



Dust and Air Quality Innovation and Expertise

Unit 8 Nimrod
De Havilland Way
Witney
Oxford OX29 0YG
United Kingdom
Tel: (44) 1608 810110

Quarterly non-technical summary: Mountsorrel Quarry particulate matter, dust and weather monitoring

Date range: Quarter 3 2025 (25 June – 25 September 2025)

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Introduction

Every month, the results of dust and particulate matter monitoring at Mountsorrel Quarry are compiled and summarised in compliance reports, which are then shared with Charnwood Borough Council (CBC), Leicestershire County Council (LCC) and the Environment Agency. The monitoring results are discussed in more detail during Technical Liaison meetings held with CBC and LCC on a quarterly basis.

Once the quarterly liaison meetings are held, we prepare a cover letter to provide a non-technical overview of the most recent three months of finalised reports. This letter covers the period from 25 June – 25 September 2025.

An explanation of how and why dust and air quality are measured at Mountsorrel Quarry is available [here](#).

The format and focus of the compliance reports have been agreed with CBC and LCC. In addition to presenting PM₁₀ and PM_{2.5} data from both on-site monitors, emphasis is being placed on the frequency of short-term PM₁₀ alerts sent to quarry management, the investigations triggered by the alerts and the changes to on-site processes to minimise dust.

The general air quality of the surrounding area is assessed by comparing the particulate matter concentrations recorded by CBC at the southern end of Hawcliffe Road against the relevant Air Quality Objectives (AQOs). Data from a Defra Automatic Urban and Rural Network (AURN) monitoring station at Leicester University are also presented for reference.

Weather summary

This quarter continued to be relatively warm and dry. In particular, there were some extended dry periods recorded in early and late July, and much of August. These dry periods tended to be quite warm, so dust levels were monitored closely throughout this quarter.

During July and August, winds were mainly recorded from the west-northwest, whilst from September the winds were primarily recorded from the south. This would have resulted in the potential for dust propagation towards the east-southeast in July and August, and to the north in September.

Deposited dust

During this period, deposited dust levels were below the site-specific threshold level at most locations, with the exception of Stn 4A (Woodside Farm), which recorded an exceedance of the threshold in July. An investigation into this exceedance determined that the signal was not caused by on-site activities, and was most likely anomalous.

The frequency of threshold level exceedances over the previous quarter is shown for each monitoring location in Figure 1 using pie charts.



Figure 1: Frequency of high dust levels, Quarter 3 2025

Particulate Matter

On-site PM_{2.5}

PM_{2.5} concentrations at Quorn House had a period average of 4.4 µg/m³, with the PM_{2.5} concentrations at Hawcliffe Road being slightly higher with a period average of 7.0 µg/m³ (Figure 2).

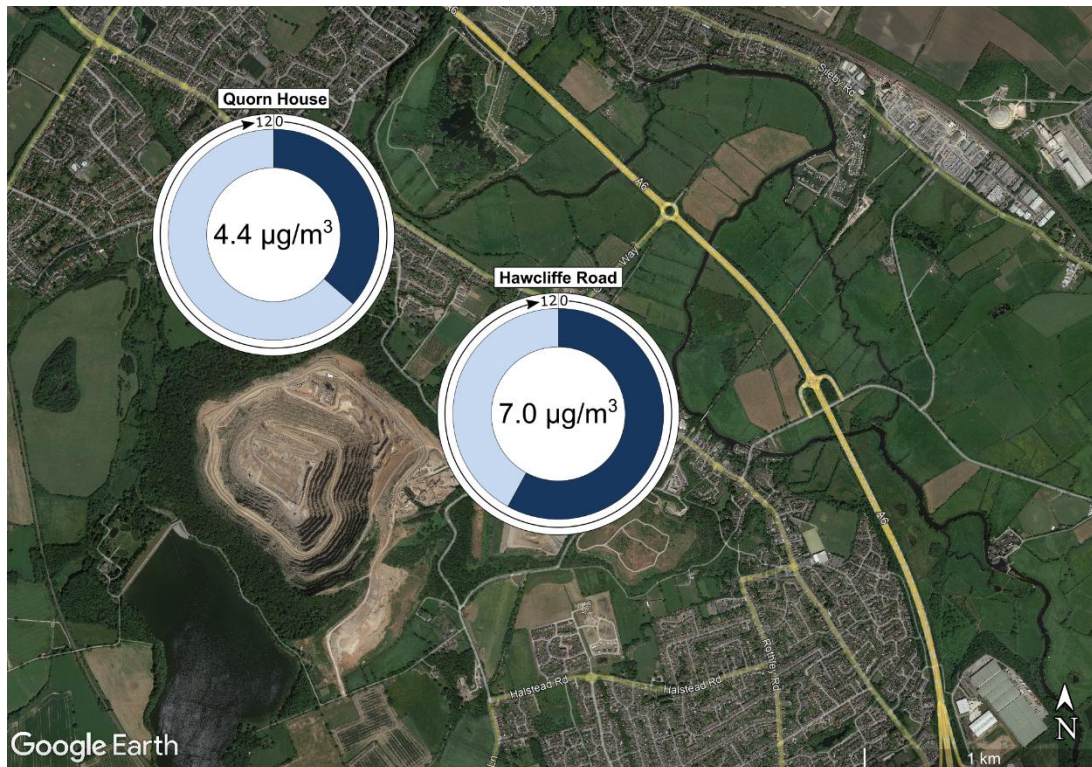


Figure 2: PM_{2.5} monitoring summary, Quarter 3 2025

Off-site PM_{2.5}

As shown in Figure 3, the period average PM_{2.5} concentrations recorded at the CBC monitoring station at the southern end of Hawcliffe Road was 4.9 µg/m³ or 41% of the interim target value for PM_{2.5} (12 µg/m³ as an annual average). The period average concentration at the Leicester University AURN monitoring station was similar, at 4.8 µg/m³ or 40% of the interim target value.

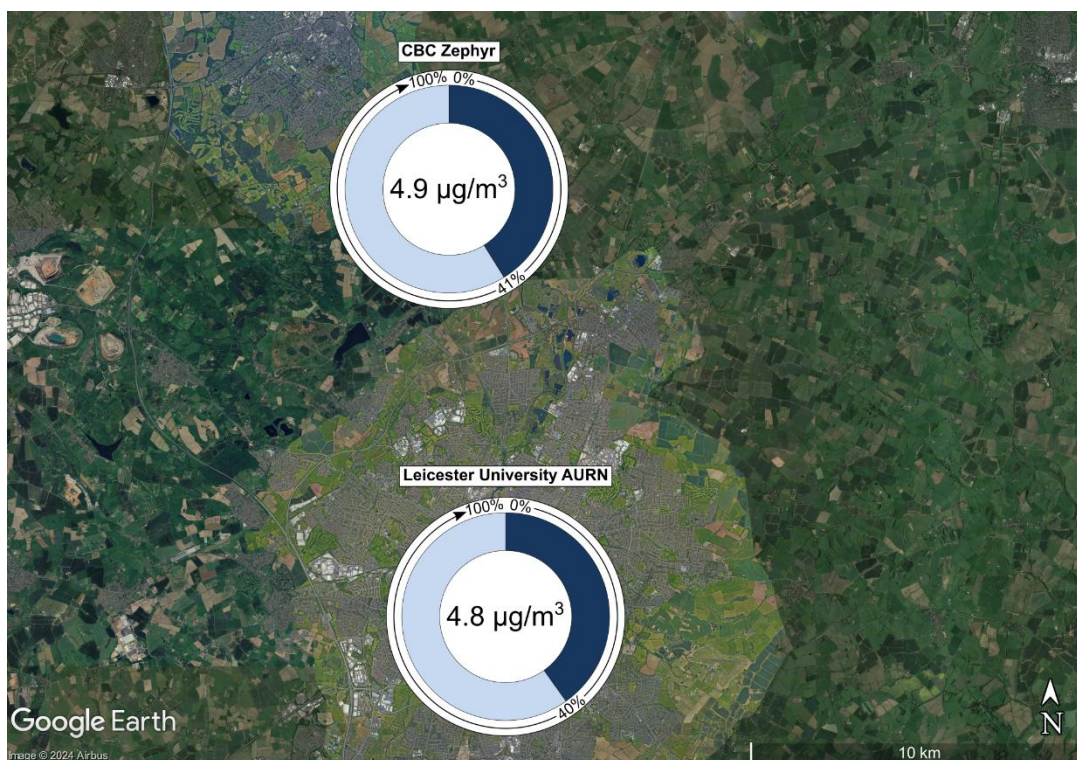


Figure 3: PM_{2.5} monitoring summary, CBC and AURN monitoring stations, Quarter 3 2025

On-site PM₁₀

PM₁₀ concentrations recorded at Quorn House had a period average of 10.4 µg/m³ for this period, with the period average being 16.2 µg/m³ at Hawcliffe Road.

The short-term PM₁₀ trigger level (125 µg/m³ over a 15-minute period) was exceeded on 19 occasions during this quarter at Hawcliffe Road and three occasions at Quorn House; details of the resulting investigations can be found in the attached reports.



Figure 4: PM₁₀ monitoring summary, Quarter 3 2025

Off-site PM₁₀

As shown in Figure 5, PM₁₀ concentrations recorded at the CBC monitoring station at the southern end of Hawcliffe Road was 7.3 µg/m³ or 18% of the AQO (40 µg/m³). Concentrations at the Leicester University AURN monitoring station was similar, at 9.2 µg/m³ or 23% of the AQO.

No days with an average PM₁₀ concentration above 50 µg/m³ were recorded during this quarter.

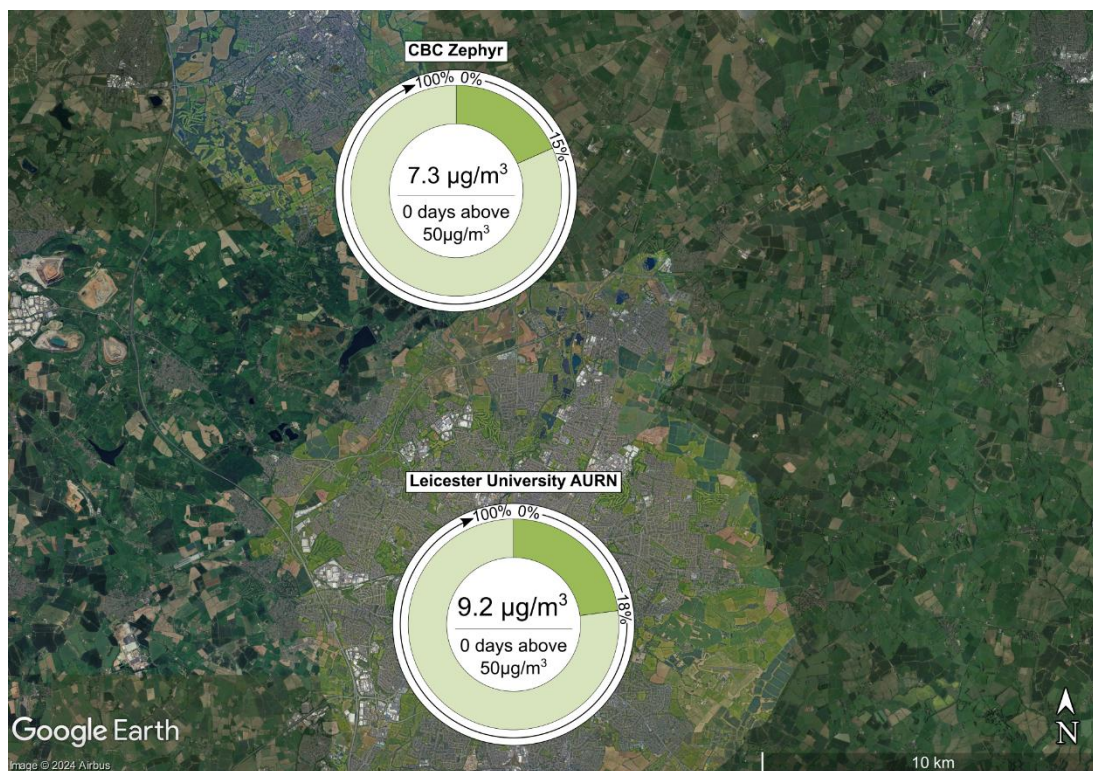


Figure 5: PM₁₀ monitoring summary, CBC and AURN monitoring stations, Quarter 3 2025

Complaints

Between 25 June – 25 September 2025, a total of eight dust complaints were received by the quarry.

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January 2026

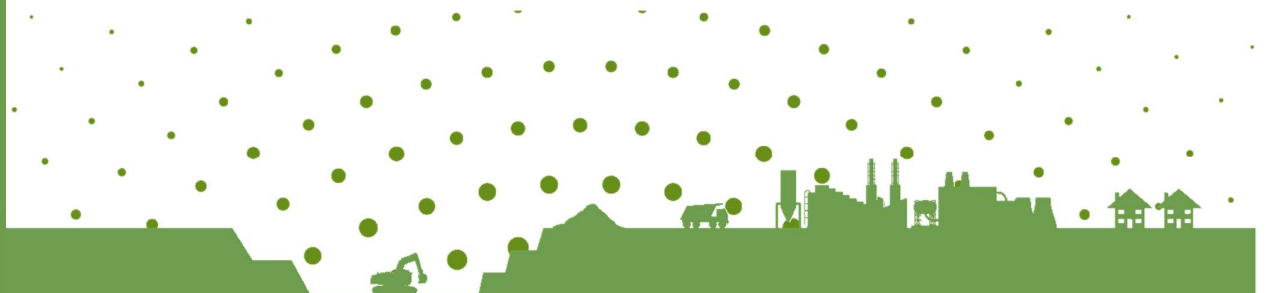


Dust, Particulate Matter and Weather Monitoring Report: July 2025

Mountsorrel Quarry

September, 2025

Tarmac



Document Control Sheet

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Disclaimer

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This report may include data obtained from trusted third-party consultants/laboratories that have been supplied to us in good faith. Whilst we do everything we can to ensure the quality of all the data we use, we cannot be held responsible for the accuracy or integrity of third-party data.

Report Prepared By

DustScanAQ
Unit 8 Nimrod
De Havilland Way
Witney
Oxon
OX29 0YG
United Kingdom
Tel: + 44 (0) 1608 810110
E-mail: info@dustscan.co.uk
Web: www.DustScan.co.uk

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1 Introduction

Mountsorrel Quarry has a comprehensive Dust Management and Monitoring Plan (DMMP). The DMMP was developed in 2011 and is subject to regular review and revision, in consultation between Tarmac and the local regulators (Leicestershire County Council (LCC) and Charnwood Borough Council (CBC)).

The DMMP is enacted through the quarry Site Improvement Plan (SIP). The SIP sets out a programme of actions to reduce the environmental impact of specific areas of the site operation, and is updated regularly by quarry management, with support from DustScanAQ through regular site visits and quarterly reviews with LCC and CBC.

Section 7.5 of the DMMP requires that a monthly summary and review of dust and particulate matter monitoring is prepared and circulated with LCC, CBC and the Environment Agency.

This report details the results of dust, particulate matter and weather monitoring around Mountsorrel Quarry during the period 25 June – 30 July 2025.

1.1 Report scope

The intention of this report is to summarise dust and particulate matter monitoring results for the given period and compare them against site-specific alert limits and thresholds. This report also details the results of any investigation carried out into elevated dust or particulate matter levels, as prompted by an exceedance of alert limits or thresholds.

1.2 Dust definitions

'Dust' is generally regarded as particulate matter up to 75 µm (micron) diameter and can be considered in two categories. Fine dust, essentially particles up to 10 µm, is commonly referred to as PM₁₀ and is measured to agreed standards and forms part of the national Air Quality Objectives (AQO). The AQO for PM₁₀ is currently 50 µg/m³ for the 24-hour mean, not to be exceeded 35 times per year and 40 µg/m³ for the annual mean. Particles up to 2.5 µm in diameter are referred to as PM_{2.5}. The interim target for PM_{2.5} is 12 µg/m³ for the annual mean (to be achieved by 2028), whilst the legal AQO for PM_{2.5} is 10 µg/m³ for the annual mean (to be achieved by 2040) as per The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023¹.

It may be noted that the above Regulations relate to average particle concentrations in Local Authority districts thus do not apply to any specific industrial or other operation, such as Mountsorrel Quarry, and are included for reference.

¹ Statutory Instrument. (2023), 'The Environmental Targets (Fine Particulate Matter) (England) Regulations', No. 96. King's Printer of Acts of Parliament

Coarser dust (essentially particles greater than 10 µm) is generally regarded as 'nuisance dust' and can be associated with annoyance, although there are no official standards (such as AQO) for dust annoyance.

2 **Sampler locations**

As shown in Figure 2.1 and Table 2.1, dust, particulate matter and weather conditions are measured at a number of locations around site and the surrounding area:

- Directional and depositional dust: currently monitored at 13 locations;
- Particulate matter: currently monitored at two locations;
- Weather conditions: currently monitored at one location.

The majority of the dust samplers around Mountsorrel Quarry comprise the 'Frisbee-type' deposition gauge combined with an adhesive 'sticky pad' directional gauge. These samplers are used to monitor 'nuisance' dust and samples from these instruments are collected on a monthly basis.

For particulate matter, Turnkey Osiris samplers are located at Stn 9 (Hawcliffe Road) and at Stn 13 (Quorn House). These recognised and certificated 'indicative' real-time devices are connected to their own wind vane and anemometer and provide near-instantaneous directional PM₁₀, PM_{2.5} and PM₁ data directly to the quarry management team.

A weather station is located at the site offices off Wood Lane and collects a range of weather parameters over fifteen-minute intervals. Data from the weather station are available to the quarry management by means of a dedicated modem connection to the internet, however as of April 17th there has been a technical issue with this connection. Several alternative options have been investigated.

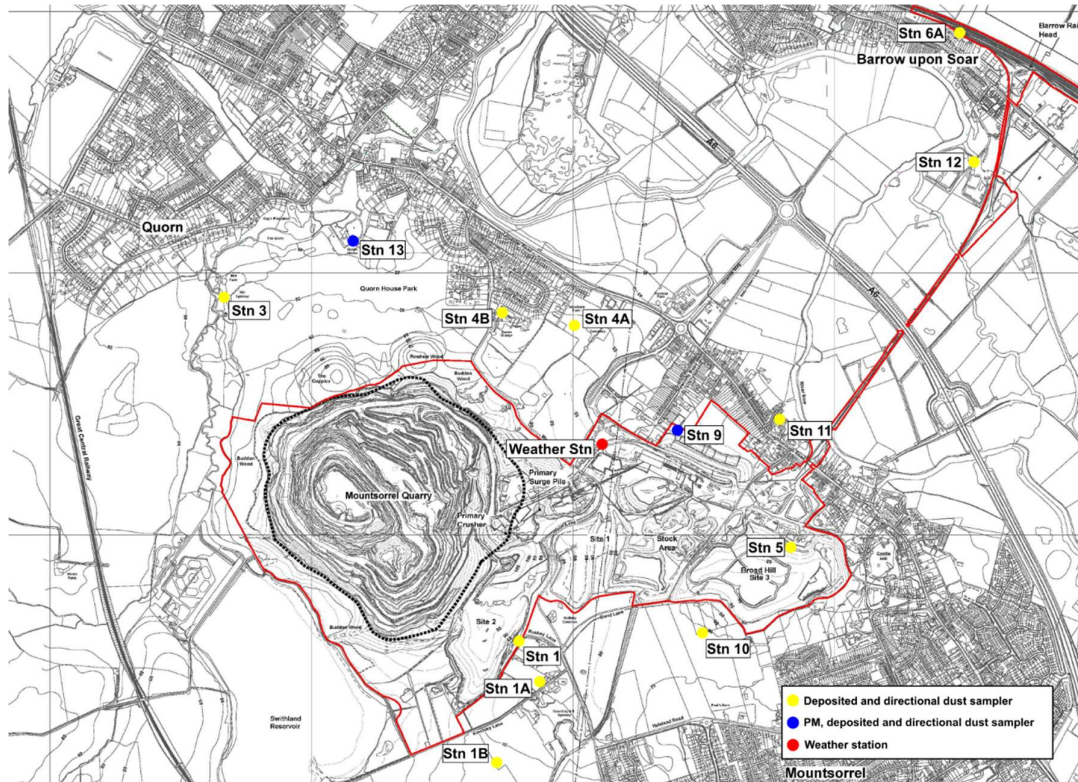


Figure 2.1: Particulate matter, dust and weather monitoring locations, Mountsorrel Quarry

Table 2.1: Weather, particulate matter and dust monitoring locations, Mountsorrel Quarry

Sampler reference	Easting	Northing	Locality monitored
Stn 1	456787	314586	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 1A	456882	314449	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 1B	456745	314112	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 3	455685	315844	Mill Farm; Quorn House
Stn 4A	456966	315787	Woodside Farm; Leicester Road
Stn 4B	456732	315767	Quorn Grange, Unitt Road, Northage Close, Quorn Park
Stn 5	457872	314875	Bond Lane; Crown Lane
Stn 6A	458655	316785	Sileby Road; Huston Close; Sileby Road (commercial)
Stn 9 (inc. PM)	457374	315398	Hawcliffe Road
Stn 10	457509	314627	Glebe Close; Halstead Road (south); Halstead Road (north)
Stn 11	457835	315504	Loughborough Road; River Soar (marina / caravan park)
Stn 12	458551	316457	Meadow Farm Marina and Caravan Park

Stn 13 (incl. PM)	456154	316087	Northage Close, Meeting Street
Weather Station	457126	315376	Wood Lane Site Offices

Charnwood Borough Council (CBC) is responsible for the monitoring of air quality within the borough and prepares Air Quality Annual Status Reports (ASRs) for submission to Defra. It operates a Zephyr air quality monitor which is located within the Leicestershire County Council (LCC) depot at the southern end of Hawcliffe Road, in close proximity to the Osiris device at Stn 9. This device measures a number of pollutants including PM₁₀ and PM_{2.5}, allowing CBC to compare concentrations against the relevant AQOs for these pollutants.

