

RAAC

REINFORCED
AUTOCLAVED
AERATED
CONCRETE

ENGAGEMENT JULY 2024



What is RAAC?

Residents have been made aware that RAAC has been identified in the roofs of homes in the Balnagask area. RAAC surveys have identified them as a high-risk category. Resident safety is of high importance, and the decision has already been made to move council tenants out of RAAC affected homes. Tenants have started to move.

Reinforced Autoclaved Aerated Concrete (RAAC) is a lightweight concrete construction material. It is predominantly found as pre-cast panels in roofs (commonly flat roofs, sometimes pitched).

Despite its name, it is very different to traditional concrete although it looks similar. It is light weight, 'bubbly' form of concrete, commonly used in construction between the 1950s and mid-1990s.



Example image only

So far

Surveys undertaken

Over a 100 properties have now been surveyed by independent structural engineers. These surveys confirmed the condition of RAAC within the roofs of homes in the Balnagask area.

This led to the proposal of options to reduce or remove the RAAC risk in the affected properties.

Using guidance published by the Institution of Structural Engineers the surveys identified a high-risk. This is due to a number of risk factors, including:

- **End bearing:** There is limited internal wall width, leading to the end bearing length being below current guidance.
- **Cracking:** All of the roof panels in the inspected homes exhibit cracking.
- **Deflection:** All of the roof panels in the inspected homes are sagging.

ENGAGEMENT

The Council will engage with key stakeholders including:

- Residents living in RAAC affected homes.
- Residents who have recently moved from RAAC affected homes.
- Private landlords of RAAC affected homes.
- The local community.
- All council tenants across the city.

Key stakeholders will be given the opportunity to inform the Council on how each viable option may impact residents, the local community and the future Housing Revenue Account (HRA) spend.

This feedback will be included in the report to Council on the **21st August** and be considered as part of a recommendation for the long-term plan for the properties.

A summary of the options, reported to Council on the 3rd July, include:

Option 1: Adding timber runners to extend the bearing length at the support walls.

Option 2: Install a support timber frame under existing RAAC roof panels.

Option 3: Removal of RAAC panels and replace roof.

Option 4a: Demolition only.

Option 4b: Demolition and build new homes.

Summary of risk ratings

Option	Risk rating (resolved RAAC risk factors only)
Option 1	High
Option 2	Medium
Option 3	Low
Option 4a	Risk removed
Option 4b	Risk removed

