



Detailed Weather Downtime Study at:

[REDACTED]

[REDACTED]
[REDACTED]

Prepared for:	[REDACTED]
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Executive Summary

██████████ is interested in MetSwift's offering to determine and accurately assess weather risk throughout the associated challenges provided by the weather. This information will assist in the design, construction and efficient deployment of the equipment and materials considering the prevailing weather conditions. This will enable cost efficiencies and a reduced delivery of waste materials.

MetSwift has worked with the construction sector for some time and therefore understands the challenges the sector faces. We address these through our intelligent and accurate weather forecasts that allow the construction industry to plan and manage the 10 to 15 years of weather data they require. This assists construction companies in their decision making.

It has shown that the weather conditions over seasons across 8 weather stations were analysed with specific focus on wind speed, wind gust, temperature and rainfall. The wind speed was analysed based on a requirement of 10% of 0 to 100 mph and 10% of 100 to 200 mph. The temperature was analysed based on a requirement of 4 working days of 5 days per week that is the same as the average wind speed of 10 mph. The rainfall was analysed based on the number of days that the rainfall was more than 10mm. The wind speed threshold of the stormline is 0.1 or 0.1% of the day.

The wind speed risk ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day. The temperature risk ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day. The rainfall risk ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day. The wind speed risk ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day.

The risk for low temperature ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day.

The risk for rainfall ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day. The risk for wind speed ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day. The risk for temperature ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day. The risk for rainfall ranges from 4 days (1%) of the risk of 10% of the day to 10 days (2.5%) of the risk of 10% of the day.

Current Situation

The construction site is at [REDACTED] in the [REDACTED] [REDACTED] [REDACTED]



Figure 1: The location of the worksite.

[REDACTED] is looking to assess the likely downtime risk, caused by wind at height, low temperatures, or heavy rainfall, as these are important from a safety perspective, due to the nature of the likely construction activities.

Wind Climatology

[REDACTED] has observed wind directions mainly fall between southerly and westerly winds, with occasional strong winds from these directions during just over half the time. Most of all responses are about a fifth of the time. The most frequent wind directions are westerly, northeasterly, northeasterly, and southeasterly, collectively observed just 6.0% of the time.

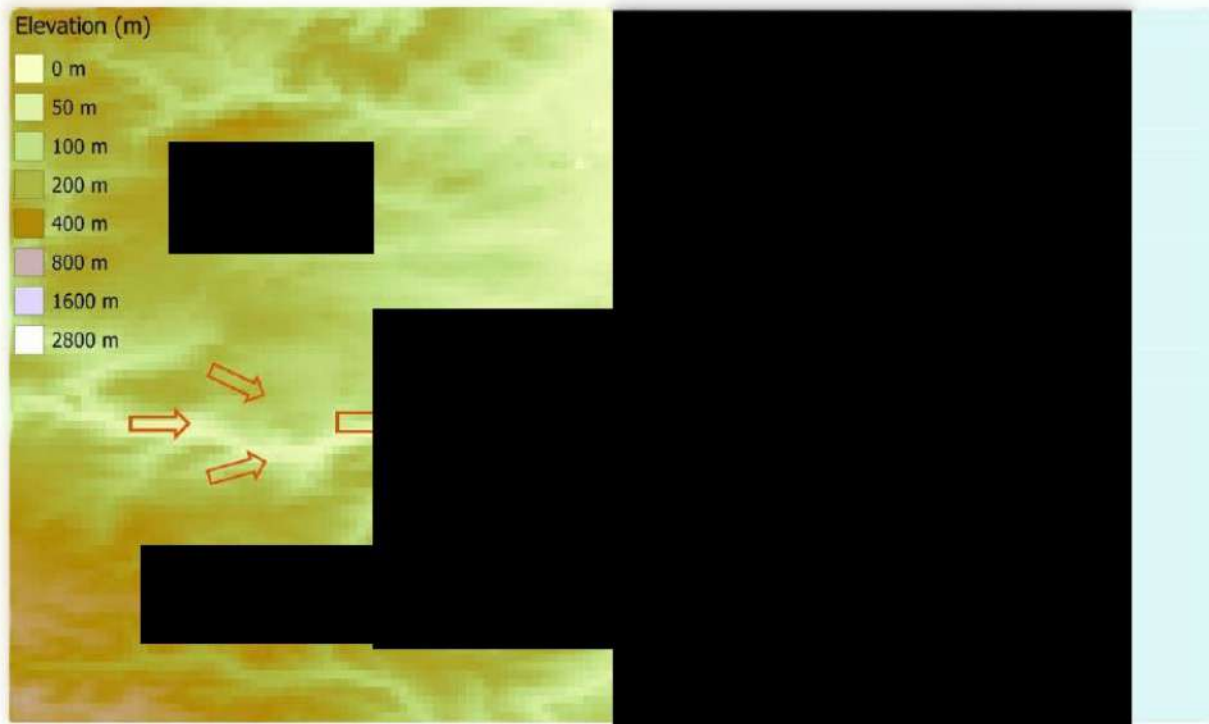
Table 1: The frequency and typical speed of the wind for 16 common categories of wind direction, from a weighted blend of data captured from the nearest weather stations at [REDACTED].

1973-2024					
Wind directions, frequencies (% of time) and mean speeds (mph)					
N	5.0%	11.7	S	9.5%	8.7
NNE	2.9%	10.4	SSW	6.5%	9.2
NE	2.8%	9.8	SW	8.0%	10.3
ENE	3.0%	9.1	WSW	9.9%	12.1
E	4.8%	9.1	W	20.8%	13.2
ESE	3.6%	8.9	WNW	5.1%	9.9
SE	2.8%	7.7	NW	3.0%	8.9
SSE	3.6%	8.1	NNW	3.0%	9.6

This frequency distribution is due to the typical location of large scale weather systems relative to the UK. Most of the time, low pressure systems are moving east to west across the UK. At the same time, high pressure systems are moving west to east across the UK. This means that the UK is often in the path of low pressure systems, which are associated with rain and wind. High pressure systems are associated with clear skies and calm weather.

