

# Living Walls – Ongoing Care

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**Living, or green walls provide clear environmental benefits however require focused ongoing care and management to reduce the risks of fire, water damage and other related losses.**

**This Loss Prevention Standard provides guidance on maintaining and inspecting living wall systems to ensure longevity and reduce the risks of loss or damage.**



# Living Walls – Ongoing Care



## Introduction

Loss Prevention Standard **Living Walls - Design and Installation** provides an overview of the main risks associated with living wall systems, along with best practice guidance to help reduce the potential for loss or damage within the design specification, and during installation of the wall and its supporting systems.

One of the primary factors that can lead to loss or damage relates to the health of the wall, specifically irrigation. Faults with the irrigation and feeding systems can result in the plants not receiving adequate water and nutrients and ultimately perishing, as demonstrated by a [maintenance related incident to a retail store in Spring 2024](#). The wall can quickly dry, particularly during periods of hot weather, and become very vulnerable to fire. In the event of ignition, fire spread can be rapid and compromise the resilience of the building, potentially resulting in fire related loss or damage. An appropriate maintenance and inspection regime can help reduce the potential for such losses.



The living wall system itself requires ongoing care to ensure structural stability, replace damaged or aged components to ensure longevity and reduce the potential for collapse and costly repairs, again emphasizing the importance of maintenance and inspection.

**Note:** This Loss Prevention Standard summarises the main risks of fire and other material damage losses and provides useful guidance on maintaining and inspecting living wall systems. It is focussed on Property loss prevention and related risk management guidance. It is not intended to address Liability exposures. The presumption is that all regulatory requirements, such as Fire Risk Assessments and compliance with local building regulations, codes, or standards, have or will be met.

## Understanding the Risks

Failings or interruptions to maintenance and inspection regimes can lead to loss or damage in a number of ways including, but not limited to:

- **Fire.** Fire can start on/with the living wall or spread to the living wall from another ignition source or internal area. Once a living wall is ignited, the fire may spread and develop into a significant fire event. The effects of fire from any ignition source are amplified during hot periods when the wall is at its driest. Ignition risks include:
  - ✓ **Arson.** Deliberate ignition of combustible components, dry foliage, or other materials in proximity such as waste receptacles, benches etc. This includes civil unrest type events.
  - ✓ **Electrical.** Damaged, faulty, incompatible, incorrectly installed or maintained electrical equipment can ignite combustible plastic components and foliage.
  - ✓ **Hot works.** Poorly managed hot works such as brazing, welding, grinding etc., undertaken in proximity to living walls can ignite combustible components and foliage.
  - ✓ **Smoking.** Discarded smoking waste can ignite trailing or low level foliage and the combustible components.
  - ✓ **Electric Vehicle/Bicycle Charging.** Charging equipment should not be located on, within or near living walls.
  - ✓ **Lighting.** Integrated lighting systems can fail, potentially leading to heat accumulation, sparking etc.

- ✓ **Heating.** Inappropriate fixed or temporary heating systems in proximity can radiate to living wall materials.
- ✓ **Exposures.** Activities undertaken within or external to the building featuring the living wall including:
  - Yard storage of combustible or flammable materials.
  - Hot emissions from boilers/catering ducting or hot flues bypassing the wall.
  - Roof mounted photovoltaic/solar equipment.
  - Waste receptacles below or in direct proximity to the living wall.
- ✓ **Balconies.** Balconies can be used to store flammable gases/fuel for barbecues, as well as general combustible goods. Some occupants may also smoke on balconies.
- ✓ **Lightning.** Lightning strike can ignite combustible materials, damage infrastructure.

Fire spread can be aided by the combustibility of the wall and its components, and any penetrations or cavities that allow fire to bypass the external walling into other areas.

