Wind and Windstorm - Property

Windstorms and high winds can cause significant damage to buildings and assets, and the effects can be worsened when combined with other weather conditions such as heavy rainfall, hail and sleet/snow.

This Loss Prevention Standard provides useful guidance on preparing for windstorm and high wind events, including emergency planning, to help reduce the potential for loss or damage.

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Wind and Windstorm – Property

Introduction

Windstorms are weather events typically featuring strong winds and often associated with low pressure systems. Named windstorm events are predicted and made public in advance by meteorological officials, given the anticipated impacts, which allows for planning and preparation to be undertaken.

Other high wind events may be less well publicised, and organisations can be vulnerable to loss or damage to key buildings and other assets as a result. The effects of the wind damage can also be worsened by accompanying rain, hail and sleet/snow in the winter months.

The potential for damage caused by wind events can be significantly reduced by appropriate design, ongoing inspection and maintenance and well-developed preparation and planned responses plans.

Note: This document is focussed on property loss prevention in relation to wind events. It is not intended to address liability exposures. The presumption is that all regulatory requirements, Fire Risk Assessments, and compliance with requirements placed by the local authority having jurisdiction which would include licencing, building permissions, regulations, codes, or standards, have or will be met.

Understanding the Risks

The property related risks include:

- **Structural Damage**. Storms and high winds can damage buildings and fittings, removing loose or aging materials including roof tiles, slate, cladding, windows etc.
- **Associated Damage.** Accompanying rainwater, hail etc., can enter damaged buildings, leading to further structural damage, particularly to vulnerable materials such as mass timber, historic finishes etc., along with damage to contents, equipment and stock. Some stocks cannot be salvaged from even the most minor of exposures such as clothing, medical equipment, food etc.
- **Power Outage.** Loss of power can also lead to chilled stock being compromised, unsafe cessation of trade processes, failure of safety systems e.g., fire detection systems etc. Server based systems processing transactions, accounting etc., can be damaged, potentially harming sales revenues. Damaged high voltage cables can start fires if in contact with combustible materials.
- **Flying Debris.** Falling trees and branches can become wind-blown and damage buildings and other assets, including external services.
- **Security.** Communications networks can be damaged, potentially impacting intruder alarm or video surveillance system monitoring. External security equipment e.g., security fencing, video surveillance systems etc., can be physically damaged leaving the premises vulnerable to theft attack.

Managing the Risks

Roofs

Roofs should be designed for the maximum expected winds and the associated uplift forces, in line with local or national standards, regulations or codes. In the United Kingdom this is addressed in:

- **Structure: Approved Document A** of the Building Regulations – England and Wales.
- **Building Standards Technical Handbook** – Scotland.
- **Technical Booklet D** – Structure of the Building Regulations (Northern Ireland) – Northern Ireland.

Many wind related roof damage events are related to the failure of inappropriately designed or poorly fastened flashing, which when compromised can leave the roof vulnerable to further damage.

Over time roofing can become weakened and require closer ongoing self-inspection and maintenance. Consider the following:

- On an ongoing basis, particularly ahead of high winds, inspect the flashing around the edge of a roof perimeter and any roof openings, ensuring they are adequately fixed and secured.
- Replace missing, loose or damaged roof tiles.
- Ensure roof-mounted structures, such as chimneys, flues etc., are in good repair/condition, and adequately affixed.
- Ensure pointing is of the appropriate standard
- Small repairs may be completed using in house maintenance teams, however roofing specialists should be contacted to complete emergency repairs ahead of any forecasted windstorm or high winds event.

Roof and Wall-Mounted Objects

Items becoming detached from roofs or walls increases the risk of damage to property in windstorms and as such should be adequately secured. Examples include lightweight plant or plant rooms, air handling equipment, solar photovoltaic panels, fans, pumps and motors etc.

Consider the following:

- On an ongoing basis, and importantly ahead of any forecasted windstorm or high wind events, any roof or wall-mounted equipment or plant rooms should be checked and any loose fittings either secured, removed or otherwise protected.
- Ensure all rooftop access hatches or plant room doorways are properly secured.

External Objects

External objects such as storage, bins, outdoor furniture, trees and shrubs and, sometimes, parked vehicles can become wind-blown during wind events. These can impact buildings, external services, storage and vehicles, leading to damage and vulnerability of the property to the ongoing effects of wind and rain.

- Precautions should be taken to prevent flying objects.
- Mobile objects should be moved to secure areas or securely fixed to the ground.
- If glazed elements are not impact resistant, install temporary coverings to provide added protection.
- External services, equipment, etc., should be protected against impact.
- The condition and location of trees and shrubs should be considered, and immediate issues of concern addressed, such as tree limb fracture or tree collapse.

