



RISE

Retrofit information,
support & expertise

Project Management: Sequencing and Critical Pathways

Supply chain advice pack

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Introduction

Retrofit projects rely on multiple trades working together in a coordinated and structured way to deliver safe, compliant and high-quality outcomes. Unlike isolated works, retrofit involves interconnected measures where the timing and sequence of activity directly affects performance, compliance and long-term building outcomes.

Project Managers (PMs) play a central role in planning and coordinating this activity through **sequencing** and **project programming**. This ensures that each task happens at the right time, in the right order, and with full awareness of how it affects other trades.

When sequencing is not followed, it can lead to:

- Rework (e.g. removing completed works to allow access)
- Performance gaps caused by poorly coordinated installations
- Compliance failures (e.g. PAS 2035 requirements not met)
- Delays and cost overruns²

95% of UK construction projects experience delays, with many significantly overrunning planned timelines¹

Rework accounts for 5-21% of total project value, often caused by poor planning, sequencing errors or design changes²

This advice pack explains what sequencing and critical pathways mean in practice, and how contractors, installers and suppliers can work together effectively.

What is sequencing in retrofit projects?

Sequencing refers to the **planned order of activities within a project programme**, based on how tasks depend on one another.

PMs rely on **accurate and comprehensive sequencing** to:

- Coordinate multiple trades working on the same property
- Manage risk at key interfaces between measures
- Ensure compliance with design standards (e.g. PAS 2035)
- Deliver the project efficiently without unnecessary delays

Key concept: Dependencies

Sequencing is driven by **dependencies**, meaning:

¹ Eleco (2025) [The true cost of construction delays in 2025](#)

² Smart Infrastructure Magazine (2025), [Why UK infrastructure projects keep falling behind](#)), [The true cost of construction delays in 2025](#)

- Some tasks must be completed **before others can begin**
- Some tasks can happen **in parallel**
- Some tasks must be **protected once completed**

Example:

Sequencing is driven by how activities interact and how one task can affect the performance or quality of another.

- Structural and preparatory works must be completed **before follow-on activities begin**
- Services (e.g. pipework, cabling) must be installed and coordinated **before fabric layers are closed up**
- Inspection, testing and quality checks must take place **before finishes are applied**

Why this matters in practice:

If sequencing is not followed:

- Installed systems may need to be removed for access
- Critical layers (e.g. insulation, airtightness) may be damaged by later works
- Defects may be hidden behind completed finishes
- Additional cost and delays occur due to rework

This highlights that sequencing is essential for **protecting completed work, maintaining performance, and avoiding rework.**

What is a critical pathway?

A **critical path** is the sequence of activities that determines the **shortest possible duration of a project.**

- These activities have no flexibility (no 'float')
- If one is delayed, the entire project is delayed

Important note

- Not all projects formally use the "Critical Path Method"
- However, most projects still rely on **critical activities and dependencies** to manage delivery
- The core principle remains the same:

Some tasks are more time-sensitive than others and must be prioritised

What happens if a critical activity is delayed?

- Knock-on delays to other trades
- Increased costs and programme pressure

- Potential contractual implications
- Risk of quality compromises if work is rushed

How Project Managers plan retrofit works

Project Managers develop a **project programme** that maps out:

- Activities
- Durations
- Dependencies
- Key milestones
- Trade interfaces

Sequencing is used as a **risk management tool** to:

- Prevent conflicts between trades
- Avoid damage to completed work
- Ensure measures perform as designed
- Maintain compliance with standards

How timelines are built

PMs consider:

- Access requirements (e.g. scaffolding, internal access)
- Technical dependencies between measures
- Inspection and quality assurance stages
- Resident needs and constraints