It is important to note that the frequency distribution of wind speeds is also affected by the location of the UK. The UK is located in the path of the prevailing westerly winds, which are associated with high wind speeds.

Figure 1: Weather maps showing the typical location of low and high pressure systems and weather stations across the UK. The UK is highlighted in black. The maps show the typical location of the wind along the coast.



The typical wind direction is the result of the typical location of low and high pressure systems relative to the UK. Most of the time, low pressure systems are moving east to west across the UK. At the same time, high pressure systems are moving west to east across the UK. This means that the UK is often in the path of low pressure systems, which are associated with rain and wind.

The typical wind direction is the result of the typical location of low and high pressure systems relative to the UK. Most of the time, low pressure systems are moving east to west across the UK. At the same time, high pressure systems are moving west to east across the UK. This means that the UK is often in the path of low pressure systems, which are associated with rain and wind. High pressure systems are associated with clear skies and calm weather.

Daily Cycle of the Wind Speed - Heat Driven Turbulence and The Sea Breeze Effect

Over the course of the day, the typical wind speed varies due to the diurnal cycle. The highest wind speeds are typically observed in the afternoon, when the sun is high in the sky and the ground is warm. This is due to the fact that the sun heats the ground, which in turn heats the air above it. This causes the air to expand and rise, creating a low pressure area. The air then flows back down to the ground, creating a high pressure area. This causes the air to flow from the high pressure area to the low pressure area, creating a wind. This is the sea breeze effect.

Table 2: The typical wind speed for each month (rows) and time of day (columns) from data captured from the most available weather stations relative to [REDACTED]

Mean Wind Speed (mph) By Month (Rows) & Hour of Day (Columns)																									
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Daily
1	12	11	11	11	11	10	11	12	12	13	12	13	14	14	14	14	13	13	13	12	12	13	12	12	4.0
2	15	11	11	11	10	10	11	11	12	13	13	14	15	14	14	14	13	12	12	15	15	16	15	15	6.0
3	9	10	10	10	9	9	10	10	10	12	12	13	14	15	15	15	15	14	13	9	9	9	8	8	7.2
4	8	8	8	8	8	7	8	10	11	12	14	14	15	14	13	13	15	13	13	13	11	9	9	8	7.4
5	7	8	7	7	7	7	7	8	8	9	10	10	10	15	14	14	15	14	14	14	11	10	8	7	8.4
6	7	7	7	7	7	6	7	8	8	9	11	10	11	12	11	11	12	11	11	12	10	9	9	7	5.9
7	7	7	6	6	7	6	6	7	7	8	9	8	9	9	8	9	10	9	8	12	10	9	8	7	5.6
8	7	7	7	7	7	6	7	7	7	8	10	10	10	12	12	12	13	12	11	11	9	8	8	7	6.4
9	8	8	8	8	8	8	8	7	7	8	9	9	10	13	13	13	14	13	12	11	9	9	9	8	6.8
10	9	9	8	8	8	8	8	7	7	8	9	8	9	11	10	10	10	9	9	10	9	9	9	9	3.4
11	10	10	10	10	9	9	10	10	10	11	10	11	13	12	12	12	10	10	11	10	10	11	10	10	3.7
12	11	10	10	10	10	10	11	11	11	12	11	12	13	12	12	13	12	11	12	11	11	12	11	11	3.1

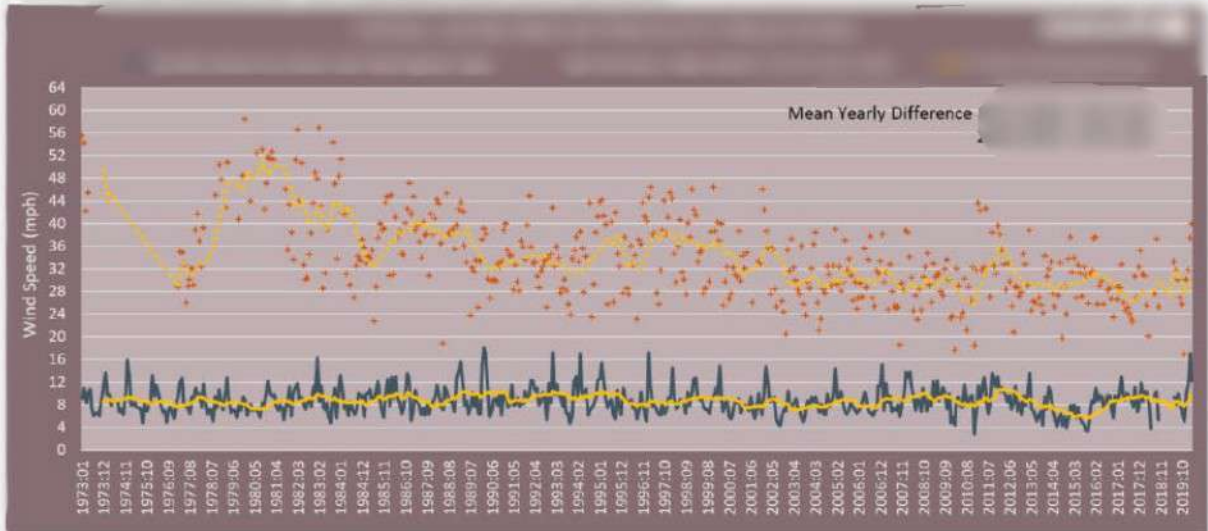
Turbulence arises when the sunshine heats surfaces sufficiently to drive strong rising motion in the air above. The air that lifts in this manner must be replaced by air from either side. Clearing conditions become windier. This process tends to peak in either way or time depending on how cloudy the local climate is in spring versus summer.