For additional context, the latest PM₁₀ and PM_{2.5} monitoring data from CBC are summarised in Appendix A and Appendix B.

2.1 Alert thresholds and response procedures

To help the site reduce its impact on the surrounding area, a number of alert thresholds have been calculated, as outlined in Table 2.2.

Table 2.2: Alert thresholds

Pollutant	Threshold	Averaging period	Applies to
PM ₁₀	125 µg/m ³	15 minutes	Stn 9 (Hawcliffe Road), Stn 13 (Quorn House)
Deposited dust	125 mg/m ² /day	1 month	All deposited dust monitoring locations

For particulate matter (PM₁₀) an alert threshold of 125 µg/m³ for the 15-minute average has been in use for several years as a trigger limit for investigation to identify potential on-site issues.

Many years of monitoring and research have shown that the quarry is not a significant source of fine particulate matter (PM_{2.5}) hence no alert threshold for this size fraction is required.

PM₁₀ and PM_{2.5} concentrations recorded by CBC at the southern end of Hawcliffe Road and by Defra through the Automatic Urban and Rural Network (AURN) at Leicester University are presented in Appendix A and Appendix B respectively. Data from both locations have been compared against relevant Air Quality Objectives (AQOs) for PM₁₀ and PM_{2.5}.

For deposited dust, the DMMP sets out a site-wide deposited dust threshold of 125 mg/m²/day 'undissolved solids' as a trigger limit for investigation to identify the potential dust source/s, taking account of the directional data.

3 Results

3.1 Weather monitoring

Weather conditions can have a significant effect on the potential for dust propagation from a mineral site. Of particular importance are wind speeds, wind direction, and precipitation. Dust can be carried from a source towards receptors (such as nearby homes and other businesses) according to the strength and direction of wind. Precipitation is recognised to suppress dust and 0.2 mm antecedent rainfall is considered sufficient to suppress windblown dust for a number of hours.

The key weather data which might affect dust propagation (wind speed, wind direction, total daily precipitation and average daily temperature) for this reporting period are summarised in Figure 3.1 and Figure 3.2.

As mentioned earlier, due to a technical issue with the on-site weather station, site-specific weather data were not available for this monitoring period. Temperature and precipitation data from a nearby Met Office WOW station in Mountsorrel² (approx. 1.9 km southeast) was used to supplement the missing data. Wind data was also sourced from the same Met Office WOW station to ensure consistency across all weather data for this monitoring period.

This monitoring period was characterised by generally warm temperatures throughout July. The maximum daily average temperature was 25 °C, recorded on the June 2025 and the minimum daily average temperature was 15.4 °C, recorded on the 15 July 2025. Due to precipitation only recorded on just 28% of days and warmer temperatures, there may have been an increased potential for dust generation and propagation during this reporting period.

² <https://wow.metoffice.gov.uk/observations/details/20250911wg3ez3hxnwe9bk1dxusa4748xr>

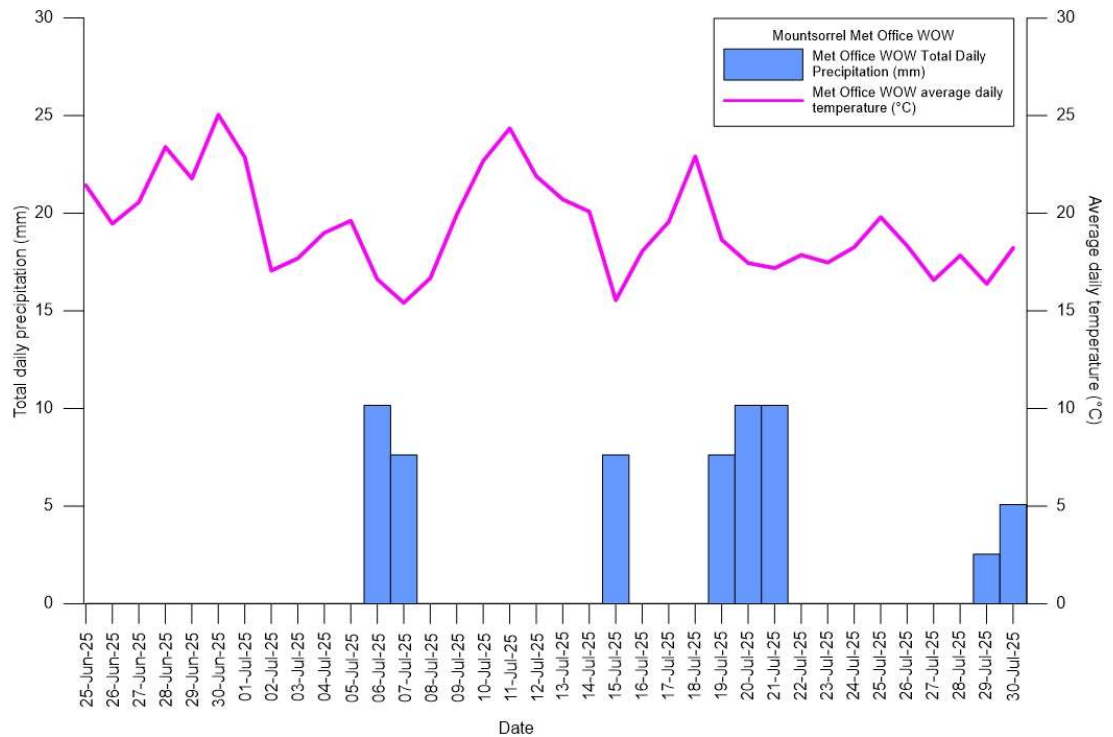


Figure 3.1: Total daily precipitation and average daily temperature, Mountsorrel Met Office WOW, 25 June – 30 July 2025

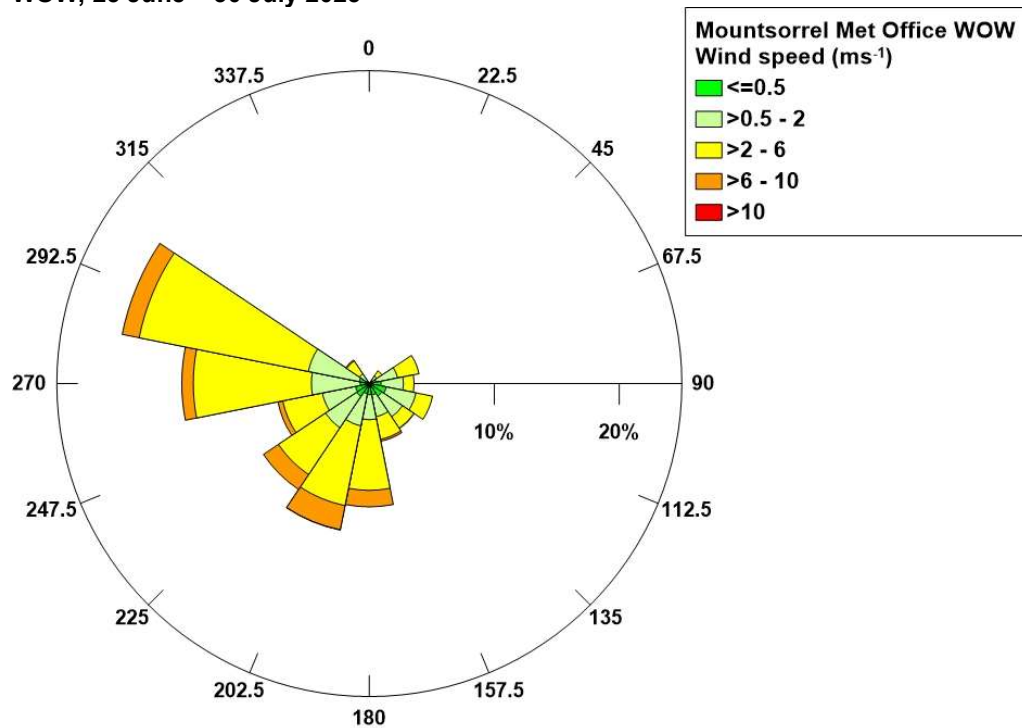


Figure 3.2: Wind rose, Mountsorrel Met Office WOW, 25 June – 30 July 2025.

3.2 Particulate matter

3.2.1 PM₁₀

The available 15-minute data from the period of review are presented for both monitoring locations in Figure 3.4 and Figure 3.4. The red line denotes the site trigger level (125 µg/m³ over the 15-minute average), whilst the dashed black line denotes the average concentration recorded over this period. Due to a technical issue no PM₁₀ data were available from the Hawcliffe Road sampler for the period 20 – 30 July 2025.

Additional PM₁₀ monitoring data (collected by CBC and the Defra AURN monitoring network) are provided in Appendix A.

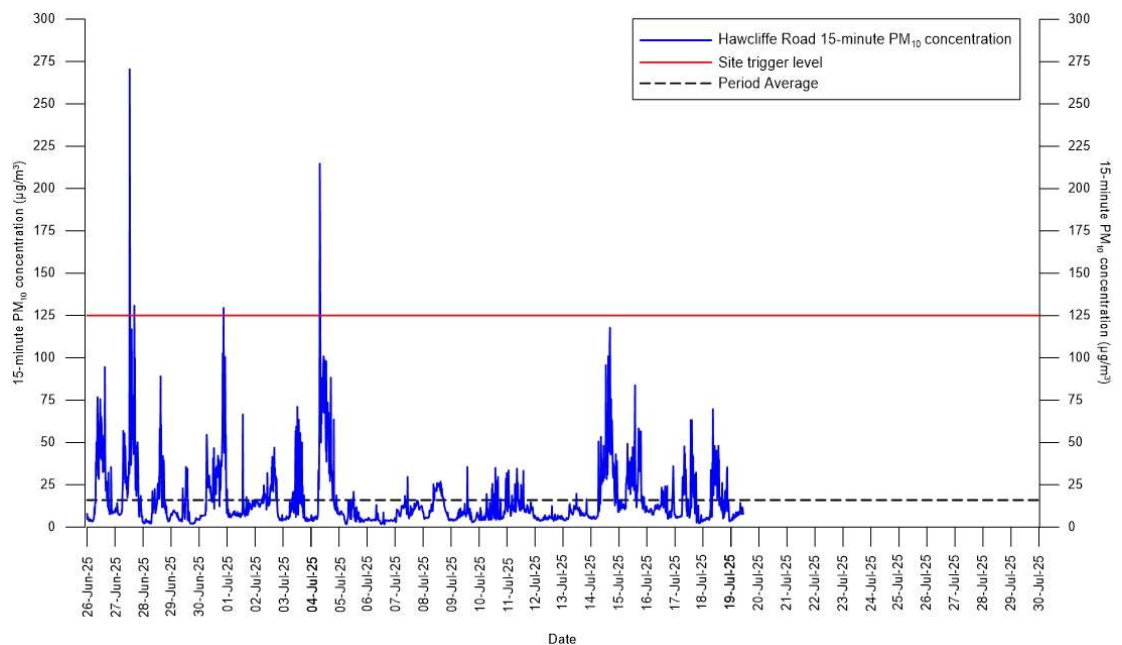


Figure 3.3: 15-minute mean PM₁₀ concentration, Hawcliffe Road, 25 June – 30 July 2025

Figure 3.3 indicates that the overall average concentration at the Hawcliffe Road sampler for this period was 15.97 µg/m³, with the alert threshold being exceeded on four occasions, all from onsite direction; details of the onsite exceedances are provided in Table 3.1.

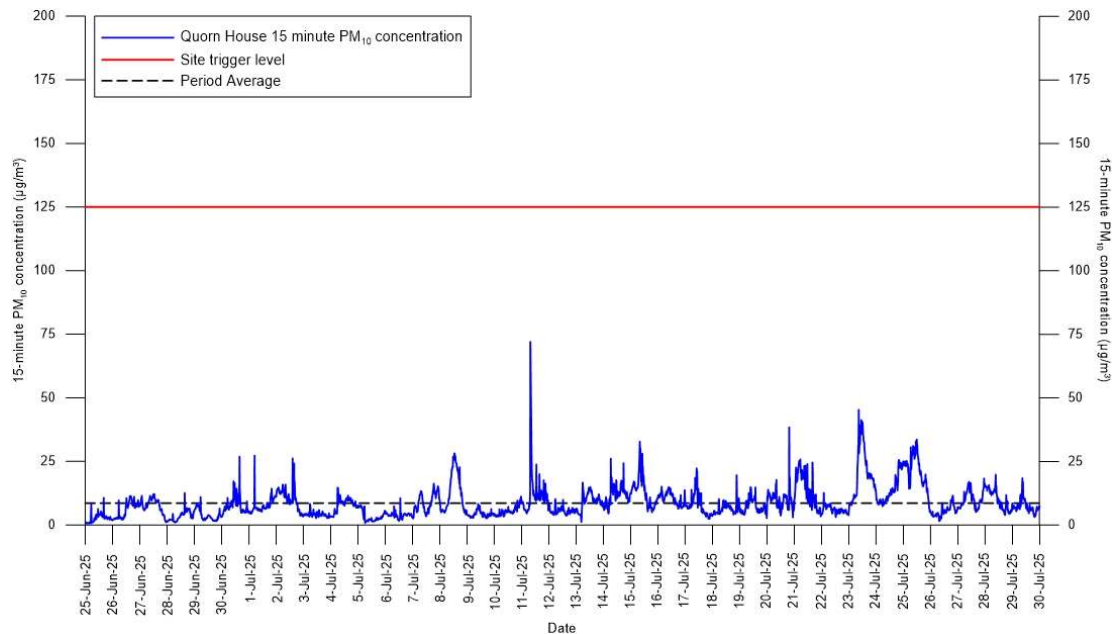


Figure 3.4: 15-minute mean PM₁₀ concentration, Quorn House, 25 June – 30 July 2025

At Quorn house there were no exceedances of the PM₁₀ site trigger, and the overall average for this period was 8.59 µg/m³.

During this review period, trigger emails alerting staff to high PM₁₀ levels from the direction of site operations were sent out on four occasions from the Hawcliffe Road Osiris. Details of the corresponding causes and investigations are provided in Table 3.1.

Table 3.1: Email alert responses, between 25 June – 30 July 2025 (using the trigger threshold, 125 µg/m³ for the 15-minute average)

Date of alert	Monitor	Details	Possible cause and investigation
27/06/2025	Hawcliffe Road	Exceedance recorded from the southwest at midday and late afternoon.	No issues on site identified. Directional data points towards the PSV yard which has subsequently had improvements made to the dust netting.
30/06/2025	Hawcliffe Road	Exceedance recorded from the south in the evening.	No issues identified.
04/07/2025	Hawcliffe Road	Exceedance recorded from the southwest in the evening.	No issues identified.

3.2.2 PM_{2.5}

The results of PM_{2.5} monitoring at Hawcliffe Road and Quorn House are presented in Figure 3.5 and Figure 3.6. The dashed black line denotes the average concentration recorded over this period. No PM_{2.5} data were available from the Hawcliffe Road sampler for the period 20 – 30 July 2025.

Additional PM_{2.5} monitoring data (collected by CBC and the Defra AURN monitoring network) are provided in Appendix B.

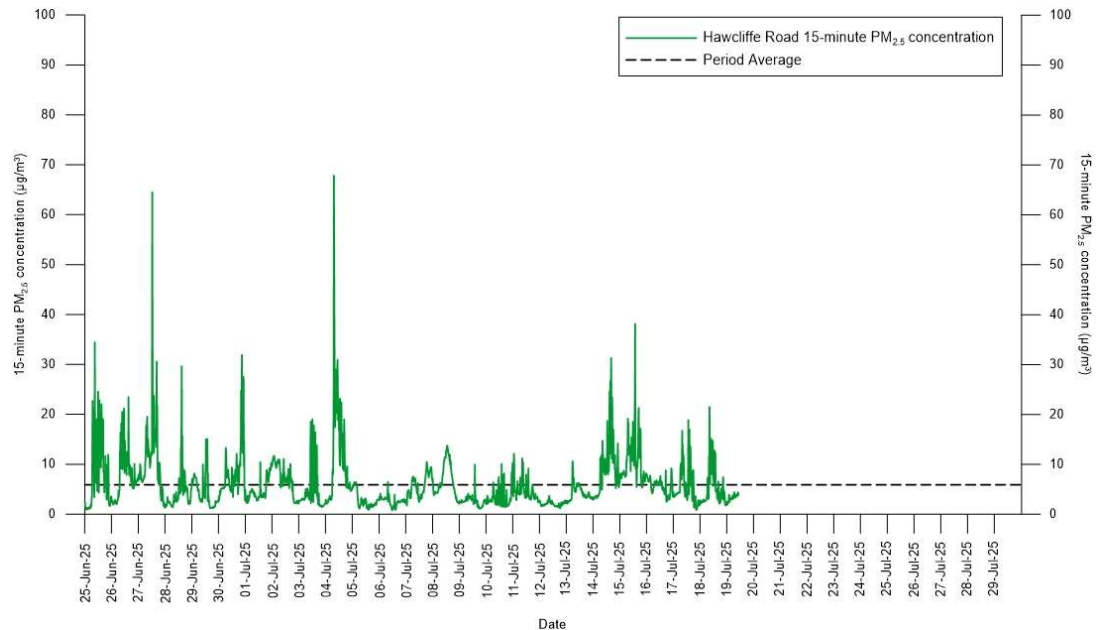


Figure 3.5: 15-minute mean PM_{2.5} concentration, Hawcliffe Road, 25 June – 30 July 2025

At Hawcliffe Road, the overall average concentration for this period was 5.9 µg/m³, whilst at Quorn House, the overall average was 3.66 µg/m³.

For this period, 37% of PM₁₀ recorded at Hawcliffe Road comprised PM_{2.5}, whilst it made up 43% at Quorn House.

