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Monitoring and Evaluation: Damp and Mould

Toolkit

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Contents

Introduction

Monitoring and evaluation (M&E) is a critical process in project management, ensuring that interventions achieve desired outcomes. In the context of housing, M&E can help to identify risks and understand underlying causes of problems. This means retrofit measures can be designed to address these problems, with further M&E in place to monitor their efficacy.

This quick guide focusses on the use of digital M&E solutions, which typically involve:

- **Monitoring:** Installing technology to collect data continuously, in order to monitor housing performance
- **Evaluation:** Systematic assessment of the data collected to determine the impact and efficacy of interventions

M&E ensures accountability, enhances decision-making, and facilitates better resource allocation. When applied to housing retrofits, particularly for damp and mould prevention, M&E helps to ensure healthier living environments, regulatory compliance, and efficient resource use.

Moreover, M&E has the potential to unlock massive advances in housing by addressing problems and risks comprehensively. For example, by improving indoor air quality through targeted, data-led interventions, M&E can lead to healthier living conditions, regulatory compliance, and optimised resource use.

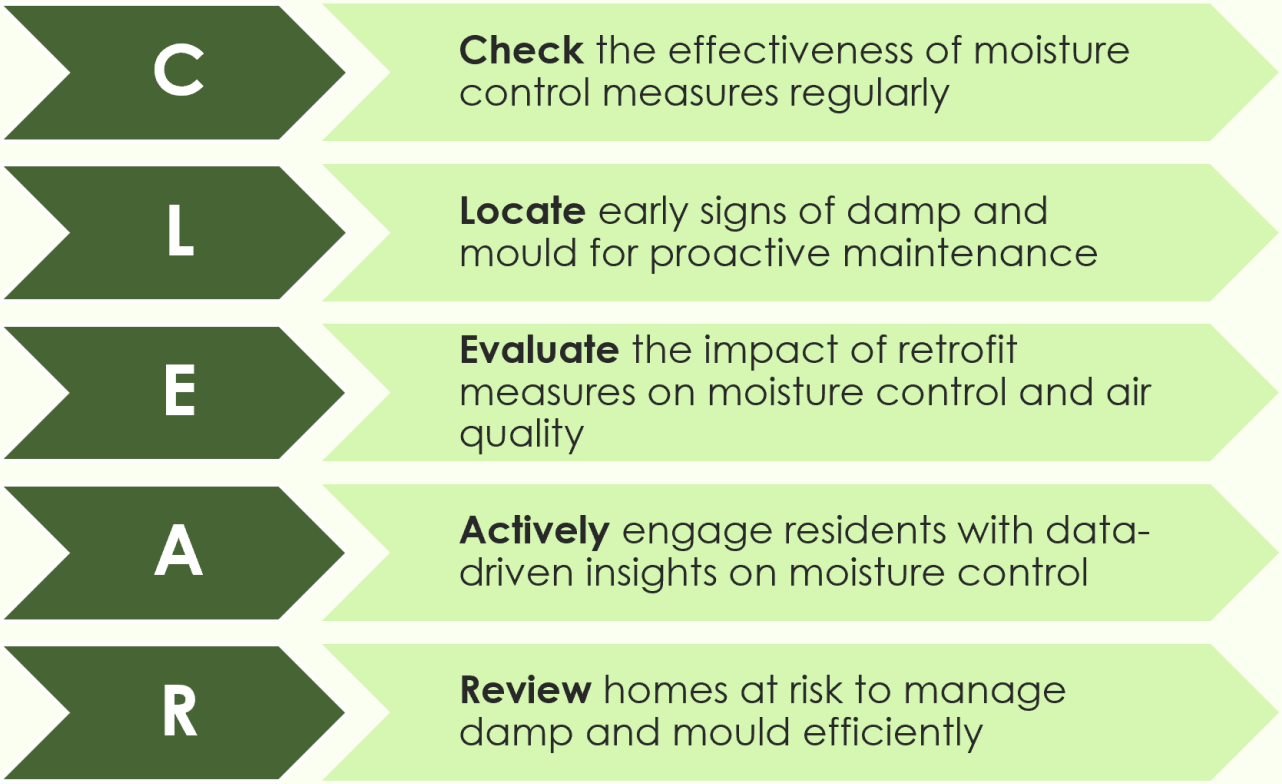
Why should organisations be interested in M&E?

