157606

Aberdeen City Council

RAAC Inspections
Balnagask Mono-Pitches

Update – 22 February 2024

FAIRHURST

CONTROL SHEET

CLIENT: Aberdeen City Council

PROJECT TITLE: RAAC Inspections - Balnagask Mono-Pitched Properties

REPORT TITLE: Intrusive Inspection Report - Update February 2024

PROJECT REFERENCE: 157606

DOCUMENT NUMBER: 157606/Report

Original Issue	Issue 1	Name	Signature	Date
	Prepared by	[redacted]	[redacted]	05/02/2024
	Checked by	[redacted]		05/02/2024
	Approved by	[redacted]		05/02/2024

Update Record	Issue	Date	Status	Description	Signature	
	2				Prepared By	
					Checked	
					Approved	
	3				Prepared By	
					Checked	
					Approved	
	4				Prepared By	
					Checked	
					Approved	

157606 Aberdeen City Council – RAAC Inspections, Balnagask – Update Report

Further to the issue of our initial Report in November 2023 on the condition of a selected number of properties we provide the following update.

Our initial Report focused on the condition of multiple empty (Void) properties (as listed below) in which we undertook visual and intrusive inspections of the RAAC roof slabs, along with a detailed review of the support conditions for these slabs.

Our inspections were based on guidance from the Institution of Structural Engineers (IStructE).

We examined the following risk factors:-

- End bearing
- Anchorage reinforcement
- Cut Panels
- Cracking
- Builder's work / building modifications
- Water ingress
- Deflection
- Potential for adverse loading

Whilst our initial Report in November 2023 discusses these aspects in detail the identified primary areas of concern were:-

- Less than 75mm bearing on internal supports
- Excessive cracking of slab panel
- Excessive deflection
- Historic water ingress (prior to roof replacement contracts over the lifetime of the properties)

The Risk Assessment contained in our November 2023 Report, undertaken in accordance with the IStructE Guidance, is detailed below.

Risk Factors	Assessment
End bearing	External wall supports all exceeded 75mm bearing
	Internal wall supports ranged between 40mm - 60mm bearing, with 1No. panel noted to be as low as 10mm – This slab is RED CRITICAL and was propped.
Anchorage/longitudinal reinforcement	Anchorage reinforcement missing to at least 1No. panel
Cut panels	None
Cracking	Transverse cracking found along full length of panel and within 500mm of the support. Spalling and corrosion of rebar also observed
Builder's works / building modifications	Damaged units from cable conduits and SVPs
Water ingress	Dampness has been noted to underside of panels
Deflection measurements	Up to span / 133, but with major cracking and spalling
Adverse or changes in loading	Replacement roofing systems with additional insulation

Red – High Risk
Amber – Medium Risk
Green – Low Risk

Following the issue of our Report in November 2023 a programme of assessing occupied properties has now been commenced (refer to list below). As these properties are occupied and have full ceilings in place, it was necessary to form three access hatches in the ceilings in each property to enable the visual inspection of the general condition of the soffit of the RAAC roof slabs to be undertaken. These hatches also enabled the required intrusive inspection of a selected number of slab bearings at the central support, in order to prove the presence or otherwise of the necessary transverse bearing reinforcement.

Principle Observations from Occupied Property Inspections

End Bearing - By virtue of the fact that the central support wall is only 100mm wide, **none** of the slabs supported on the central wall achieve the required 75mm minimum bearing as required by the IStructE guidance. Notwithstanding the fact that as part of the overall Risk Assessment we have undertaken and proven in all inspection locations (six per property) that transverse bars exist at the end of the slabs along the central 100mm wide wall – **These further inspections maintain and further support the previous RED – High Risk Classification in the Risk Assessment for this element of the properties**. Of approximately 250 slabs inspected to date, one slab within an unoccupied property was found to have a bearing of 10mm. This slab was considered **RED Critical**. Propping was put in place to address this defect. The property can no longer be used in this condition.