The sea breeze effect is driven by the temperature difference between the land and sea. The warmer the land relative to sea, the stronger the effect. During spring and summer, daytime temperatures tend to reach much higher than the sea temperatures. As the land to sea difference is most positive, causing the strongest sea breeze effect. This effect can be felt. The wind tends to end up being lighter during the daytime as westwinds off the Atlantic. This can be weaker and more variable during April-September.

Wind Climate Trend

Preliminary analysis of wind patterns since 1973 has found little trend in near wind speed (0.02 mph). This century has so far seen to change 0 that trend.

Figure 3: Monthly means of daily 10m wind speed and gust observations for a period of the weather stations most representative of [redacted], an area of [redacted] with near yearly [redacted]



analysis of the [redacted] data would expect the near wind speed to be dropped markedly. However, while the frequencies total 0.44% of 1973 data, they still to 4.3% for 2019. This tells us that calm conditions have been spotted 0.0% less often during the more recent period.

The overall message here is that the wind has tended to blow more often, but less strongly, so far this century.

Figure 4: Wind direction, frequencies and mean speeds for [redacted] 2024 statistics with historic [redacted]

Wind directions, frequencies (% of time) and mean speeds (mph)					Difference to [redacted]						
N	4.1%	10.2	S	9.3%	7.3	N	-0.9%	-1.6	S	-0.2%	-1.4
NNE	2.9%	9.7	SSW	6.1%	8.2	NNE	0.0%	-0.7	SSW	-0.4%	-1.0
NE	3.0%	9.2	SW	9.3%	9.7	NE	0.2%	-0.6	SW	1.3%	-0.6
ENE	3.4%	8.4	WSW	10.3%	10.7	ENE	0.4%	-0.8	WSW	0.4%	-1.3
E	4.8%	8.2	W	24.4%	12.7	E	0.0%	-0.9	W	3.6%	-0.5
ESE	3.8%	8.5	WNW	5.4%	8.7	ESE	0.2%	-0.4	WNW	0.3%	-1.2
SE	3.2%	6.8	NW	3.7%	8.1	SE	0.4%	-0.9	NW	0.7%	-0.8
SSE	3.0%	6.1	NNW	3.1%	9.1	SSE	-0.6%	-2.0	NNW	0.1%	-0.5

Data

Weather stations are often low-tech simple data collection devices, sometimes including a human interface, and so maintenance and reliability issues can be common. MetSwift has developed a series of proprietary algorithms that 'clean' the data, stripping out incorrect data values, whilst guarding against removing real data that may look faulty just because it is an outlier.

The closest weather station was the [REDACTED] however this station ceased operation in 2011. In order to provide as complete as possible a dataset for this project additional data was gathered from two stations at [REDACTED] and stations at [REDACTED]. 66.3% of the final data came from the station at [REDACTED] covering a period from 1973 to the present day, with the remaining 33.7% coming from the [REDACTED] station which operated between 1973 and 2011. The stations at [REDACTED] contributed 0.3% of the final data combined.

Using the Weather Centre station as the baseline, since it is the closest station to the construction site (see figure 2), the other stations underwent a bias analysis and adjustment process to compensate for the differences in local factors between the stations. This allows us to adjust the observations from the other stations to be more reflective of the conditions in [REDACTED].

Both the Standard and Advanced models were run for this enquiry to highlight how different the selected variables weather metrics.

Figure 4 - Final merged station metadata using the location information of the [REDACTED]

- » Name: [REDACTED]
- » Elevation: 50m above sea level
- » Latitude: [REDACTED]
- » Longitude: [REDACTED]
- » Start Date: 01/01/1973
- » End Date: 01/08/2024
- » Number of observations: 1,000,000 (processed 400,000 used after processing)

Figure 3. Bespoke requirements for downtime calculation

Specific requirements	
Wind and Gust Speed Limits (m/s)	6, 12, 17
Daily Total Rainfall Limits (mm)	1, 5, 10
Hourly Total Rainfall Limits (mm)	Any 0.1, 1
Temperature Limits (°C)	6, 8
Working hours	Monday 0800 - 1800 Tuesday 0800 - 1800 Sunday 000
Report start date	September 2024
Report end date	December 2025
Standard downtime	100% 2024 all years
Advanced downtime	1 100% 2024 (average years only)
Portion of working day exceeding thresholds.	50% of hourly reports 0% of daily reports 7% of hourly reports

The reason for not having hourly rainfall threshold being specified separately is that the contractor would prefer to have reports that rainfall has been observed, not just the report of rainfall report observation. In these events, we would like to know as a task should not start if there is rainfall risk, but it is unknown how much rain at the time. Thresholds are therefore included in the hourly and daily thresholds, which may not be a valid way to use these limits. They are included in the daily thresholds column.

It would be nice if the changes to thresholds can be made, as they can be. The wind speed threshold needs to be adjusted at the weather station to make it consistent. The rain rate threshold is appropriate to height, but it is not a good practice.

Figure 4. The basic structure of a great weather station with a variable height site threshold

Task	Start Date	End Date	Height (m)	Threshold (m/s)	Adjusted Speed (m/s)
Concrete Raft	2024-09-01	2024-09-30	70	12	9.4
Steel Frame & PCC	2024-10-01	2024-10-31		8	6.3
Unitised Cladding	2024-11-01	2024-11-30		17	13.3
All Tasks	2024-09-01	2024-11-30			

Methodology

The analysis was conducted as a defect downtime study using both the full historical record and a weather model using a climate adjusted model based on long term trends and regional weather conditions. Results of the standard model are presented in the appendix and are intended to present a baseline to compare the advanced results against.

The advanced model uses the available data applying height adjustment and other climate related adjustments.

The advanced model also uses MetSwift's proprietary climate analogue assessment methodology which uses the historical record's most relevant data to create a weather model. This process uses the years that bear the most resemblance to the historical record, considering the difference of the data and thereby creating a more accurate weather model.

Weather Analysis

The analysis was conducted using the hourly precipitation data for working days using the advanced model and standard model. The results of the standard statistics for the analysis are presented in the appendix.

