RAAC Guidance Note

Publication Date: December 2025

RAAC Guidance Note

Introduction

This publication provides non-statutory guidance from NHS England. It has been produced to help estates teams / site managers understand the process of assessment, investigation and managing the presence of Reinforced Autoclaved Aerated Concrete (RAAC) panels.

It has been written to supplement guidance produced by the Institution of Structural Engineers (IStructE) and the research undertaken by the RAAC Research team, led by Loughborough University.

It also provides guidance on the level of information to be provided by a specialist, if appointed, to ensure a unified consistent approach to RAAC assessment.

This guidance is for all NHS leaders and governing bodies across NHS healthcare settings for the identification, management and removal of RAAC within their estate.

This RAAC Guidance note is organised under Five sections:

- **Background**
- **Surveying**
- **Appraisal**
- **Management**
- **Remediation**

RAAC Guidance Note

SECTION 1.0 BACKGROUND

Reinforced Autoclaved Aerated Concrete (RAAC) was a widely used construction product between the later 1940s and mid 1990s.

It is a lightweight, offsite formed, panelised system that was adopted for floors, roofs and walls as an alternative to traditional precast concrete or unit systems, such as masonry.

The key characteristics of RAAC are described opposite.

NOTE; The term RAAC panels is used within this document to describe the multitude of different ways in which RAAC was used; including roof, floor, wall and partition panels.

RAAC Close Up

Close up of RAAC section.

Note that the colour of RAAC may vary depending on the manufacturer.

Characteristic	Identifier
Reinforced	It is reinforced, it has reinforcement contained within it.
Autoclaved	It was steam cured / baked in ovens
Aerated	It contains bubbles within the matrix
Concrete	It is a mixture of cement and fine-aggregate
Date	RAAC panels have been found in buildings between the late 1940s and mid 1990s. Manufactured in the UK between 1950s and 1980s.
Use	It was typically used in roofs, supported on steelwork or concrete frames. It was also used for floors, ceilings and load-bearing and non-load-bearing wall construction.
Large Panels	Constructed in large panels typically 600mm wide (although 450-500mm have been seen)
Self-finished	Typically painted, plastered or self-finished (with no applied finishes). It is unusual to have a pebble-dashed or stippled finish, but Artex has been used for soffit finishes.
Chamfered	Panels typically have chamfered edges, reflected in finishes where exposed. This can be evident above ceilings for non-load-bearing wall panels
No aggregate	Generally RAAC has no aggregate (small stones) within the material
Low-strength	RAAC is very low strength, around 10% of concrete. This is similar to Aircrete blocks. **You can hand-drill panels or hand-drive a screw-driver into panels with ease, however, watch out for asbestos**
Low-density	It is very low-density, circa 25% of normal concrete.
Porous	It can absorb water; through leaks or atmosphere.
Clips / hangers	RAAC often has a series of clips and hangers to join panels to steelwork or suspend services / ceilings or create roof-lights
Cut faces	RAAC panels were formed from a ‘cake’ – a large block of RAAC that was then cut. This results in a variation of reinforcement placement. This means you can normally see the texture of bubbles or cut-marks
Design life	RAAC has no specified design life. The life of panels will be dependent on the original installation, atmospheric conditions and ongoing maintenance.

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SECTION 2.0 SURVEYING

RAAC panels were widely used throughout England and the United Kingdom, within the construction of many different building typologies, including education, healthcare and commercial settings. The map opposite indicates the location of known education and healthcare buildings containing RAAC, it is non-exhaustive, including only identified cases up to October 2023 (QR codes below).

Typically, RAAC panels can be visually identified based on the characteristics of the panels and materials used. However, it is recommended that the surveys are undertaken by competent professionals with experience in RAAC and undertaking RAAC risk assessments.

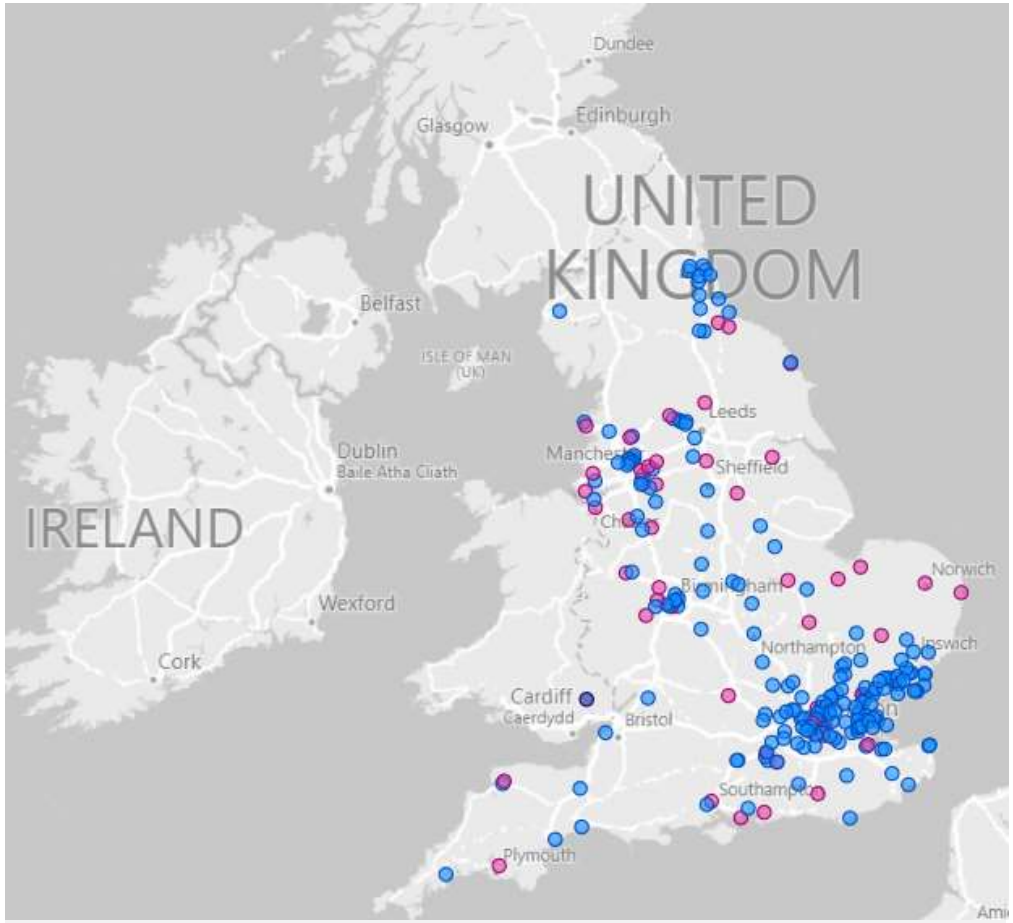
The following section provides guidance on the development of RAAC panel surveys and the requirements for these.

Department of Education

List of Schools & Colleges in England

Department of Health & Social Care

List of Hospitals in England



RAAC Locations

RAAC locations of schools (blue) and hospitals (pink) up to October 2023.

RAAC Guidance Note

SECTION 2.1 SURVEYING PROCESS

RAAC surveys will generally follow the same process, this is outlined opposite.

It should commence with a desk-study of available information. This should collate all known information of the building, including the date and form of construction. If possible, original design information should be sought from archives or health-and-safety files.

A confirmation survey will be required following a desk-study to confirm the findings. This should confirm whether RAAC is present and the extents for each building. This may be limited by the presence of fixed ceilings and asbestos. Consideration should be given to organising openings in any fixed ceilings prior to the confirmation survey.

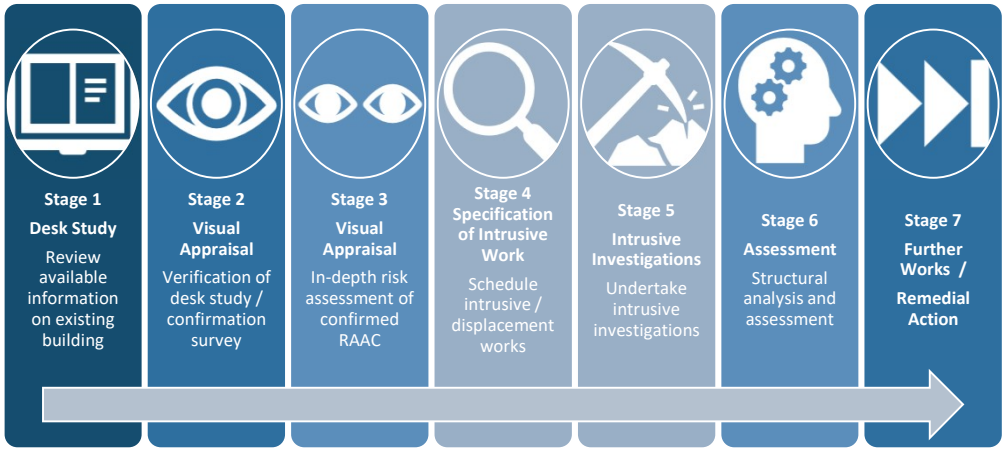
During confirmation surveys, it is worth noting that RAAC has been used in numerous infill areas, such as plant rooms, crane-access hole infills, or small fire-resistant flat roofs etc. It is also worth noting that other materials may be present within predominantly RAAC structures. Therefore, care is needed to identify the 'boundaries' of the RAAC installation

For detailed visual surveys, it is recommended that any surveying works are undertaken in line with the Institution of Structural Engineers guidance (QR Code opposite). This provides guidance on the methodology and approach undertaking RAAC surveys and the approach to assessment of risks.