Line ID	Project Stage	Milestones		Owner	Notes	Frequency	Forecast			March (week commencing)					April (W/C)			
		Action	Sub Action				Start Date	End Date	Duration	3	10	17	24	31	7	14	21	28
1	Establish Project Team	Hire vacant roles	Vacancies recruited to internal project team	Name or team name	If applicable	One off or set intervals	03/03/2025	10/03/2025	2 weeks									
2			Vacancies onboarding / initial training				10/03/2025	17/03/2025	4 weeks									
3		Project kick off	Team established, governance and reporting aligned to company guidelines				17/03/2025	31/03/2025	2 weeks									
4			Data sharing protocols agreed with delivery partners				17/03/2025	31/03/2025	2 weeks									
5		Internal Governance	Establish organisation-specific controls				31/03/2025	14/04/2025	3 weeks									
6	Procurement Activity	Contractor Engagement	Procurement exercise for existing contract extensions commences (if necessary)	Name or team name	If applicable	One off or set intervals			X weeks									
7			Contractor(s) pre-start meeting(s)															
8			Schedule of works and milestones agreed (or reaffirmed with existing contractors)															
9		Contractor Governance	Execution of contract and governance agreed in line with project plan															
10			Contractor governance and contract management meetings															
11	Pre-construction Resident Engagement	Introductory resident engagement	Contractor capacity and market supply review for measures - issues and gaps identified															
12			Introductory letter issued to affected residents	Name or team name	If applicable	One off or set intervals			X weeks									
13		Follow up engagement and queries	Pre-work soft engagement event(s)															
14			Access granted to digital platform pilot for selected residents															
15			Follow up calls arranged to address specific queries															
16	Risk Assessment	Property Survey	Schedule of works shared with contact methods															
17			Referrals															
18		Finance modelling	Sample surveys to identify the best approach and establish current conditions	Name or team name	If applicable	One off or set intervals			X weeks									
19			Refine measures list based on survey results															
20			Financial model complete															
21			Scope of works and specification written by the project designer															
22	Pre-work assessment and actions	Complete dwelling assessments, identify risk paths per type and develop medium term improvement plans per risk path	Pre-installation monitoring and evaluation commences															
23			Complete dwelling assessments, identify risk paths per type and develop medium term improvement plans per risk path															
24			Complete planning and building control requirements - permissions, ecology surveys etc.															
25			Identify problem properties and substitute, as required															

Source: [Using Gantt Charts in Retrofit - RISE App](#)

Example: Typical retrofit sequence

While programmes vary, a simplified sequence might look like:

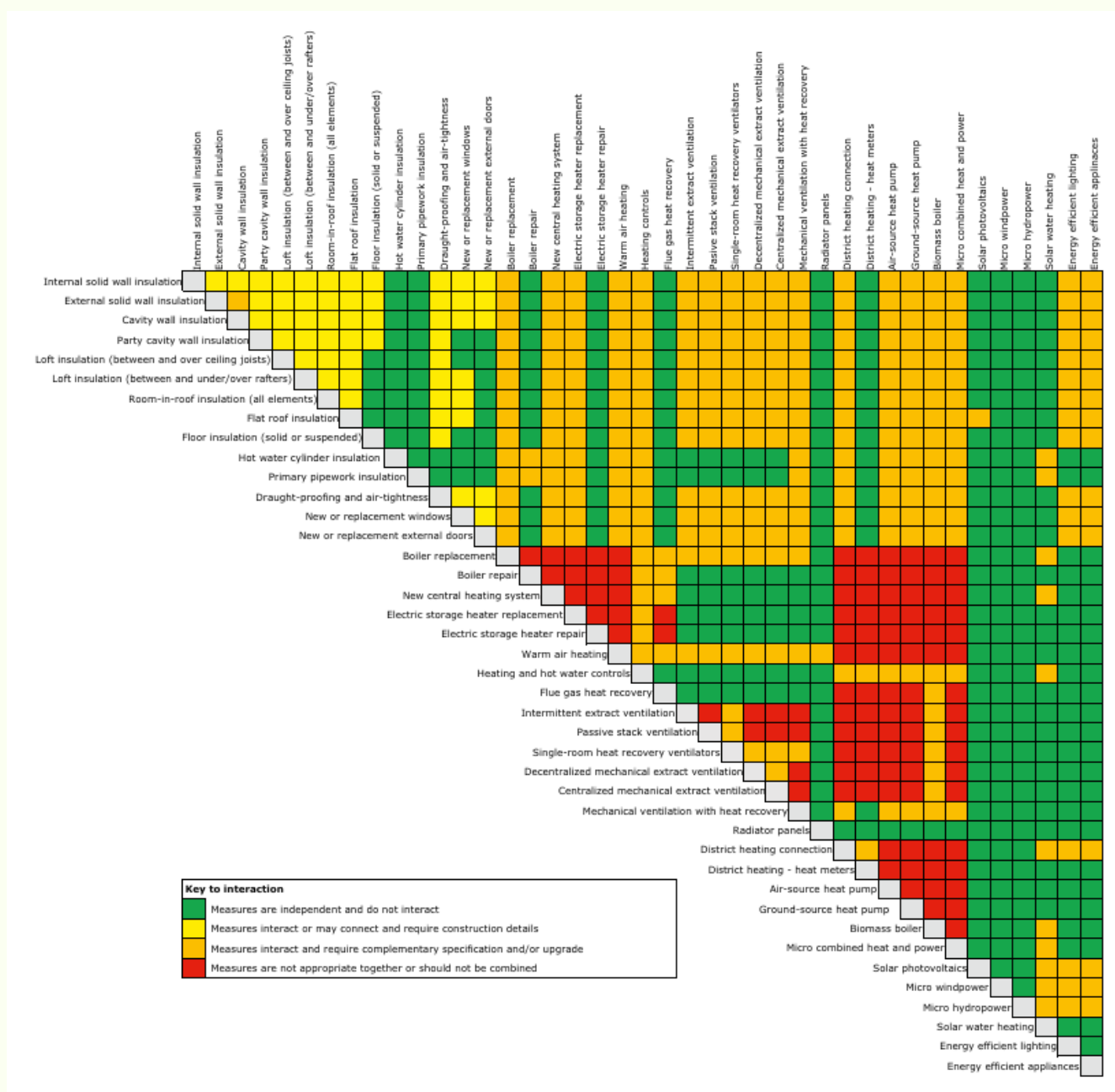
Stage	Activity	Why sequencing matters
Pre-works	Surveys, design, mobilisation	Ensures correct specification and risk identification
Enabling works	Scaffolding, strip-out	Enables safe access for following trades
Fabric measures	Insulation (EWI, loft, cavity)	Must precede airtightness and services
Ventilation	MVHR, extract systems	Must be planned and installed before airtightness is finalised
Airtightness	Sealing, detailing	Final layer dependent on coordinated services and ventilation
Low carbon tech	Heat pumps, PV	Requires completed fabric and services coordination
QA & commissioning	Testing, sign-off	Validates performance and compliance
Finishes	Decoration, reinstatement	Prevents damage and rework

The need for logical sequencing is embedded throughout PAS2035, as retrofit measures should be planned and delivered in a logical way that considers measure interactions, risk management and future improvements. For example:

- Retrofit design
- Medium-term improvement plans (MTIP)
- Risk management
- Retrofit Coordination
- Quality assurance

The MTIP is effectively a strategic sequencing document, as it determines which measures are installed now, which measures are planned for later and how future measures will interact with current works.

Source: *The measures interaction matrix* ³



Why order matters

Changing this sequence can create serious issues:

- Installing finishes too early → damage during later works
- Installing ventilation too late → moisture and mould risk
- Installing insulation after services → access and performance problems

³ BSI Group (2023), [pas_2035_2023.pdf](#)

Key interfaces and handover points between trades

The importance of sequencing is best understood in real scenarios.

Real-life sequencing example

Scenario:

A home is planned to receive

- **Solar PV panels**
- **Battery storage system**

The agreed approach is to:

- Design PV and battery system as a **single integrated system**
- Ensure **cable routes, inverter location and connections are planned in advance**
- Install panels, electrical connections and battery in a **coordinated sequence**
- Commission the system only once all components are fully connected

Potential impact of not following this approach:

- System cannot operate as intended (incomplete system)
- Rework required to expose or extend cabling
- Delays to commissioning
- Increased costs due to revisiting completed works
- Disruption to residents

Key technical risk

Low carbon technologies rely on **full system integration**, not isolated installation.