Table 1 presents the data for the analysis. Table 2 presents the hourly rainfall data for the analysis. Table 3 presents the wind speed data for the analysis.

Table 4 presents the data for the analysis. Table 5 presents the data for the analysis.

Date Range	Working Days	All Tasks		
		1 mm	5 mm	10 mm
Daily Rainfall Total				
Full Range	417	33.7 days	17.1 days	10.4 days
Full Range as %		8.08%	4.10%	2.49%
01/09/2024 - 30/09/2024	25	2.1 days	1.1 days	0.5 days
01/10/2024 - 31/10/2024	27	3.1 days	1.8 days	1.1 days
01/11/2024 - 30/11/2024	26	1.2 days	0.4 days	0.2 days
01/12/2024 - 31/12/2024	26	1.3 days	0.5 days	0.3 days
01/01/2025 - 31/01/2025	27	1.9 days	0.6 days	0.2 days
01/02/2025 - 28/02/2025	24	2.0 days	0.9 days	0.6 days
01/03/2025 - 31/03/2025	26	2.6 days	1.2 days	0.6 days
01/04/2025 - 30/04/2025	26	3.4 days	1.7 days	1.0 days
01/05/2025 - 31/05/2025	27	2.2 days	1.3 days	0.9 days
01/06/2025 - 30/06/2025	25	2.1 days	1.4 days	0.9 days
01/07/2025 - 31/07/2025	27	1.9 days	1.1 days	0.6 days
01/08/2025 - 31/08/2025	26	1.7 days	0.8 days	0.7 days
01/09/2025 - 30/09/2025	26	2.3 days	1.4 days	0.9 days
01/10/2025 - 31/10/2025	27	2.8 days	1.4 days	0.9 days
01/11/2025 - 30/11/2025	25	0.8 days	0.3 days	0.2 days
01/12/2025 - 31/12/2025	27	2.3 days	1.2 days	0.8 days

Figure 3.10: Annual Maximum Daily Rainfall (AMDR) for the three temperature thresholds (0°C, 5°C and 10°C) for the three wind speeds (any, 0.1 mm and 1 mm) for the period 01/09/2024 to 31/12/2025

Period	Days	50%			60%			70%		
		Any	0.1 mm	1 mm	Any	0.1 mm	1 mm	Any	0.1 mm	1 mm
Full Range	417	102.7 days	36.3 days	5.3 days	87.1 days	28.6 days	3.6 days	67.5 days	18.8 days	1.8 days
Full Range as %		24.63%	8.71%	1.27%	20.89%	6.86%	0.86%	16.19%	4.51%	0.43%
01/09/2024 - 30/09/2024	25	5.5 days	2.0 days	0.2 days	4.7 days	1.7 days	0.1 days	3.5 days	0.8 days	0.1 days
01/10/2024 - 31/10/2024	27	6.5 days	2.5 days	0.5 days	5.5 days	2.0 days	0.3 days	3.9 days	1.5 days	0.1 days
01/11/2024 - 30/11/2024	26	6.0 days	1.7 days	0.1 days	5.0 days	1.2 days	0.1 days	4.0 days	0.9 days	0.1 days
01/12/2024 - 31/12/2024	26	6.7 days	1.8 days	0.3 days	5.5 days	1.2 days	0.2 days	4.2 days	0.9 days	0.1 days
01/01/2025 - 31/01/2025	27	7.8 days	2.5 days	0.2 days	6.7 days	1.9 days	0.1 days	5.3 days	1.1 days	0.1 days
01/02/2025 - 28/02/2025	24	7.0 days	2.3 days	0.3 days	5.8 days	1.5 days	0.2 days	4.7 days	1.2 days	0.1 days
01/03/2025 - 31/03/2025	26	6.9 days	3.0 days	0.2 days	5.9 days	2.3 days	0.2 days	4.6 days	1.6 days	0.1 days
01/04/2025 - 30/04/2025	26	7.4 days	3.6 days	0.7 days	6.3 days	3.0 days	0.6 days	5.1 days	1.8 days	0.2 days
01/05/2025 - 31/05/2025	27	6.0 days	2.3 days	0.3 days	5.2 days	2.1 days	0.3 days	4.2 days	1.3 days	0.1 days
01/06/2025 - 30/06/2025	25	6.1 days	2.4 days	0.4 days	5.2 days	1.9 days	0.3 days	4.0 days	1.2 days	0.1 days
01/07/2025 - 31/07/2025	27	5.5 days	2.0 days	0.4 days	4.6 days	1.6 days	0.1 days	3.3 days	0.8 days	0.1 days
01/08/2025 - 31/08/2025	26	5.7 days	1.4 days	0.4 days	4.8 days	1.2 days	0.3 days	3.7 days	1.0 days	0.2 days
01/09/2025 - 30/09/2025	26	5.4 days	2.2 days	0.3 days	4.9 days	1.9 days	0.2 days	3.8 days	1.1 days	0.1 days
01/10/2025 - 31/10/2025	27	6.4 days	2.6 days	0.5 days	5.4 days	2.1 days	0.2 days	4.0 days	1.5 days	0.1 days
01/11/2025 - 30/11/2025	25	5.6 days	1.3 days	0.1 days	4.7 days	0.9 days	0.1 days	3.7 days	0.7 days	0.1 days
01/12/2025 - 31/12/2025	27	8.2 days	2.7 days	0.4 days	6.9 days	2.1 days	0.3 days	5.5 days	1.4 days	0.1 days

Figure 3.11: Annual Maximum Daily Rainfall (AMDR) for the three temperature thresholds (0°C, 5°C and 10°C) for the three wind speeds (any, 0.1 mm and 1 mm) for the period 01/09/2024 to 31/12/2025