It is recommended in particular that any surveys should adopt:

- A unified and consistent methodology for collating initial information
- Appropriate methods for surveying, in line with the initial panel investigation and assessment guidance
- A unified and consistent approach to risk factors in line with the further guidance documentation

The survey works should be used to create a Remediation, Management and Communication Strategy plan.



IStructE RAAC guidance

RAAC Guidance Note

SECTION 2.2 APPOINTING SURVEYORS

It is recommended that advisors for RAAC installations have a working understanding of the structural appraisal of existing buildings and ideally the management of RAAC.

It is recommended that identification surveys may be undertaken by Chartered Surveyors, but that structural assessment and management surveys are undertaken by Chartered Engineers (as detailed below).

When procuring structural assessment and management surveys, the following criteria are recommended:

- The Surveyor should be a Chartered Engineer; a Member of the Institution of Structural Engineers or Member of the Institution of Civil Engineers
- The Surveyor should have experience and should be able to provide examples of:
    - Verifying and validating existing record information,
    - Identifying and confirming the presence of RAAC panel systems
- The Surveyor should be able to, and have examples of:
    - Identifying the support form and condition; i.e. the structural framing system,
    - Commenting on loading regime applied to planks,
    - Scheduling and managing investigation works,
- The Surveyor should have experience and examples of developing the:
    - Production of a management strategy; developing a risk-based approach to the implementation of remediation and medium-long term monitoring,
    - Producing remedial works proposals, drawings and specifications, where appropriate

Evidence of previous examples should be sought.

RAAC

Survey of RAAC panel installation supported on steelwork bearings.

RAAC Guidance Note

SECTION 2.3 VISUAL SURVEYS

For structural assessment and management surveys, it is recommended that in all instances a panel-by-panel, room-by-room or structural bay-by-bay assessment of the RAAC panel installation is undertaken. This should be sufficient to identify the risk classification of particular panels and provide guidance on a room-by-room basis.

This detailed survey may be visual in the first instance but may need additional investigation works (destructive or non-destructive). The additional requirements should be determined on a case-by-case, building-by-building basis.

The survey should focus on the bearing width and location of anchorage reinforcement to ensure the minimum requirements are being met, as well as reviewing risk factors such as adverse loading and cut-panels. The risks are described within the IStructE guidance.

Given the risks associated with moisture content and strength reduction, visual signs of high moisture should be noted and considered within the risk classification.

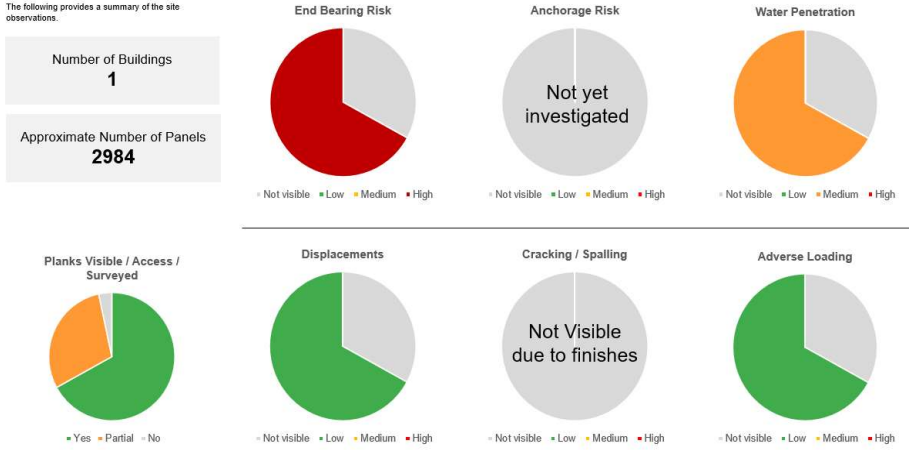
For clarity, the panel risk and bearing risk may be separated to identify the individual risk. This approach acknowledges that RAAC panels may have limited defects but may be sat on poor bearings in all instances within a building.

The survey results should be reported to the Trust's Estates Department in a clear and concise manner that represents the risks associated with the RAAC panel installation in accordance with the terminology used by the IStructE guidance. Any immediate or critical actions should be conveyed to the Trust at the time of survey, followed by the written report. Estates will need to raise high and high-critical risks to their Board.

The detailed surveys should include a consistent method of recording defects to individual panels, with an ability to assess changes over time. This should focus on the bearing of panels.

RAAC

Example of water penetration.



RAAC assessment

Example of RAAC assessment reporting

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SECTION 2.4 RAAC IDENTIFICATION

Example visual survey images confirming RAAC or NOT RAAC.

CONFIRMED RAAC

Non-load-bearing wall panels

CONFIRMED RAAC

RAAC load-bearing wall panels

NOT RAAC

Pebbledash finish with evidence of course aggregate within the matrix of concrete

NOT RAAC

Pebbledash finish with evidence of course aggregate within the matrix of concrete

CONFIRMED RAAC

Narrow RAAC panels to roof construction supported on lightweight steel trusses.

CONFIRMED RAAC

Panelised construction above suspended ceiling

NOT RAAC

Thermalite / Aircrete blocks formed in small units and laid as traditional blockwork masonry

NOT RAAC

1200mm wide precast concrete panels. Large format, smooth finish with no casting marks

RAAC Guidance Note

SECTION 2.5 SURVEYING ACCESS

To undertake a detailed visual survey of a RAAC installation a good level of access is required, as close as possible to the RAAC surface and support structure.

In order to facilitate inspection, NHS trusts should consider the following questions:

- Is there an up-to-date asbestos register, including above ceilings?

  RAAC surveys will generally require access above ceilings, within plant and riser spaces and other back of house areas. A full and detailed asbestos register is required to facilitate safe conduct of RAAC surveys and should be provided to the survey team for review ahead of any on site works. Further information about managing asbestos is available online from the Health and Safety Executive.

- Can the area be closed to allow access for the survey team? How will this impact on clinical operations? Does the area require out of hours access?

  RAAC surveys can be disruptive. Therefore, ahead of any survey works the onsite team (clinical and estates) should be informed and the date / timing / access requirements for surveys agreed in advance.

- Is the RAAC installation located above 3m from ground level? If so, it is recommended that ladder / step or mobile platform access is provided in line with the local estates policy and guidance provided by the Health and Safety Executive.

  RAAC surveys often require working at height. The estates team should inform the survey team of any site constraints and facilitate access to the RAAC installation.

- Can the underside of the roof be seen and accessed to take images / record defects? Is there a suspended ceiling or fixed ceiling? Is the area obscured by building services equipment? Will the extent of services prevent a meaningful view of RAAC panels?

  Access will be required above suspended ceilings. Therefore, it is recommended that the local estates team open ceilings ahead of site visits to ensure efficiency of the survey.

  If there are significant services obscuring the view of RAAC, alternative survey techniques may be required (see opposite).

Where good access is not possible to observe the RAAC, alternative survey techniques may be required to allow the RAAC installation risk profile to be developed. These may include:

- 360-Camera
- Pole Camera
- Drone Survey

Where finishes are applied directly to the RAAC panels, it is crucial to make assumptions and clearly articulate the potential risk factors associated with the installation.

360 Photos

360 photo image taken of remedial works.

RAAC Guidance Note

SECTION 2.6 NON-DESTRUCTIVE TESTING

Non-destructive testing can be used to support the development of the risk assessment for RAAC panels. The IStructE guidance provides details of suitable methods of non-destructive testing and the limitations.

There are two key forms of non-destructive test that can be used to inform the risk classification of RAAC panels. These are; radar scanning to locate anchorage reinforcement over bearings, and displacement surveys to inform the risk classification of individual panels.

The following should be noted when considering any non-destructive testing on RAAC panels:

Radar / Cover-meter scanning

Subsurface radar scanning can be used to determine the location of reinforcement, cover and depth of concrete within concrete structures. This can be useful to determine the extent and variation of reinforcement within RAAC panels.

Radar scanning has been used to assess the location of reinforcement over panel bearings. This can be used to inform the risk classification of panel bearings.

Standard cover meter surveys may also be useful to understand the variance of bar locations within panels but are unlikely to be appropriate for assessment of panel bearings due to the reflections / disruption / inaccuracies caused by the supporting element.

The tolerances of radar scanning techniques need to be carefully considered when attempting to establish the location of reinforcement over panel bearings. The location of reinforcement within bearings or reflective insulation to roofs can influence the accuracy and therefore validity of such techniques.

If bearings are to be investigated using radar scanning, it is suggested that testing starts small with the ability to scale as test results are obtained. Therefore, the price per test should be agreed with the maximum number of tests budgeted for. The minimum representative sample will depend on the variances encountered on site; i.e. number of different support types, panel conditions etc. Typically, the number of samples is 10-15% of the particular population, with a minimum of 20-30 samples. Radar scanning would need to be calibrated against physical testing to determine the likely accuracy of testing.

It is recommended that non-destructive testing is used with caution and that need for scanning is reviewed against the risk / tolerances and cost benefit.

Displacement Assessments

Displacement surveys, to assess panel displacements, can take many forms, including spot-surveys of individual panels or full digital scanning of entire RAAC populations. The level of displacement survey will depend on the site conditions, including access restrictions.

Displacement surveys can be used to establish the risk classification of the panels.