- **Water Related Damage.** Risks associated with the irrigation systems include:
  - ✓ **Leaks.** Undetected leaks from the irrigation system can lead to water penetrating facades and causing structural damage. Damaged or faulty irrigation systems can also leak onto electrical equipment potentially leading to electrical fires.
  - ✓ **Control System Failure.** Loss or damage to control/monitoring equipment, wi-fi connectivity etc., could potentially lead to failure to water the wall potentially resulting in failure of the wall and the creation of combustible dried plant material
  - ✓ **Freezing.** Some systems may be vulnerable to freezing during periods of very cold weather adding weight to the living wall, potentially leading to structural damage.
  - ✓ **Rain & Inundation.** Inadequate or faulty drainage can lead to the wall perishing.
  - ✓ **Weight.** If the live wall is not designed, installed, or maintained to drain correctly, the collection of water in any growing arrangements will add additional weight to the installation causing potential damage to it and the building.
- **Windstorm** – Inappropriately secured living wall systems can break free during storm conditions, potentially leading to significant property damage.
- **Corrosion.** Some pesticides/feeds may be corrosive to system components.

## Key Maintenance Considerations

A healthy living wall system will inevitably mature and requires regular maintenance to ensure the risks of damage are minimised as the weight and size increases, and the risk controls remain pertinent.

### Hot Work

Hot work should be the last resort within 10m of living walls and alternative ‘low risk’ means of undertaking repairs etc., should be utilised wherever possible.

The Aviva Loss Prevention Standard – **Hot Work Operations** should be followed where hot works are unavoidable and thermographic cameras used throughout the process and during fire watches.

Fire watches should be undertaken for 240 minutes after the hot works, and only reduced where supported by a specific risk assessment. A minimum fire watch period of 120 minutes should be enforced.

## General Arrangements

- Ensure adequately trained and experienced workers and/or companies are used for inspection, servicing, and maintenance.
  - ✓ Formal contractor controls and arrangements should be in place for approving works, issuing, and signing off permits to work, ensuring works have been satisfactorily completed, and fire detections and/or protections reinstated where previously isolated or covered
- Ensure electrical installation, including lightning protection systems, are maintained in accordance with local regulatory requirements and original equipment manufacturers (OEM) or installers recommendations.
  - ✓ In the United Kingdom fixed electrical installations should be maintained by a competent and qualified electrical contractor, who are members of a third party accreditation scheme for electrical installation inspections and issuing Electrical Installation Condition Reports (EICR) e.g. NICEIC, ECA, NAPIT etc.
  - ✓ In the United Kingdom lightning protection systems should be maintained in accordance with **BS EN 62305 pts 1 to 4 – Protection Against Lightning**
- Produce a formal recorded maintenance plan and appropriate inspection checklists and timescales.
  - ✓ Routine auditing of a sample of completed maintenance documents to ensure compliance with site rules and procedures is recommended.
- Ensure an emergency call out arrangement is in place in respect of irrigation systems, ensuring attendance within 72 hours.
  - ✓ This can significantly reduce the potential for the wall drying and the associated increased combustibility concerns.
- Ensure sufficient spares are retained to support servicing and prompt repairs.
  - ✓ Ensure like for like replacement parts are utilised wherever possible.
  - ✓ Where this is not possible, check the replacement parts are compatible with the system, and the agents in use e.g. fertilisers/feeds, treatment sprays etc. via the supplier.
  - ✓ Replacement parts should be non-combustible wherever possible.
- Ensure fire detection and protection systems are maintained, inspected, and tested in line with installer recommendations by a competent and accredited company. Any alarms and interlocks should be tested at least monthly.

Refer to the Aviva Loss Prevention Standard – **Maintenance Regimes** for further guidance.

- Review Fire Risk Assessments at least annually to ensure changes to occupancy, activities, local area, the living wall and building etc. are adequately assessed and fire safety arrangements remain suitable and sufficient.
- Business Continuity Plans should be reviewed at least annually to ensure disaster recovery and continuity arrangements remain adequate. Any actions generated should be addressed promptly.
  - ✓ Please refer to the Aviva Loss Prevention Standard **Business Continuity** for further guidance.
- Review emergency response plans, key roles and responsibilities and training provision at least annually to ensure they remain adequate.
  - ✓ Please see the Aviva Loss Prevention Standard **Emergency Response Teams**.