Period	Days	0°C		5°C		10°C	
		Any	0.1 mm	Any	0.1 mm	Any	0.1 mm
Full Range	417	5.7 days	64.6 days	4.9 days	59.2 days	3.9 days	52.9 days
Full Range as %		1.37%	15.49%	1.18%	14.20%	0.94%	12.69%
01/09/2024 - 30/09/2024	25	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/10/2024 - 31/10/2024	27	0.0 days	0.4 days	0.0 days	0.3 days	0.0 days	0.1 days
01/11/2024 - 30/11/2024	26	0.3 days	4.9 days	0.3 days	4.4 days	0.2 days	3.8 days
01/12/2024 - 31/12/2024	26	1.6 days	11.8 days	1.4 days	11.1 days	1.1 days	10.2 days
01/01/2025 - 31/01/2025	27	1.3 days	13.7 days	1.0 days	12.7 days	0.9 days	11.9 days
01/02/2025 - 28/02/2025	24	0.3 days	9.7 days	0.3 days	8.7 days	0.2 days	7.7 days
01/03/2025 - 31/03/2025	26	0.2 days	5.2 days	0.1 days	4.8 days	0.1 days	3.9 days
01/04/2025 - 30/04/2025	26	0.0 days	2.1 days	0.0 days	1.9 days	0.0 days	1.4 days
01/05/2025 - 31/05/2025	27	0.0 days	0.1 days	0.0 days	0.1 days	0.0 days	0.1 days
01/06/2025 - 30/06/2025	25	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/07/2025 - 31/07/2025	27	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/08/2025 - 31/08/2025	26	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/09/2025 - 30/09/2025	26	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/10/2025 - 31/10/2025	27	0.0 days	0.4 days	0.0 days	0.2 days	0.0 days	0.1 days
01/11/2025 - 30/11/2025	25	0.2 days	4.1 days	0.2 days	3.6 days	0.2 days	3.2 days
01/12/2025 - 31/12/2025	27	1.8 days	12.2 days	1.6 days	11.4 days	1.2 days	10.5 days

Figure 11 - Advanced downtime risk for 417 working days between 01/09/2024 – 31/12/2025 for the three given wind speed and wind gust thresholds at the three different working hour percentage thresholds. Highlighted in bold are the planned working months where each threshold is relevant. The total downtime days and percentages at the top of the columns are calculated based on these planned working periods, and do not include non-bolded figures.

Downtime Estimates - Advanced Statistics										
70m above ground level										
Date Range	Working Days	Concrete, Steel, and PCC	Unitised Cladding	General Winding Off	Concrete, Steel, and PCC	Unitised Cladding	General Winding Off	Concrete, Steel, and PCC	Unitised Cladding	General Winding Off
% of day below threshold		50%			60%			70%		
Wind Speed / Wind Gust Limit		12 m/s	8 m/s	17 m/s	12 m/s	8 m/s	17 m/s	12 m/s	8 m/s	17 m/s
Planned Working Period	417	36.4 days	38.1 days	28.1 days	30.7 days	32.9 days	22.7 days	23.9 days	26.2 days	16.2 days
Planned Period as %		14.05%	20.82%	6.74%	11.85%	17.98%	5.44%	9.23%	14.32%	3.88%
01/09/2024 - 30/09/2024	25	1.9 days	4.8 days	1.1 days	1.5 days	4.0 days	0.9 days	1.0 days	2.3 days	0.6 days
01/10/2024 - 31/10/2024	27	2.4 days	3.6 days	1.8 days	2.0 days	3.2 days	1.4 days	1.4 days	2.3 days	1.0 days
01/11/2024 - 30/11/2024	26	3.0 days	7.4 days	1.6 days	2.4 days	6.3 days	1.2 days	1.8 days	4.9 days	0.8 days
01/12/2024 - 31/12/2024	26	4.0 days	8.1 days	2.5 days	3.3 days	7.3 days	2.0 days	2.8 days	6.4 days	1.5 days
01/01/2025 - 31/01/2025	27	5.3 days	10.0 days	3.4 days	4.6 days	9.0 days	2.6 days	3.7 days	7.8 days	2.1 days
01/02/2025 - 28/02/2025	24	5.4 days	10.0 days	3.0 days	4.7 days	9.0 days	2.5 days	3.7 days	7.9 days	2.0 days
01/03/2025 - 31/03/2025	26	5.4 days	10.9 days	3.1 days	4.7 days	10.0 days	2.5 days	3.6 days	8.6 days	2.0 days
01/04/2025 - 30/04/2025	26	4.6 days	11.5 days	2.0 days	4.1 days	10.6 days	1.7 days	3.5 days	9.4 days	1.0 days
01/05/2025 - 31/05/2025	27	2.7 days	8.9 days	1.1 days	2.1 days	7.3 days	1.0 days	1.4 days	4.4 days	0.6 days
01/06/2025 - 30/06/2025	25	1.7 days	4.9 days	0.8 days	1.3 days	4.5 days	0.7 days	1.0 days	4.0 days	0.4 days
01/07/2025 - 31/07/2025	27	0.8 days	1.7 days	0.5 days	0.7 days	1.3 days	0.4 days	0.4 days	1.0 days	0.2 days
01/08/2025 - 31/08/2025	26	1.6 days	6.2 days	0.5 days	1.4 days	5.2 days	0.4 days	0.7 days	4.4 days	0.2 days
01/09/2025 - 30/09/2025	26	2.0 days	5.7 days	1.2 days	1.5 days	4.7 days	1.0 days	1.2 days	2.6 days	0.7 days
01/10/2025 - 31/10/2025	27	2.6 days	4.6 days	1.7 days	2.1 days	3.9 days	1.4 days	1.4 days	2.9 days	1.1 days
01/11/2025 - 30/11/2025	25	3.0 days	7.0 days	1.6 days	2.5 days	6.0 days	1.2 days	1.9 days	5.1 days	0.8 days
01/12/2025 - 31/12/2025	27	3.9 days	8.0 days	2.2 days	3.1 days	7.3 days	1.8 days	2.7 days	6.2 days	1.2 days

Summary

The advanced results for the 16-month period from April 2024 to March 2025 show a generally drier than average forecast across most metrics. This is particularly evident in the rainfall and temperature data, which show a clear trend towards lower values compared to the long-term average.