It is recommended that where RAAC installations are to be retained in the short to medium term, displacement surveys are undertaken. These may be targeted to areas of particular concern, i.e. locations of ponding or adverse loading or where visible displacement has been identified and the cause to be investigated.

For large installations with good access, full displacement surveys should be undertaken to help inform the panel risk assessment, in line with the IStructE guidance.

Displacement Scanning

Displacement scanning using digital techniques can be used to establish the RAAC risk profile.

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SECTION 2.7 DESTRUCTIVE TESTING

Destructive testing can be used to support the development of the risk assessment for RAAC panel bearings. In this instance, destructive testing describes small break-out holes at bearings to ascertain the depth of bearing and location of reinforcement.

It is recommended that careful consideration is given to the need for investigations into bearings before commissioning such work. In areas with narrow bearings, such as steelwork beams with narrow flanges, bearing investigation works may result in the need for remedial bearings regardless.

Generally, investigations are not recommended given the large variance in results and individual nature of the RAAC panels. This is particularly applicable to steelwork installations on narrow bearings.

If bearings are to be investigated, it is suggested that testing starts small with the ability to scale as test results are obtained. Therefore, the price per test should be agreed with the maximum number of tests budgeted for. The minimum representative sample will depend on the variances encountered on site; i.e. number of different support types, panel conditions etc. Typically, the number of samples is 10-15% of the particular population, with a minimum of 20-30 samples.. Radar scanning would need to be calibrated against physical testing to determine the likely accuracy of testing.

The need for temporary works ahead of any bearing investigation must be assessed on a case-by-case basis. This may include propping the panel. The remedial works required following the investigation will depend on the findings of the investigation; i.e. propping may need to remain in place.

RAAC

Measurement of bearing end of RAAC panel.

RAAC Guidance Note

SECTION 2.8 OTHER CONSTRUCTION FORMS

It is recognised that RAAC is only one of a multitude of construction forms that may be identified when undertaking a RAAC confirmation survey. It is recommended that the forms of construction encountered during surveys are noted for future reference by the local and national NHS team. This should include the assumed or confirmed structural systems for the frame, floor and roof, façade and a record of any novel systems encountered.

The following provides a non-exhaustive set of example systems that should be identified as they can have ongoing maintenance implications.

Beam and Pot Floors / Roofs

Lightweight floor system using clay pots as void formers between in-situ concrete ribs.

Low-weight system used to reduce weight of concrete floor slabs

Laingspan

Componentised construction system using precast, prestressed and reinforced concrete beam and column sections.

Woodwool / Stramit Roofs

Lightweight roofing or permanent formwork system.

Intergrid

Componentised construction system using precast, prestressed and reinforced concrete beam and column sections.

RAAC Guidance Note

SECTION 3.0 ASSESSMENT

If RAAC is discovered on site, it is recommended that a unified approach to assessment is undertaken to ensure that the individual NHS trust and the central NHS RAAC team can understand the risk profile.

The Institution of Structural Engineers (IStructE) have provided guidance (available using the QR code opposite) on the approach to risk assessment of RAAC panels; focused on floor and roof panels.

It is recommended that all teams adopt the IStructE guidance in defining the structural condition risk of a RAAC installation, using the categories opposite. This should be clearly described as the condition risk associated with the RAAC at a given time. This may not need to be panel-by-panel when there is a global risk associated with elements such as bearing width.

The following section provides guidance on the development of RAAC risk assessments for installations expanding on those covered by the IStructE guidance.

Element	Discussion
RED **Critical Risk**	Requires urgent remedial works which may include taking out of use or temporary propping to allow the safe ongoing use of a building. Depending on the extent, this may be part or all of the building. Combined with awareness campaign for occupants including exclusion zones.
RED **High Risk**	Requires remedial action as soon as possible. Combined with awareness campaign for occupants, which may include exclusion zones, signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, change in loading, etc.
Amber **Medium Risk**	Requires inspection and assessment on a regular basis, eg, annually. Combined with awareness campaign for occupants, which may include signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, etc.
Green **Low Risk**	Requires inspection and assessment occasionally, eg, three-year period depending on condition. Combined with awareness campaign for occupants, which may include signage, loading restrictions and the need to report changes of condition, eg, water leaks, debris, etc.

IStructE RAAC guidance

RAAC Guidance Note

SECTION 3.1 FLOOR & ROOF PANELS

RAAC floor and roof panels are covered within the IStructE guidance. This guidance provides the risk factors and methodology for assigning a RAG rating to panels.

Reference should be made to the IStructE guidance for the risk assessment of roof and floor panels

	Element	
External	Use	Load-bearing
	Orientation	Installed horizontally
	Form and appearance	Typically, 600mm wide panels with chamfer (but can vary)
	Reinforcement	Doubly reinforced sections
	Finish	Varies; typically direct painted where exposed or hidden behind ceilings
	Fixings	Fixings made between units and supporting structure based on manufacturers documentation.

External Panel

600mm wide panels with chamfered edges

Thickness varies depending on the application / use.

Significant Risks for Roof and Floor Panels

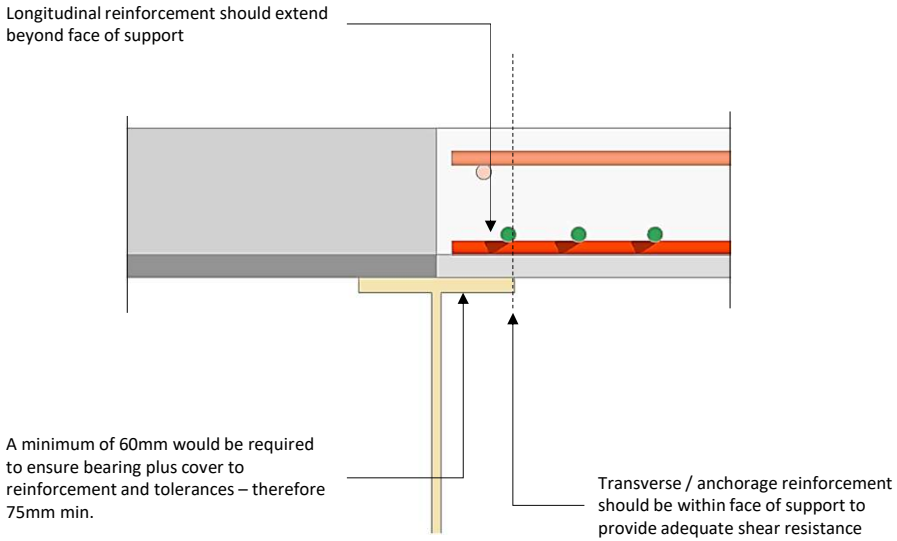
The dimension of the supporting elements and the 'end-bearing' of the RAAC panels is critical to the shear strength of the panel. This has been confirmed by the NHS RAAC Research (Led by Loughborough University).

Critical to bearing is the inclusion and position of the transverse, anchorage bar or cross bar as defined by BS EN 12602. The transverse / anchorage bar (shown green in the diagram below), must sit over the supporting structure to achieve the full design shear strength of the panel. Where this is not the case, the reduction in shear strength can be significant and increase the risk of brittle failure.

For this reason, the IStructE recommends a minimum bearing width for panels of 75mm in general. This is expected to increase the probability of the transverse bar being located over the bearing.

This is recognised to be greater than the minimum bearing of RAAC panels as defined within CP116 (generally considered the Code of Practice at the time of installation).

In particular, cut or modified panels present a risk as the minimum requirements for bearing and location of the transverse / anchorage bar is much less likely to be achieved when panels have been adapted on site.



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SECTION 3.2 CEILING PANELS

In some instances, RAAC panels have been used to provide a fire-resistant ceiling construction, with a secondary roof structure located above. In these instances, RAAC panels generally support their self-weight only, although nominal ceiling and services loads or nominal access may be also be applied.

In general, ceiling panels should be treated as similar to roof and floor panels.

Reference should be made to the IStructE guidance for the risk assessment of roof and floor panels

	Element	
External	Use	Load-bearing (supporting weight of RAAC panels only)
	Orientation	Installed horizontally
	Form and appearance	Typically, 600mm wide panels with chamfer (but can vary)
	Reinforcement	Doubly reinforced sections
	Finish	Varies; typically direct painted where exposed or hidden behind ceilings
	Fixings	Fixings made between units and supporting structure based on manufacturers documentation.

External Panel

600mm wide panels with chamfered edges

Thickness varies depending on the application / use.

RAAC

Example of ceiling panels

RAAC

Example of ceiling panels.

RAAC Guidance Note

SECTION 3.2. CEILING PANELS CONTINUED

Internal **load-bearing** ceiling panels are generally considered to present a MEDIUM to HIGH risk if panels are in good visible condition. There remains a potential HIGH risk if there is evidence of poor bearing (similar to floor and roof panels, described by the IStructE guidance).

