls, and flooring: risk of catastrophic structural failure.

Summary

Reinforced autoclaved aerated concrete (RAAC) planks were used in building roofing, walls and flooring from the 1960s to the early 1990s and may still be in situ in buildings used today. RAAC planks are considered relatively weak and prone to degradation over time due to external factors. The limited visible exposure of panels to assess their condition may result in catastrophic failure without warning. Recommendations are given on identification, risk management, monitoring and replacement of RAAC planks.

Action

1. Bring this to the attention of all appropriate managers and staff.
2. Each health board has a requirement to survey their existing estate with the aim of identifying buildings where RAAC planks either are, or potentially could be, in situ. Individual health boards hold the responsibility for managing properties on their estate including RAAC. This survey should be carried out by a qualified structural engineer with specific RAAC experience.

To support boards in the identification of RAAC, NHS Scotland Assure issued a newsletter ([Reinforced Autoclaved Aerated Concrete \(RAAC\) Survey Programme 2023, issued 30 January 2023](#) – see annex) to all boards. This highlights a national survey programme due to commence in February 2023 which will locate, risk assess, and provide temporary remedial recommendations as necessary for any RAAC found. All boards are responsible for ensuring that all buildings suspected to contain RAAC are included in this programme of works, and work closely with the survey partner to provide relevant information and access to these buildings.

3. If any building is suspected or confirmed with RAAC planks, then:
 - a. develop safe system of work to conduct identification / inspection work
 - b. conduct structural assessment (condition and structural adequacy). The structural assessment should be managed by a suitably qualified and experienced engineer as recommended by the Institution of Structural Engineers.
 - c. conduct risk assessment (RAAC, building and use)
 - d. put plan in place to mitigate identified risks (e.g., plank propping, improved end supports, etc – however there may be a requirement to close off sections of a building if risks cannot be mitigated).
 - e. plan for a programme of removal and replacement of all RAAC planks identified (or suspected) where possible - the goal should be to eliminate all RAAC from the NHS Scotland estate over time but understand that some may have to remain in situ and be actively monitored.

- f. increase frequency of monitoring / maintenance / inspection schedules on a case-by-case basis for confirmed / suspected RAAC planks remaining in situ or until such a time as they are replaced.
- g. put contingency plans in place to deal with an adverse incident involving RAAC planks should it occur. Resilience and emergency plans will need to be updated
- h. Estates should include Infection Prevention and Control Teams in all communications and apply [HAI -SCRIBE \(SHFN30\)](#) prior to any inspection/ work being undertaken within the Healthcare Built Environment

Background

RAAC planking is considered relatively weak ⁽¹⁾ and is more prone to degradation from external factors. The useful life of such planks has been estimated to be around thirty years ⁽¹⁾.

There is a risk of catastrophic structural failure of planks in buildings constructed using RAAC. Panel failure is gradual over time and due to external factors. However, due to limited visible exposure of panels to assess the condition it may result in sudden catastrophic failure without warning ^(1, 4).

In 2018 a school's flat roof constructed with RAAC planks partially collapsed with little warning. Fortunately, the failure happened at a weekend and there were no injuries. At the time the Local Government Association (LGA) and the Department for Education (DfE) contacted all school building owners to draw attention to this failure ^(1, 2, 4).

Construction using RAAC planks had been dated to between the 1960s and early 80s, but there may be outliers and a recent Cross report (Aug 2022) refers to discovery of RAAC in the roof of a 1991 hospital build. This suggests that RAAC could have been used over a longer period than first thought and this affects the scope of buildings that require screening for RAAC ⁽³⁾.

Primarily RAAC was used in roofing but may also be present in flooring or walls ⁽¹⁾. RAAC planks are suspected to be present in the NHS Scotland estate, but their full extent / location remains unknown. As such there is a risk of catastrophic structural failure in some of our older NHS buildings. The level of unknown risk this issue poses is unacceptable and needs an immediate response.