Key findings include a significant reduction in the risk of sub-zero temperatures, with the period of highest risk (June to September) showing a notable decrease in the number of days where temperatures fall below 5 °C. Additionally, the advanced results for rainfall show a consistent pattern of lower totals across most months, with the most pronounced differences seen in the winter and spring months.

These findings suggest a shift in the weather patterns for the 16-month period, with a generally warmer and drier environment compared to the long-term average. This has implications for various sectors, including agriculture, water management, and infrastructure planning.

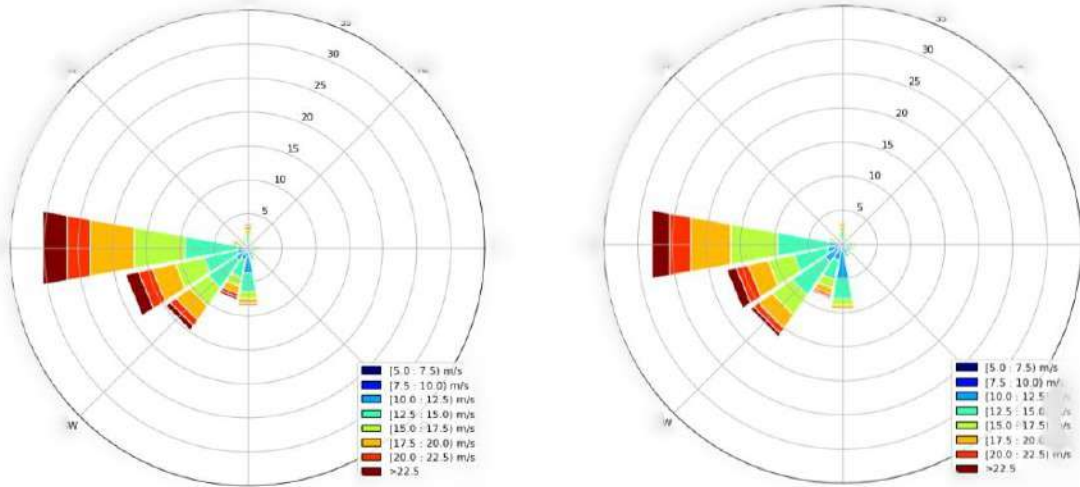
As noted, the risk of sub-zero temperatures is significantly reduced when the temperature is below zero for at least 7 days. Between April and October, the risk of sub-zero temperatures varies, with the highest risk occurring in the winter months. However, the advanced results show a decrease in the number of days where temperatures fall below 5 °C, that period is June to September. These results are generally lower in the advanced results, suggesting a slightly warmer 16-month period compared to the long-term average.

For the daily rainfall totals, risk is present throughout the year at even the lowest threshold. This risk peaks in October 2024 and April 2025, with the lowest risk occurring in November 2024 to January 2025, and November 2025. The advanced results show a different pattern to the standard results found in the appendix, with significantly lower rainfall totals in all months.

In the hourly rainfall assessment, the same drier than average forecast is visible, with lower risk across the board compared to the standard, especially at the lower thresholds. April and August 2025 have the highest risk of 70% of the day being above 1 mm per hour, likely due to the prevalence of more showery conditions during these months. August does not show the same stand out risk at the lower limits, since rain is less common generally during the month, whereas April is also amongst the wettest months at the 0.1mm and "Any rain" thresholds alongside January, February, March, and December 2025. A similar pattern to that seen in the daily totals can be seen in these results.

Overall, the advanced results indicate a period of generally drier and warmer weather compared to the long-term average, with implications for various sectors.

Figure 12 Wind gust speed (m/s) & direction (Standard year [left], analogous years [right]), summarized from at least forty wind gust recordings between 1970 and 2020 at the merged [redacted] station.



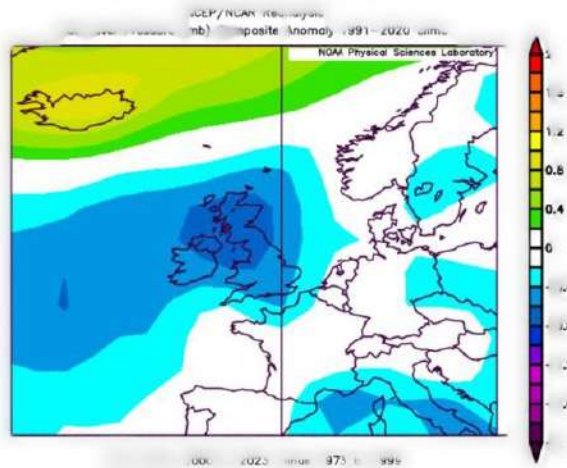
The pattern of the winds in [redacted] is very consistent between the standard and advanced results with a very dominant westerly and south westerly flow driven by the UK's own prevailing wind and the [redacted] blocking these incoming winds and that's telling the [redacted] [redacted] the advanced results do show a slight increase in the south westerly winds and a reduction in the strongest westerly winds, but this is only around a 2% swing.

Explanation

Examining typical sea level pressure in the vicinity of the UK during 1973-1999 (compared to 2000-2024 (see below), there's been a shift to lower values across and to the west of the UK, indicating more frequent low pressure in that area.

This is a plausible culprit for the reduced frequency of calm conditions and can also explain winds with a westerly component having become even more frequent so far this century.

Figure 13 Comparison of mean sea level pressure between 2000-2024 & 1973-1999. Blue shading represents lower pressure (on average) so far this century, green to yellow shading higher pressure.