Risk Factor	Identifier	Impact	Risk Rating	Investigation / Further works	Remediation
Bearing / Anchorage	Visually, identify narrow support structure, such as 100mm wide steelwork beams. HOWEVER, bearings need investigation to confirm actual width and bar locations.	Limited bearing with high potential for transverse / anchorage bar to be located outside of the support.	HIGH RISK – Potential for shear failure of RAAC panels	Investigate bearing width and location of transverse / anchorage reinforcement.	Remove panels or install end-bearing support structure applied to the primary frame.
Cut-panels	Where location of panels which appear shorter or have been cut for features such as roof-lights.	Limited bearing with high potential for transverse / anchorage bar to be located outside of the support.	HIGH RISK – Potential for shear failure of RAAC panels	Visual inspection	Remove panels or install span-support structure applied to the primary frame.
Builders-work / Services / Ceiling installations	Where builders work / service penetrations or fixings through or into panels are noted	Potential impact on reinforcement (cutting during install) or additional loading applied to panels.	HIGH RISK – Potential for shear failure of RAAC panels due to instability local to openings.	Visual inspection	Remove panels or install span-support structure applied to the primary frame.
Water damage	Water damage through staining of panels or crystallisation deposits on surface of RAAC.	Saturated RAAC may result in degradation of reinforcement coating, corrosion of reinforcement, spalling, reduced strength of AAC and increase loading	HIGH RISK – Potential for decrease in strength and increase in loading	Visual inspection and anecdotal evidence	Remove panels or install span-support structure applied to the primary frame.
Cracking	Minor cracking within span or close to support	Cracking may indicate high stresses within specific areas of section	LOW-MEDIUM RISK - when in span HIGH RISK - when within 500mm of supports	Visual inspection	Remove panels or install span-support structure applied to the primary frame.
Displacement	Differential displacement between panels or using Non-destructive testing (NDT) such as displacement surveys	Increase in bearing stresses due to rotation of panels	LOW-MEDIUM RISK – high displacements may impact on bearing stresses	Visual inspection and NDT	Remove panels or install span-support structure applied to the primary frame.
Adverse Loading	Applied services, fixings, equipment connected to panels	Local instability of panels and fixed element due to low strength of panels	MEDIUM RISK – Depending on the equipment. Large equipment should not be connected to RAAC panels due to potential for poor fixings.	Visual assessment of panels for signs of attached equipment	Removal of fixed equipment

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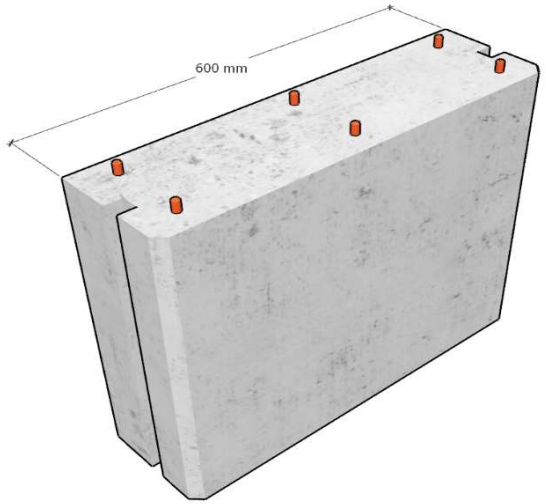
SECTION 3.3 EXTERNAL NON-LOAD-BEARING WALL PANELS

RAAC panels were manufactured for use in non-load-bearing external wall panels. These are supported by a primary frame, typically of steelwork or concrete.

This note discusses the impact of these wall panels and the risk factors to be considered wall RAAC panels.

The walls have the following characteristics:

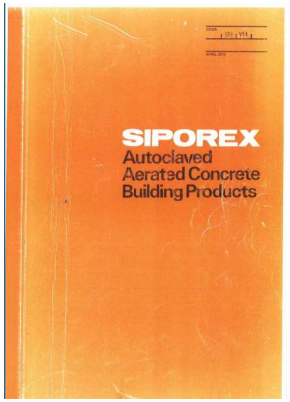
	Element	
External	Use	Non-load-bearing
	Orientation	Installed vertically or horizontally, but not as a load-bearing construction.
	Form and appearance	600mm wide panels with chamfer and internal recess / key
	Reinforcement	Doubly reinforced sections
	Finish	Varies; Render, Dry-dash or direct painting finish. Full cladding in severe locations
	Fixings	Fixings made between units using specialist clamp fixings



External Panel

600mm wide panels with chamfered edges

Thickness varies depending on the application / use.



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SECTION 3.4 EXTERNAL NON-LOAD-BEARING WALL PANELS

External **non-load-bearing** walls are generally considered to present a LOW to MEDIUM risk if panels are in good visible condition. There remains a potential HIGH risk if there is evidence of a lack of restraint or corrosion of restraint fixings.

Risk Factor	Identifier	Impact	Risk Rating	Investigation / Further works	Remediation
Corrosion of reinforcement	Spalling or cracking of concrete local to location of embedded reinforcement.	Possible reduction in lateral, and vertical, capacity of RAAC wall panels	MEDIUM RISK – Depending on the extent of corrosion, the panel stability may be adversely affected under wind / imposed loading	Visual assessment of panels for signs of cracking / spalling Identify source of corrosion / moisture	Assessment of panel strength with reduced reinforcement AND local repair of RAAC and reapplication of weathering / finishes OR Replacement of panels.
Local damage to panel edges	Spalling or breaking of concrete local to panel edges	Spalling of concrete local to reinforcement or areas of surface damage	LOW RISK – Minor damage to panel edges unlikely to impact on stability, but may cause further damage	Visual assessment of panels for signs of cracking / spalling	Local repair of RAAC
Corrosion or Lack of Connections to Primary Frame	Spalling or cracking of concrete local to location of support points, typically between panels. Displacement or movement of panels	Overall instability of panels, possible failure away from primary support. May impact multiple panels	HIGH RISK – panels may become laterally unstable if fixings are damaged or missing	Visual assessment of panels for signs of cracking / spalling AND / OR Investigate sample of connections to ascertain corrosion levels	Remedial fixings / additional to RAAC panels OR Replacement of panels
Mechanical Damage / Holes	Where builders work / service penetrations or fixings through or into panels are noted	Local instability of panels	MEDIUM RISK – Depending on the location / size of the penetration, the panel stability may be impacted	Visual assessment of panels for signs of damage	Re-routing of services with Local repair of RAAC OR Replacement of panels
Non-breathable finish / Water ingress	Damp / staining on internal or external face	Increase in potential saturation of panel, leading to strength reduction and reinforcement corrosion	MEDIUM RISK – Depending on the degree of water penetration and associated factors (corrosion etc)	Visual assessment of panels for signs of water ingress Identify source of water ingress	Repair of weathering with breathable coatings OR over-cladding (subject to assessment of condensation risk) OR Replacement of panels
Increase in loading	Applied services, fixings, equipment connected to panels	Local instability of panels and fixed element due to low strength of panels	MEDIUM RISK – Depending on the equipment. Large equipment should not be connected to RAAC panels due to potential for poor fixings.	Visual assessment of panels for signs of attached equipment	Removal fixed equipment

RAAC Guidance Note

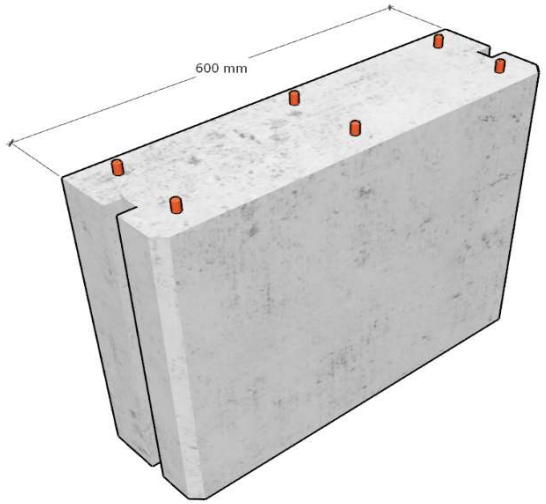
SECTION 3.5 LOAD-BEARING WALL PANELS

RAAC panels were manufactured for use in load-bearing wall panels. These are normally recognised as exposed external wall panels, although load-bearing panels may also be found within buildings as well as load-bearing panels as inner-leaf for external walls.

This note discusses the impact of these wall panels and the risk factors to be considered wall RAAC panels.

The walls have the following characteristics:

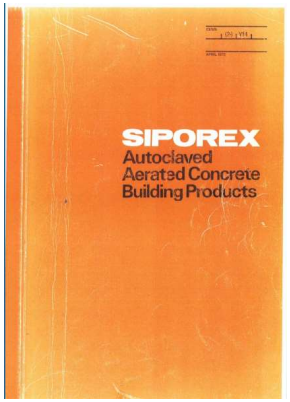
	Element	
External	Use	Load-bearing
	Orientation	Installed vertically
	Form and appearance	600mm wide panels with chamfer and internal recess / key
	Reinforcement	Doubly reinforced sections
	Finish	Varies; Render, Dry-dash or direct painting finish. Full cladding in severe locations
	Fixings	Fixings made between units using specialist clamp fixings



External Panel

600mm wide panels with chamfered edges

Thickness varies depending on the application / use.



RAAC Guidance Note

SECTION 3.6 EXTERNAL LOAD-BEARING WALL PANELS

NHS England

External **load-bearing** walls are generally considered to present a MEDIUM risk if panels are in good visible condition. There remains a potential HIGH risk if there is evidence of a lack of restraint or corrosion of restraint fixings.