Indicative programme across all options



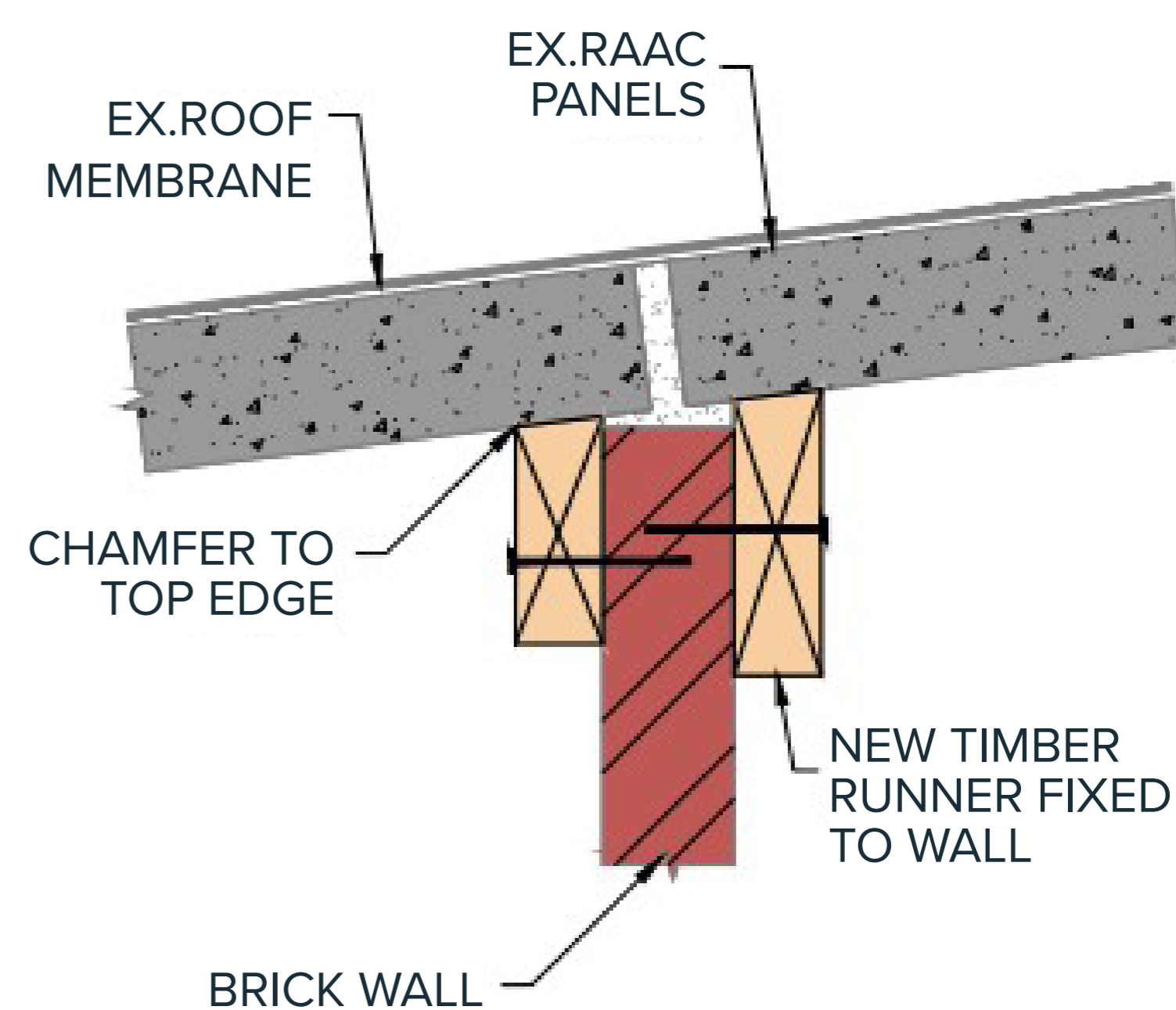
All options would require ongoing engagement with residents.

OPTION ONE

Adding timber runners to extend the bearing length at the support walls.

NON-VIABLE

Independent structural engineers advised that this option does not resolve the RAAC risk factors, such as cracking and deflection, therefore this option is non-viable.



Example image only

This option would involve adding timber beams to supporting walls to increase the bearing distance.

This proposal still leaves the RAAC panels in place, and remains categorised as high-risk because:

- Extending the central support bearing distance will not improve or mitigate against the cracking / deflection observed in all RAAC roof panels.
- Additional consideration would have to be made for a new robust roof membrane.
- There would also need to be regular RAAC panel inspections.

This option is not considered to be viable as the RAAC panels would still be categorised as high risk. This was rejected by Council as an option for Council owned properties on the 3rd July 2024.

OPTION TWO

Install a support timber frame under existing RAAC roof panels.

What does this option involve?

- Involves installing a timber support frame under the existing RAAC roof panels.
- The frame will support the weight of the RAAC panel.



Example image only

What works will be done?

Works include removal and disposal of existing lowered ceilings, install a new timber support grillage frame, placed tight to the underside of the existing RAAC roof panels and reinstatement works. Additional consideration would have to be made for a new robust roof membrane.

Indicative costs

**RAAC construction costs only:
£16k - £27k per property**

(These costs do not include an environmental retrofit or other capital investment.)

How long will it take?

(Indicative timeline for the roof works only)



OPTION TWO

ADVANTAGES

- This option is least disruptive of the viable options at present.
- The remedial work will reduce RAAC affected panels to low risk.
- During the works, homes won't be exposed to the weather, thereby preventing further damage to the internal area.
- The Council will be able to keep the same number of homes within the area.
- Benefits of Local Authority and homeowners working together including coordination of works, shared costs.
- Option to return to the area in the future.
- For homeowners, in the short-medium term, this option will have the least construction cost compared with the other viable options.
- Homes will remain, helping to support a continued sense of community and support local services.
- In the short-medium term, the initial cost of this option will be lower than the other options on the overall impact on the Housing Revenue Account (HRA).

DISADVANTAGES

- RAAC panels remain in place.
- This is a temporary solution, the roof will need to be replaced in the future, resulting in residents having to move out of the area whilst work is being done.
- Once complete access will be needed for regular inspections to be carried out.
- Due to the extensive timber supports, inspections will be restricted.
- The value of homes will continue to be affected due to RAAC remaining in the panels of the roof.
- For buildings which are shared use, the owner will be required to pay their share of the remedial RAAC related works cost and planned regular inspections.