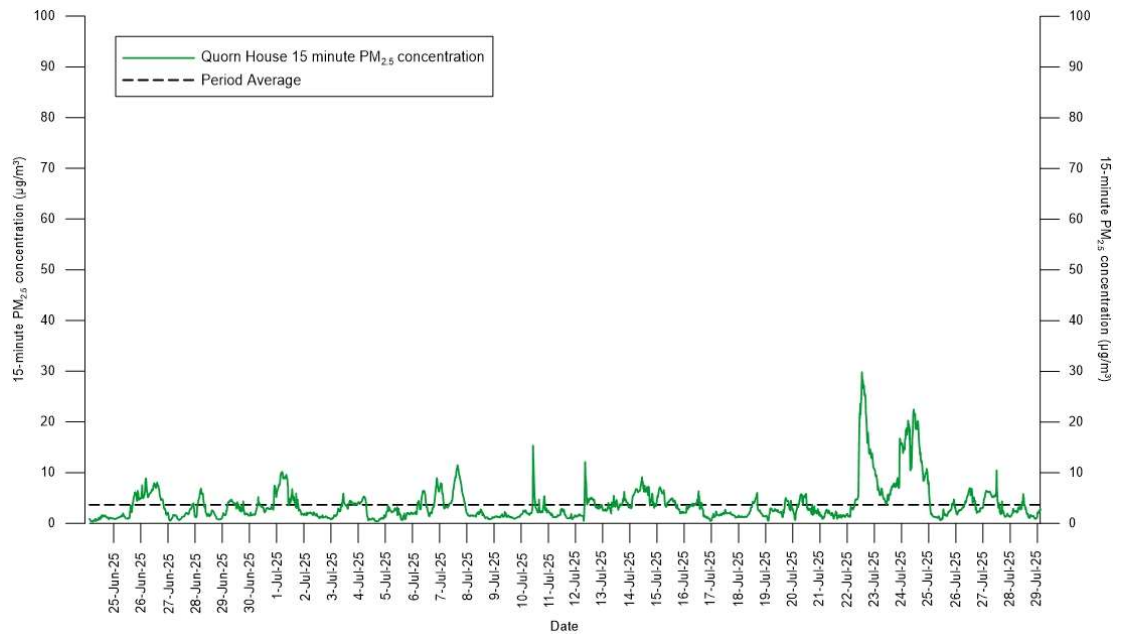


Figure 3.6: 15-minute mean $PM_{2.5}$ concentration, Quorn House, 25 June – 30 July 2025

3.3 Visible dust

3.3.1 Deposited dust monitoring summary

The deposited dust data for 25 June – 30 July 2025 are summarised in Table 3.2. As outlined above, there is a site-wide threshold for investigation to identify the potential dust source/s, taking account of the directional data. Table 3.2 shows that, for the available data, deposited dust levels during 25 June – 30 July 2025 were all within the site-specific threshold for all stations, with Stn 4A, which recorded Very High levels during this period, exceeding the threshold. Given the unusually high deposition rate and the lack of a clear directional signal, it is most likely that this result is anomalous and should be disregarded.

Table 3.2: Summary of deposited dust (undissolved solids), 25/06/25 – 30/07/25

Undissolved solids (mg/m ² /day)				
This month report start date:		25-Jun-25		
This month report end date:		30-Jul-25		
Receptor location	Nearest / appropriate dust monitoring point	Reported value	Trigger: $\geq 125^a$	Magnitude ^b
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	40	No	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	35	No	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	67	No	Low
Mill Farm; Quorn House	Stn 3	10	No	Very Low
Woodside Farm, Leicester Road	Stn 4A	241	Yes	Very High
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	78	No	Low
Bond Lane; Crown Lane	Stn 5	26	No	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	27	No	Very Low
Hawcliffe Road	Stn 9	70	No	Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	61	No	Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	26	No	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	26	No	Very Low
Quorn House Park	Stn 13	10	No	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of mass deposition rate assessed against typical rate for semi-rural areas (30 - 80 mg/m²/day)

Regarding dust deposition over time, the rates across the sampling area have varied considerably. Trends in dust deposition rates (as undissolved solids) for the previous 12 months, together with the site-wide dust threshold are illustrated in Figure 3.7.

In general, as would be expected, dust deposition rates are typically lower in winter months than in summer months. This trend is clearly seen for most monitoring points in Figure 3.7, with some exceptions. Dust deposition rates have been consistently below the ‘trigger limit’ at all sampling locations except at Stn 9, where it has exceeded twice in the last 12 months and Stn 4a which has exceeded once.

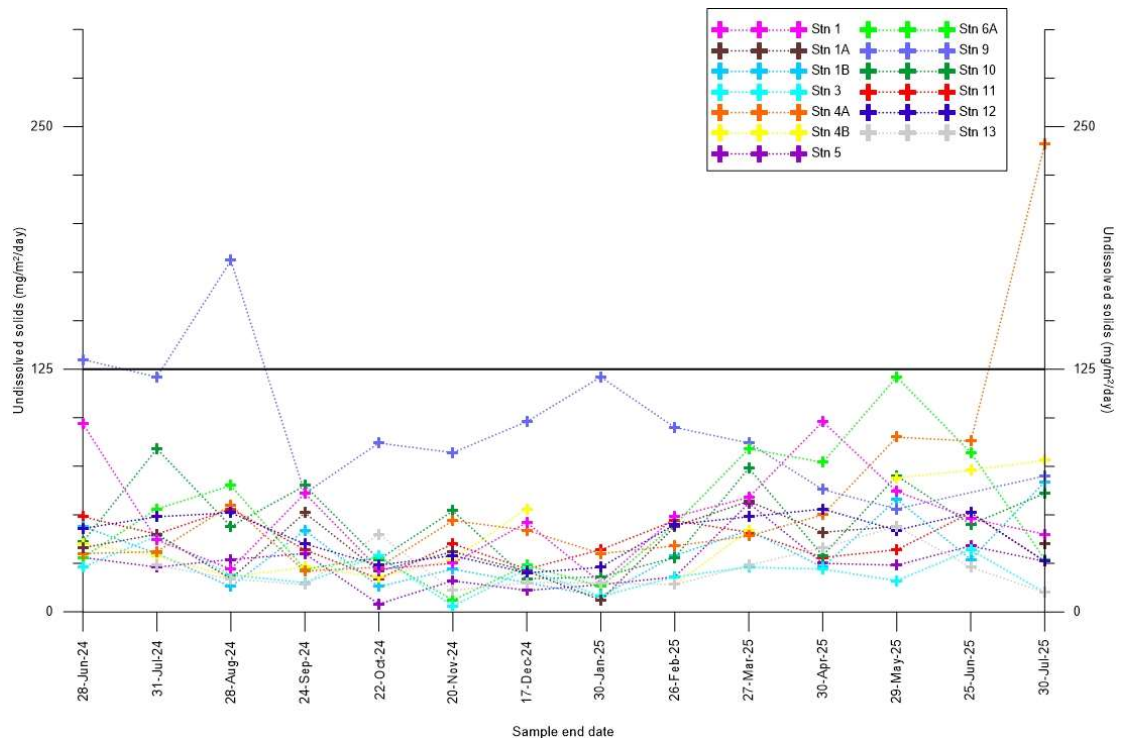


Figure 3.7: Dust deposition rates per sampling location over time (past 12 months)

3.3.2 Directional dust monitoring summary

The directional dust data for 25 June – 30 July 2025 are summarised in Table 3.3, and are presented graphically in Figure 3.8. As with deposited dust, the DMMP sets out a site-wide directional dust threshold. For directional dust soiling, 0.5 % Effective Area Coverage (EAC) per day is a trigger limit for investigation to identify the likely dust source/s, again taking account of the direction.

Table 3.3 and Figure 3.8 show that during 25 June – 30 July 2025, all stations recorded Very Low to Low dust levels from all directions, except for Stn 6A which recorded up to moderate levels from the southwest and Stn 9 which recorded up to moderate levels from the southwest and west. At Stn 6A, the direction signal would suggest an off-site source of dust given its location on the site boundary. At Stn 9 this pattern of directional dust would suggest the impact of both on-site (e.g. the PSV yard) and off-site (e.g. industrial activities along Granite Way) dust sources impacting this location.

Table 3.3: Summary of directional dust soiling, 25 June – 30 July 2025

Directional dust soiling (%EAC/day) by direction (°)										
This month report start date:		25-Jun-25								
This month report end date:		30-Jul-25								
Receptor location	Nearest / appropriate dust monitoring point		Direction (°)							
			0	45	90	135	180	225	270	315
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	Reported value	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	Reported value	0.1	0	0	0	0	0.1	0.1	0.1
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	Reported value	0	0	0	0.1	0.1	0.1	0	0
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Mill Farm; Quorn House	Stn 3	Reported value	0	0	0.1	0	0	0	0	0
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Woodside Farm, Leicester Road	Stn 4A	Reported value	0	0	0.1	0.1	0.1	0.1	0.1	0.1
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	Reported value	0.1	0.1	0.1	0.1	0.1	0	0.1	0
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Bond Lane; Crown Lane	Stn 5	Reported value	0.1	0	0	0.1	0.1	0.1	0.1	0.2
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	Reported value	0	0.1	0.2	0	0.1	0.4	0.1	0.2
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Low	Very Low	Very Low	Moderate	Very Low	Low
Hawcliffe Road	Stn 9	Reported value	0.1	0.1	0.1	0.1	0.1	0.5	0.4	0.1
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	Yes	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Moderate	Very Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	Reported value	0.1	0	0	0	0.1	0.1	0.1	0.2
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	Reported value	0.1	0	0	0.1	0.1	0.2	0.1	0.1
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	Reported value	0.1	0.1	0	0	0	0.1	0.1	0.1
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn House Park	Stn 13	Reported value	0.1	0	0.1	0.1	0	0.1	0.1	0.1
		Trigger: ≥ 0.5 ^a	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of directional dust soiling derived from Beaman and Kingsbury, 1981

^c Direction/s not determined for daily EAC below 0.1%/day (very low soiling)



Figure 3.8: Directional dust soiling rose diagrams, 25 June – 30 July 2025

Table 3.4 shows that the average directional soiling rates have been at Very Low levels at most monitoring locations, for most directions, over the past year. Low average directional dust flux levels were recorded from the southwest and west at Stn 9, and from the east at Stn 6A.

Table 3.4: Running average directional dust soiling (past 12 months)

Receptor location	Nearest / appropriate dust monitoring point		Direction (°)							
			0	45	90	135	180	225	270	315
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	Average value	0.1	0.1	0.1	0	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	Average value	0.1	0.1	0.1	0	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	Average value	0.1	0	0	0	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Mill Farm; Quorn House	Stn 3	Average value	0	0.1	0.1	0.1	0.1	0.1	0	0
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Woodside Farm, Leicester Road	Stn 4A	Average value	0	0.1	0.1	0.1	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	Average value	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Bond Lane; Crown Lane	Stn 5	Average value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	Average value	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Low	Very Low	Very Low	Low	Very Low	Very Low
Hawcliffe Road	Stn 9	Average value	0.1	0.1	0.1	0.1	0	0.2	0.2	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	Very Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	Average value	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	Average value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	Average value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn House Park	Stn 13	Average value	0.1	0	0.1	0	0	0.1	0	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of directional dust soiling derived from Beaman and Kingsbury, 1981

^c Direction/s not determined for daily EAC below 0.1%/day (very low soiling)

4 Complaints

During July 2025, it is understood that two complaints were received by the quarry. These were investigated in accordance with the procedure outlined in the DMMP.

Appendix A: Off-site PM₁₀ monitoring (CBC and AURN)

The daily average PM₁₀ concentrations recorded by the CBC Zephyr are presented below in Figure A.1, alongside similar data from the Defra Automatic Urban and Rural Network (AURN) station in Leicester University³. Due to a technical issue with the CBC Zephyr, no data was available during this monitoring period.

For the 12 months leading up to 30 July 2025, there were 326 daily PM₁₀ readings taken by the CBC Zephyr, representing an 89 % data collection rate at this location, and 365 daily PM₁₀ readings taken from the Leicester AURN, representing a 100 % data collection rate.

From the available data the annual average daily PM₁₀ concentration for the 12 months to date at CBC Zephyr was 14.6 µg/m³, which is approximately 36.5 % of the annual average PM₁₀ concentration objective (40 µg/m³). At the Leicester AURN the annual average daily PM₁₀ concentration for the 12 months to date was 13.2 µg/m³ which is approximately 32.9 % of the annual average PM₁₀ concentration objective.

For the 12 months up to 29 May 2025 there were three recorded instances where the daily average PM₁₀ concentrations exceeded 50 µg/m³ at the CBC Zephyr. In summary, for the 12 months up to 30 July 2025 neither the annual nor daily AQO have been exceeded.

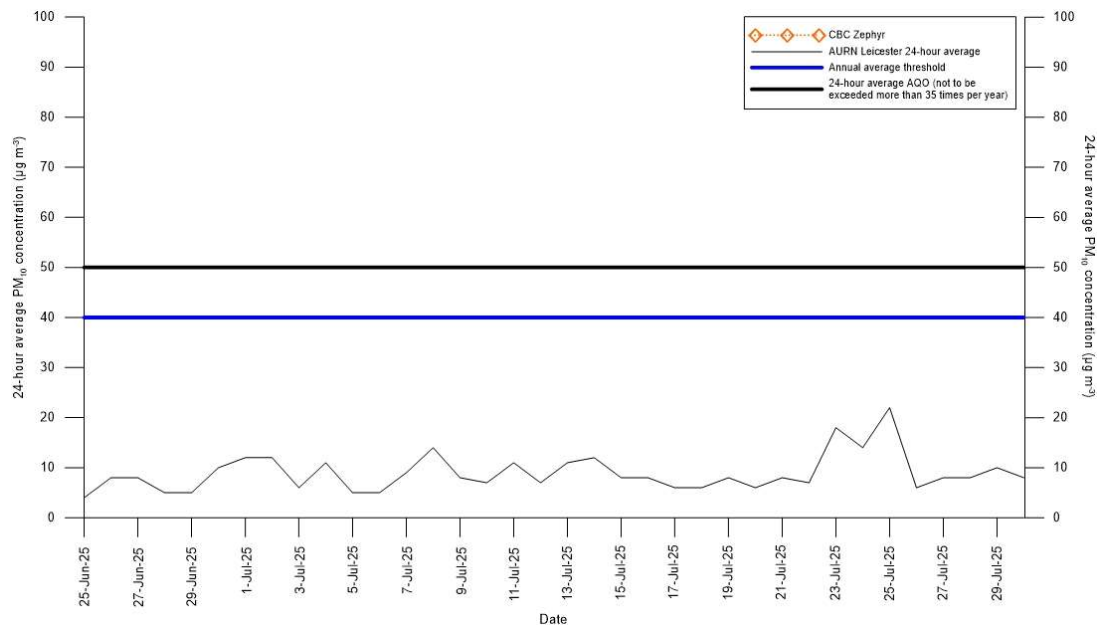


Figure A.1: Daily average PM₁₀ concentration, CBC Zephyr and Leicester AURN, 25 June – 30 July 2025

³ <http://uk-air.defra.gov.uk/networks/network-info?view=aurn>

Appendix B: Off-site PM_{2.5} monitoring (CBC and AURN)

The daily average PM_{2.5} concentrations recorded by the CBC Zephyr are presented below in Figure B.1, alongside similar data from the Defra Automatic Urban and Rural Network (AURN) station in Leicester University.

For the 12 months leading up to 30 July 2025, there were 326 daily PM_{2.5} readings taken by the CBC Zephyr, representing an 89 % data collection rate at this location and 365 daily PM_{2.5} readings taken from the Leicester AURN, representing a 100 % data collection rate. From the available data the annual average daily PM_{2.5} concentration for the 12 months at the CBC Zephyr was 9.57 µg/m³, which is approximately 80 % of the interim annual average PM_{2.5} concentration objective (12 µg/m³) applicable from 31 January 2023. At the Leicester AURN the annual average daily concentration was 8.61 µg/m³, which is approximately 72 % of the interim target PM_{2.5} concentration objective.

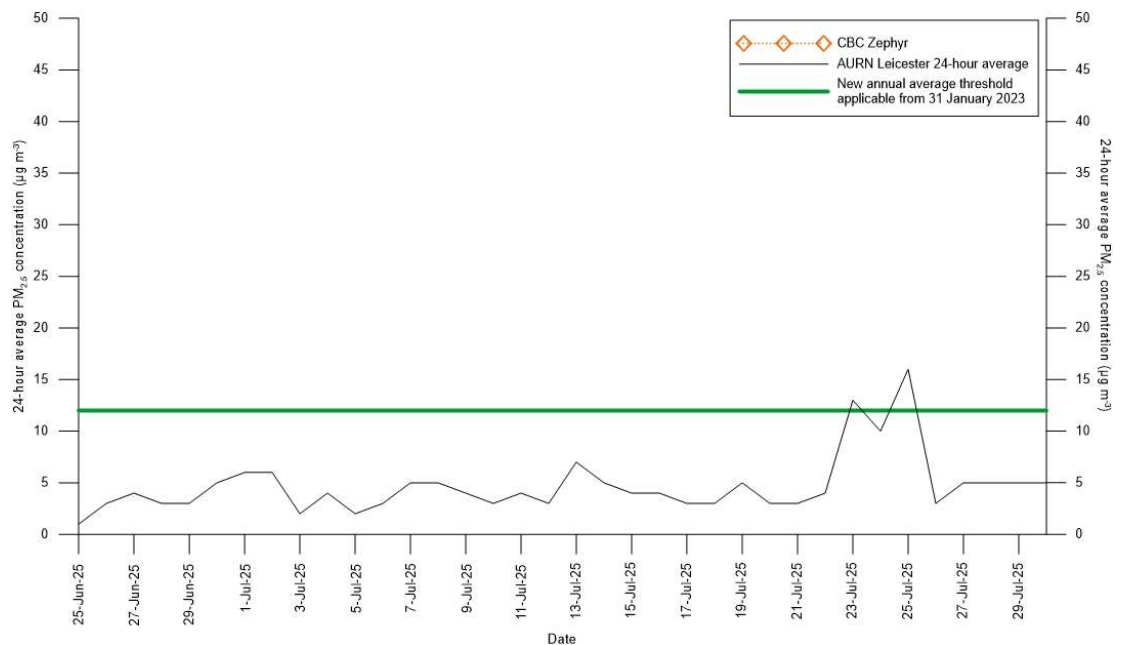


Figure B.1: Daily average PM_{2.5} concentrations, CBC Zephyr and Leicester AURN, 25 June – 30 July 2025



Dust, Particulate Matter and Weather Monitoring Report: August 2025

Mountsorrel Quarry

November, 2025

Tarmac



Document Control Sheet

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Disclaimer

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This report may include data obtained from trusted third-party consultants/laboratories that have been supplied to us in good faith. Whilst we do everything we can to ensure the quality of all the data we use, we cannot be held responsible for the accuracy or integrity of third-party data.

Report Prepared By

DustScanAQ
Unit 8 Nimrod
De Havilland Way
Witney
Oxon
OX29 0YG
United Kingdom
Tel: + 44 (0) 1608 810110
E-mail: info@dustscan.co.uk
Web: www.DustScan.co.uk

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1 Introduction

Mountsorrel Quarry has a comprehensive Dust Management and Monitoring Plan (DMMP). The DMMP was developed in 2011 and is subject to regular review and revision, in consultation between Tarmac and the local regulators (Leicestershire County Council (LCC) and Charnwood Borough Council (CBC)).

The DMMP is enacted through the quarry Site Improvement Plan (SIP). The SIP sets out a programme of actions to reduce the environmental impact of specific areas of the site operation, and is updated regularly by quarry management, with support from DustScanAQ through regular site visits and quarterly reviews with LCC and CBC.

Section 7.5 of the DMMP requires that a monthly summary and review of dust and particulate matter monitoring is prepared and circulated with LCC, CBC and the Environment Agency.

This report details the results of dust, particulate matter and weather monitoring around Mountsorrel Quarry during the period 30 July – 28 August 2025.

1.1 Report scope

The intention of this report is to summarise dust and particulate matter monitoring results for the given period and compare them against site-specific alert limits and thresholds. This report also details the results of any investigation carried out into elevated dust or particulate matter levels, as prompted by an exceedance of alert limits or thresholds.