Risk Factor	Identifier	Impact	Risk Rating	Investigation / Further works	Remediation
Corrosion of reinforcement	Spalling or cracking of concrete local to location of embedded reinforcement.	Possible reduction in lateral, and vertical, capacity of RAAC wall panels. This may impact on the capacity.	MEDIUM / HIGH RISK – Depending on the extent of corrosion, the panel stability may be adversely affected under wind / imposed loading	Visual assessment of panels for signs of cracking / spalling. Calculations of capacity. Identify source of corrosion / moisture	Assessment of panel strength with reduced reinforcement AND local repair of RAAC and reapplication of weathering / finishes OR Replacement of panels.
Local damage to panel edges	Spalling or breaking of concrete local to panel edges	Spalling of concrete local to reinforcement or areas of surface damage	LOW RISK – Minor damage to panel edges unlikely to impact on stability, but may cause further damage	Visual assessment of panels for signs of cracking / spalling	Local repair of RAAC
Corrosion or Lack of Connections to Primary Frame	Spalling or cracking of concrete local to location of support points, typically between panels. Displacement or movement of panels	Overall instability of panels, possible failure away from primary support. May impact multiple panels	HIGH RISK – panels may become laterally unstable if fixings are damaged or missing	Visual assessment of panels for signs of cracking / spalling AND / OR Investigate sample of connections to ascertain corrosion levels	Remedial fixings / additional to RAAC panels OR Replacement of panels
Mechanical Damage / Holes	Where builders work / service penetrations or fixings through or into panels are noted	Local instability of panels	MEDIUM RISK – Depending on the location / size of the penetration, the panel stability may be impacted	Visual assessment of panels for signs of damage	Re-routing of services with Local repair of RAAC OR Replacement of panels
Non-breathable finish / Water ingress	Damp / staining on internal or external face	Increase in potential saturation of panel, leading to strength reduction and reinforcement corrosion	MEDIUM RISK – Depending on the degree of water penetration and associated factors (corrosion etc)	Visual assessment of panels for signs of water ingress Identify source of water ingress	Repair of weathering with breathable coatings OR over-cladding (subject to assessment of condensation risk) OR Replacement of panels
Increase in loading	Applied services, fixings, equipment connected to panels	Local instability of panels and fixed element due to low strength of panels	MEDIUM RISK – Depending on the equipment. Large equipment should not be connected to RAAC panels due to potential for poor fixings.	Visual assessment of panels for signs of attached equipment	Removal fixed equipment

RAAC Guidance Note

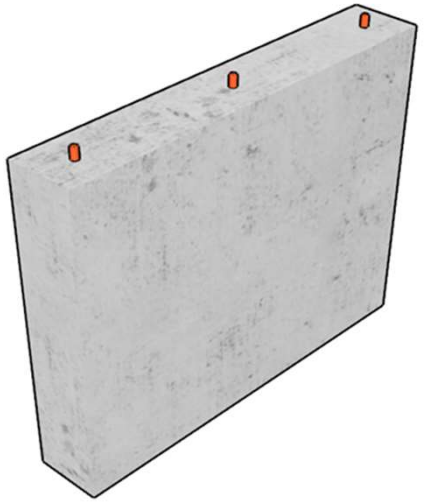
SECTION 3.7 INTERNAL NON-LOAD-BEARING WALL PANELS

RAAC panels were manufactured for use in non-load-bearing internal wall panels, fixed with movement joints between the primary frame.

This note discusses the impact of these wall panels and the risk factors to be considered wall RAAC panels.

The walls have the following characteristics:

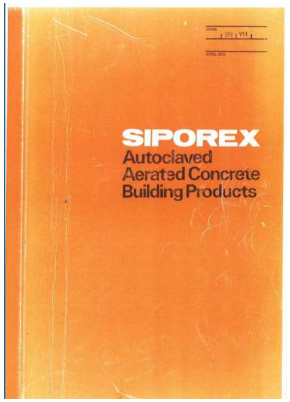
	Element	
Internal	Use	Non-load-bearing
	Orientation	Installed vertically, with a movement joint between panels and primary structure
	Form and appearance	600mm wide panels with no-chamfers
	Reinforcement	Single reinforcement
	Finish	Direct plaster or paint finish
	Fixings	Fixings made using timber or proprietary steel fixings



Internal Panel

600mm wide panels with straight edges

Thickness varies depending on the application / use.



RAAC Guidance Note

SECTION 3.8 INTERNAL NON-LOAD-BEARING WALL PANELS

Internal **non-load-bearing** walls are generally considered to present a LOW risk if panels are in good visible condition. There remains a potential HIGH risk if there is evidence of a lack of restraint or corrosion of restraint fixings.

Risk Factor	Identifier	Impact	Risk Rating	Investigation / Further works	Remediation
Corrosion of reinforcement	Spalling or cracking of concrete local to location of embedded reinforcement.	Possible reduction in lateral, and vertical, capacity of RAAC wall panels	LOW RISK – Depending on the extent of corrosion, the panel stability may be adversely effected under imposed loading	Visual assessment of panels for signs of cracking / spalling Identify source of corrosion / moisture	Assessment of panel strength with reduced reinforcement AND local repair of RAAC and reapplication of finishes OR Replacement of panels
Local damage to panel edges	Spalling or breaking of concrete local to panel edges	Spalling of concrete local to reinforcement or areas of surface damage	LOW RISK – Minor damage to panel edges unlikely to impact on stability, but may cause further damage	Visual assessment of panels for signs of cracking / spalling	Local repair of RAAC
Corrosion or Lack of Connections to Primary Frame	Spalling or cracking of concrete local to location of support points, typically between panels No restraint / fixings evident Displacement or movement of panels	Overall instability of panels, possible failure away from primary support. May impact multiple panels	HIGH RISK – panels may become laterally unstable if fixings are damaged or missing	Visual assessment of panels for signs of cracking / spalling AND / OR Investigate sample of connections to ascertain corrosion levels	Remedial fixings / additional to RAAC panels OR Replacement of panels
Mechanical Damage / Holes	Where builders work / service penetrations or fixings through or into panels are noted	Local instability of panels	MEDIUM RISK – Depending on the location of the penetration, the panel stability may be impacted	Visual assessment of panels for signs of damage	Local repair
Increase in loading	Applied services, fixings, equipment connected to panels	Local instability of panels and fixed element due to low strength of panels	MEDIUM RISK – Depending on the equipment. Large equipment should not be connected to RAAC panels due to potential for poor fixings.	Visual assessment of panels for signs of attached equipment	Removal of fixed equipment

RAAC Guidance Note

SECTION 3.9 LINTELS

RAAC panels were manufactured for use in non-load-bearing internal wall panels.

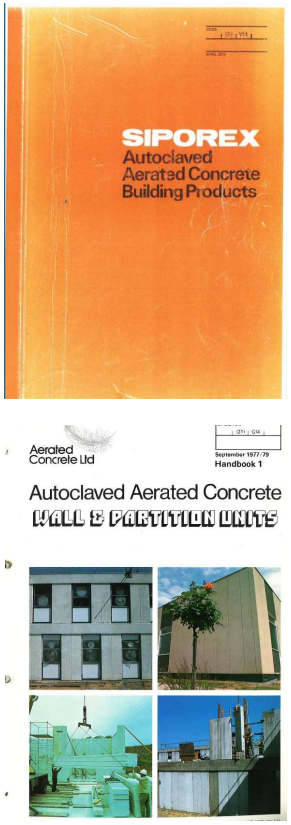
This note discusses the impact of these wall panels and the risk factors to be considered wall RAAC panels.

The walls have the following characteristics:

	Element	
Internal	Use	Within load-bearing masonry construction
	Orientation	Installed horizontally
	Form and appearance	Cast
	Reinforcement	Doubly reinforcement
	Finish	Direct plaster or paint finish
	Fixings	N/A

Lintels

RAAC lintels being installed, taken from Siporex manual.



RAAC Guidance Note

SECTION 3.10 LINTELS

Lintels are considered to be a LOW risk if in good visible condition with no distress evident to adjacent masonry.

Risk Factor`	Identifier	Impact	Risk Rating	Investigation / Further works	Remediation
Corrosion of reinforcement	Spalling or cracking of concrete local to location of embedded reinforcement.	Possible reduction in lateral, and vertical, capacity of RAAC lintel	LOW RISK – Depending on the extent of corrosion, the lintel stability may be adversely effected under imposed loading	Visual assessment of panels for signs of cracking / spalling Identify source of corrosion / moisture	Assessment of lintel strength with reduced reinforcement AND local repair of RAAC and reapplication of finishes OR Replacement of lintel
Mechanical Damage / Holes	Where builders work / service penetrations or fixings through or into panels are noted	Local instability of lintel	MEDIUM RISK – Depending on the location of the penetration, the panel stability may be impacted	Visual assessment of panels for signs of damage	Local repair
Increase in loading	Where additional loading has been applied to lintels	Increase in loading on lintels causing potential movement / failure of masonry.	MEDIUM RISK – Depending on the applied loading.	Visual assessment of masonry and lintel for signs of distress.	Replacement of lintel.
Poor Bearing	Poor bearing of lintels from original installation.	Increases of stresses local to bearing	MEDIUM RISK – Depending on the applied loading.	Visual assessment of masonry and lintel for signs of distress.	Replacement of lintel.

RAAC Guidance Note

SECTION 3.10 PRIMARY FRAME ASSESSMENT

RAAC can be supported on a range of structural systems. It is important that the appraisal of the RAAC installation extends to understand the condition of the supporting structure.

The condition of the support structure may influence decisions around retention of the building or the form and scope of interim remedial works. In some instances, the condition and form of the support structure may require additional strengthening to support RAAC remedial works.