OPTION THREE

Removal of RAAC panels and replace roof.

What does this option involve?

- The removal of existing roof structures and installation of new timber roof and roof covering and environmental retrofit of homes.



Example image only

What works will be done?

Roof covering, insulation, fire separation, gutters, down pipes and then new ceilings light fittings and associated works and environmental retrofit programme.

Indicative Costs

RAAC construction costs only:
£47k - £71k per property

(These costs do not include an environmental retrofit or other capital investment.)

How long will it take?

Indicative timeline for replacing roof and installing new timber roof and covering only.

COUNCIL
TENANTS TO HAVE
MOVED OUT OF
THEIR HOMES
DURING 2024

SET OUT WORK
REQUIREMENTS,
PROGRAMME
AND PROCURE
SERVICES

CONSTRUCTION
WORKS TAKE
PLACE

COMPLETION
TARGET:
5 YEARS

OPTION THREE

ADVANTAGES

- The new roof will be built to current standards.
- RAAC is removed from homes.
- Homes will be upgraded including improved insulation.
- Energy performance will be improved.
- Benefits of Local Authority and homeowners working together including coordination of works and shared costs.
- Homes will remain, helping to retain sense of community and support local services.
- This option will enable the Council to keep the same number of homes in the area.

DISADVANTAGES

- Higher risk of damage to wider structure during construction requiring additional works.
- Building will not remain water-tight during construction.
- Interdependency of adjoining properties creates further complexity in delivery.
- Risk of affordability for homeowners, meeting shared costs.
- When roofs are being replaced, homeowners may have to leave their homes to create safe working areas.
- Works will cause disruption to the local community for a prolonged period of time.
- This option will have a higher negative impact on the amount which is able to be invested in existing council homes.
- For buildings which are shared use, the owner will be required to pay their share of the remedial RAAC related works cost.

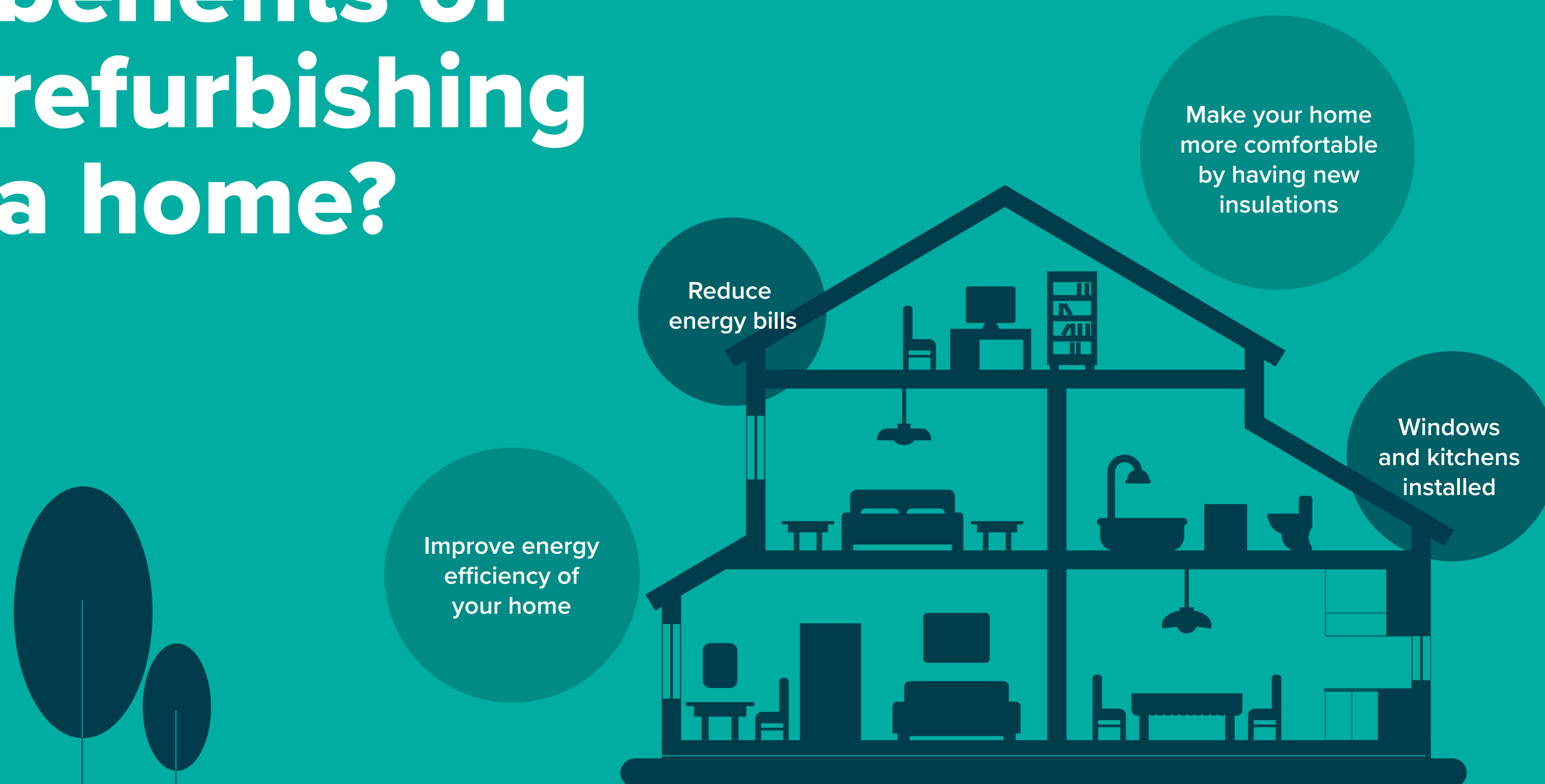
Options 2 & 3 will consider refurbishment and energy efficiency improvements:

Given the properties are now around 60 years old, all options will consider property improvement works to meet future energy performance requirements. To inform this consideration, fabric condition surveys have been carried out over a sample number of properties.

In addition, as a consequence of the necessary works to mitigate the impact of the RAAC panels, there will be unavoidable additional costs, such as consideration of alternative heating options, insulation improvements, replacing kitchens and bathrooms.

The cost of all these works will be substantial and may be greater than the direct RAAC mitigation cost.

What are the benefits of refurbishing a home?



When will these works be carried out?

It is proposed that any refurbishment and energy efficiency works will be programmed at the same time as when the RAAC mitigation works are being carried out.

OPTION FOUR

4a. Demolition only

What does this option involve?

Demolish homes that are affected with RAAC and grass over the area.



Example image only

What works will be done?

Demolition: This option would involve full demolition of properties.

Site would be cleared, ground would be made good and landscaped to allow it be re-used at a later date.

Indicative Costs

Demolition costs only:
£5k - £10k per property

(There will be additional costs relating to items such as landscaping.)

How long will it take?

(Indicative timeline)



OPTION FOUR

4a. ADVANTAGES

Demolition only

- RAAC is removed from homes.
- Site is cleared and landscaped.
- Less time for properties to be left empty and negative impact.
- Less complexity in further design work/ tender process etc.
- Lowest cost impact (subject to involvement with private owners).

4a. DISADVANTAGES:

- Loss of home.
- Demolishing homes can result in a further loss of community and impact on local services.
- Demolition increases the environmental impact.

OPTION FOUR

4.b Demolition and building new homes

What does this option involve?

This option will involve building new homes to modern standard that will be based on the projected housing need in the city.



Example image only

What works will be done?

This option will involve building new homes following demolition.

Indicative costs

Construction costs only:

£200k-£290k per unit

(Fully meets sustainability requirements.)

How long will it take?

(Indicative timeline)

COUNCIL
TENANTS TO HAVE
MOVED OUT OF
THEIR HOMES
DURING 2024

SET OUT WORK
REQUIREMENTS,
PROGRAMME
AND PROCURE
SERVICES

DEMOLITION OF
PROPERTIES
AND THE
BUILDING OF
NEW HOMES
TAKE PLACE

COMPLETION
TARGET:
5-15 YEARS

OPTION FOUR

4b. ADVANTAGES

Building new homes

- RAAC risk is fully removed.
- New homes built to modern standards, improving energy efficiency and insulation.
- Homes built to best meet projected housing needs.
- Option supports the wider community and local services.

4b. DISADVANTAGES:

- Building new houses will be more expensive than other options.
- Rebuilding will have a higher carbon footprint.
- The building of new homes will cause disturbance to the local community in the short term.
- There is a long lead in to build new houses.