For organisations involved in retrofit projects, implementing a strong M&E framework is crucial for several reasons:

- **Regulatory compliance:** Many housing regulations now mandate monitoring for damp and mould conditions (e.g. Awaab's Law under the Social Housing Regulation Act 2023)
- **Resident health and safety:** Poor indoor air quality and damp conditions contribute to respiratory illnesses and other health issues
- **Cost efficiency:** Early detection of damp and mould helps avoid costly repairs and legal disputes
- **Sustainability goals:** Interventions that reduce damp and mould often improve energy efficiency, which might align with sustainability and decarbonisation initiatives
- **Informing retrofit and repair strategies:** M&E provides valuable data that can inform the development and refinement of retrofit and repair strategies, ensuring interventions are effective and targeted
- **Innovation and monitoring technology:** Leveraging advanced monitoring technologies enhances the quality of data collected, leading to more accurate assessments and better-informed decisions

M&E in relation to damp and mould

Damp and mould present significant challenges in housing, affecting residents' health and property integrity. Monitoring and evaluating damp and mould within retrofit projects is therefore crucial to:



Proactive approaches, such as the use of digital tools (e.g. environmental sensors), are known to enhance M&E efforts by providing real-time data and early warnings.

Potential approaches to digital tools

- **Environmental sensors:** Housing associations have successfully used environmental sensors to monitor humidity and temperature levels in real-time. These sensors provide early warnings of potential damp and mould issues, allowing for timely interventions
- **Thermal imaging:** Thermal imaging cameras have been employed to detect hidden moisture within walls and structures. This technology helps identify areas at risk of damp before visible signs appear, enabling preventive measures
- **Smart ventilation systems:** Implementing smart ventilation systems that automatically adjust airflow based on real-time data has proven effective in maintaining optimal indoor air quality and preventing damp and mould growth

- **Smart heating controls:** Smart heating controls involve the use of advanced technology to manage and optimise heating systems in homes. These controls can be programmed to adjust heating based on real-time data, occupancy patterns, and weather conditions, ensuring efficient energy use and maintaining comfortable indoor temperatures. Involving residents in the process enhances engagement and ensures that the system meets their needs.

Benefits and considerations of M&E in damp and mould management

Benefits

Early detection	• Continuous monitoring helps identify damp and mould issues before they become severe
Data-driven decision making	• Real-time insights enable targeted interventions, reducing costs and improving efficiency
Improved resident wellbeing	• Better indoor air quality and thermal comfort contribute to healthier living environments
Regulatory compliance	• Supports adherence to housing standards and legal requirements, including the Social Hosing Regulations Act and Awaab's Law, ensuring safe and quality standards are met
Resource optimisation	• Reduces unnecessary maintenance and repair costs by identifying issues early

Considerations

Initial costs	• Installing sensors and digital monitoring tools requires upfront investment
Data management challenges	• Large volumes of data need to be processed and analysed effectively
Resident engagement	• Understanding and prioritising resident experience is crucial. Engagement involves not only informing residents but also gaining their trust and buy-in to help them see solutions to their issues, leading to better acceptance and cooperation

Initial costs	• Installing sensors and digital monitoring tools requires upfront investment
Technology dependence	• Reliance on digital tool means potential risks from malfunctions or connectivity issues

Challenges and solutions in M&E for damp and mould

While M&E provides valuable insights, it also presents several challenges. Below are some of the key obstacles and potential solutions:

High initial costs

- **Challenge:** Implementing digital monitoring systems requires significant investment in equipment and training
- **Solution:** Organisations could run a pilot scheme to see the potential of digital monitoring. This can then be refined to scale it in the most effective way e.g. location and archetype

Data overload and management

- **Challenge:** Large volumes of environmental data can be difficult to analyse effectively
- **Solution:** The use of automated data analytic platforms can help to streamline insights and ensure actionable reporting. Additionally, ensure staff are trained and understand the system. Have a team in place to deal with high demand of data analysis and procure additional resources if more availability is needed