1.2 Dust definitions

'Dust' is generally regarded as particulate matter up to 75 µm (micron) diameter and can be considered in two categories. Fine dust, essentially particles up to 10 µm, is commonly referred to as PM₁₀ and is measured to agreed standards and forms part of the national Air Quality Objectives (AQO). The AQO for PM₁₀ is currently 50 µg/m³ for the 24-hour mean, not to be exceeded 35 times per year and 40 µg/m³ for the annual mean. Particles up to 2.5 µm in diameter are referred to as PM_{2.5}. The interim target for PM_{2.5} is 12 µg/m³ for the annual mean (to be achieved by 2028), whilst the legal AQO for PM_{2.5} is 10 µg/m³ for the annual mean (to be achieved by 2040) as per The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023¹.

It may be noted that the above Regulations relate to average particle concentrations in Local Authority districts thus do not apply to any specific industrial or other operation, such as Mountsorrel Quarry, and are included for reference.

¹ Statutory Instrument. (2023), 'The Environmental Targets (Fine Particulate Matter) (England) Regulations', No. 96. King's Printer of Acts of Parliament

Coarser dust (essentially particles greater than 10 µm) is generally regarded as 'nuisance dust' and can be associated with annoyance, although there are no official standards (such as AQO) for dust annoyance.

2 Sampler locations

As shown in Figure 2.1 and Table 2.1, dust, particulate matter and weather conditions are measured at a number of locations around site and the surrounding area:

- Directional and depositional dust: currently monitored at 13 locations;
- Particulate matter: currently monitored at two locations;
- Weather conditions: currently monitored at one location.

The majority of the dust samplers around Mountsorrel Quarry comprise the 'Frisbee-type' deposition gauge combined with an adhesive 'sticky pad' directional gauge. These samplers are used to monitor 'nuisance' dust and samples from these instruments are collected on a monthly basis.

For particulate matter, Turnkey Osiris samplers are located at Stn 9 (Hawcliffe Road) and at Stn 13 (Quorn House). These recognised and certificated 'indicative' real-time devices are connected to their own wind vane and anemometer and provide near-instantaneous directional PM₁₀, PM_{2.5} and PM₁ data directly to the quarry management team.

A weather station is located at the site offices off Wood Lane and collects a range of weather parameters over fifteen-minute intervals. Data from the weather station are available to the quarry management by means of a dedicated modem connection to the internet. Due to a malfunctioning battery, the station had been offline from 17 April, however as of 08 October the device is now fully functional again.

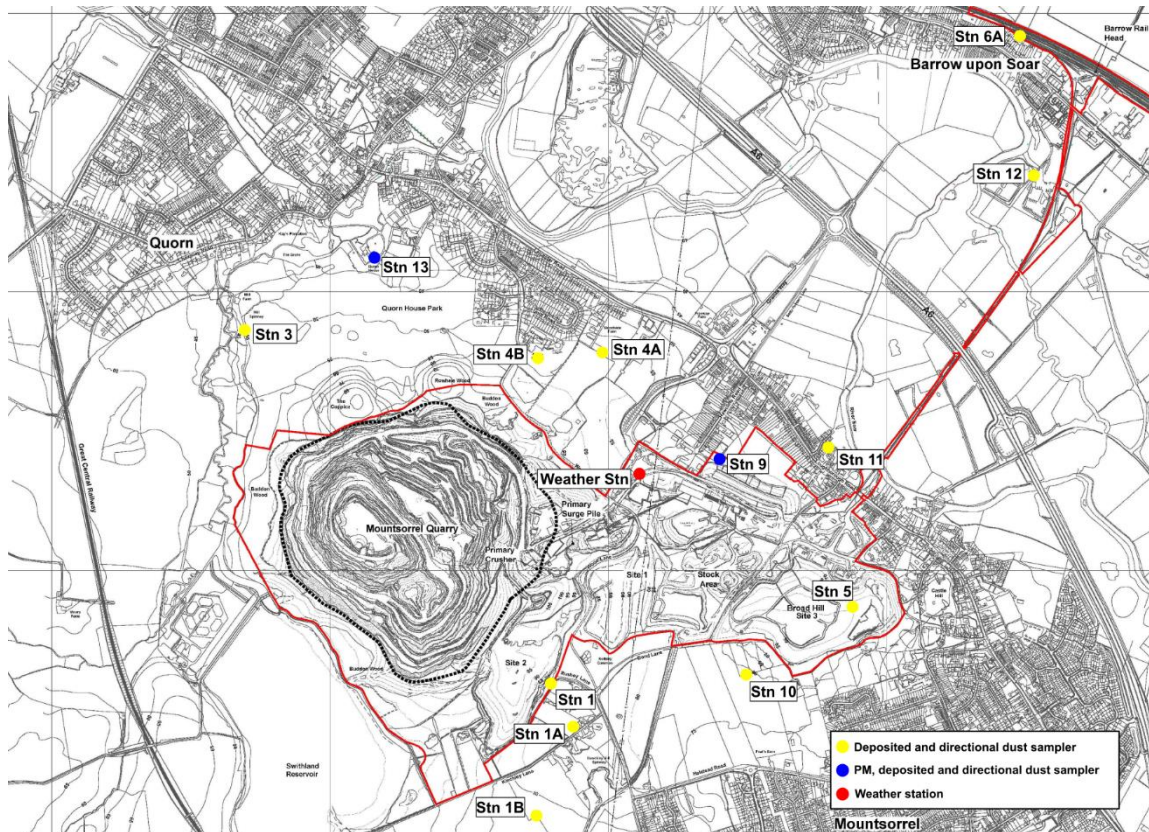


Figure 2.1: Particulate matter, dust and weather monitoring locations, Mountsorrel Quarry

Table 2.1: Weather, particulate matter and dust monitoring locations, Mountsorrel Quarry

Sampler reference	Easting	Northing	Locality monitored
Stn 1	456787	314586	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 1A	456882	314449	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 1B	456745	314112	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 3	455685	315844	Mill Farm; Quorn House
Stn 4A	456966	315787	Woodside Farm; Leicester Road
Stn 4B	456732	315767	Quorn Grange, Unitt Road, Northage Close, Quorn Park
Stn 5	457872	314875	Bond Lane; Crown Lane
Stn 6A	458655	316785	Sileby Road; Huston Close; Sileby Road (commercial)
Stn 9 (inc. PM)	457374	315398	Hawcliffe Road
Stn 10	457509	314627	Glebe Close; Halstead Road (south); Halstead Road (north)
Stn 11	457835	315504	Loughborough Road; River Soar (marina / caravan park)

Sampler reference	Easting	Northing	Locality monitored
Stn 12	458551	316457	Meadow Farm Marina and Caravan Park
Stn 13 (incl. PM)	456154	316087	Northage Close, Meeting Street
Weather Station	457126	315376	Wood Lane Site Offices

Charnwood Borough Council (CBC) is responsible for the monitoring of air quality within the borough and prepares Air Quality Annual Status Reports (ASRs) for submission to Defra. It operates a Zephyr air quality monitor which is located within the Leicestershire County Council (LCC) depot at the southern end of Hawcliffe Road, in close proximity to the Osiris device at Stn 9. This device measures a number of pollutants including PM₁₀ and PM_{2.5}, allowing CBC to compare concentrations against the relevant AQOs for these pollutants.

For additional context, the latest PM₁₀ and PM_{2.5} monitoring data from CBC are summarised in Appendix A and Appendix B, whilst a summary of the latest 12 months of data are provided in Appendix C for reference.

2.1 Alert thresholds and response procedures

To help the site reduce its impact on the surrounding area, a number of alert thresholds have been calculated, as outlined in Table 2.2.

Table 2.2: Alert thresholds

Pollutant	Threshold	Averaging period	Applies to
PM ₁₀	125 µg/m ³	15 minutes	Stn 9 (Hawcliffe Road), Stn 13 (Quorn House)
Deposited dust	125 mg/m ² /day	1 month	All deposited dust monitoring locations

For particulate matter (PM₁₀) an alert threshold of 125 µg/m³ for the 15-minute average has been in use for several years as a trigger limit for investigation to identify potential on-site issues.

Data analysis has shown that PM₁₀ provides a stronger 'site signal' than PM_{2.5}, therefore no alert threshold for the smaller size fraction has been set.

PM₁₀ and PM_{2.5} concentrations recorded by CBC at the southern end of Hawcliffe Road and by Defra through the Automatic Urban and Rural Network (AURN) at Leicester University are presented in Appendix A and Appendix B respectively. Data from both locations have been compared against relevant Air Quality Objectives (AQOs) for PM₁₀ and PM_{2.5}.

For deposited dust, the DMMP sets out a site-wide deposited dust threshold of 125 mg/m²/day 'undissolved solids' as a trigger limit for investigation to identify the potential dust source/s, taking account of the directional data.

3 Results

3.1 Weather monitoring

Weather conditions can have a significant effect on the potential for dust propagation from a mineral site. Of particular importance are wind speeds, wind direction, and precipitation. Dust can be carried from a source towards receptors (such as nearby homes and other businesses) according to the strength and direction of wind. Precipitation is recognised to suppress dust and 0.2 mm antecedent rainfall is considered sufficient to suppress windblown dust for a number of hours.

The key weather data which might affect dust propagation (wind speed, wind direction, total daily precipitation and average daily temperature) for this reporting period are summarised in Figure 3.1 and Figure 3.2.

As mentioned in Section 2, due to a technical issue with the on-site weather station, site-specific weather data were not available for this monitoring period. Temperature and precipitation data from a nearby Met Office WOW station in Mountsorrel² (approx. 1.9 km southeast) was used to supplement the missing data. Wind data was also sourced from the same Met Office WOW station to ensure consistency across all weather data for this monitoring period.

This monitoring period was characterised by generally warm, dry weather throughout. The maximum daily average temperature was 23.9 °C, recorded on 13 August 2025 and the minimum daily average temperature was 15.2 °C, recorded on 28 August 2025. Precipitation was recorded on just four days during this period; due to this and the warm temperatures there will have been an increased potential for dust generation and propagation during this reporting period.

As seen in Figure 3.2, winds were calm to moderate in speed (>0.5 – 6 m/s) during this monitoring period, and were predominantly recorded from the west-northwest, west and south. This may have resulted in an increased potential for dust propagation to the east-southeast, east and north during this period.

² <https://wow.metoffice.gov.uk/observations/details/20250911wg3ez3hxnwe9bk1dxusa4748xr>

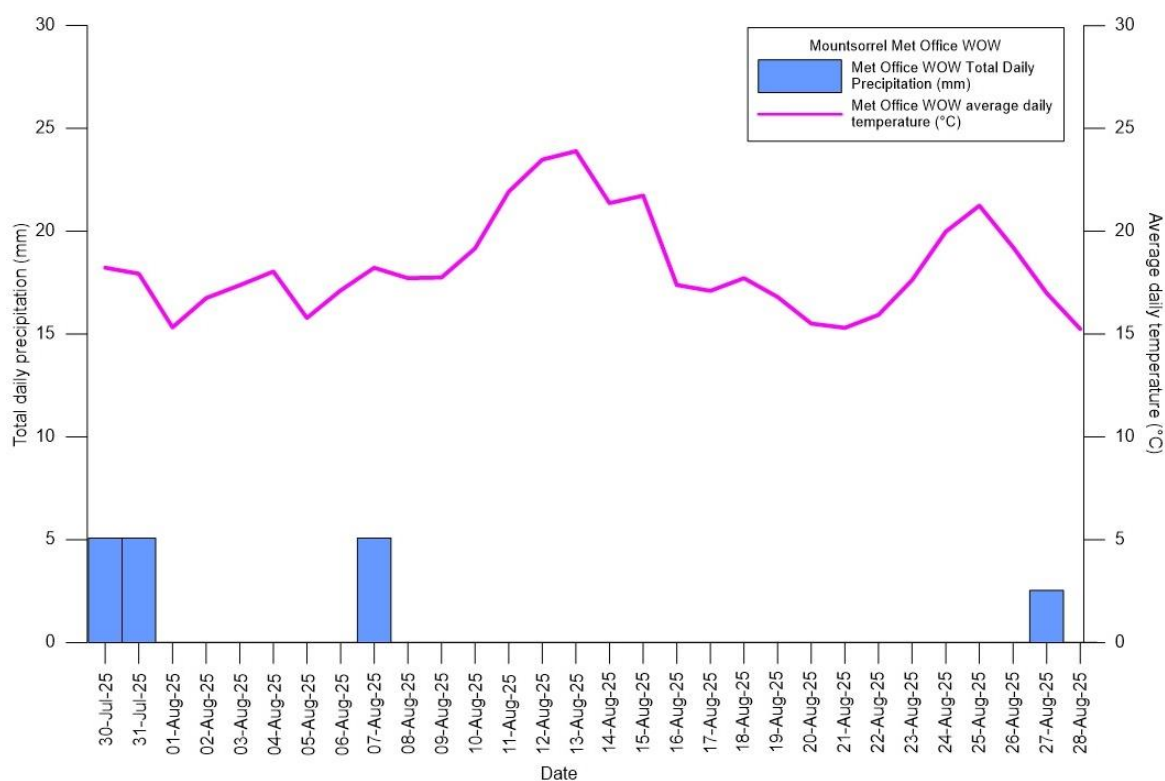
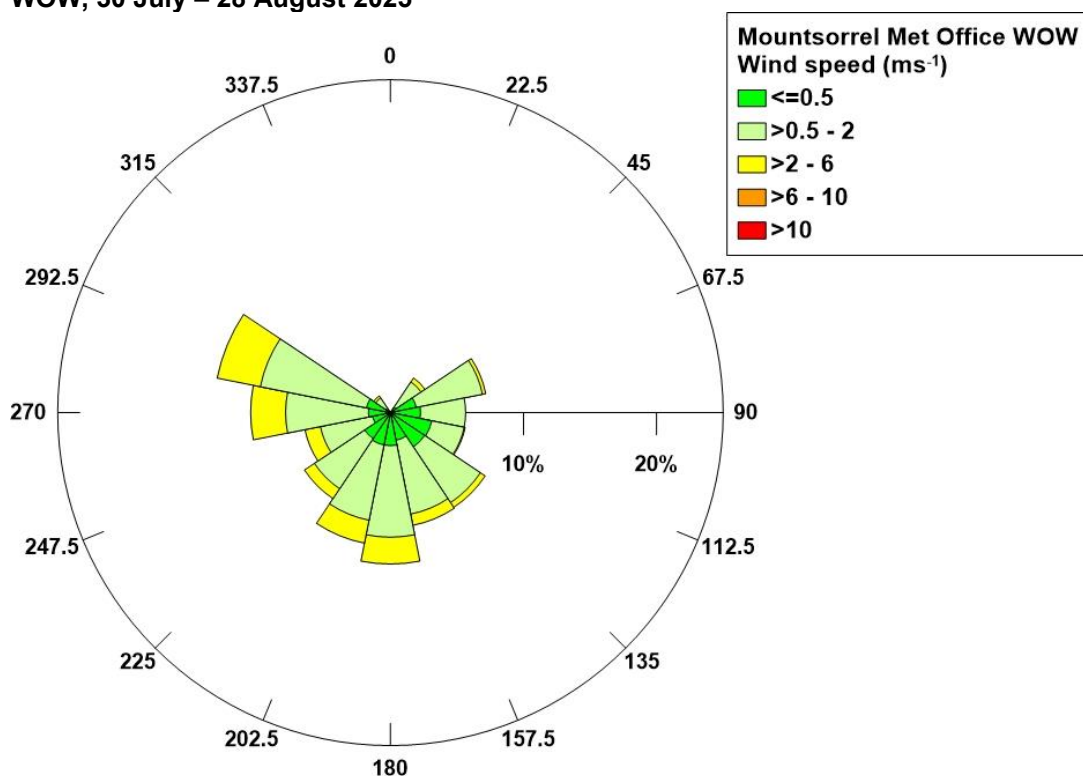


Figure 3.1: Total daily precipitation and average daily temperature, Mountsorrel Met Office WOW, 30 July – 28 August 2025



3.2 Particulate matter

3.2.1 PM₁₀

The available 15-minute data from the period of review are presented for both monitoring locations in Figure 3.4 and Figure 3.4. The red line denotes the site trigger level (125 µg/m³ over the 15-minute average), whilst the dashed black line denotes the average concentration recorded over this period. Due to a technical issue, no PM₁₀ data were available from the Hawcliffe Road sampler for the period 30 July – 05 August 2025.

Additional PM₁₀ monitoring data (collected by CBC and the Defra AURN monitoring network) are provided in Appendix A.

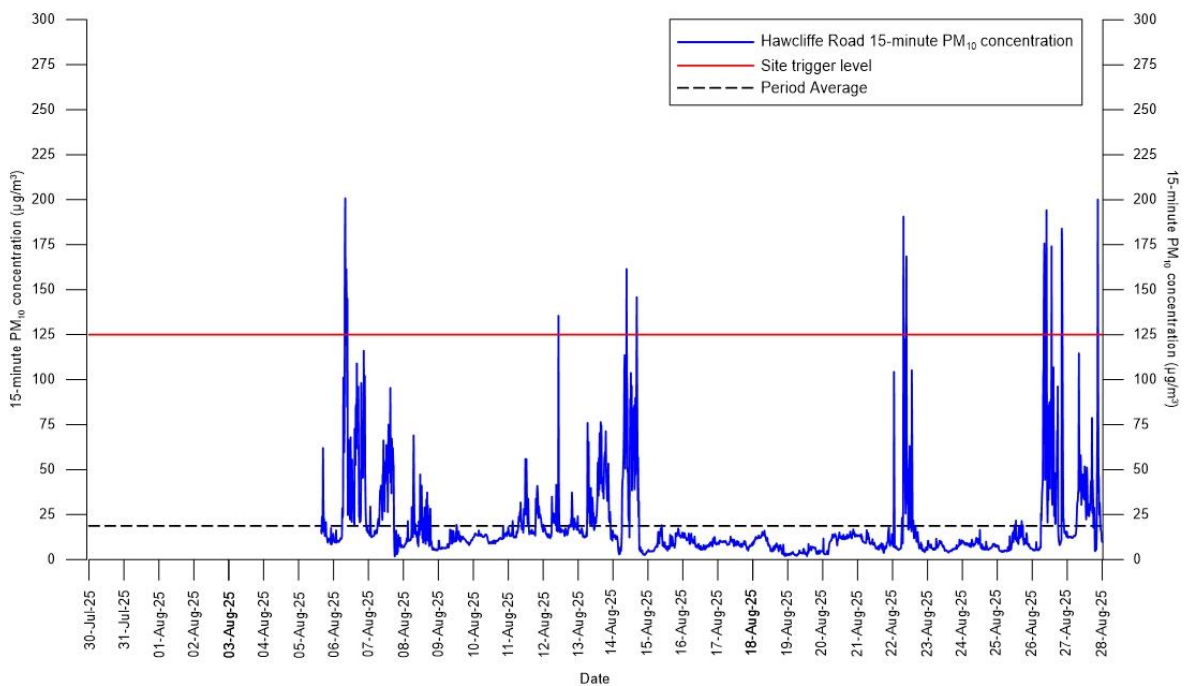


Figure 3.3: 15-minute mean PM₁₀ concentration, Hawcliffe Road, 30 July – 28 August 2025

Figure 3.3 indicates that the overall average concentration at the Hawcliffe Road sampler for this period was 18.70 µg/m³, with the alert threshold being exceeded on several occasions, from both onsite and offsite directions: details of the exceedances are provided in Table 3.1.