Rain

Heavy and wind-driven rain creates many exposures, ranging from flooding water courses to flash or surface water flooding, and driving rain through windows, doors or external apertures from the building.

- Precautions should be taken against wind-driven rain through air ventilation systems, louvres, under and around sliding glass doors, roof-mounted exhausts, roof-mounted access hatches or plant rooms, etc.
- Ensure roofs and gutters are cleared and clean.
- Ensure drains and manhole covers are in place and secured.
- Ensure public highway located storm drains are cleared and clean.
- Liaise with neighbours to ensure the same. A blockage at any point in the drainage system can lead to backing up and water ingress into buildings.
  - ✓ The use of non-return valves in drainage and foul water systems can help prevent such issues.

Utilities and Services

Consider the potential impact to your utilities and services and ensure these form part of your emergency plans.

- What could be impacted, e. g., overground services?
- How could it be impacted, e. g., wind damage or the impact from falling trees?
- What services need to be operational during the storm, e. g., fire alarm system, sprinkler fire protection system, and electricity?
- Can any services be isolated ahead of the storm? This should be verified by formal documented risk assessment and permit to work, and managed with a formal lock out/tag out process
- When do services need to be restored?
- Is there adequate redundancy in the event of damage to key or critical equipment, or should additional equipment be acquired and back-up procedures improved?

Emergency Response Planning

Ensure emergency response plans adequately address windstorm, high wind and associated weather conditions, including flash floods, surface water accumulations and run-off, which can all occur in areas outside of recognised designated flood zones.

Emergency response plans should include the following:

- Ensure the site management and emergency response teams are adequately prepared, trained for wind related events and the associated conditions.
- Formalise procedures for checking openings, windows and doors are protected and sealed at all levels of the building, including basements, upper levels, and levels adjacent to gutter valleys/troughs or flat roofs.
- Moving susceptible items to internal areas or higher ground.
- Consider skidding items in store on pallets or multiple pallets.
- Removable flood protections should be considered to help prevent surface or flood water ingress into buildings where vulnerable. Ensure formal planning is in place for the deployment of such equipment including regular training and exercises.
- Ensure appropriate water collection vessels are available to catch and water ingress or leaks.
- Consider how denial of access to the site due to adverse weather conditions could impact business activities, deliveries, collections etc., and make appropriate back up plans, such as securing temporary yard or warehouse storage in lower risk locations.

- Ensure any temporary or emergency water pumps and generators are protected from water ingress, have appropriate fuel or protected energy supplies, and are primed and available to operate.
- Utilise warning services and apps such as:
  - ✓ UK weather warnings - Met Office
  - ✓ Sign up for flood warnings - GOV.UK
  - ✓ Floodupdates - Scottish Environmental Protection Agency
  - ✓ Flood warnings and alerts - Natural Resources Wales
  - ✓ Check the risk of flooding in your area | NIdirect - Northern Ireland
- Ensure relevant staff are equipped to work remotely in an emergency event. This can help reduce the potential for business interruption related losses.
- Regularly test and update emergency response plans.

Refer Aviva Loss Prevention Standard **Emergency Response Teams** for further guidance.

Business Continuity

Every business should have a formal Business Continuity Plan in place. This should be reviewed to ensure disaster recovery and continuity arrangements adequately address wind events and associated weather conditions related damage. Any actions generated should be addressed promptly.

Refer Aviva Loss Prevention Standard **Business Continuity Management** and **Business Continuity - Testing and Maintenance** for further guidance.

Key Actions

- Assess the buildings and assets for vulnerability to wind related events, including associated weather conditions such as rain, hail etc.
- Improve the resilience of the buildings and assets by replacing aged, worn or damaged materials.
- Routinely inspect buildings and assets for damage that increases vulnerability to wind related damage. Ensure any such issues are rectified.
- Ensure appropriate emergency response plans are produced, and roles allocated. Routinely review and test.
- Ensure contingency plans are in place via business continuity planning. This can help reduce the scales of any business interruption losses.

Checklist

A generic **Wind and Windstorm Checklist** is presented 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.