## At least Annually

- Inspect the living wall for signs of structural distress to the wall, components, and fixings.
- Ensure the living wall remains within the weight parameters stipulated in the original design.
  - ✓ Cutting back or replacement of more vigorous plants may be necessary as the wall matures.
- Ensure the root structure of any ground based plants is not damaging foundations or drainage systems.
- Review whether the fire performance of the living wall is changing as plants mature and some thrive more than others.
  - ✓ Cutting back or replacing such planting can help maintain the desired or expected fire performance.
- Audit the living wall system for fire penetrations requiring remediation; removed or damaged fire walls, seals etc.; missing or damaged fire stopping; damaged or missing cavity barriers etc., and ensure any corrective issues are actioned promptly.
  - ✓ Refer to the Aviva Loss Prevention Standard – **Fire Compartmentation** for further guidance.
- Flush irrigation systems.
- Review the ‘Planting Plan’ to ensure it remains suitable given any changes to the building and the immediate area e.g. new buildings that may obstruct the sun.
- Consider whether any new pesticides or fertilisers now in use are suited for the system.

## At Least Six Monthly

- Irrigation systems should be serviced / maintained in accordance with Original Equipment Manufacturer (OEM) guidance, or more frequently where recommended.
  - ✓ Components should be replaced at, or preferably prior to the advised timescales.
  - ✓ Adequate parts/spares should be held to help minimise downtime during repairs / servicing.
- Monitoring systems should be thoroughly inspected to ensure full and correct functionality.

## Monthly

The living wall and supporting systems should be subject to a recorded monthly self-inspection programme to help identify areas of damage, faults, deteriorating condition of parts, use of unapproved or incompatible components, water leaks, drainage issues, housekeeping concerns etc. The use of photographic evidence with such inspections can prove invaluable. Self-inspections should include:

- The living wall for signs of damage, drying, faults or other hazards. Repair or remediate promptly as necessary.
- Irrigation plant rooms and tanks.
  - ✓ Any damage, leaks or other issues should be investigated and repaired promptly.
- Feed supply systems to check they are working correctly.
- Drainage systems for signs of blockages or waste accumulation.
- Automated monitoring systems to ensure they are working correctly.
- Use of thermographic cameras to routinely check for overheating electrical fitting and components.
- Ensure housekeeping arrangements are satisfactory:
  - ✓ Plant rooms maintained sterile and clear of combustible goods.
  - ✓ Smoking rules are being followed.
- Parking and vehicle charging rules are being followed.

An inspection checklist is provided in Appendix A of this Loss Prevention Standard. Also refer to Aviva Loss Prevention Standard – **Fire Safety Inspections** for further guidance.

## Checklist

A **Living Wall Maintenance and Inspection Checklist** is included in Appendix 1 which can be tailored to your own organisation.

## Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners, including:

- Fire risk assessment: [Cardinus Risk Management.](#)
- Electrical/Lightning installation testing: [Bureau Veritas.](#)
- Thermographic imaging and PAT testing: [PASS](#)
- Automatic fire detection: [SECOM](#)
- Leak detection: [LeakSAFE](#)

For more information please visit: [Aviva Risk Management Solutions – Specialist Partners](#)

## Sources and Useful Links

- Risc Authority guidance document [Green and Living Walls as External Cladding - A Joint Guide to Managing Risk](#)
- Industry best practice guide [External Cladding: Living Walls and Fire Safety.](#)

**Note:** Whilst UK standards and legislation are referenced in this document, other international standards and legislation should be referenced where applicable.