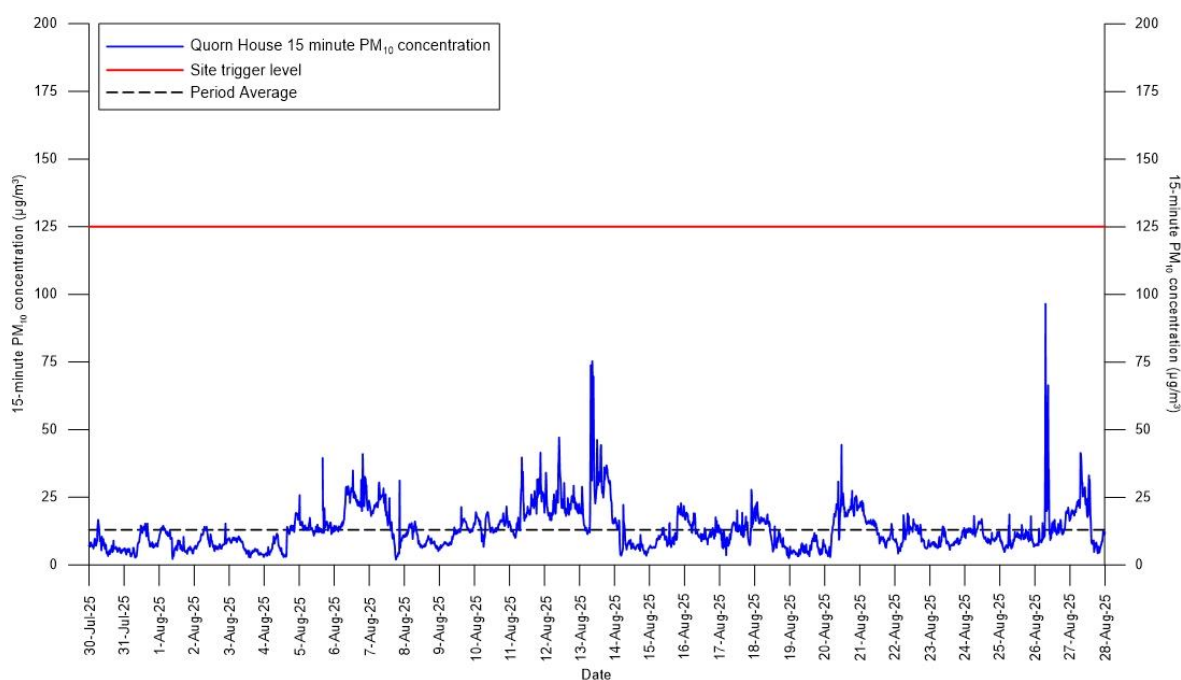


Figure 3.4: 15-minute mean PM₁₀ concentration, Quorn House, 30 July – 28 August 2025

At Quorn house there were no exceedances of the PM₁₀ site trigger, and the overall average for this period was 12.97 µg/m³.

During this review period, trigger emails alerting staff to high PM₁₀ levels were sent on seven separate days from the Hawcliffe Road Osiris. Details of the corresponding causes and investigations are provided in Table 3.1.

Table 3.1: Email alert responses, between 30 July – 28 August 2025 (using the trigger threshold, 125 µg/m³ for the 15-minute average)

Date of alert	Monitor	Details	Possible cause and investigation
06/08/2025	Hawcliffe Road	Exceedances recorded from the east, east-southeast and southeast in the morning.	Full site investigation carried out. Granite Way observed to be dusty towards Waitrose roundabout (although clear track out of water from site - photos obtained). Tarmac road sweeper deployed immediately. All dust suppression working and no issues identified on site.
12/08/2025	Hawcliffe Road	Exceedance recorded from the east-northeast in the morning.	Investigation carried out and no issues identified. Data suggests exceedance was coming from an offsite direction.
14/08/2025	Hawcliffe Road	Exceedances recorded from the east-southeast in the morning and from the southeast in the late afternoon.	Investigation carried out and no issues identified. Data suggests exceedance from the east-southeast was coming from an offsite direction.
22/08/2025	Hawcliffe Road	Exceedances recorded from the east and	Investigation carried out and no issues identified. Data suggests exceedance

Date of alert	Monitor	Details	Possible cause and investigation
		southeast in the morning.	from the east was coming from an offsite direction.
26/08/2025	Hawcliffe Road	Exceedances recorded in the morning from the southeast and south-southeast, at midday from the east and in the evening from the east and south.	Investigation carried out and no issues identified. Data suggests exceedance at midday was coming from an offsite direction. DustScan were up on site this day and identified that the sprays in Phase 2 yard had been turned off whilst maintenance works were being carried out.
27/08/2025	Hawcliffe Road	Exceedance recorded from the southeast in the evening.	Site investigation carried out and no issues identified.
28/08/2025	Hawcliffe Road	Exceedance recorded from the east-southeast at midday.	Investigation carried out and no issues identified. Data suggests exceedance was coming from an offsite direction.

3.2.2 PM_{2.5}

The results of PM_{2.5} monitoring at Hawcliffe Road and Quorn House are presented in Figure 3.5 and Figure 3.6. The dashed black line denotes the average concentration recorded over this period. Due to a technical issue no PM_{2.5} data were available from the Hawcliffe Road sampler for the period 30 July – 05 August 2025.

Additional PM_{2.5} monitoring data (collected by CBC and the Defra AURN monitoring network) are provided in Appendix B.

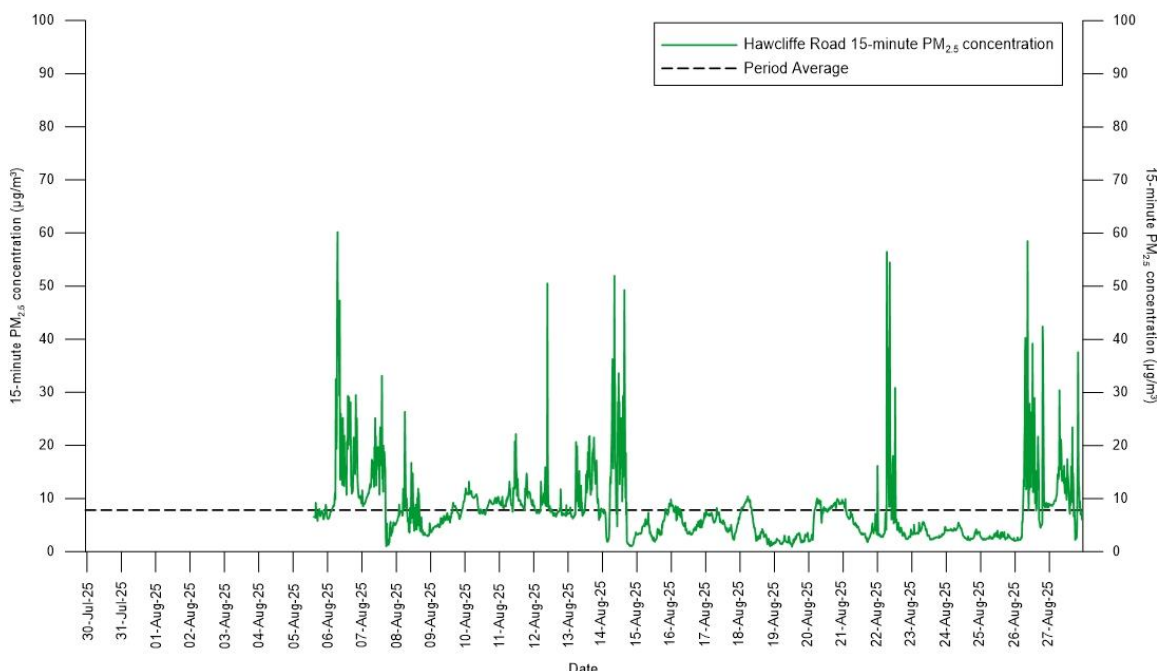


Figure 3.5: 15-minute mean PM_{2.5} concentration, Hawcliffe Road, 30 July – 28 August 2025

At Hawcliffe Road, the overall average concentration for this period was $7.82 \mu\text{g}/\text{m}^3$, whilst at Quorn House, the overall average was $5.04 \mu\text{g}/\text{m}^3$. In general, $\text{PM}_{2.5}$ concentrations recorded at Hawcliffe Road are more variable than at Quorn House (as shown by the increased frequency of spikes in the dataset); this is most likely due to its location, being on the site boundary and in proximity to a more built-up environment when compared to the rural location of Quorn House.

For this period, 42% of PM_{10} recorded at Hawcliffe Road comprised $\text{PM}_{2.5}$, whilst it made up 39% at Quorn House.

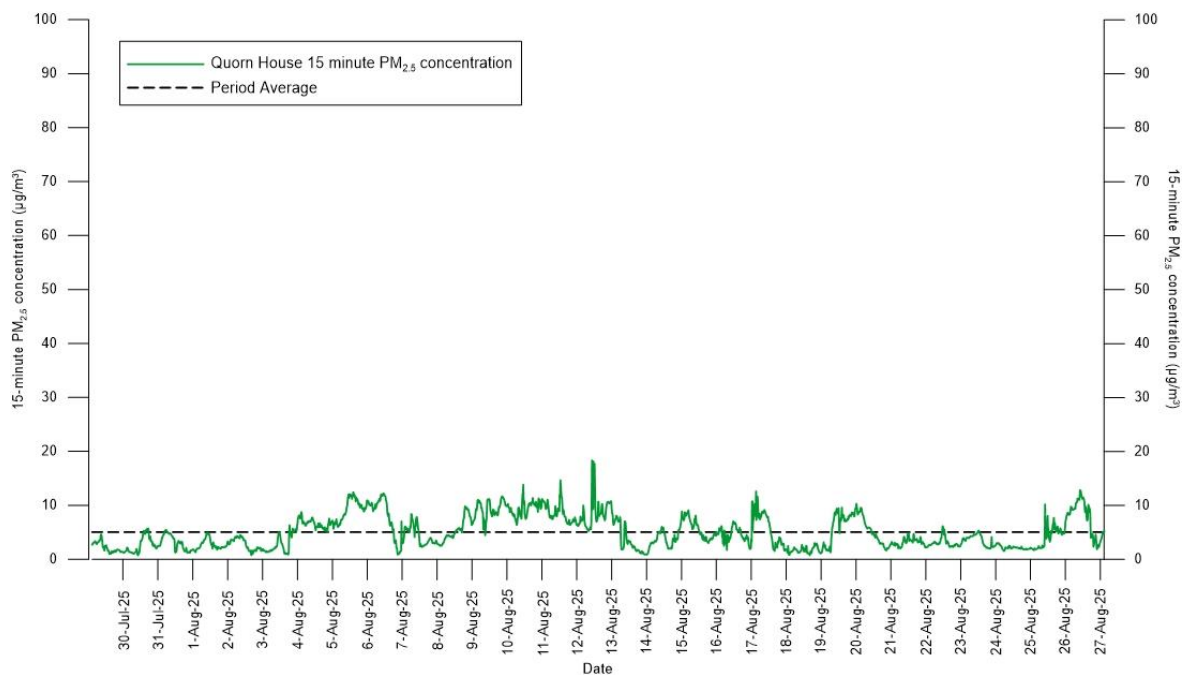


Figure 3.6: 15-minute mean $\text{PM}_{2.5}$ concentration, Quorn House, 30 July – 28 August 2025

3.3 Visible dust

3.3.1 Deposited dust monitoring summary

The deposited dust data for 30 July – 28 August 2025 are summarised in Table 3.2. As outlined above, there is a site-wide threshold for investigation to identify the potential dust source/s, taking account of the directional data. Table 3.2 shows that, for the available data, deposited dust levels during 30 July – 28 August 2025 were all within the site-specific threshold for all stations, with Stn 9 experiencing slightly elevated levels (albeit below the threshold) during this monitoring period.

Table 3.2: Summary of deposited dust (undissolved solids), 30/07/25 – 28/08/25

Undissolved solids (mg/m ² /day)				
This month report start date:		30-Jul-25		
This month report end date:		28-Aug-25		
Receptor location	Nearest / appropriate dust monitoring point	Reported value	Trigger: $\geq 125^a$	Magnitude ^b
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	31	No	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	30	No	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	29	No	Very Low
Mill Farm; Quorn House	Stn 3	17	No	Very Low
Woodside Farm, Leicester Road	Stn 4A	47	No	Very Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	51	No	Low
Bond Lane; Crown Lane	Stn 5	23	No	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	56	No	Low
Hawcliffe Road	Stn 9	94	No	Slightly Elevated
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	30	No	Very Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	40	No	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	40	No	Very Low
Quorn House Park	Stn 13	16	No	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of mass deposition rate assessed against typical rate for semi-rural areas (30 - 80 mg/m²/day)

Regarding dust deposition over time, the rates across the sampling area have varied considerably. Trends in dust deposition rates (as undissolved solids) for the previous 12 months, together with the site-wide dust threshold are illustrated in Figure 3.7.

In general, as would be expected, dust deposition rates are typically lower in winter months than in summer months. This trend is clearly seen for most monitoring points in Figure 3.7, with some exceptions. Dust deposition rates have been consistently below the ‘trigger limit’ at all sampling locations, with the exception of Stn 4A and Stn 9, which have each exceeded the threshold just once over the past 12 months.

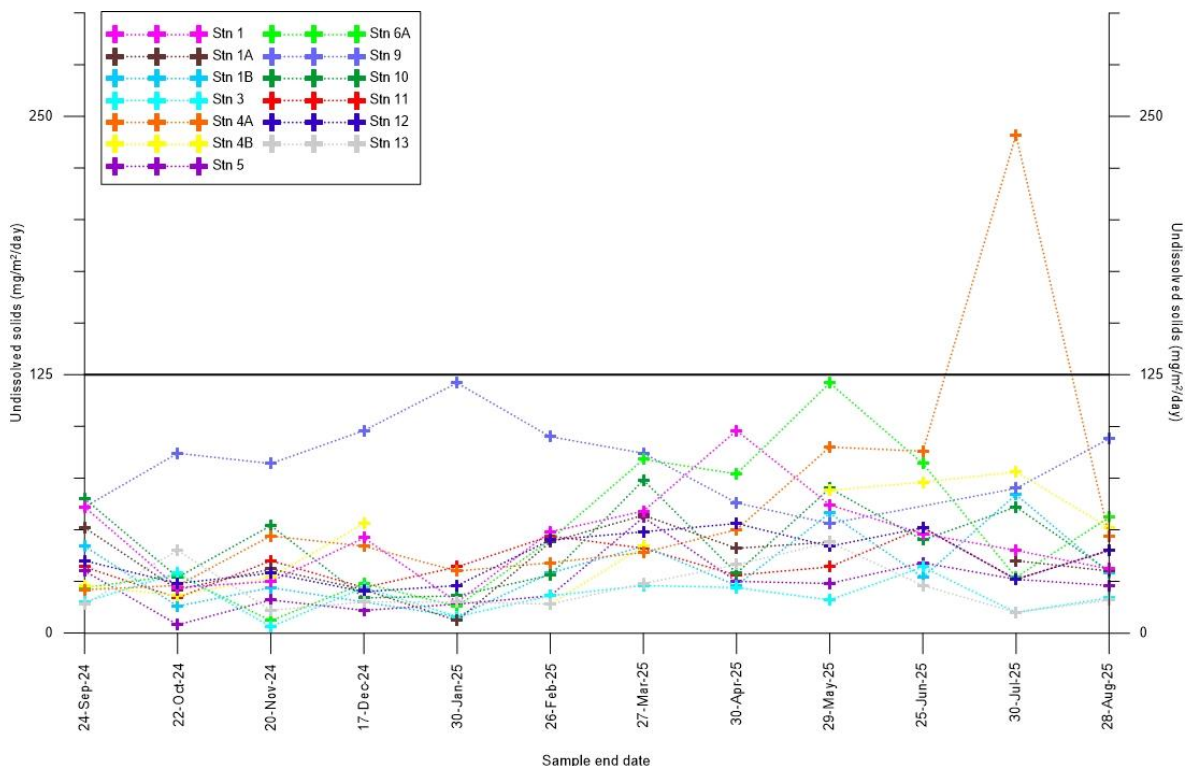


Figure 3.7: Dust deposition rates per sampling location over time (past 12 months)

3.3.2 Directional dust monitoring summary

The directional dust data for 30 July – 28 August 2025 are summarised in Table 3.3, and are presented graphically in Figure 3.8. As with deposited dust, the DMMP sets out a site-wide directional dust threshold. For directional dust soiling, 0.5 % Effective Area Coverage (EAC) per day is a trigger limit for investigation to identify the likely dust source/s, again taking account of the direction. Table 3.3 and Figure 3.8 show that during 30 July – 28 August 2025, all stations recorded Very Low dust flux from all directions, except for Stn 9 and Stn 6A which recorded up to Low from onsite directions.

Table 3.3: Summary of directional dust soiling, 30 July 2025 – 28 August 2025

Directional dust soiling (%EAC/day) by direction (°)										
This month report start date:		30-Jul-25								
This month report end date:		28-Aug-25								
Receptor location	Nearest / appropriate dust monitoring point		Direction (°)							
			0	45	90	135	180	225	270	315
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	Reported value	0	0.1	0	0	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	Reported value	0	0.1	0.1	0	0	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	Reported value	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Mill Farm; Quorn House	Stn 3	Reported value	0	0.1	0.1	0.1	0.1	0	0	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Woodside Farm, Leicester Road	Stn 4A	Reported value	0	0	0	0	0	0.1	0.1	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	Reported value	0	0.1	0.1	0.1	0.1	0.1	0	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Bond Lane; Crown Lane	Stn 5	Reported value	0	0	0	0	0	0	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	Reported value	0	0.1	0.2	0	0	0.1	0.1	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Low	Very Low	Very Low	Very Low	Very Low	Very Low
Hawcliffe Road	Stn 9	Reported value	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	Very Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	Reported value	0.1	0.1	0	0	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	Reported value	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	Reported value	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn House Park	Stn 13	Reported value	0	0	0	0.1	0	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of directional dust soiling derived from Beaman and Kingsbury, 1981

^c Direction/s not determined for daily EAC below 0.1%/day (very low soiling)

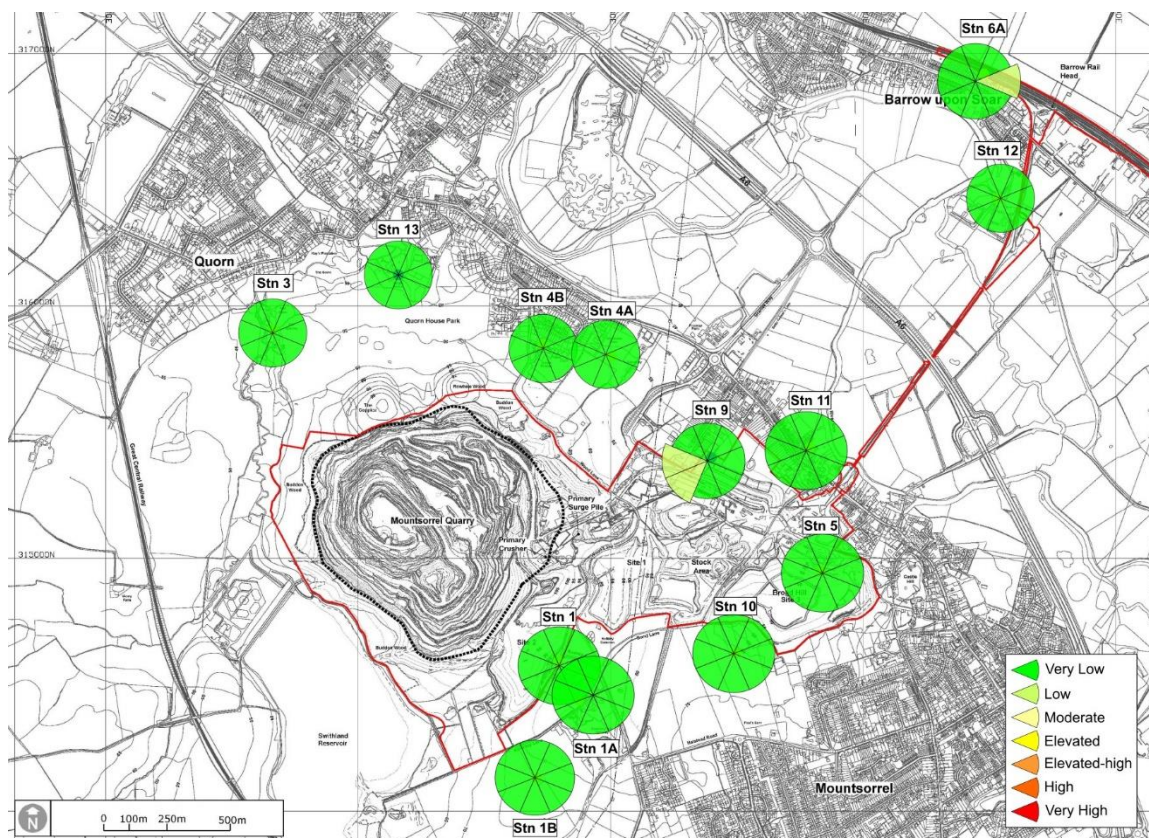


Figure 3.8: Directional dust soiling rose diagrams, 30 July – 28 August 2025

Table 3.4 shows that the average directional soiling rates have been at Very Low levels at most monitoring locations, for most directions, over the past year. Low average directional dust flux levels were recorded from the southwest and west at Stn 9, and from the east at Stn 6A.