Flood protection Services - Apex Flood Solutions
Flood risk management - Ashfield Solutions
Flood risk assessments - JBA Consulting
Business Continuity - Horizonscan

For more information please visit: Aviva Risk Management Solutions – Specialist Partners

Sources and Useful Links

- Structure - Approved Document A - GOV.UK
- Building Standards – Scottish Government
- Technical Booklet D - Building Regulations - Northern Ireland

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:

- **Emergency Response Teams**
- **Flood Guidance and Mitigation (UK)**
- **Flood Guidance and Mitigation (Global)**
- **Weather related Property Damage**
- **Weight of Snow - Property**

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

Email us at 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 Wind and Windstorm - Checklist

Location	
Date	
Completed by (name and signature)	

	Wind and Windstorm – Property	Y/N	Comments
1.	Are the buildings and roofs designed for the maximum expected winds and the associated uplift forces?		
2.	Are the buildings situated in an exposed location that is prone to windstorm?		
3.	• Are ongoing inspection, maintenance and repairs made to roofs? • Are any missing, loose or damaged roof tiles and flashings replaced?		
4.	• Ahead of any expected high winds, is the flashing around the edge of a building perimeter visually and closely checked? • To facilitate immediate small level repairs, do you have a supply of threaded nails with flat washers available?		
5.	• Are all roof-mounted structures sound and, where appropriate, is pointing of an appropriate standard?		
6.	• Ahead of any storm, for anything other than small repairs is a roofing specialist contacted to expedite emergency repairs?		
7.	• Are roof and wall-mounted objects, equipment or plant rooms appropriately secured, and has this been checked? • Have all roof top access hatches or plant room doorways been properly secured?		
8.	• Are glazed elements (including skylights) impact resistant? • If not, has appropriately fixed plywood been used to protect them?		

	Wind and Windstorm – Property Cont'd	Y/N	Comments
9.	• Have all external objects such as storage, bins, outdoor furniture, pole-mounted utilities, trees and shrubs, and parked vehicles that can become missiles in high winds, been identified? • Have appropriate precautions been taken to prevent objects from becoming missiles or flying? • Have mobile objects been moved to secure areas or securely fixed to the ground?		
10.	Have any external services, equipment, etc., been protected against impact?		
11.	• Has the condition and location of nearby trees and shrubs been considered? • Are there any issues with any of these? • Have appropriate remedial works been taken to prevent tree limb fracture or collapse, impacting a building or any associated services or equipment?		
12.	Has the impact of heavy rain or wind driven rain been reviewed with consideration of: ✓ Flooding from watercourses? ✓ Flash or surface water flooding? ✓ Driving rain through windows, doors or external apertures?		
13.	Have precautions been taken against wind driven rain through any potential external openings: ✓ Air ventilation systems? ✓ Louvres or airbricks? ✓ Under and around sliding glass doors? ✓ Roof-mounted exhausts? ✓ Roof-mounted access hatches? ✓ Roof-mounted plant or plant rooms?		
14.	Are roofs and gutters cleared and clean?		
15.	Are drains and manhole covers in place and secured?		
16.	Are the public highway located storm drains identified, cleared and clean?		
17.	Have you liaised with neighbouring occupiers to ensure they have clear drainage channels?		

	Wind and Windstorm – Property Cont'd	Y/N	Comments
18.	• Has the potential impact to your utilities and services been considered? • Is this part of your emergency plans? • Have you identified what could be impacted and how? ✓ Have you identified what services require to be operational during the storm, and what contingencies need to be put in place to ensure they remain operational, e. g. uninterruptible power supplies? ✓ Can any services be isolated ahead of the storm? ✓ Has this been verified by formal documented risk assessment and permit to work? ✓ Is this managed with a formal lock out/tag out process? ✓ Have you identified when services need to be restored?		
19.	• Are your emergency preparations and response plans up to date for windstorm and flooding? • Have the plans been recently tested? • Do your plans provide accountability for tracking any storms before, during and post their impact?		
20.	• If appropriate, do you have removeable flood systems available on site? • Do you have a plan of when to deploy these and are operatives trained?		
21.	• Are any temporary or emergency water pumps and generators needed? • If not permanent arrangements, are temporary devices and connections required? • Are these devices protected from water ingress or wind damage? • Do they have appropriate fuel or protected energy supply? Are they available to operate?		
22.	• Are any temporary or emergency water pumps and generators needed? • If not permanent arrangements, are temporary devices and connections required? • Are these devices protected from water ingress or wind damage? • Do they have appropriate fuel or protected energy supply? Are they available to operate?		

	Wind and Windstorm – Property Cont'd	Y/N	Comments
23.	• Has denial of access to the site been considered? • If so, have contingency arrangements been put in place to use other premises during a wind event?		
24.	• Has the impact to employees, site management and the emergency response team by these events been considered? • Will these events impact on their ability to perform any tasks required of them?		
25.	Additional comments:		

Please Note

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