## Additional Information

Relevant Aviva Loss Prevention Standards include:

- **Fire Safety Inspections.**
- **Fire Compartmentation.**
- **Escape of Water and Fluid Leakage**
- **Fire Safety Legislation.**
- **Electrical Installations - Inspection and Testing.**
- **Emergency Response Teams**
- **Housekeeping - Fire Prevention.**
- **Maintenance Regimes.**
- **Heat and Smoke Venting Systems.**
- **Hot Work Operations.**
- **Thermographic Surveys.**
- **What is Environmental, Social and Governance.**

To find out more, please visit [Aviva Risk Management Solutions](#) or **speak to one of our advisors.**

**Email us at [riskadvice@aviva.com](mailto:riskadvice@aviva.com) or call 0345 366 6666.\***



\*The cost of calls to 03 prefixed numbers are charged at national call rates (charges may vary dependent on your network provider) and are usually included in inclusive minute plans from landlines and mobiles. For our joint protection telephone calls may be recorded and/or monitored.

# Appendix 1 – Living Walls Maintenance and Inspection Checklist



Location	
Date	
Completed by (name and signature)	

	General	Y/N	Comments
1.	<ul style="list-style-type: none"> <li>• Are adequately trained and experienced workers and/or companies used for inspection, servicing, and maintenance of the living wall and associated systems?</li> <li>• Are formal contractor controls and arrangements in place in respect of:                             <ul style="list-style-type: none"> <li>✓ Approving works?</li> <li>✓ Issuing, and signing off permits to work?</li> <li>✓ Ensuring works have been satisfactorily completed?</li> <li>✓ Fire detections and/or protections reinstated where previously isolated or covered?</li> </ul> </li> <li>• Are permits to work routinely inspected to ensure compliance with rules and stipulated procedures?</li> </ul>		
2.	<ul style="list-style-type: none"> <li>• Is the electrical installation, including lightning protection systems, maintained in accordance with local regulatory requirements and original equipment manufacturers (OEM) or installers recommendations?</li> <li>• Is there a process for ensuring replacement components are suitable for wet environments?</li> <li>• Is there a process for ensuring replaced lighting equipment is low heat emitting?</li> </ul>		
3.	<ul style="list-style-type: none"> <li>• Is a formal recorded maintenance plan and inspection programme in place in respect of the living wall and associated systems?</li> <li>• Do you routinely audit completed maintenance documents to ensure compliance with site rules and procedures?</li> </ul>		
4.	Is an emergency call out arrangement in place in respect of irrigation systems, ensuring attendance within at most 72 hours?		

## LOSS PREVENTION STANDARDS



5	<ul style="list-style-type: none"> <li>• Are sufficient parts/spares retained to support servicing and prompt repairs of the wall and supporting systems including irrigation?</li> <li>• Are like for like replacement spares/parts utilised wherever possible?</li> <li>• Where this is not possible, are the replacement parts checked for compatibility with the system, and the agents in use e.g. fertilisers/feeds, treatment sprays etc., via the supplier?</li> <li>• Are checks made to ensure non-combustible parts are used wherever possible?</li> </ul>		
6.	<ul style="list-style-type: none"> <li>• Are fire detection and protection systems maintained, inspected, and tested in line with installer recommendations by a competent and accredited company?</li> <li>• Are alarms and interlocks tested at least monthly?</li> </ul>		
7.	<ul style="list-style-type: none"> <li>• Are Business Continuity Plans reviewed at least annually to ensure disaster recovery and continuity arrangements remain adequate?</li> <li>• Are any remedial actions addressed promptly?</li> </ul>		
8.	Are Fire Risk Assessments reviewed at least annually or following any significant change to the living walls, associated systems etc?		
9.	Are emergency response plans, key roles and responsibilities and training provision reviewed at least annually to check for changes to the living wall, associated equipment, and personnel?		

	<b>Annual Inspections</b>	<b>Y/N</b>	<b>Comments</b>
10.	<ul style="list-style-type: none"> <li>• Has the wall been thoroughly inspected for signs of structural distress to the wall, components, and fixings?</li> <li>• Have any corrective actions been addressed?</li> </ul>		
11.	<ul style="list-style-type: none"> <li>• Does the living wall remain within the weight bearing parameters stipulated in the original design?</li> <li>• Have the plants been cut back/maintained to avoid exceeding weight limitations?</li> </ul>		
12.	Has the root structure of any ground based plants been inspected to ensure the roots are not damaging foundations or drainage systems?		
13.	Have there been any changes which might negatively impact the fire resistance (insulation and integrity) of the external walls of the building e.g. penetrations, ventilation ducts etc?		

