

Loss prevention standards

# Windstorm – Protection of Buildings

Named windstorms and high winds bring many risks to buildings and their surroundings. Combined with rainfall, hail and increased tidal surges, this can threaten life, property and business activities. Every available precaution should be taken to reduce these risks.



# Windstorm – Protection of Buildings



## Introduction

In numerous cases, windstorm events are predicted and made public in advance by meteorological officials. This means that their impact should not be sudden and unforeseen and provides the opportunity to prepare and plan.

The impact of windstorms can be reduced by appropriate design and foresight, ongoing inspection and maintenance, and developed preparation and planned responses plans.



## Guidance for Reducing the Risks

### Roofs

Roofs should be designed for the maximum expected winds and the associated uplift forces. However, regardless of the design, the lack of appropriate ongoing inspection, maintenance and repairs increases the risk factors of a roof or its covering failing in high winds or heavy rains. Buildings situated in open locations such as adjacent to lakes or fields, or on hillsides are particularly at risk from wind loads.

The majority of roof wind damage starts with failure of inappropriately designed, poorly maintained or poorly fastened flashing. If strong winds damage the perimeter flashing, additional damage can be expected to the remainder of the roof.

Consider the following:

- On an ongoing basis, but more importantly, ahead of high winds, the flashing around the edge of a building perimeter should be visually and closely checked. Having some threaded nails with flat washers available, enables quick and easy interim repairs where needed
- Replace missing, loose or damaged roof tiles
- Ensure roof-mounted structures are of sound construction and condition, such as chimneys
- Ensure pointing is of appropriate standard
- For anything other than small repairs, a roofing specialist should be contacted to complete emergency repairs ahead of the storm

### Roof and wall-mounted objects

Detached items from roofs or walls increase the risk of damage to property in windstorms and need to be properly secured. Examples include lightweight plant rooms, air conditioners, solar panels, and fans, pumps and motors.

Consider the following:

- On an ongoing basis, but more importantly ahead of any high winds, any roof or wall-mounted equipment or plant rooms should be checked
- Ensure all rooftop access hatches or plant room doorways are properly secured
- Where there are any concerns, further securing or methods of protection should be considered

## LOSS PREVENTION STANDARDS

## External objects

External objects such as storage, bins, outdoor furniture, trees and shrubs and, sometimes, parked vehicles can become missiles in high winds. These can impact buildings, external services, storage and vehicles, leading to immediate damage and making the impacted item more vulnerable 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, appropriately fixed plywood can be used to protect them
- 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

Rain, and particularly heavy or wind-driven rain, creates many exposures. 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. One blockage can cause a knock-on effect in a drainage network

## Utilities and services

As part of any storm management, 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?

## Emergency Planning

Make sure your emergency preparations and response plans are up-to-date for windstorms and flooding. With these types of events, unexpected flooding, flash floods, surface water accumulations and run-off can occur in areas outside of recognised designated flood zones.

Experience repeatedly shows that many floods occur in these areas, and without appropriate preparations and response, the impact to a building can be significant. Any emergency response plans should include the following:

- Moving susceptible items to higher ground
- Consider skidding items on pallets or multiple pallets
- Make sure 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
- If the risk is appropriate, consider having sandbags or more engineered items available on site and a plan in place of when to deploy them
- Ensure any temporary or emergency water pumps and generators are protected from water ingress, have appropriate fuel or protected energy supply, and are available to operate
- Consider denial of access to the site due to the weather conditions
- Consider the impact to employees, site management and the emergency response team. Will events impact on their ability to perform any tasks required of them?
- Consider the impact to your services

It is important to regularly test and update emergency response plans.

## Checklist

A generic Windstorm – Protection of Buildings 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.

For more information please visit:

[Aviva Risk Management Solutions – Specialist Partners](#)

## Additional Information

Relevant Loss Prevention Standards include:

- Emergency Response Teams
- UK Flood – Guidance and Mitigation
- Flood Guidance and Mitigation (Global)
- Impairment Management
- Photovoltaic Solar Panel Systems



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.\*

\*Calls may be recorded and/or monitored for our joint protection.