Resident engagement and compliance

- **Challenge:** Residents may not understand or use the provided technology effectively
- **Solution:** Implement comprehensive resident training programs and deploy apps that offer real-time feedback, alerts, and maintenance tips. Ensure robust engagement throughout the M&E journey by maintaining transparency with residents and providing clear, accessible information. Foster trust by involving residents in the process and addressing their concerns

Privacy and data security concerns

- **Challenge:** Collecting and storing data from residents' home raises privacy concerns

- **Solution:** Ensure compliance with GDPR and other data protection regulations and maintain transparent communication with residents about data usage

Seasonal variability in data

- **Challenge:** Monitoring results may vary depending on the season (e.g., increased condensation in winter months)
- **Solution:** Conduct long-term monitoring across different seasons to establish more accurate baselines and trends

Equipment checklist for monitoring and evaluating damp and mould

The PAS 2030 and PAS 2035 documents provide detailed guidance on the processes and standards for retrofitting dwellings, including the use of monitoring and evaluation equipment. Here are some relevant points from these documents:

The PAS 2035:2023 document emphasises thorough assessments and ongoing monitoring for retrofitting dwellings. Section 7 requires whole-dwelling assessments using various tools to identify issues like damp and mould. Section 10 highlights the need for continuous monitoring and evaluation to ensure retrofit effectiveness.

The PAS 2030 & PAS 2035: Q&A Briefing stresses the importance of pre-installation inspections and ongoing performance monitoring, using appropriate technologies to ensure project success and compliance with standards.

The following checklist outlines key equipment and recommended monitoring durations based on best practices in retrofit projects.

Baseline monitoring (Pre-project assessment)

- ☐ Moisture meters (handheld sensors to measure surface moisture) – *ongoing during pre-assessment*
- ☐ Thermal imaging cameras (identify cold spots and potential condensation risks) – *one-time assessment before retrofit*
- ☐ Hygrometers (monitor humidity levels in key risk areas) – *Typically used a few months before project initiation to establish baseline humidity conditions*

Continuous monitoring (during and post-project evaluation)

- ☐ Environmental sensors
  - Measures temperature, humidity, and CO2 levels.

- Duration: continuous monitoring for an extended period post-installation to ensure ongoing performance and identify any emerging issues.

- Data transmitter for sensor data
  - Collects and transmits sensor data for analysis
  - Duration: continuous, linked to monitoring dashboards
- Mechanical ventilation with heat recovery (MVHR) performance monitors
  - Ensures proper air circulation post-retrofit
  - Duration: monitored for an extended period to verify system performance and effectiveness

Data collection and analysis tools

- Portal and resident app
  - Enables remote monitoring and resident engagement
  - Duration: continuous, with regular data reviews to keep residents informed and engaged in maintaining a healthy living environment
- Energy consumption tracker e.g. smart meters for electricity, gas and water
  - Helps correlate energy usage with damp and mould conditions
  - Duration: ongoing, with substantial data collection to identify trends and optimise energy use

Considerations

Each retrofit project is unique, and there is no one-size-fits-all method for conducting M&E. Factors such as the orientation of the building, humidity, temperature, season, and weather can all impact the results. Therefore, collecting a substantial amount of data over a longer period ensures a more accurate and comprehensive survey.

Conclusion

An effective M&E strategy for damp and mould in housing retrofits is essential for ensuring long-term success. By leveraging digital sensors, data analytics, and resident engagement, organisations can proactively identify risks, improve living conditions of residents, and ensure regulatory compliance. This toolkit provides a structured approach to implementing and managing an M&E framework for damp and mould, ensuring data-driven interventions and sustainable housing improvements.

Useful links

- Social Housing (Regulation) Act 2023
- Awaab's law
- Damp and mould: understanding and addressing the health risks for rented housing providers
- Supply Chain Advice Pack: Introduction to PAS 2030
- Supply Chain Advice Pack: Introduction to PAS 2035
- Managing Damp and Mould | RISE Masterclass