It is recommended that the Surveyor reviews the condition of the support structure and advises on any additional surveys or testing required to assess the capacity. This is particularly important ahead of any remediation works.

A non-exhaustive list of considerations is provided below:

For further details, refer to the Institution of Structural Engineers; Appraisal of Existing Structures (latest edition).

Support Structure

Example of support structure.

General Considerations:

- Water penetration due to poor maintenance or defective original details
- High humidity and condensation due to poor ventilation
- Mechanical damage caused by building services installation; particularly in refurbished spaces
- Poor connections between cladding and non-load-bearing elements and primary frame

Insitu Concrete Considerations:

- Corrosion of reinforcement
- High chlorides causing corrosion originating from acceleration of casting process
- High chlorides originating from external factors; de-icing salts / gritting etc
- Low-shear capacity of concrete sections before 1980s
- Variable cover to reinforcement; impacting on durability and fire resistance

Precast Concrete Considerations:

- Corrosion of reinforcement
- High chlorides causing corrosion originating from acceleration of casting process
- High chlorides originating from external factors; de-icing salts / gritting etc
- High Alumina Cement (HAC)
- Low-shear capacity of concrete sections before 1980s
- Variable cover to reinforcement; impacting on durability and fire resistance
- Low-shear capacity of nib details before 1980s
- Poor bearing details between elements
- Poor tying details between elements

Steelwork Frame Considerations:

- Corrosion of steelwork and connections in areas with high-humidity OR within cavities
- Low capacity of existing connections for additional loading
- Low strength of original materials

RAAC Guidance Note

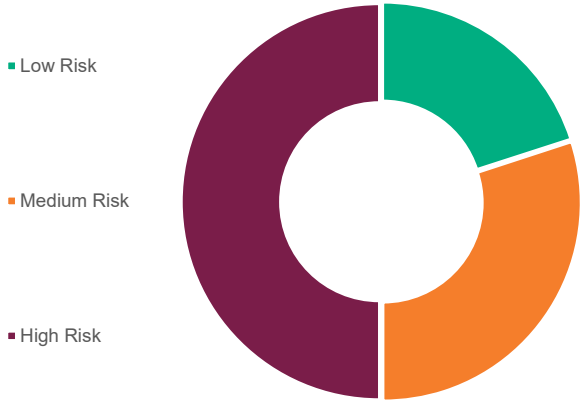
SECTION 4.0 RAAC MANAGEMENT

Once RAAC has been identified, a RAAC management strategy should be developed in collaboration with the onsite estates and clinical teams, supported by the surveyor's findings.

This management strategy should form part of the site Health and Safety File, remaining as a working document. It should maintain records of the location and condition of RAAC within the estate, as well as remedial actions that have been undertaken or planned.

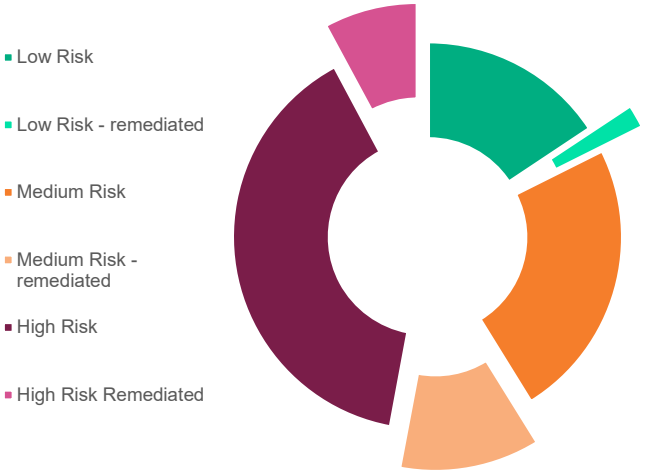
The management (and remediation / removal strategy) should be updated as surveys progress and should contain the following information:

- The responsible parties (estates, clinical and survey teams)
- The form of structure
- The location of RAAC panels
- The condition / risk assessment for RAAC panels in each location. This should include summaries of the RAAC installation at a given time – as shown in the examples opposite.
- Up to date records of activities that may impact on RAAC condition; such as new building services installations, re-roofing or replacement of roof coatings etc
- Details of remedial works or temporary supports installed
- Details of any restrictions / limitations imposed by the RAAC installation or the remediation installed.



RAAC Condition Summary – Initial

Example of RAAC condition assessment following initial site visit.



RAAC Condition Summary – Year 1+

Example of RAAC condition assessment following year 1+ remedial works.

RAAC Guidance Note

SECTION 4.0 RAAC MANAGEMENT CONTINUED

RAAC risk assessments need to consider both the technical risk, developed by surveyors, and the operational risk, understood and developed by the building owner or operator or user. The combined view should inform the management approach and prioritisation of RAAC remediation programmes.

It is recommended that the roles and responsibilities are defined within the RAAC management strategy. This should ideally be presented as an organogram of responsible persons for management of RAAC.

Within a healthcare setting this should include both estates and clinical teams.

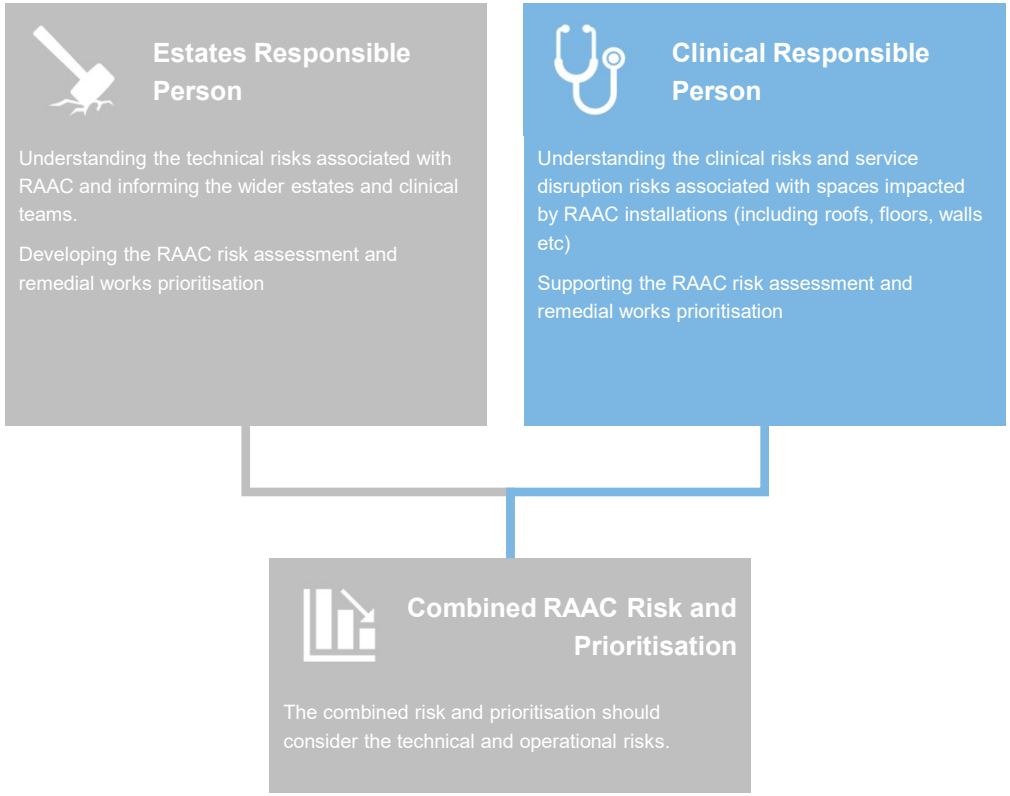
The estates personnel should be responsible for developing the technical appraisal of RAAC and the RAAC risk assessment. The estates team should:

- Maintain the RAAC management and remediation strategy documentation
- Raise awareness of RAAC within the estate amongst staff
- Procure support for surveys and remedial works

The clinical personnel engaged in RAAC management should be responsible for assisting the understanding of operational risk. This should include:

- Assisting the development of the management strategy through providing clinical / service prioritisation and risk assessments
- Raising awareness of RAAC within the estate amongst staff
- Supporting the undertaking of surveys

As part of the management process, it is recommended that trusts engage their resilience personnel / teams in the management of RAAC and that there is assurance that, were relevant, a tested and exercised evacuation plan exists related to the site / area with RAAC.



RAAC Guidance Note

SECTION 4.1 RAAC COMMUNICATION

It is recommended that a communication strategy is developed for the healthcare sites that provides clear guidance on the RAAC installation and how this is being managed. The National RAAC Programme has a Comms Pack to assist Trusts in this activity.

An awareness campaign should be implemented so that all staff members are aware of the challenges with RAAC. This should provide reassurance that measures are being taken and help involve staff members in the monitoring. Staff members should be encouraged to notify the responsible person if conditions change, for example, if leaks are detected.

A permit to work system, which may include signs / communication, should be enacted where RAAC panels are found to raise awareness and prevent unintended damage, such as loading, additional fixings etc

External communication should be carefully considered and agreed with the onsite team. It is recommended that external stakeholder mapping is undertaken to ensure those who need to be aware of the presence of RAAC are communicated with, for example local fire & rescue service.

It is suggested that the following proactive measures should be implemented (not exhaustive):

- Raise awareness of the risks associated with RAAC to the senior leadership and estates teams
- Raising awareness with clinical teams to ensure incidents are reported as-soon-as-possible
- Ensure that contractors are aware of the installation to avoid fixings, building services or other additional items being connected to RAAC
- Ensure all users are aware of any loading restrictions, such as roof or floor loading limits.

