



## Wind Management Policy

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### Managing environmental factors for structures and covered stages

This policy outlines the management of covered stage and structures exceeding 1m and should be taken into account as a site-wide guide to wind management for the safety of the public, performers & all other workers at the event. Decisions regarding the safe running of an event need to be taken well in advance of reaching the operational wind loading capacities of the stage itself, specifically it should be noted that other structures may have much lower tolerances.

The wind reference chart below will help to clarify the relationship between various wind measurements and it must be noted that anything above 25 mph is a strong wind and site conditions may start to become hazardous at this speed. Each site has its own topography and local conditions and response to winds and wind management plans must therefore be adjusted to include this data.

### Wind speeds

Miles per hour	Beaufort Scale	Description
0.0 – 0.6 mph	0	Calm
0.7 – 12.2 mph	1-3	Light Breeze
12.3 to 17.8 mph	4	Moderate Breeze
17.9 - 24.0 mph	5	Fresh Breeze
24.1 – 31.0 mph	6	Strong Wind
31.1 – 38.3 mph	7	Near Gale Force
38.4 – 46.4 mph	8	Gale Force
46.6 – 54.7 mph	9	Strong Gale Force
54.8 – 63.6 mph	10	Storm Force

Careful consideration must be given to wind management throughout all phases for the construction, show and deconstruction stages. At the planning stage advice should be given to the event organiser regarding site layout, taking into account stage orientation in relation to topographical location. A full site risk assessment should be done to ensure that factors such as construction on headlands, on the coast or in valleys where wind can funnel are taken into account, and suitable design changes are implemented where necessary.

IStructE guidance regarding temporary structures is that they should be designed to withstand the loads created by approximately 55mph. The guidance does however allow for the removal of sheeting. Many structures have a much lower tolerance when fully sheeted and event organisers should be aware of this when constructing wind management plans. In view of this potential confusion, HSE have strongly recommended that during the build and show phases, roof sheets should not be removed should gusting become hazardous, as screens, stage sets, drapes and lighting rigs inside the stage structure, exposed to the wind, become



dynamic loads rather than static and themselves put undue strain on the structure. Some stage designs need low level wall sheeting to be removed at certain wind speeds and the requirements for this and the potential issues that may arise need to be clearly documented in advance of the event.

### Preventative measures

An anemometer should be installed as soon as is reasonably practicable on all covered stages and structures over 2m and must be constantly monitored when conditions are likely to cause a hazard.

Where topography and seasonality factors are considered of more of a concern than normal, each structure should have its own specific wind action plan that can be integrated into the overall event safety risk assessment taking into account site specific requirements. The event safety plan should identify what actions should be taken, when and by whom in relation to each specific structure.

There should be monitoring of weather forecasts for the area at all times from beginning of construction until deconstruction is complete.

The use of access equipment or roof climbing must cease if gusting becomes continuous above 27 mph based on industry standard access equipment manufacturers recommended maximum operational wind speed.

### Operational management throughout an event

Wind Speed mph	Monitoring Level	Action	Action Level
Up to 15	8 hourly	Regular weather forecast review.	
16 – 25	Hourly	Regular on site assessment.	
26 – 40	30 Minutes	Prepare to halt erection operations until safe working conditions have resumed. If show is in progress, it is likely that a show stop should occur due to factors other than TDS safety.	Level 1
41 – 50	15 Minutes	Site safety meeting and risk assessment. Prepare for full site evacuation.	Level 2
51 and over	Constant	Site evacuation procedure implemented.	Level 3

#### Action Level 1

When monitoring registers a gust wind speed in excess of 20 mph, in conjunction with an increasing general trend of recorded high wind speeds, then subject to risk assessment, all staff involved with the installation/ erection of the structure(s) should be put on alert that action may be required to delay the erection process until safe working conditions have returned. This process should be adopted into the overall site wind management plan.

#### Action Level 2

It is recommended as safe practice for a site safety meeting to be convened to assess the overall site conditions when monitoring registers a gust wind speed in excess of 32 mph in conjunction with an increasing



general trend of recorded high wind speeds. This can be varied subject to onsite risk assessment. This should be adopted into the overall event safety plan and preparations should be made regarding show stop procedure and full or partial evacuation of the site should wind speeds increase making site conditions unsafe.

### Action Level 3

When monitoring registers a gust wind speed in excess of 48 mph in conjunction with an increasing general trend of high recorded wind speeds, and determined by risk assessment site evacuation may have to be implemented and a safety meeting must be called to identify subsequent action such as the lowering of production. The structure must immediately become a hard hat area for essential personnel only and the stage may be evacuated and a safe perimeter imposed around all temporary structures. Before performances resume, or deconstruction begins, there must be a structural inspection and new sign off.

### Strong wind and structures

It is important to recognise that it is wind pressure on a structure that poses an issue not merely wind speeds themselves. The relationship between pressure and wind is not linear. The applied pressure is proportional to the square of the wind speed. For example: An increase in wind speed from 25 mph to 38 mph will approximately double the pressure on the structure. Between 25 mph & 54 mph, pressure on the structure approximately quadruples.

Wind Speed mph	Surface Pressure kN/m <sup>2</sup>
26.88	0.088
29.12	0.104
31.36	0.120
33.60	0.138
35.84	0.157
38.08	0.177
40.32	0.199
42.56	0.221
44.80	0.245
47.04	0.270
49.28	0.297
51.52	0.324
53.76	0.353
56.00	0.383

## 1. Revision

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- 1.1 The Company may review and revise this procedure from time to time without notice to meet the needs of the business, but will advise all staff of such revisions when published.

## 2. Policy Version

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