Table 3.4: Running average directional dust soiling (past 12 months)

Receptor location	Nearest / appropriate dust monitoring point		Direction (°)							
			0	45	90	135	180	225	270	315
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	Average value	0.1	0.1	0.1	0	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	Average value	0.1	0.1	0.1	0	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	Average value	0.1	0	0	0	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Mill Farm; Quorn House	Stn 3	Average value	0	0.1	0.1	0.1	0.1	0	0	0
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Woodside Farm, Leicester Road	Stn 4A	Average value	0	0.1	0.1	0	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	Average value	0	0.1	0.1	0.1	0.1	0.1	0	0
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Bond Lane; Crown Lane	Stn 5	Average value	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	Average value	0.1	0.1	0.2	0.1	0	0.2	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Low	Very Low	Very Low	Low	Very Low	Very Low
Hawcliffe Road	Stn 9	Average value	0.1	0.1	0.1	0.1	0	0.2	0.2	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	Very Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	Average value	0.1	0.1	0	0	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	Average value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	Average value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn House Park	Stn 13	Average value	0	0	0.1	0	0	0.1	0	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of directional dust soiling derived from Beaman and Kingsbury, 1981

^c Direction/s not determined for daily EAC below 0.1%/day (very low soiling)

4 Complaints

During August 2025, it is understood that five complaints were received by the quarry. These were investigated in accordance with the procedure outlined in the DMMP.

Appendix A: Off-site PM₁₀ monitoring (CBC and AURN)

The daily average PM₁₀ concentrations recorded by the CBC Zephyr are presented below in Figure A.1, alongside similar data from the Defra Automatic Urban and Rural Network (AURN) station in Leicester University³.

For the monitoring period 30 July – 28 August 2025, the CBC Zephyr achieved a 97% data capture rate for PM₁₀, and a 100 % data collection rate recorded from the Leicester AURN station.

For the available data the average daily PM₁₀ concentration for this monitoring period at CBC Zephyr was 9.2 µg/m³. At the Leicester AURN the average daily PM₁₀ concentration for the same period was 11.0 µg/m³.

During this monitoring period, the average daily PM₁₀ concentrations recorded from the onsite monitors were higher than the CBC Zephyr and Leicester AURN, with 18.70 µg/m³ at Hawcliffe Road and 12.97 µg/m³ at Quorn House.

Between 30 July – 28 August there were no recorded instances where the daily average PM₁₀ concentrations exceeded 50 µg/m³ at the CBC Zephyr or at the Leicester AURN.

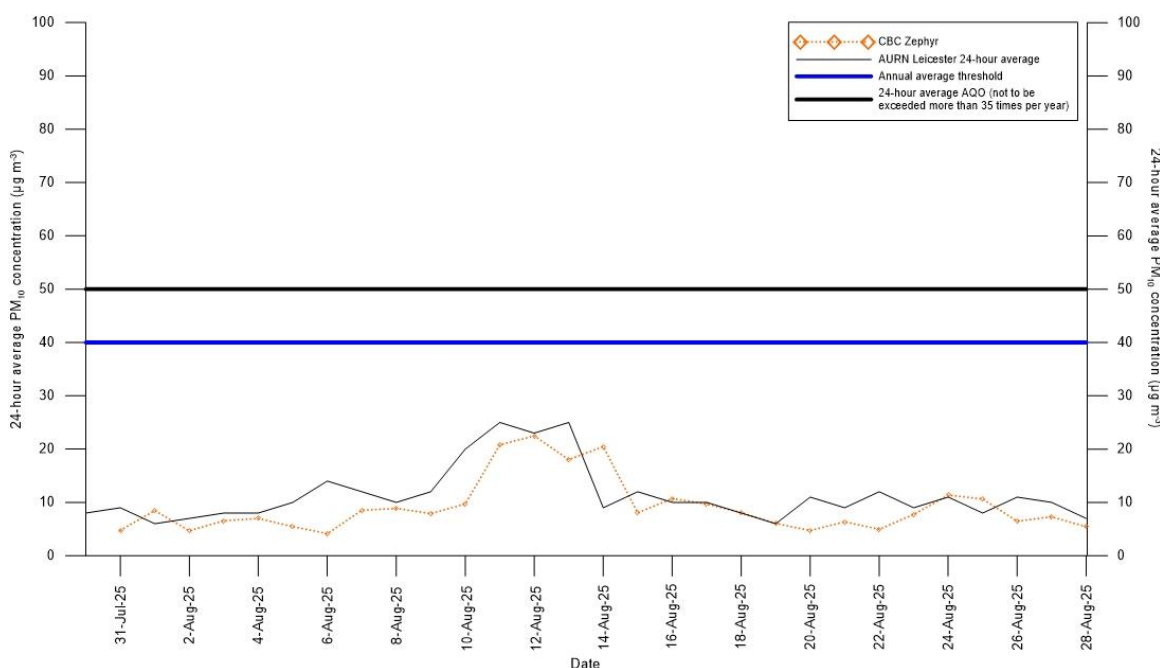


Figure A.1: Daily average PM₁₀ concentration, CBC Zephyr and Leicester AURN, 30 July – 28 August 2025

³ <http://uk-air.defra.gov.uk/networks/network-info?view=aurn>

Appendix B: Off-site PM_{2.5} monitoring (CBC and AURN)

The daily average PM_{2.5} concentrations recorded by the CBC Zephyr are presented below in Figure B.1, alongside similar data from the Defra Automatic Urban and Rural Network (AURN) station in Leicester University.

For the monitoring period 30 July – 28 August 2025, there was a 97 % data collection rate of PM_{2.5} readings at the CBC Zephyr, and a 100 % data collection rate recorded from the Leicester AURN station. For the available data the average daily PM_{2.5} concentration for this monitoring period at CBC Zephyr was 6.5 µg/m³. At the Leicester AURN the average daily PM_{2.5} concentration was 6.0 µg/m³ for the same period.

Onsite PM_{2.5} concentrations were slightly higher at Hawcliffe Road (7.8 µg/m³) and lower at Quorn House (5.0 µg/m³) when compared to off-site averages of 6.5 µg/m³ at CBC Zephyr and 6.0 µg/m³ at Leicester AURN. This may be due to localised emission sources and site-specific conditions.

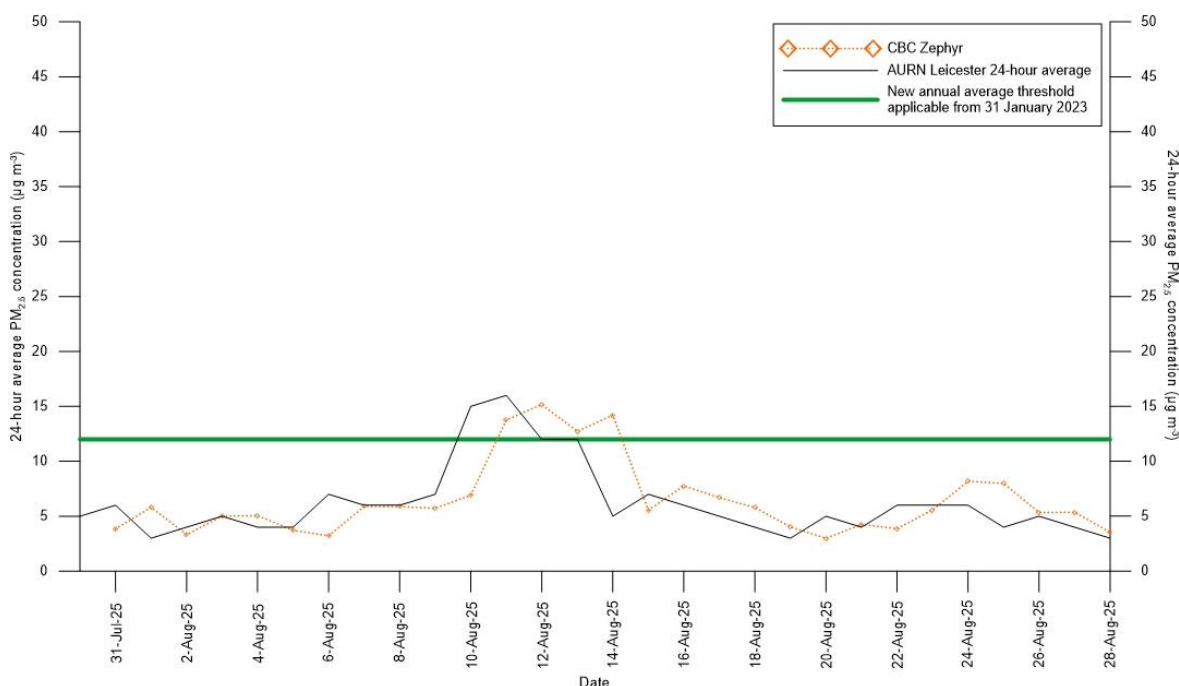


Figure B.1: Daily average PM_{2.5} concentrations, CBC Zephyr and Leicester AURN, 30 July – 28 August 2025

Appendix C: Off-site PM₁₀ and PM_{2.5} Annual Summary

Table C.4.1: Average PM₁₀ concentrations at CBC Zephyr and Leicester AURN for 12 months leading up to 28 August 2025.

	AURN Leicester University	CBC Zephyr
Valid data capture	100 %	89 %
Period average PM ₁₀ concentration	13.2 µg/m ³	14.6 µg/m ³
Percentage of annual AQO (40 µg/m ³)	32.9 %	36.5 %
No. exceedances of daily AQO (50 µg/m ³ , not to be exceeded more than 35 times per calendar year)	1	3

Table C.4.2: Average PM_{2.5} concentrations at CBC Zephyr and Leicester AURN for 12 months leading up to 28 August 2025.

	AURN Leicester University	CBC Zephyr
Valid data capture	100 %	89 %
Period average PM _{2.5} concentration	8.5 µg/m ³	9.6 µg/m ³
Percentage of interim target (12 µg/m ³ as an annual average)	70.8 %	80.0 %



Dust, Particulate Matter and Weather Monitoring Report: September 2025

Mountsorrel Quarry

November, 2025

Tarmac



Document Control Sheet

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Report Prepared By

DustScanAQ
Unit 8 Nimrod
De Havilland Way
Witney
Oxon
OX29 0YG
United Kingdom
Tel: + 44 (0) 1608 810110
E-mail: info@dustscan.co.uk
Web: www.DustScan.co.uk

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1 Introduction

Mountsorrel Quarry has a comprehensive Dust Management and Monitoring Plan (DMMP). The DMMP was developed in 2011 and is subject to regular review and revision, in consultation between Tarmac and the local regulators (Leicestershire County Council (LCC) and Charnwood Borough Council (CBC)).

The DMMP is enacted through the quarry Site Improvement Plan (SIP). The SIP sets out a programme of actions to reduce the environmental impact of specific areas of the site operation, and is updated regularly by quarry management, with support from DustScanAQ through regular site visits and quarterly reviews with LCC and CBC.

Section 7.5 of the DMMP requires that a monthly summary and review of dust and particulate matter monitoring is prepared and circulated with LCC, CBC and the Environment Agency.

This report details the results of dust, particulate matter and weather monitoring around Mountsorrel Quarry during the period 28 August – 25 September 2025.

1.1 Report scope

The intention of this report is to summarise dust and particulate matter monitoring results for the given period and compare them against site-specific alert limits and thresholds. This report also details the results of any investigation carried out into elevated dust or particulate matter levels, as prompted by an exceedance of alert limits or thresholds.

1.2 Dust definitions

'Dust' is generally regarded as particulate matter up to 75 µm (micron) diameter and can be considered in two categories. Fine dust, essentially particles up to 10 µm, is commonly referred to as PM₁₀ and is measured to agreed standards and forms part of the national Air Quality Objectives (AQO). The AQO for PM₁₀ is currently 50 µg/m³ for the 24-hour mean, not to be exceeded 35 times per year and 40 µg/m³ for the annual mean. Particles up to 2.5 µm in diameter are referred to as PM_{2.5}. The interim target for PM_{2.5} is 12 µg/m³ for the annual mean (to be achieved by 2028), whilst the legal AQO for PM_{2.5} is 10 µg/m³ for the annual mean (to be achieved by 2040) as per The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023¹.

It may be noted that the above Regulations relate to average particle concentrations in Local Authority districts thus do not apply to any specific industrial or other operation, such as Mountsorrel Quarry, and are included for reference.

¹ Statutory Instrument. (2023), 'The Environmental Targets (Fine Particulate Matter) (England) Regulations', No. 96. King's Printer of Acts of Parliament

Coarser dust (essentially particles greater than 10 µm) is generally regarded as 'nuisance dust' and can be associated with annoyance, although there are no official standards (such as AQO) for dust annoyance.

2 Sampler locations

As shown in Figure 2.1 and Table 2.1, dust, particulate matter and weather conditions are measured at a number of locations around site and the surrounding area:

- Directional and depositional dust: currently monitored at 13 locations;
- Particulate matter: currently monitored at two locations;
- Weather conditions: currently monitored at one location.

The majority of the dust samplers around Mountsorrel Quarry comprise the 'Frisbee-type' deposition gauge combined with an adhesive 'sticky pad' directional gauge. These samplers are used to monitor 'nuisance' dust and samples from these instruments are collected on a monthly basis.

For particulate matter, Turnkey Osiris samplers are located at Stn 9 (Hawcliffe Road) and at Stn 13 (Quorn House). These recognised and certificated 'indicative' real-time devices are connected to their own wind vane and anemometer and provide near-instantaneous directional PM₁₀, PM_{2.5} and PM₁ data directly to the quarry management team.

A weather station is located at the site offices off Wood Lane and collects a range of weather parameters over fifteen-minute intervals. Data from the weather station are available to the quarry management by means of a dedicated modem connection to the internet. Due to a malfunctioning battery, the station had been offline from 17 April; however, as of 08 October the device is now fully functional again.

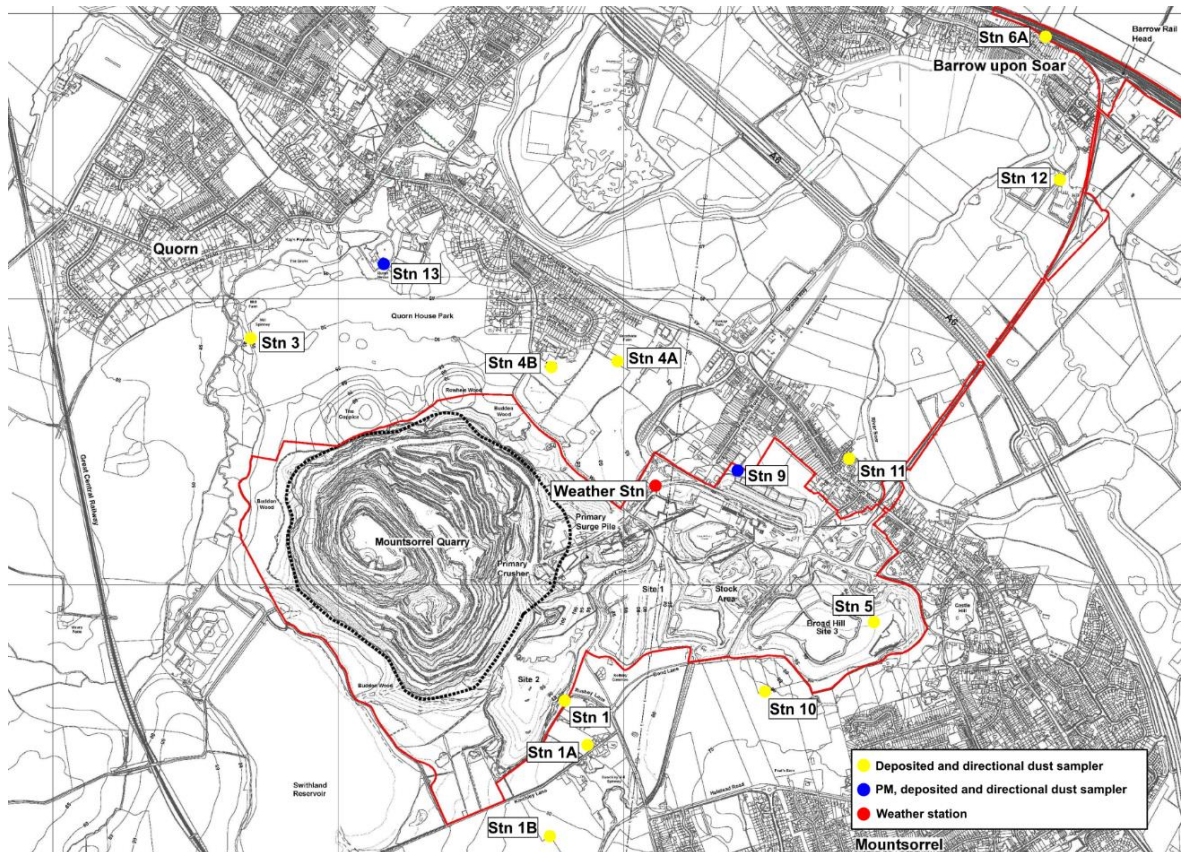


Figure 2.1: Particulate matter, dust and weather monitoring locations, Mountsorrel Quarry

Table 2.1: Weather, particulate matter and dust monitoring locations, Mountsorrel Quarry

Sampler reference	Easting	Northing	Locality monitored
Stn 1	456787	314586	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 1A	456882	314449	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 1B	456745	314112	Swithland Lane; Rushey Lane; Kinchley Lane
Stn 3	455685	315844	Mill Farm; Quorn House
Stn 4A	456966	315787	Woodside Farm; Leicester Road
Stn 4B	456732	315767	Quorn Grange, Unitt Road, Northage Close, Quorn Park
Stn 5	457872	314875	Bond Lane; Crown Lane
Stn 6A	458655	316785	Sileby Road; Huston Close; Sileby Road (commercial)
Stn 9 (inc. PM)	457374	315398	Hawcliffe Road
Stn 10	457509	314627	Glebe Close; Halstead Road (south); Halstead Road (north)

Sampler reference	Easting	Northing	Locality monitored
Stn 11	457835	315504	Loughborough Road; River Soar (marina / caravan park)
Stn 12	458551	316457	Meadow Farm Marina and Caravan Park
Stn 13 (incl. PM)	456154	316087	Northage Close, Meeting Street
Weather Station	457126	315376	Wood Lane Site Offices

Charnwood Borough Council (CBC) is responsible for the monitoring of air quality within the borough and prepares Air Quality Annual Status Reports (ASRs) for submission to Defra. It operates a Zephyr air quality monitor which is located within the Leicestershire County Council (LCC) depot at the southern end of Hawcliffe Road, in close proximity to the Osiris device at Stn 9. This device measures a number of pollutants including PM₁₀ and PM_{2.5}. The purpose of this monitoring is for CBC to compare measured concentrations against the relevant AQOs for these pollutants.

For additional context, the latest PM₁₀ and PM_{2.5} monitoring data from CBC are summarised in Appendix A and Appendix B, whilst a summary of the latest 12 months of data are provided in Appendix C for reference.