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14	<ul style="list-style-type: none"> <li>Has an annual firestopping audit of the walling system and fascia been carried out to check for fire penetrations requiring remediation; removed or damaged fire walls; faulty seals; missing or damaged fire stopping; airbricks/vents; window surrounds; damaged or missing cavity barriers etc?</li> <li>Have any corrective actions been addressed?</li> </ul>		
15.	Have the irrigation systems been fully flushed?		
16.	<ul style="list-style-type: none"> <li>Have there been any changes to the building and the immediate area which may negatively impact the living wall e.g. new buildings which obstruct the sun?</li> <li>If so, has the planting plan been reviewed to ensure it remains suitable?</li> <li>Are any new/replacement pesticides or fertilisers used in the irrigation systems suited for the system, and has this been verified by the irrigation equipment suppliers, living wall installers etc?</li> </ul>		

	<b>Six monthly Inspections</b>	<b>Y/N</b>	<b>Comments</b>
17.	<ul style="list-style-type: none"> <li>Have irrigation systems been serviced / maintained in accordance with Original Equipment Manufacturer (OEM) guidance, or more frequently where recommended?</li> <li>Are components replaced at, or preferably prior to the recommended timescales?</li> <li>Are adequate parts/spares held to help minimise downtime during repairs / servicing?</li> <li>Where the irrigation systems automatically adjust to meet seasonal requirements, has this been checked (software updates, component changes, cancelled/overridden programming etc?)</li> </ul>		
18.	Have monitoring systems been thoroughly inspected to ensure full and correct functionality, software updates etc?		

	<b>Monthly</b>	<b>Y/N</b>	<b>Comments</b>
19.	<ul style="list-style-type: none"> <li>Has the living wall been checked for signs of damage, dead/diseased plants, drying, faults, other hazards, and general condition?</li> <li>Have any corrective actions been addressed?</li> <li>Have automated monitoring systems been checked and working correctly?</li> </ul>		

## LOSS PREVENTION STANDARDS

20.	<ul style="list-style-type: none"> <li>• Have the irrigation systems, plant rooms and tanks been checked for:               <ul style="list-style-type: none"> <li>✓ Damage or leaks?</li> <li>✓ Housekeeping issues? <b>Note:</b> plant rooms should be maintained sterile and clear of combustible items.</li> <li>✓ Issues or faults with the feed supply systems?</li> <li>✓ Damaged or missing lagging?</li> <li>✓ Are any trace heating systems working correctly?</li> <li>✓ Are any leak detection systems working correctly?</li> </ul> </li> <li>• Are irrigation systems, feeding systems and flow rate monitoring systems working correctly?</li> <li>• Have any corrective actions been addressed?</li> </ul>		
21.	Are water level meters installed in the living wall working correctly?		
22.	Are all alert/alarm systems working correctly?		
23.	<ul style="list-style-type: none"> <li>• Are water treatments (mineral deposits etc.) up to date?</li> <li>• Are there any signs of mineral build up that might impact the irrigation or feeding systems?</li> </ul>		
24.	Are drainage systems, including emergency drainage, clear of blockages or waste accumulation?		
25.	Is the living wall at least 10 metres clear of combustible waste and/or waste receptacles?		
26.	Is there any evidence of smoking within 10 metres proximity to the living wall?		
27.	Are cars and vehicles maintained at least 10 metres clear of the living wall?		
28.	Is any battery charging undertaken within 10 metres of the living wall e.g. electric vehicles, e-Bikes etc?		
29.	Are any fittings, furniture or finishings present on the inner side of the living wall structure that are vulnerable to ignition in the event of radiated or conducted heat from a fire in the living wall?		
30.	Are there any unauthorised/unapproved heaters in use?		
31.	Are impact protection devices present and in good working order?		

32.	Additional comments:
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## LOSS PREVENTION STANDARDS