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Appendices

Figure A - Standard downtime risk for 417 working days between 01/09/2024 - 31/12/2025 for the three given daily rainfall thresholds

Downtime Estimates - Standard Statistics				
Date Range	Working Days	All Tasks		
Daily Rainfall Total		1 mm	5 mm	10 mm
Full Range	417	77.6 days	42.4 days	25.5 days
Full Range as %		18.61%	10.17%	6.12%
01/09/2024 - 30/09/2024	25	4.3 days	2.3 days	1.5 days
01/10/2024 - 31/10/2024	27	5.3 days	2.9 days	1.7 days
01/11/2024 - 30/11/2024	26	5.2 days	2.9 days	1.6 days
01/12/2024 - 31/12/2024	26	4.8 days	2.5 days	1.4 days
01/01/2025 - 31/01/2025	27	5.0 days	2.5 days	1.4 days
01/02/2025 - 28/02/2025	24	4.3 days	1.9 days	1.1 days
01/03/2025 - 31/03/2025	26	4.6 days	2.3 days	1.3 days
01/04/2025 - 30/04/2025	26	4.7 days	2.5 days	1.6 days
01/05/2025 - 31/05/2025	27	4.6 days	2.8 days	1.7 days
01/06/2025 - 30/06/2025	25	5.2 days	3.5 days	2.2 days
01/07/2025 - 31/07/2025	27	4.9 days	2.8 days	1.7 days
01/08/2025 - 31/08/2025	26	4.8 days	2.8 days	2.0 days
01/09/2025 - 30/09/2025	26	4.5 days	2.5 days	1.6 days
01/10/2025 - 31/10/2025	27	5.6 days	3.0 days	1.7 days
01/11/2025 - 30/11/2025	25	5.0 days	2.7 days	1.5 days
01/12/2025 - 31/12/2025	27	4.8 days	2.5 days	1.5 days

Figure A - Standard downtime risk for 417 working days between 01/09/2024 - 31/12/2025 for the three given hourly rainfall thresholds at the three different working hour percentage thresholds

Downtime Estimates - Standard Statistics										
Date Range	Working Days	All Tasks								
% of day below threshold		50%			60%			70%		
Hourly Rainfall Total		Any	0.1 mm	1 mm	Any	0.1 mm	1 mm	Any	0.1 mm	1 mm
Full Range	417	141.4 days	71.3 days	10.8 days	121.9 days	59.6 days	8.6 days	95.7 days	40.7 days	4.7 days
Full Range as %		33.91%	17.10%	2.59%	29.23%	14.29%	2.06%	22.95%	9.76%	1.13%
01/09/2024 - 30/09/2024	25	7.4 days	3.5 days	0.5 days	6.4 days	3.0 days	0.3 days	4.7 days	1.7 days	0.2 days
01/10/2024 - 31/10/2024	27	9.5 days	5.0 days	0.8 days	8.1 days	4.0 days	0.5 days	6.2 days	2.7 days	0.1 days
01/11/2024 - 30/11/2024	26	9.5 days	4.9 days	0.6 days	8.3 days	3.9 days	0.5 days	6.6 days	2.9 days	0.4 days
01/12/2024 - 31/12/2024	26	9.5 days	4.8 days	0.7 days	8.2 days	4.1 days	0.6 days	6.5 days	2.9 days	0.3 days
01/01/2025 - 31/01/2025	27	9.7 days	4.8 days	0.6 days	8.5 days	4.1 days	0.4 days	6.7 days	2.8 days	0.3 days
01/02/2025 - 28/02/2025	24	8.6 days	4.3 days	0.5 days	7.5 days	3.5 days	0.4 days	5.9 days	2.5 days	0.2 days
01/03/2025 - 31/03/2025	26	9.4 days	4.3 days	0.3 days	8.2 days	3.5 days	0.3 days	6.4 days	2.5 days	0.1 days
01/04/2025 - 30/04/2025	26	9.0 days	4.7 days	0.9 days	7.5 days	3.9 days	0.8 days	5.9 days	2.4 days	0.4 days
01/05/2025 - 31/05/2025	27	8.1 days	3.9 days	0.6 days	7.2 days	3.5 days	0.6 days	5.7 days	2.4 days	0.3 days
01/06/2025 - 30/06/2025	25	8.1 days	4.5 days	1.0 days	6.9 days	3.8 days	0.8 days	5.6 days	2.8 days	0.5 days
01/07/2025 - 31/07/2025	27	8.3 days	4.2 days	0.8 days	6.9 days	3.4 days	0.6 days	5.4 days	2.2 days	0.4 days
01/08/2025 - 31/08/2025	26	8.0 days	3.8 days	1.0 days	6.9 days	3.2 days	0.8 days	5.5 days	2.3 days	0.5 days
01/09/2025 - 30/09/2025	26	7.6 days	3.7 days	0.5 days	6.6 days	3.3 days	0.4 days	5.0 days	2.0 days	0.2 days
01/10/2025 - 31/10/2025	27	9.6 days	5.2 days	0.8 days	8.1 days	4.2 days	0.5 days	6.3 days	2.8 days	0.2 days
01/11/2025 - 30/11/2025	25	9.1 days	4.7 days	0.6 days	8.0 days	3.9 days	0.5 days	6.4 days	2.8 days	0.4 days
01/12/2025 - 31/12/2025	27	10.0 days	5.0 days	0.6 days	8.6 days	4.3 days	0.6 days	6.9 days	3.0 days	0.2 days

Figure A3: Standard downtime risk for 417 working days between 01/09/2024 - 31/12/2025, 0.1m below the given maximum temperature thresholds at the three different working hour percentage thresholds