2.1 Alert thresholds and response procedures

To help the site reduce its impact on the surrounding area, a number of alert thresholds have been calculated, as outlined in Table 2.2.

Table 2.2: Alert thresholds

Pollutant	Threshold	Averaging period	Applies to
PM ₁₀	125 µg/m ³	15 minutes	Stn 9 (Hawcliffe Road), Stn 13 (Quorn House)
Deposited dust	125 mg/m ² /day	1 month	All deposited dust monitoring locations

For particulate matter (PM₁₀) an alert threshold of 125 µg/m³ for the 15-minute average has been in use for several years as a trigger limit for investigation to identify potential on-site issues.

Analysis of data from the site has demonstrated that PM₁₀ provides a stronger 'site signal' than PM_{2.5}. The purpose of alerts is to provide site managers with information regarding elevated PM₁₀ concentrations, allowing them to investigate and make operational changes if necessary. An alert threshold has therefore not been set for PM_{2.5} to prevent duplication.

PM₁₀ and PM_{2.5} concentrations recorded by CBC at the southern end of Hawcliffe Road and by Defra through the Automatic Urban and Rural Network (AURN) at Leicester University are presented in Appendix A and Appendix B respectively. Data from both locations have been compared against relevant Air Quality Objectives (AQOs) for PM₁₀ and PM_{2.5}.

For deposited dust, the DMMP sets out a site-wide deposited dust threshold of 125 mg/m²/day 'undissolved solids' as a trigger limit for investigation to identify the potential dust source/s, taking account of the directional data.

3 Results

3.1 Weather monitoring

Weather conditions can have a significant effect on the potential for dust propagation from a mineral site. Of particular importance are wind speeds, wind direction, and precipitation. Dust can be carried from a source towards receptors (such as nearby homes and other businesses) according to the strength and direction of wind. Precipitation is recognised to suppress dust and 0.2 mm antecedent rainfall is considered sufficient to suppress windblown dust for a number of hours.

The key weather data which might affect dust propagation (wind speed, wind direction, total daily precipitation and average daily temperature) for this reporting period are summarised in Figure 3.1 and Figure 3.2.

As mentioned in Section 2, due to a technical issue with the on-site weather station, site-specific weather data were not available for this monitoring period. Temperature and precipitation data from a nearby Met Office WOW station in Mountsorrel² (approx. 1.9 km southeast) was used to supplement the missing data. Wind data was also sourced from the same Met Office WOW station to ensure consistency across all weather data for this monitoring period.

This monitoring period was generally mild to warm, with a slight decrease in temperature as the month progressed. The maximum daily temperature was 19.3 °C, recorded on 07 September 2025 and the minimum daily temperature was 10.0 °C, recorded on 22 September 2025. Precipitation was recorded on just 34 % of days during this period, and there were a number of extended dry periods throughout; this combination of warm temperatures and lack of precipitation may have increased the risk of dust propagation during this period.

As seen in Figure 3.2, winds were mostly calm to moderate in speed (>0.5 – 6 m/s) during this monitoring period, and were predominantly recorded from the south, south-southwest and south-southeast. This may have resulted in an increased potential for dust propagation to the north, north-northeast and north-northwest during this monitoring period.

² <https://wow.metoffice.gov.uk/observations/details/20250911wg3ez3hxnwe9bk1dxusa4748xr>

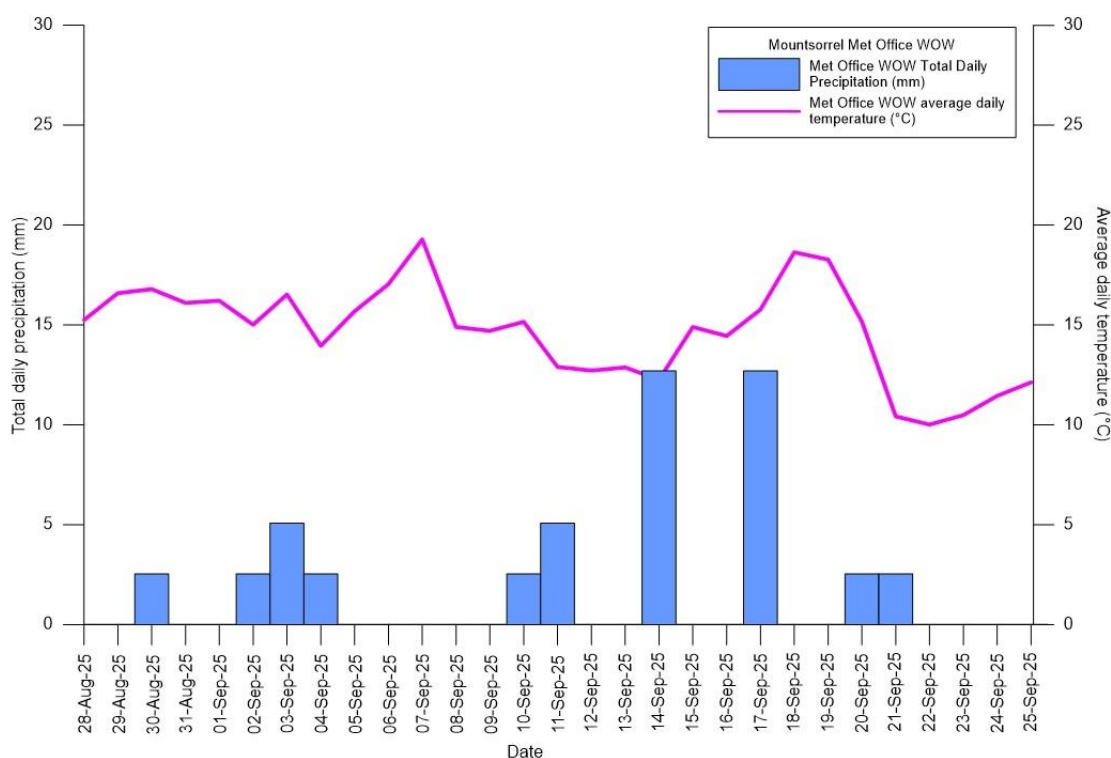


Figure 3.1: Total daily precipitation and average daily temperature, Mountsorrel Met Office WOW, 28 August – 25 September 2025

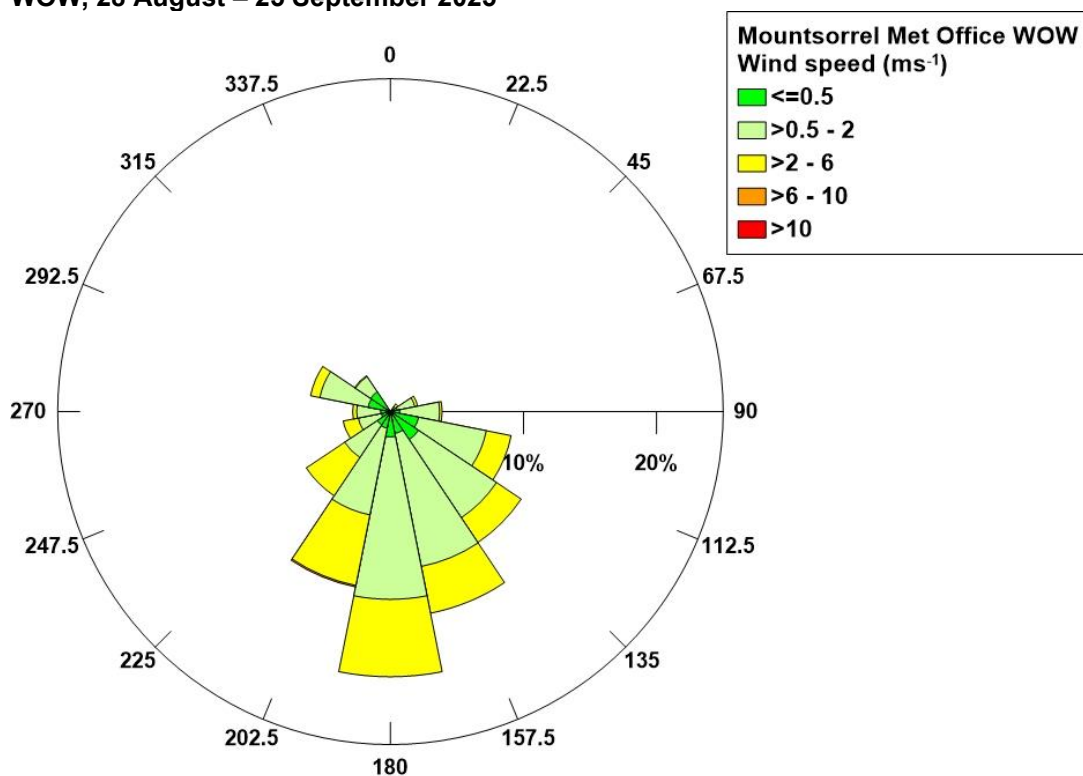


Figure 3.2: Wind rose, Mountsorrel Met Office WOW, 28 August – 25 September 2025.

3.2 Particulate matter

3.2.1 PM₁₀

The available 15-minute data from the period of review are presented for both monitoring locations in Figure 3.4 and Figure 3.4. The red line denotes the site trigger level (125 µg/m³ over the 15-minute average), whilst the dashed black line denotes the average concentration recorded over this period.

Additional PM₁₀ monitoring data (collected by CBC and the Defra AURN monitoring network) are provided in Appendix A.

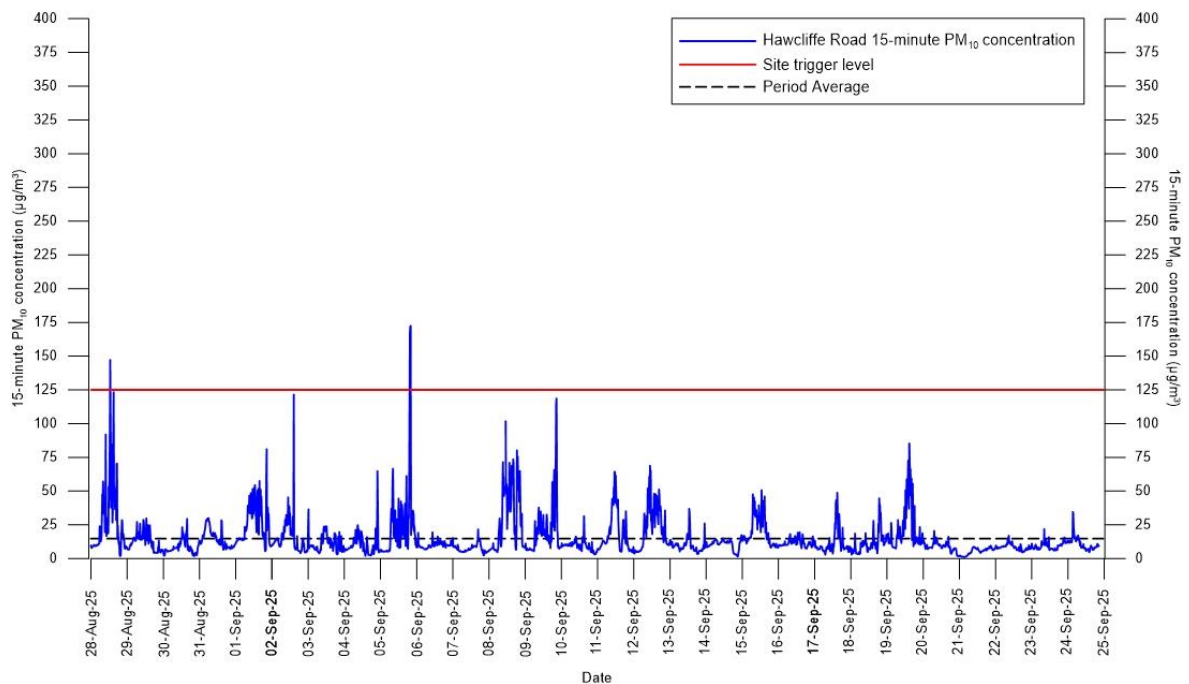


Figure 3.3: 15-minute mean PM₁₀ concentration, Hawcliffe Road, 28 August – 25 September 2025

Figure 3.3 indicates that the period average concentration at the Hawcliffe Road sampler for this period was 14.8 µg/m³, with the alert threshold being exceeded on two occasions: in late August and early September. Details of the exceedances are provided in Table 3.1.

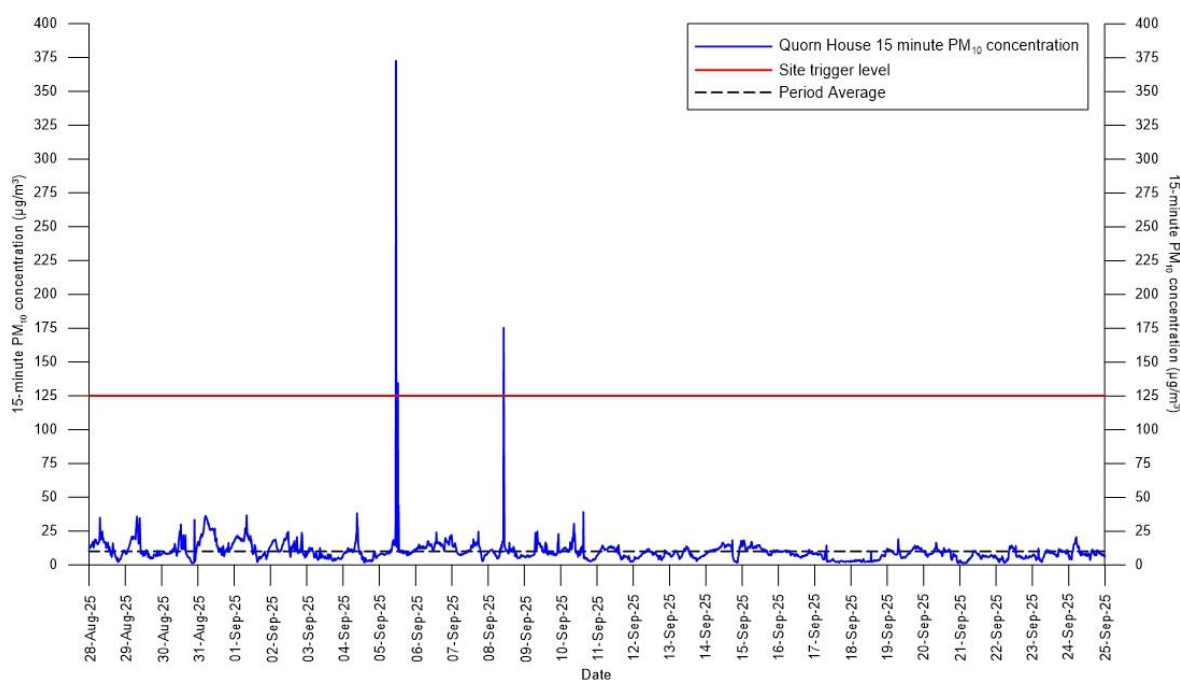


Figure 3.4: 15-minute mean PM₁₀ concentration, Quorn House, 28 August – 25 September 2025

At Quorn house there were two exceedances of the PM₁₀ site trigger, and the period average was 10.1 µg/m³. Details of the exceedances are provided in Table 3.1.

During this review period, trigger emails alerting staff to high PM₁₀ levels were sent on two days from the Hawcliffe Road Osiris and two days from the Quorn House Osiris. Details of the corresponding causes and investigations are provided in Table 3.1.

Table 3.1: Email alert responses, between 28 August – 25 September 2025 (using the trigger threshold, 125 µg/m³ for the 15-minute average)

Date of alert	Monitor	Details	Possible cause and investigation
28/08/2025	Hawcliffe Road	Exceedance recorded from the east-southeast at midday.	Investigation carried out and no issues identified. Data suggests exceedance was coming from an offsite direction.
05/09/2025	Hawcliffe Road	Exceedances recorded from the south-southeast in the evening.	Site investigation carried out. Phase 1 & 2 were not producing at the time. No issues identified on site.
05/09/2025	Quorn House	Exceedances from the west-southwest and west-northwest in the late morning/midday.	Alert caused by gardening and landscaping activities around Quorn House.
08/09/2025	Quorn House	Exceedance from the south in the mid-morning.	Exceedance caused by monitor maintenance.

3.2.2 PM_{2.5}

The results of PM_{2.5} monitoring at Hawcliffe Road and Quorn House are presented in Figure 3.5 and Figure 3.6. The dashed black line denotes the average concentration recorded over this period.

Additional PM_{2.5} monitoring data (collected by CBC and the Defra AURN monitoring network) are provided in Appendix B.

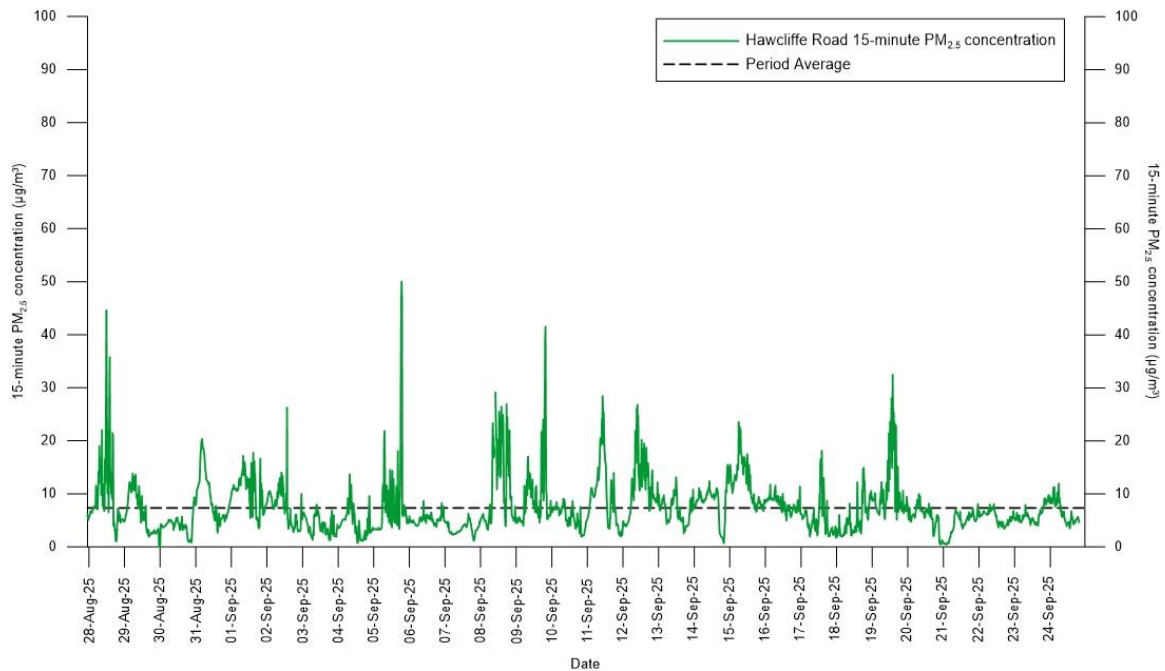


Figure 3.5: 15-minute mean PM_{2.5} concentration, Hawcliffe Road, 28 August – 25 September 2025

At Hawcliffe Road, the period average concentration was 7.3 µg/m³, whilst at Quorn House, the period average was 4.5 µg/m³. In general, PM_{2.5} concentrations recorded at Hawcliffe Road are more variable than at Quorn House (as shown by the increased frequency of spikes in the dataset); this is most likely due to its location on the site boundary and in a more built-up environment when compared to the rural location of Quorn House.

For this period, 50% of PM₁₀ recorded at Hawcliffe Road comprised PM_{2.5}, whilst it made up 45% at Quorn House.