Suggested onward distribution

Directors of Estates & Facilities

Health & Safety Managers

Risk Management

References

1. [Failure of reinforced autoclaved aerated concrete \(RAAC\) planks](#) May 2019
2. [Failure of RAAC planks in schools](#) April 2020
3. [Reinforced aerated autoclaved concrete planks found on pitched roof of 1990s hospital building](#) August 2022
4. [IStructE publishes investigation and assessment of RAAC panels](#) March 2022
5. [HAI-SCRIBE \(SHFN 30\) | National Services Scotland \(nhs.scot\)](#)

Enquiries

Enquiries and adverse incident reports should be addressed to:

Incident Reporting & Investigation Centre (IRIC)

NHS National Services Scotland

Tel: 0131 275 7575 Email: nss.irc@nhs.scot

Accessibility: Please contact us using the above details if you are blind or have a sight impairment and would like to request this alert in a more suitable format.

IRIC remit: general information about adverse incidents, safety alerts and IRIC's role can be found in [CEL 43 \(2009\)](#), *Safety of Health, Social Care, Estates and Facilities Equipment: NHS Board and Local Authority Responsibilities*, issued 30 October 2009.

Report an incident: Information on [how to report an adverse incident](#)

NHS National Services Scotland is the common name for the Common Services Agency for the Scottish Health Service <https://www.nss.nhs.scot/>

NHS Scotland Assure

Reinforced Autoclaved Aerated Concrete (RAAC) Survey Programme 2023

Welcome to the first update on the upcoming Reinforced Autoclaved Aerated Concrete (RAAC) Survey Programme which is due to commence across Boards from February 2023.

What is RAAC?

RAAC is a lightweight form of concrete used primarily in roof construction in the UK from the mid-1950s to the mid-1980s, although recent examples date back to the 1990s. We believe it was used by some municipal architects primarily in office and schools, but RAAC has been found in a wide range of buildings, which can be found in both the private and public sector.

The limited durability of RAAC roofs has long been recognised and recent experience elsewhere within the public sector suggests the problem may be more serious than previously appreciated as in there is a potential risk to people and the environment where RAAC is located. As large property owners NHSScotland may not be fully aware to the extent of RAAC present within its estate.

Due to the scale and age range of the NHSScotland property portfolio, it is presumed that RAAC is present in properties across the estate and as a result, action is required to identify and assess the condition of each instance of RAAC.

Pictures of RAAC:



NHS Scotland Assure contacted all Health Boards to request a list of properties which could potentially contain Reinforced Autoclaved Aerated Concrete (RAAC). The property list has been compiled and has been used to inform the appointment of a Survey Partner. Following the tender process in September 2022 Currie & Brown were successful and have been appointed as the RAAC Survey Partner.

The aim of the RAAC discovery survey will be to locate and identify any RAAC panels present within the submitted properties. There are three elements to the survey process:

- **RAAC Desktop Survey** – The Survey Partner will initially carry out a desktop review which will involve speaking to and coordinating with Board contacts to obtain relevant existing building information, including but not limited to drawings, photographs, structural reports. The gathered information will be used to inform the Pilot and Discovery Surveys.
- **RAAC Pilot Survey** – A pilot survey will be carried out to ensure the proposed methodology is tried and tested prior to the remainder of the properties being surveyed.
- **RAAC Discovery Survey** – This is the physical surveys of the remainder of the properties which are assumed to contain RAAC. The report will detail associated risks, remedial actions, costs and any routine monitoring suggestions for all RAAC planks identified with a Red or Amber RAG rating. This information will be in the form of a report for each Board and where required, uploaded to our national asset management system.

Board Requirements

To assist the process and to ensure that maximum value is achieved from the surveys, Boards are requested to provide as much information as possible in regard to the list below. We ask that Boards gather this as soon as possible to ensure they can provide Currie & Brown all the relevant information. The supply of this information will greatly assist the initial RAAC Desktop Survey and allow all parties to be best prepared when organising/undertaking the RAAC Discovery Surveys. The information required is as follows:

- Site layouts with unique building numbers / identifiers noted
- General building layout plans
- Building structural drawings
- Building elevation drawings
- Asbestos registers

Access to all the properties that have been identified on the final list following the desktop survey is vital in order to complete the survey and understand any risks across the NHSScotland estate. Currie & Brown will contact Health Boards direct to gain access to these properties.

Contact:

For more information please contact either Robert Gray, Estates and Asset Management Advisor or Annie Watson, Principal Structural Engineer.

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