Cracking – All of the slabs in the Occupied Property inspections have transverse cracking, similar to the initially inspected void properties – **These further inspections maintain and further support the previous RED – High Risk Classification in the Risk Assessment for this element of the properties**.

Deflection – All of the slabs in the Occupied Property inspections have deflections generally similar to those measured in detail in the Void Property inspections – **These further inspections maintain and further support the previous RED – High Risk Classification in the Risk Assessment for this element of the properties.**

Conclusion & Recommendations

The inspections of occupied properties that have now been undertaken following our initial report have all shown that the condition of the RAAC slabs are similar throughout the development. Given the number of properties now inspected, we have no reason to believe that uninspected properties will show any meaningful improvement on general condition, furthermore, it is likely that where there has been historic water ingress the condition of the RAAC slab and reinforcement will be measurably worse.

Our recommendation remains the same as previously reported, requiring either re-housing or remedial works to be undertaken. Recognising the scale of this task, this action requires to be combined with a Management Strategy and an awareness campaign for occupants, loading restrictions on the roofs and the need to report changes of condition such as water leaks, debris, change in loading, etc.

The Risk Assessment maintains the RED – Critical / High Risk elements as noted and as such **our recommendation remains that the properties should be vacated as soon as possible until such time that the risk is addressed by either mitigating remedial works or reconstruction of the roof structure.**

It is further emphasised that remedial works to address the central support bearings will not improve nor mitigate against the cracking / deflection observed in all RAAC roof slabs.

The roof slabs will not only require the central bearing to be addressed, but also the free-span of all roof slabs will require to be supported by a secondary structure or re-constructed.

Void Property Inspections (ceilings removed)	Occupied Property Inspections (hatches installed)
[redacted] Balnagask Road	[redacted] Farquhar Road
[redacted] Farquhar Road	[redacted] Farquhar Road
[redacted] Farquhar Road	[redacted] Farquhar Road
[redacted] Pentland Crescent	[redacted] Farquhar Road
[redacted] Balnagask Road	[redacted] Farquhar Road
[redacted] Farquhar Road	[redacted] Girdleness Road
[redacted] Farquhar Road	[redacted] Girdleness Road
[redacted] Farquhar Road	[redacted] Girdleness Road
[redacted] Girdleness Road	[redacted] Girdleness Road
[redacted] Girdleness Road	[redacted] Girdleness Road
[redacted] Girdleness Road	[redacted] Balnagask Road
[redacted] Pentland Crescent	[redacted] Lochnagar Road
[redacted] Pentland Crescent	[redacted] Burnbank Terrace
[redacted] Pentland Place	[redacted] North Balnagask Road
[redacted] Pentland Place	[redacted] Pentland Crescent
[redacted] Pentland Road	[redacted] Balnagask Road
[redacted] Pentland Road	[redacted] Farquhar Road
[redacted] Balnagask Road	[redacted] Pentland Crescent
[redacted] Farquhar Road	[redacted] Balnagask Road
[redacted] Farquhar Road	
[redacted] Farquhar Road	
[redacted] Farquhar Road	
[redacted] Girdleness Road	
[redacted] Girdleness Road	
[redacted] Pentland Place	
[redacted] Rockall Place	
[redacted] Lochnagar Road	
[redacted] Lochnagar Road	
[redacted] Farquhar Road	
[redacted] Pentland Place	

CIVIL ENGINEERING • STRUCTURAL ENGINEERING • TRANSPORTATION • ROADS & BRIDGES
PORTS & HARBOURS • GEOTECHNICAL & ENVIRONMENTAL ENGINEERING • PLANNING &
DEVELOPMENT • WATER SERVICES • HEALTH & SAFETY / CDM SERVICES

www.fairhurst.co.uk

Aberdeen
Birmingham
Bristol
Dundee
Edinburgh
Elgin
Glasgow
Huddersfield
Inverness
Leeds
London
Newcastle upon Tyne
Plymouth
Sevenoaks
Taunton
Watford

FAIRHURST