Project manager actions

- Confirm sequencing aligns with design intent
- Ensure all components are planned and coordinated
- Prevent partial or out-of-sequence installation
- Require formal approval for any sequencing changes

Key takeaway

Even simple measures require coordination – installing components separately without full planning can lead to delays, rework and poor system performance.

Why interfaces matter

Many sequencing risks occur at **handover points between trades**, such as:

- Insulation installers → airtightness specialists
- Electricians → ventilation installers
- Scaffolders → façade installers
- Heating engineers → commissioning teams

Common issues at interfaces

- Incomplete work passed to next trade
- Lack of communication about tolerances or design intent
- Damage to newly installed measures
- Assumptions instead of confirmed readiness

Good practice at handover points

- Ensure work is complete before handover
- Use clear sign-off processes
- Communicate risks and limitations
- Always confirm readiness before proceeding

Sequencing risks on site

Common risks include:

1. Working out of sequence

- Starting tasks before prerequisites are complete
- Can lead to rework and compliance failure

2. Weather dependency

- External wall insulation or roofing works may be delayed by rain, cold or wind
- Poor timing can affect quality and durability

3. Trade clashes

- Multiple trades needing the same space at once
- Leads to delays and safety risks

4. Damage to completed work

- Following trades undoing previous works (e.g. drilling through airtight layers)

5. Incomplete communication

- Delays not communicated to PM
- Changes made without approval

Variations and working out of sequence

In some cases, working out of sequence is necessary.

However, this must follow **formal variation processes**.

What is a variation?

A variation is a **formal change to the agreed scope, programme or method of works**.

Why variations matter

- They maintain control over quality and compliance
- They ensure impacts on cost and programme are understood
- They protect contractual responsibilities

Contractor responsibilities

- Do not proceed with out-of-sequence work without approval
- Raise issues early (before starting work)
- Follow contract processes:
 - **Early Warnings** (NEC contracts)
 - Notifications of Delay (JCT contracts)

What Project Managers need from the supply chain

For sequencing to work effectively, PMs rely on the supply chain to:

1. Understand sequencing constraints

- Be aware of dependencies and programme logic
- Know how your work affects others

2. Follow the agreed programme

- Respect the planned sequence of activities
- Avoid working ahead without approval

3. Communicate early

- Raise risks, delays or access issues immediately
- Highlight clashes between trades

4. Support coordination

- Attend site briefings and handovers
- Engage with other trades collaboratively

5. Protect completed works

- Avoid damaging previous installations
- Report issues if they occur

Practical tips for contractors and installers

Before starting work

- Review the programme and understand your dependencies
- Confirm access, materials and prerequisites
- Clarify any uncertainties with the PM

During works

- Follow the agreed sequence of activity
- Communicate issues early
- Record progress and flag deviations

At handover points

- Ensure work is complete and ready before passing on
- Clearly communicate any limitations or risks
- Avoid assumptions - confirm readiness

When issues arise

- Stop and raise concerns before proceeding
- Use formal channels for changes or variations
- Never “fix” sequencing issues independently without approval

Conclusion

Sequencing and critical pathways are fundamental to delivering successful retrofit projects. They ensure that multiple trades work in a coordinated way, reducing risk, avoiding rework and maintaining compliance.

For contractors and installers, understanding sequencing is essential. Your role does not sit in isolation - it directly affects other trades, overall project performance and the final outcome for the building and its occupants.

By following the agreed programme, communicating effectively, and respecting dependencies, the retrofit supply chain can help deliver projects that are efficient, safe and high quality.

Resources



Podcast: All RISE podcasts are available [here](#).

Podcast: "Retrofit Credits with HACT" available [here](#).



Masterclass: All RISE masterclasses are available [here](#).

Masterclass "A guide to good practice project management" available [here](#).



Advice pack: All RISE advice packs available [here](#).

Advice pack: "Solar Photovoltaic in domestic retrofit" available [here](#).



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