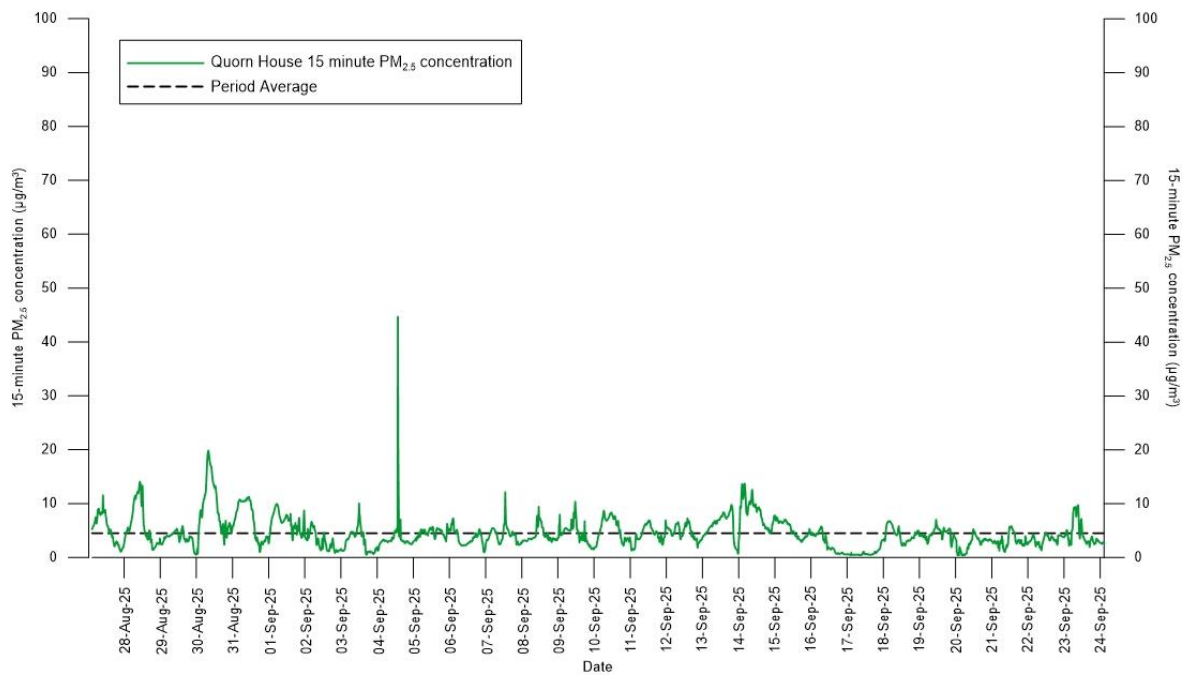


Figure 3.6: 15-minute mean PM_{2.5} concentration, Quorn House, 28 August – 25 September 2025

3.3 Visible dust

3.3.1 Deposited dust monitoring summary

The deposited dust data for 28 August – 25 September 2025 are summarised in Table 3.2. As outlined above, there is a site-wide threshold for investigation to identify the potential dust source/s, taking account of the directional data. Table 3.2 shows that, for the available data, deposited dust levels during 28 August – 25 September 2025 were all within the site-specific threshold for all stations.

Table 3.2: Summary of deposited dust (undissolved solids), 28 August – 25 September 2025

Undissolved solids (mg/m ² /day)				
This month report start date:		28-Aug-25		
This month report end date:		25-Sep-25		
Receptor location	Nearest / appropriate dust monitoring point	Reported value	Trigger: $\geq 125^a$	Magnitude ^b
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	22	No	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	17	No	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	14	No	Very Low
Mill Farm; Quorn House	Stn 3	15	No	Very Low
Woodside Farm, Leicester Road	Stn 4A	9	No	Very Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	42	No	Very Low
Bond Lane; Crown Lane	Stn 5	13	No	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	27	No	Very Low
Hawcliffe Road	Stn 9	73	No	Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	36	No	Very Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	27	No	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	20	No	Very Low
Quorn House Park	Stn 13	13	No	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015
^b Magnitude of mass deposition rate assessed against typical rate for semi-rural areas (30 - 80 mg/m²/day)

Regarding dust deposition over time, the rates across the sampling area have varied considerably. Trends in dust deposition rates (as undissolved solids) for the previous 12 months, together with the site-wide dust threshold are illustrated in Figure 3.7.

In general, as would be expected, dust deposition rates are typically lower in winter months than in summer months. This trend is clearly seen for most monitoring points in Figure 3.7, with some exceptions. Dust deposition rates have been consistently below the 'trigger limit' at all sampling locations, with the exception of Stn 4A and Stn 9, which have each exceeded the threshold just once over the past 12 months.

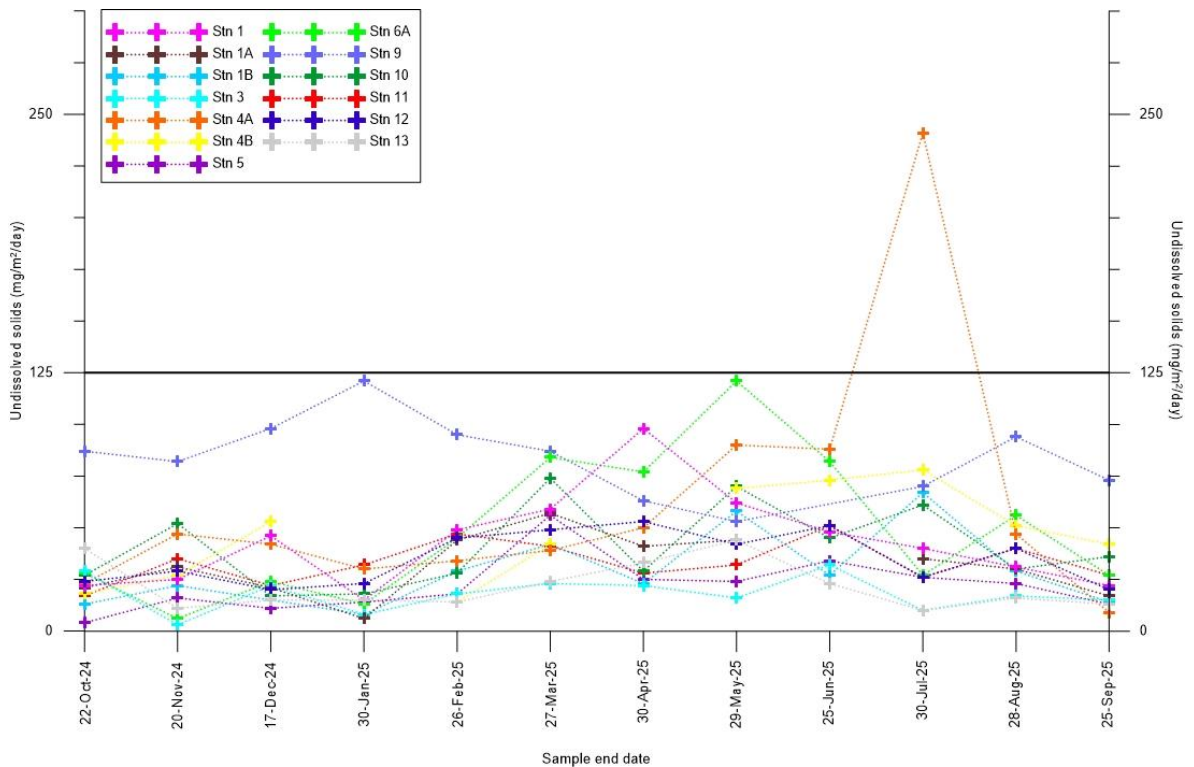


Figure 3.7: Dust deposition rates per sampling location over time (past 12 months)

3.3.2 Directional dust monitoring summary

The directional dust data for 28 August – 25 September 2025 are summarised in Table 3.3 and are presented graphically in Figure 3.8. As with deposited dust, the DMMP sets out a site-wide directional dust threshold. For directional dust soiling, 0.5 % Effective Area Coverage (EAC) per day is a trigger limit for investigation to identify the likely dust source/s, again taking account of the direction. Table 3.3 and Figure 3.8 show that during 28 August – 25 September 2025, all stations recorded Very Low and Low dust flux from all directions, except for Stn 9 and Stn 4A which recorded up to Moderate from onsite directions.

Table 3.3: Summary of directional dust soiling, 28 August – 25 September 2025

Directional dust soiling (%EAC/day) by direction (°)										
This month report start date:		28-Aug-25								
This month report end date:		25-Sep-25								
Receptor location	Nearest / appropriate dust monitoring point		Direction (°)							
			0	45	90	135	180	225	270	315
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	Reported value	0	0	0	0	0	0.2	0.1	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	Reported value	0.1	0	0	0	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	Reported value	0	0	0	0.1	0.2	0.1	0.1	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very Low	Very Low
Mill Farm; Quorn House	Stn 3	Reported value	0	0.1	0	0	0.1	0.1	0	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Woodside Farm, Leicester Road	Stn 4A	Reported value	0	0	0.1	0.2	0.2	0.4	0.2	0.2
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Low	Low	Moderate	Low	Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	Reported value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Bond Lane; Crown Lane	Stn 5	Reported value	0	0	0	0.1	0.1	0.1	0.1	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	Reported value	0	0	0.1	0	0.1	0.2	0.1	0
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very Low
Hawcliffe Road	Stn 9	Reported value	0.1	0.1	0.1	0.1	0	0.4	0.3	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Low	Very Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	Reported value	0.1	0	0	0.1	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	Reported value	0	0	0	0.1	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	Reported value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn House Park	Stn 13	Reported value	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
		Trigger: $\geq 0.5^a$	No	No	No	No	No	No	No	No
		Magnitude ^b	Very Low	Very Low	Very Low	Low	Very Low	Very Low	Very Low	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of directional dust soiling derived from Beaman and Kingsbury, 1981

^c Direction/s not determined for daily EAC below 0.1%/day (very low soiling)



Figure 3.8: Directional dust soiling rose diagrams, 28 August – 25 September 2025

Table 3.4 shows that the average directional soiling rates have been at Very Low levels at most monitoring locations, for most directions, over the past year. Low average directional dust flux levels were recorded from the southwest and west at Stn 9, and from the east at Stn 6A.

Table 3.4: Running average directional dust soiling (past 12 months)

Receptor location	Nearest / appropriate dust monitoring point		Direction (°)							
			0	45	90	135	180	225	270	315
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1	Average value	0	0.1	0.1	0	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1A	Average value	0.1	0.1	0.1	0	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Swithland Lane; Rushey Lane; Kinchley Lane	Stn 1B	Average value	0.1	0	0	0	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Mill Farm; Quorn House	Stn 3	Average value	0	0.1	0.1	0.1	0.1	0.1	0	0
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Woodside Farm, Leicester Road	Stn 4A	Average value	0	0.1	0.1	0.1	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn Grange, Unitt Road, Northage Close, Quorn Park	Stn 4B	Average value	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Bond Lane; Crown Lane	Stn 5	Average value	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Sileby Road; Huston Close; Sileby Road (commercial)	Stn 6A	Average value	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Low	Very Low	Very Low	Low	Very Low	Very Low
Hawcliffe Road	Stn 9	Average value	0.1	0.1	0.1	0.1	0	0.2	0.2	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	Very Low
Glebe Close; Halstead Road (south); Halstead Road (north)	Stn 10	Average value	0.1	0	0	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Loughborough Road; River Soar (marina / caravan park)	Stn 11	Average value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Meadow Farm Marina and Caravan Park	Stn 12	Average value	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Quorn House Park	Stn 13	Average value	0.1	0	0.1	0.1	0	0.1	0.1	0.1
		Magnitude ^b	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low

^a Trigger mass deposition and Effective Area Coverage rates as in Section 7.3, ZLFMS-AG008 Dust Management and Monitoring Plan (Updated), 2015

^b Magnitude of directional dust soiling derived from Beaman and Kingsbury, 1981

^c Direction/s not determined for daily EAC below 0.1%/day (very low soiling)

4 Complaints

During September 2025, it is understood that one complaint was received by the quarry. These were investigated in accordance with the procedure outlined in the DMMP.

Appendix A: Off-site PM₁₀ monitoring (CBC and AURN)

The daily average PM₁₀ concentrations recorded by the CBC Zephyr are presented below in Figure A.1, alongside similar data from the Defra Automatic Urban and Rural Network (AURN) station in Leicester University³.

For the monitoring period 28 August – 25 September 2025, the CBC Zephyr and Leicester AURN station both had a data capture of 100%.

For the available data, the average daily PM₁₀ concentration for this monitoring period at the CBC Zephyr (Hawcliffe Road) was 5.5 µg/m³. At the Leicester AURN the average daily PM₁₀ concentration was 7 µg/m³ for the monitoring period.

During this monitoring period, the average daily PM₁₀ concentrations recorded from the onsite monitors were higher than the CBC Zephyr and Leicester AURN, with 14.3 µg/m³ at Hawcliffe Road and 10.1 µg/m³ at Quorn House.

Between 28 August – 25 September 2025 there were no recorded instances where the daily average PM₁₀ concentrations exceeded 50 µg/m³ at the CBC Zephyr or at the Leicester AURN.

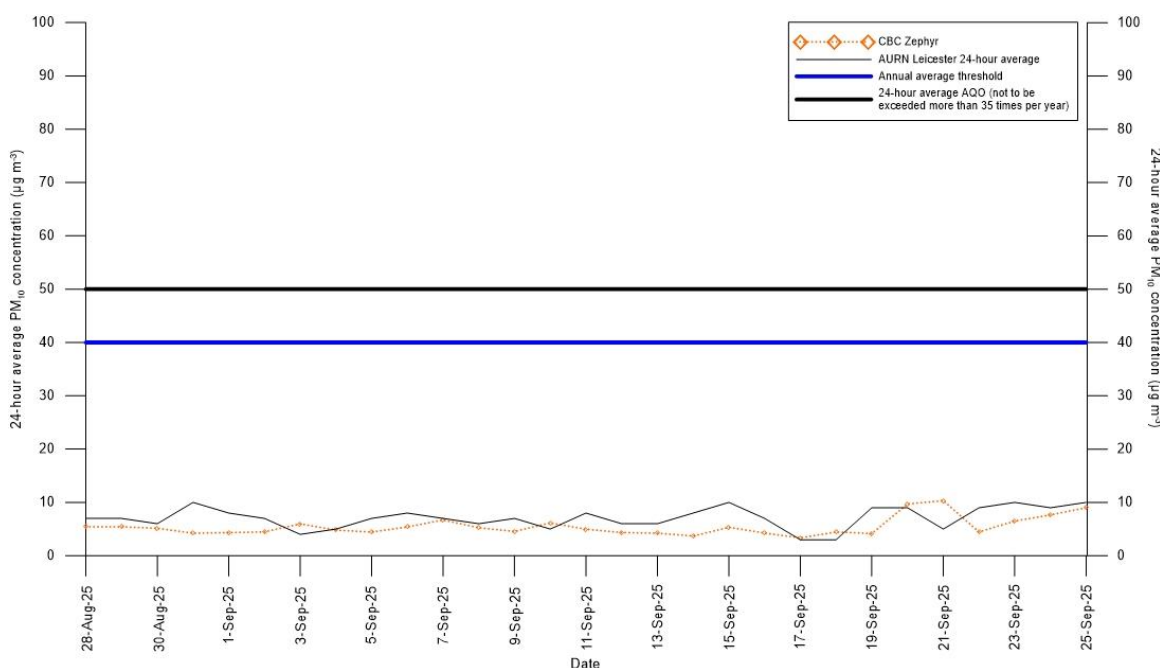


Figure A.1: Daily average PM₁₀ concentration, CBC Zephyr and Leicester AURN, 28 August – 25 September 2025

³ <http://uk-air.defra.gov.uk/networks/network-info?view=aurn>

Appendix B: Off-site PM_{2.5} monitoring (CBC and AURN)

The daily average PM_{2.5} concentrations recorded by the CBC Zephyr are presented below in Figure B.1, alongside similar data from the Defra Automatic Urban and Rural Network (AURN) station in Leicester University.

For the monitoring period 28 August – 25 September 2025, there was 100 % data capture recorded from the CBC Zephyr and Leicester AURN station. For the available data the average daily PM_{2.5} concentration for this monitoring period at the CBC Zephyr was 3.3 µg/m³. At the Leicester AURN the average daily PM_{2.5} concentration was 4 µg/m³ for the monitoring period.

Onsite PM_{2.5} concentrations were slightly higher at both Hawcliffe Road (7.3 µg/m³) and Quorn House (4.5 µg/m³) compared to off-site averages of 3.3 µg/m³ at CBC Zephyr and 4.0 µg/m³ at Leicester AURN, likely reflecting localised emission sources and site-specific conditions.

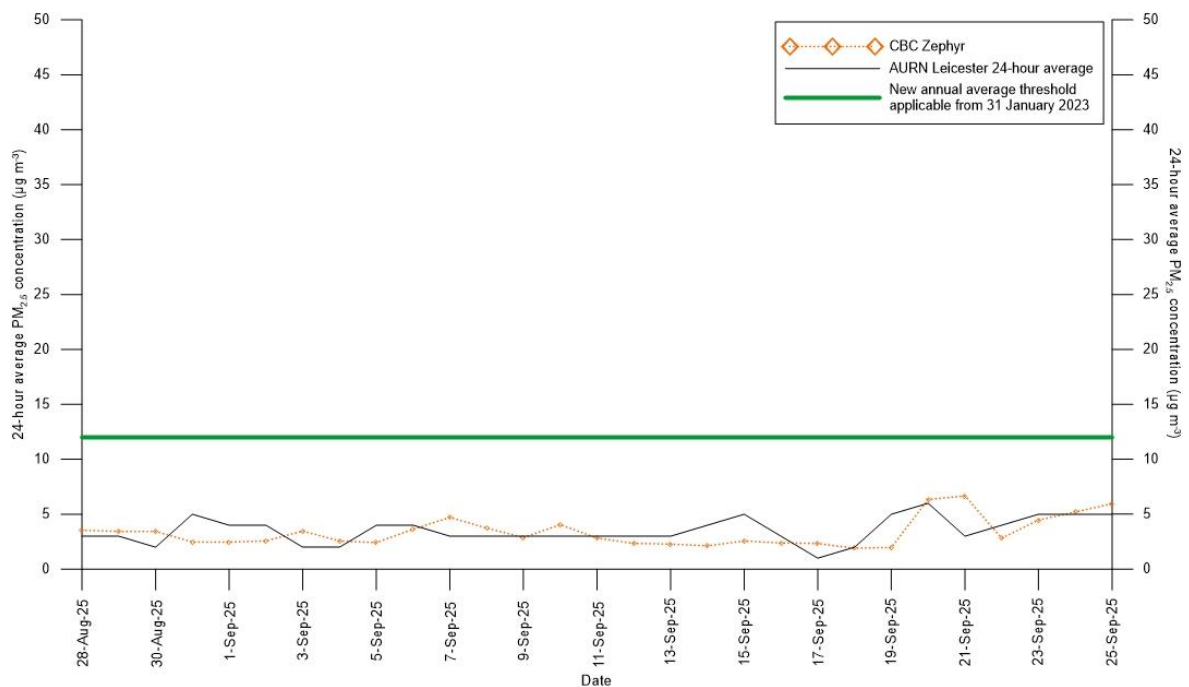


Figure B.1: Daily average PM_{2.5} concentrations, CBC Zephyr and Leicester AURN, 28 August – 25 September 2025

Appendix C: Off-site PM₁₀ and PM_{2.5} Annual Summary

Table C.4.1: Average PM₁₀ concentrations at CBC Zephyr and Leicester AURN for 12 months up to 25 September 2025.

	AURN Leicester University	CBC Zephyr
Valid data capture	100 %	89 %
Period average PM ₁₀ concentration	12.5 µg/m ³	13.7 µg/m ³
Percentage of annual AQO (40 µg/m ³)	31.3 %	34.2 %
No. exceedances of daily AQO (50 µg/m ³ , not to be exceeded more than 35 times per calendar year)	1	3

Table C.4.2: Average PM_{2.5} concentrations at CBC Zephyr and Leicester AURN for 12 months up to 25 September 2025.

	AURN Leicester University	CBC Zephyr
Valid data capture	100 %	89 %
Period average PM _{2.5} concentration	8.1 µg/m ³	9.0 µg/m ³
Percentage of interim target (12 µg/m ³ as an annual average)	67.5 %	75 %