Downtime Estimates - Standard Statistics							
70m above ground level							
Date Range	Working Days	All Tasks					
% of day below threshold		50%		60%		70%	
Maximum Temperature Limit		0 °C	5 °C	0 °C	5 °C	0 °C	5 °C
Full Range	417	6.7 days	73.3 days	5.6 days	68.0 days	4.2 days	60.9 days
Full Range as %		1.61%	17.58%	1.34%	16.31%	1.01%	14.60%
01/09/2024 - 30/09/2024	25	0.0 days	0.1 days	0.0 days	0.1 days	0.0 days	0.0 days
01/10/2024 - 31/10/2024	27	0.0 days	0.4 days	0.0 days	0.3 days	0.0 days	0.2 days
01/11/2024 - 30/11/2024	26	0.3 days	5.9 days	0.2 days	5.3 days	0.2 days	4.6 days
01/12/2024 - 31/12/2024	26	1.6 days	12.4 days	1.4 days	11.8 days	1.1 days	10.9 days
01/01/2025 - 31/01/2025	27	1.7 days	14.7 days	1.4 days	13.8 days	1.1 days	13.0 days
01/02/2025 - 28/02/2025	24	0.9 days	11.3 days	0.8 days	10.5 days	0.5 days	9.4 days
01/03/2025 - 31/03/2025	26	0.3 days	6.9 days	0.2 days	6.3 days	0.1 days	5.3 days
01/04/2025 - 30/04/2025	26	0.0 days	2.7 days	0.0 days	2.4 days	0.0 days	1.8 days
01/05/2025 - 31/05/2025	27	0.0 days	0.1 days	0.0 days	0.1 days	0.0 days	0.1 days
01/06/2025 - 30/06/2025	25	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/07/2025 - 31/07/2025	27	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/08/2025 - 31/08/2025	26	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/09/2025 - 30/09/2025	26	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days	0.0 days
01/10/2025 - 31/10/2025	27	0.0 days	0.6 days	0.0 days	0.4 days	0.0 days	0.2 days
01/11/2025 - 30/11/2025	25	0.3 days	5.5 days	0.2 days	4.9 days	0.1 days	4.3 days
01/12/2025 - 31/12/2025	27	1.6 days	12.7 days	1.4 days	12.1 days	1.1 days	11.1 days

Figure A4: Standard downtime risk for 417 working days between 01/09/2024 - 31/12/2025, 0.1m below the given wind speed and wind gust thresholds at the three different working hour percentage thresholds. Highlighted in bold are the planned working periods where the thresholds are relevant. The total downtime days and percentages at the top of the columns are calculated based on these planned working periods, and do not include the unworked periods.

Downtime Estimates - Standard Statistics										
70m above ground level										
Date Range	Working Days	Concrete, Steel, and PCC	Unitised Cladding	General Winding Off	Concrete, Steel, and PCC	Unitised Cladding	General Winding Off	Concrete, Steel, and PCC	Unitised Cladding	General Winding Off
% of day below threshold		50%			60%			70%		
Wind Speed / Wind Gust Limit		12 m/s	8 m/s	17 m/s	12 m/s	8 m/s	17 m/s	12 m/s	8 m/s	17 m/s
Planned Working Period	417	38.6 days	46.0 days	29.9 days	32.4 days	40.5 days	24.8 days	25.3 days	33.0 days	18.5 days
Planned Period as %		14.90%	25.14%	7.17%	12.51%	22.13%	5.95%	9.77%	18.03%	4.44%
01/09/2024 - 30/09/2024	25	2.7 days	7.5 days	1.3 days	2.1 days	6.7 days	1.1 days	1.5 days	5.1 days	0.8 days
01/10/2024 - 31/10/2024	27	2.3 days	5.2 days	1.6 days	1.9 days	4.6 days	1.3 days	1.4 days	3.7 days	1.0 days
01/11/2024 - 30/11/2024	26	3.3 days	8.1 days	1.8 days	2.7 days	6.9 days	1.4 days	2.1 days	5.5 days	1.0 days
01/12/2024 - 31/12/2024	26	4.6 days	9.3 days	2.9 days	3.8 days	8.5 days	2.4 days	3.2 days	7.3 days	1.8 days
01/01/2025 - 31/01/2025	27	6.0 days	11.2 days	3.7 days	5.2 days	10.3 days	3.1 days	4.2 days	9.1 days	2.5 days
01/02/2025 - 28/02/2025	24	5.6 days	10.3 days	3.0 days	4.7 days	9.5 days	2.5 days	3.7 days	8.3 days	2.0 days
01/03/2025 - 31/03/2025	26	5.4 days	11.5 days	3.1 days	4.7 days	10.4 days	2.7 days	3.6 days	8.9 days	2.2 days
01/04/2025 - 30/04/2025	26	4.5 days	11.7 days	2.0 days	3.9 days	10.8 days	1.5 days	3.2 days	9.6 days	1.1 days
01/05/2025 - 31/05/2025	27	2.7 days	9.2 days	1.3 days	2.2 days	7.6 days	1.1 days	1.5 days	5.0 days	0.8 days
01/06/2025 - 30/06/2025	25	1.5 days	5.6 days	0.6 days	1.2 days	5.2 days	0.5 days	0.9 days	4.4 days	0.3 days
01/07/2025 - 31/07/2025	27	1.1 days	3.6 days	0.6 days	0.8 days	3.0 days	0.6 days	0.6 days	2.3 days	0.3 days
01/08/2025 - 31/08/2025	26	1.7 days	6.3 days	0.6 days	1.5 days	5.4 days	0.5 days	0.9 days	4.5 days	0.3 days
01/09/2025 - 30/09/2025	26	2.7 days	7.7 days	1.3 days	2.1 days	6.7 days	1.1 days	1.6 days	5.2 days	0.8 days
01/10/2025 - 31/10/2025	27	2.5 days	5.5 days	1.7 days	2.0 days	4.8 days	1.4 days	1.4 days	3.7 days	1.1 days
01/11/2025 - 30/11/2025	25	3.3 days	8.0 days	1.8 days	2.7 days	6.9 days	1.4 days	2.1 days	5.7 days	0.9 days
01/12/2025 - 31/12/2025	27	4.4 days	9.3 days	2.6 days	3.7 days	8.5 days	2.2 days	3.1 days	7.2 days	1.6 days