RAAC Guidance Note

SECTION 5.0 REMEDIATION

The form of remediation for RAAC installations will vary depending on location and the form of RAAC. The level of complexity of remediation also varies; from temporary through propping to full removal.

The level of remediation works will depend on the findings of the detailed survey. In some instances, immediate actions may be required, such as installation of propping or exclusion zones. In most instances, planned remedial works including end-bearing support, full span support or replacement.

Replacement / eradication at the earliest opportunity should be considered as the preferred option, subject to balance of investment considerations of operational risks, structural risks, financial constraints and estates strategic plans.

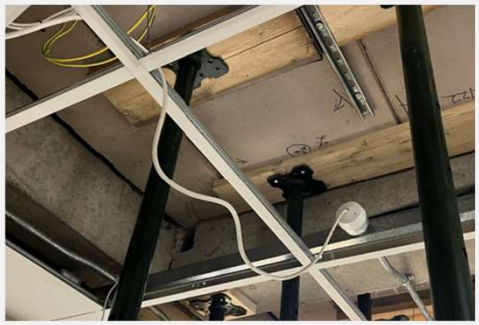
The forms of remediation works are described overleaf.

Action	Description	Applicable Form of Remedial Works
Immediate actions	Actions that should be implemented ahead of any future access into the space.	Temporary propping OR end-bearing support OR full-span support
Short-Medium term actions	Actions that should be implemented through a prioritisation exercise	Installation of end-bearing support OR full-span support OR Removal of RAAC panels
Long-term actions	Actions that may be implemented within the next 3-5years.	Installation of full-span support OR Removal of RAAC panels
Supporting Actions		
Further Survey works	Additional surveys that may influence or change the risk profile described within this report	
Control Measures	Control measures should be implemented to reduce the risks associated with RAAC panel installations in support of remediation / removal plans.	

RAAC Guidance Note

SECTION 5.1 REMEDIATION OPTIONS

Descriptions of typical RAAC remediation options. Note these are not within sequential order or order of preference.



Temporary Propping

Temporary propping can support end-bearing and mid-span of RAAC panels.

Suitable for immediate support and long-term support where service is not disrupted; i.e. spaces can be temporarily closed or propping can be accommodated without disrupting users.

Temporary propping is typically defined by the Structural Engineer, but designed by a specialist temporary works contractor.

End Bearing Support

End-bearing support can be used to enhance the end-bearing of panels to reduce shear risk.

End-bearing support requires pre-planning to allow installation, which may include removal of ceilings and services.

It is recommended for all panels where end-bearing risk is considered high.

Full Span Support

Full span support can be used to support panels which have high displacements, have been cut, have significant builders work or adverse loading.

Full span support requires pre-planning to allow installation, which will include removal of ceilings and services.

This will disrupt clinical services below.

Replacement

Removal of RAAC requires significant pre-planning and will include removal of ceilings and services.

This will disrupt clinical services below.

Increasing Complexity

Reduces risk	Reduces risk due to shear / end-bearing failure	Reduces risk of end-bearing and span failure	Removes risk

Ongoing Management Required

RAAC Guidance Note

SECTION 5.2 IMMEDIATE ACTIONS

It is recommended that when RAAC is discovered, immediate actions are implemented to reduce the risk to RAAC installations. These may include the following:

- Loading reduction through removal of non-essential finishes; for example, building services / plant on roof, suspended services or ceilings (if it is safe or viable to do so).
- Permit to access zones above RAAC installations
- Assessment of installations supported by RAAC; handrails, building services installations etc
- Removal of ponding water; use of pumps
- Clearance of gutters and ensuring rainwater goods have sufficient capacity
- Removal of significant vegetation (if applicable)
- Development of adverse weather action plan

These works may need to be undertaken from defined access zones or temporary walkways

Roof level

Ponding and vegetation on roof structure

RAAC Guidance Note

SECTION 5.3 REMEDIATION DESIGN

It is recommended that RAAC remedial works should follow a consistent approach, outside of the clinical and operational risks associated with the RAAC.

This should:

- Support the full dead-loading of the RAAC panels, finishes, ceilings and services
- Support nominal access loading appropriate to the building typology and location. At roof level, it is suggested that this may be reduced to align with the normal snow loads applied to a roof structure; i.e. 0.4-0.5kN/m2. At floor levels this should be limited to reasonable loads for the space, considering the precise current use.
- Dead (self-weight) and imposed (access) loads should be fully articulated to the Trusts' estates teams.
- Load-durations for wind-loading should not be modified.
- Loads should be reduced and combined with appropriate factors of safety to BS EN 1990.
- Where timber supporting structures are adopted, these should be designed with appropriate load-duration factors to account for the higher capacity of timber in short durations.
- The serviceability limit state displacements of RAAC panel and supporting structure installations should be assessed on a case-by-case basis with appropriate values selected for the finishes, ceilings and services being applied.
- Composite action between RAAC panels and supporting structure should not be considered.
- Consider the additional loading on the primary frame from the remedial works

The prioritisation process should consider the clinical and operational risks.

It is recommended that plans of RAAC remedial works are maintained at each stage.

RAAC Support

RAAC support structure using timber

RAAC Support

RAAC support structure using steelwork

RAAC Guidance Note

SECTION 5.3 REMEDIATION DESIGN CONTINUED

End-bearing Support

It is recommended that end-bearing support should generally be formed using timber sections to reduce the cost and carbon implications of the remedial works (unless site specific considerations change this).

The end-of-life, circular economy, aspects of remedial works should be considered. This is particularly when the installation is to last for a short-term time period.

It is recommended that any end-bearing-supports are designed for a nominal additional loading should span support measures be needed in the future.

To limit the shrinkage of timber, a moisture content control plan should be implemented, as outlined within the National Structural Timber Specification, to ensure that the average moisture content at time of installation is as low as practicable.

Full-Span Support

It is recommended that span support should utilise timber (or other lightweight forms) in lieu of steelwork. This would reduce the material weight, impact on the primary frame and the potential carbon impact.

To limit the shrinkage of timber, a moisture content control plan should be implemented, as outlined within the National Structural Timber Specification, to ensure that the average moisture content at time of installation is as low as practicable.

It is recommended that the spacing of remedial supports should be maximised to limit the number of supports. This is applicable particularly in dry-environments where the risk of spalling or reduction of the RAAC material strength is low.

Where the panels are within a humid or wet environment, due to water leaks, spacing could be reduced.

In the back of house areas, where the services may be limited or ceilings are not required, netting may be installed to contain debris. In clinical and front of house areas, ceilings should be designed to support some debris. Ongoing maintenance and inspection of the RAAC condition and remedial structure should be continued.

RAAC Support

End bearing support on steelwork beam with isolated trimming to BWIC hole

RAAC Support

Full span support to RAAC panels

RAAC Guidance Note

SECTION 5.3 REMEDIATION DESIGN CONTINUED

Replacement of RAAC

RAAC panels may be removed as part of an overall remediation strategy. Where this is the case, the following considerations should be made:

- The weight of the replacement material; RAAC is very lightweight and significantly lighter than traditional concrete products. Any replacement should consider the weight of new materials on the primary frame and should seek to avoid the need for strengthening of the primary frame.
- Local lateral stability; RAAC panels are likely to provide local lateral stability against buckling to the primary frame elements; beams and columns. Therefore, temporary bracing may be required to avoid local instability during the construction works.
- Global lateral stability: RAAC panels will provide a lateral load-path, i.e. will be part of the wind-loading resisting system. Removal of RAAC panels may cause global instability under wind loads, therefore replacement systems will need to recreate this lateral load-path either through the new panels or new permanent bracing.

RAAC Guidance Note

SECTION 5.3 REMEDIATION DESIGN CONTINUED

Wall Remedial Works

Wall remediation may take a number of forms, including:

- Introduction of corrosion inhibitor systems to prevent reinforcement corrosion and potential cracking / spalling of the RAAC panels
- Removal of defective panels and replacement with alternative structural system
- Over-cladding with laterally load-bearing system to reduce panel stresses.

Given the potential for disruption and high value of the works, it is recommended that before any wall remediation is installed, applied loading and condition assessments are undertaken; this should include some measurement of moisture content and loss of section. These assessments should inform whether remediation is required.

Weather protection should be reinstated to limit water penetration. Protection should be ‘breathable’ to prevent increases in internal moisture content.

Wall Remediation

Wall remediation works progressing on site

RAAC Guidance Note

SECTION 5.4 COMMUNICATING REMEDIATION

It is important that the remedial works to RAAC panels are captured within the Health & Safety File. Ideally, this should follow the set format defined opposite.

The Health and Safety file should be in sufficient detail to allow the likely risks to be identified and addressed by those carrying out future works and maintenance to buildings containing RAAC and remediated RAAC. The level of detail should be proportional to the risk.

Critical to the file will be the loading plans that identify potential limitations of future works.