# Appendix 1 – Windstorm – Protection of Buildings Checklist



Location	
Date	
Completed by (name and signature)	

	Windstorm – Protection of Buildings	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?		
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 any missing, loose or damaged roof tiles replaced?		
6.	Are all roof-mounted structures sound and, where appropriate, is pointing of an appropriate standard?		
7.	Ahead of any storm, for anything other than small repairs is a roofing specialist contacted to expedite emergency repairs?		
8.	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?		

## LOSS PREVENTION STANDARDS

	Windstorm – Protection of Buildings Contd.	Y/N	Comments
9.	<p>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?</p> <p>Have appropriate precautions been taken to prevent objects from becoming missiles or flying?</p> <p>Have mobile objects been moved to secure areas or securely fixed to the ground?</p>		
10.	<p>Are glazed elements (including skylights) impact resistant? If not, has appropriately fixed plywood been used to protect them?</p>		
11.	<p>Have any external services, equipment, etc. been protected against impact?</p>		
12.	<p>Has the condition and location of nearby trees and shrubs been considered?</p> <p>Are there any issues with any of these?</p> <p>Have appropriate remedial works been taken to prevent tree limb fracture or collapse, impacting a building or any associated services or equipment?</p>		
13.	<p>Has the impact of heavy rain or wind driven rain been reviewed with consideration of:</p> <ul style="list-style-type: none"> <li>• Flooding from watercourses?</li> <li>• Flash or surface water flooding?</li> <li>• Driving rain through windows, doors or external apertures?</li> </ul>		
14.	<p>Have precautions been taken against wind driven rain through any potential external openings:</p> <ul style="list-style-type: none"> <li>• Air ventilation systems?</li> <li>• Louvres or airbricks?</li> <li>• Under and around sliding glass doors?</li> <li>• Roof-mounted exhausts?</li> <li>• Roof-mounted access hatches?</li> <li>• Roof-mounted plant or plant rooms?</li> </ul>		

## LOSS PREVENTION STANDARDS

	Windstorm – Protection of Buildings Contd.	Y/N	Comments
15.	Are roofs and gutters cleared and clean?		
16.	Are drains and manhole covers in place and secured?		
17.	Are the public highway located storm drains identified, cleared and clean?		
18.	Have you liaised with your neighbours to ensure they have clear drainage channels?		
19.	<p>Has the potential impact to your utilities and services been considered?</p> <p>Is this part of your emergency plans?</p> <p>Have you identified what could be impacted and how?</p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• Can any services be isolated ahead of the storm?</li> <li>• Has this been verified by formal documented risk assessment and permit to work?</li> <li>• Is this managed with a formal lock out/tag out process?</li> <li>• Have you identified when services need to be restored?</li> </ul>		
20.	<p>Are your emergency preparations and response plans up-to-date for windstorm and flooding?</p> <p>Have the plans been recently tested?</p> <p>Do your plans provide accountability for tracking any storms before, during and post their impact?</p>		
21.	<p>Have you moved susceptible items to higher ground?</p> <p>Have you considered skidding items on pallets or multiple pallets?</p>		
22.	<p>Are all openings, windows and doors protected and sealed at all levels of the building?</p> <p>Consider basement levels, upper levels and levels adjacent to gutter valleys/troughs or flat roofs.</p>		

## LOSS PREVENTION STANDARDS



	Windstorm – Protection of Buildings Contd.	Y/N	Comments
23.	<p>If appropriate, do you have sandbags or more specifically engineered items available on site?</p> <p>Do you have a plan of when to deploy these?</p>		
24.	<p>Are any temporary or emergency water pumps and generators needed?</p> <p>If not permanent arrangements, are temporary devices and connections required?</p> <p>Are these devices protected from water ingress or wind damage?</p> <p>Do they have appropriate fuel or protected energy supply? Are they available to operate?</p>		
25.	Has denial of access to the site been considered?		
26.	<p>Has the impact to employees, site management and the emergency response team by these events been considered?</p> <p>Will these events impact on their ability to perform any tasks required of them?</p>		
27.	Additional comments:		

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