	Description	Requirement
A	Description of the works	Description of the risks associated with RAAC installations Brief description of the works carried out for remediation
B	Residual hazards	List of hazards that have not been eliminated through the design and construction processes.
C	Key structural principles	Description of the key structural principles, allowable load assumed during the remedial works and the design criteria
D	Hazardous materials	Description of any hazardous materials used within construction process
E	Information regarding dismantling of equipment	Not applicable
F	Equipment for cleaning and maintaining	Not applicable
G	Location of services	Not applicable
H	As Built information	As Constructed / Built information, drawings and specifications for building structure, plant and equipment. Including: - As installed drawings - Key material specifications and as installed material / element data sheets - Methods of construction - Information relevant to demolition - Loading Plans

RAAC Guidance Note

SECTION 5.5 REMOVAL OF RAAC

Ahead of removing RAAC panels from the estate, the following information is suggested to support the ongoing understanding of RAAC. This should be submitted to the national RAAC team.

Prior to removal of the RAAC:

- Following removal of services and ceilings, provide a full photographic record of the installation, including the RAAC panel condition and supporting structure form
- Provide a General Arrangement sketch plans of the installation indicating the following:
    - Span of panels
    - Width of panels
    - Location and type of supports
    - Width of supports.
- Provide details of the supporting structure, text and photographic evidence, highlighting the structural form (concrete or steelwork) and the width of supports

During demolition / removal of RAAC:

- Dimensions and photographic evidence of:
    - The depth of the RAAC panels
    - Width of bearing onto the supporting structure
    - Presence of anchorage bars to ends of panels, including dimension from end of panel to first anchorage bar
- Any specific features, such as water ingress or BWIC, and the impact that this has had on panel formation during the works.

Demolished RAAC

RAAC demolished without survey works to gather data on bearing, reinforcement etc

RAAC Guidance Note

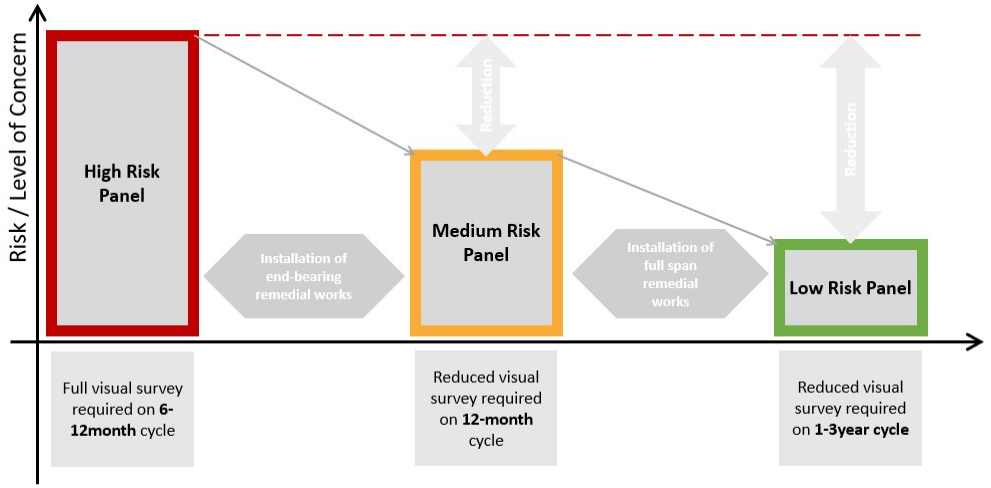
SECTION 5.6 ONGOING MANAGEMENT

It is recommended that the time-frame for re-surveying of remediated panels is assessed and reduced to suit the ongoing risk of panel failure.

The recommended approach is:

- Remedial works need to be fully signed-off for compliance by the Structural Engineer. This would mitigate later surveys highlighting deviations from remedial works intent – the as-built surveys should be the baseline.
- With remedial end-bearing installed, there is a significant risk reduction. Therefore, the scope of survey may be reduced.
- For fully remediated panels where the remaining risk is debris, site teams (estates teams) may review for signs of change every 1-year. Full inspections for remediated panels should reduce to circa 2-3year cycles and limited to visual and tap-testing for debonding

Note that additional surveys should be undertaken if water leaks are suspected or major events occur such as significant snow fall etc.

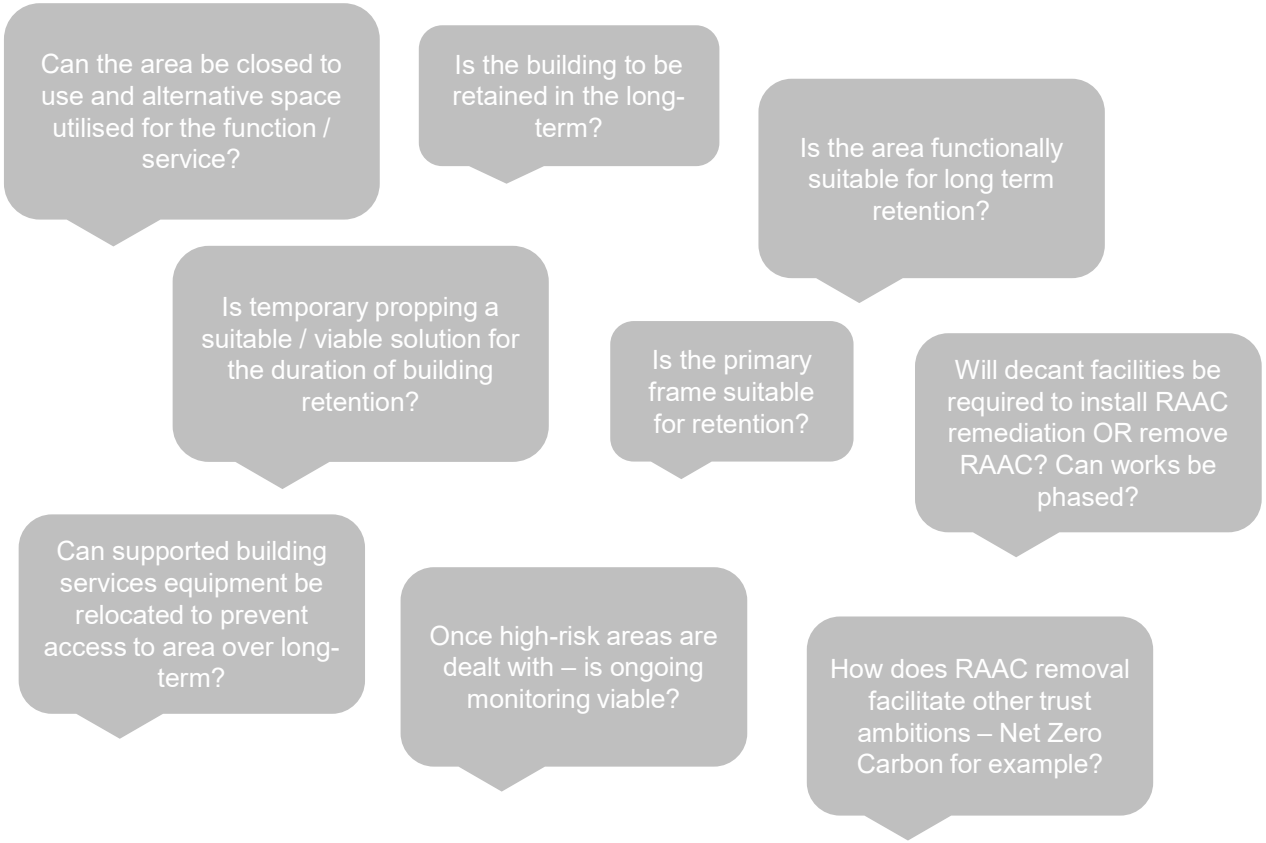


High Risk Panel	**6-12month cycle**	In line with the IStructE guidance: Full visual survey of the panels. - Cracking - Water penetration - Builders work Tap-testing Full displacement survey (LIDAR) Survey of roof level
Medium Risk Remediated Panel	**12month cycle**	Full visual survey of the panels to identify changes (as above). Spot-check of displacement where possible
Medium Risk Panel		
Low Risk Remediated Panel	**1-3year cycle**	Visual survey of panel (only)
Low Risk Panel	**1-3year cycle**	Full visual survey of the panels to identify changes (as above). Spot-check of displacement where possible

RAAC Guidance Note

SECTION 6.0 LINKING RAAC REMEDIATION TO WIDER ESTATES WORKS

The removal of RAAC installations may have wider implications on the estates strategy. This should be considered when developing the approach to remediation and management. It is recommended that the following questions should be asked (non-exhaustive):



RAAC Guidance Note

REFERENCES

Key Documents / websites for further information can be found in the links below:

BRE IP 10/96 (1996) – REQUIRES PAYMENT

Building Research Establishment review of early RAAC installations.

Concerns raised over displacement and creep.

Institution of Structural Engineers (IStructE) 2022

IStructE guidance on assessment and surveying of RAAC panels. Linked to ongoing research by the NHS and Loughborough

12th SCOSS Report (2000)

Review of RAAC panel installations.

Advises both school and non-school building owners to have roofs assessed

Department of Education (DfE) 2023

Department of Education guidance on the identification of RAAC and follow-on steps. The guidance is specific to the education sector.

BRE IP 07/02 (2002) – REQUIRES PAYMENT

Building Research Establishment review of RAAC panels, including some additional testing.

Recommendation similar to previous BRE guidance.

Institution of Structural Engineers (IStructE) 2023

IStructE guidance on risk classification of RAAC installations to provide unified approach across structural engineers.

SCOSS

Standing Committee of Structural Safety (SCOSS), highlighting failure of RAAC panel installation in 2018.

Failure arising from poor bearing.

SCOSS

Standing Committee of Structural Safety (SCOSS) has created a website / resource page to provide the latest guidance on RAAC installations.