



# SUMMARY MONITORING REPORT

## February 2025

<b>DATE:</b>	19 March 2025	<b>CONFIDENTIALITY:</b>	Restricted
<b>SUBJECT:</b>	Monthly Air Quality Monitoring Report – February 2025		
<b>PROJECT:</b>	NVCC	<b>AUTHOR:</b>	Sachin Kumar / Shruti Verma
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## INTRODUCTION

WSP has been commissioned by Sacyr UK Limited to continue the ambient air quality monitoring in the vicinity of the Approved Velindre Cancer Centre, Whitchurch Hospital, Park Road, Whitchurch, Cardiff, CF14 7XB. The ambient monitoring was originally set up on behalf of NHS Wales to meet Cardiff Councils (CC) Pre-commencement planning condition 11 in relation to the Temporary Construction Access Route (TCAR) for the Construction of the Approved Velindre Cancer Centre. The ambient monitoring is required to allow the continued use of the TCAR during the construction of the main cancer centre site which is being completed by Sacyr UK Limited.

For reference, Condition 11 (CC Reference: 20/01110/MJR) states that:

*“Prior to commencement of the development hereby approved details of an air monitoring unit and its location shall be submitted to and approved in writing with the Local Planning Authority. The monitoring unit shall be implemented in accordance with the approved details and remain operational until cessation of the development. Data from the air monitoring unit shall be provided to the Local Planning Authority on request.*

*Reason: To monitor air quality in accordance with Policy EN13 of the adopted Cardiff Local Plan (2006-2026).’*

During construction works there is the potential for air quality impacts from the generation of dust and particulate matter, which could lead to dust soiling and human health impacts at relevant sensitive receptors. There is also the potential for increases in pollutant emissions from construction vehicles using the local road network.

On behalf of Sacyr UK Limited, WSP is carrying out monitoring in the study area using Zephyr and DM11 Pro continuous monitors. The air quality monitoring within the study area is being undertaken to ensure that dust and vehicle exhaust emissions from construction traffic are monitored and effectively managed. This report provides a summary of the monitoring data for the month of February 2025.

Historically, concentrations of particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and Nitrogen Dioxide (NO<sub>2</sub>) have been continuously monitored at four locations within the study area. Historically, two monitors have been continuously sampling for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> using Zephyr monitors located close to the Hollybush Estate site (1381) and close to the construction site entrance (942). Due to on-going power issues with the Zephyr located close to the Hollybush Site (1381), the monitor was relocated on the 10<sup>th</sup> January to lamp post 5 on Pendwyallt Road, approximately 150m north of the Hollybush Pub and since this re-location data capture has improved. There have also been dedicated PM<sub>10</sub> and PM<sub>2.5</sub> monitors (DM11 Pro) located outside 19 Park Road (332) and at a location On-site (333), however, power to the On-Site monitor was removed in October 2023 and no suitable alternative location has yet been identified. Figure 1 shows the current monitoring locations in operation.

The Zephyrs and DM11 Pro monitors are able to detect localised pollution events and fluctuations in the concentrations and can send alerts to the project team when concentrations go above a certain threshold. The Zephyr continuous monitoring devices are supplied by Earthsense and the DM11 Pros by Air Quality Monitors, data

from each of the monitors is uploaded onto a cloud system/website where it can be viewed and downloaded by specific individuals.

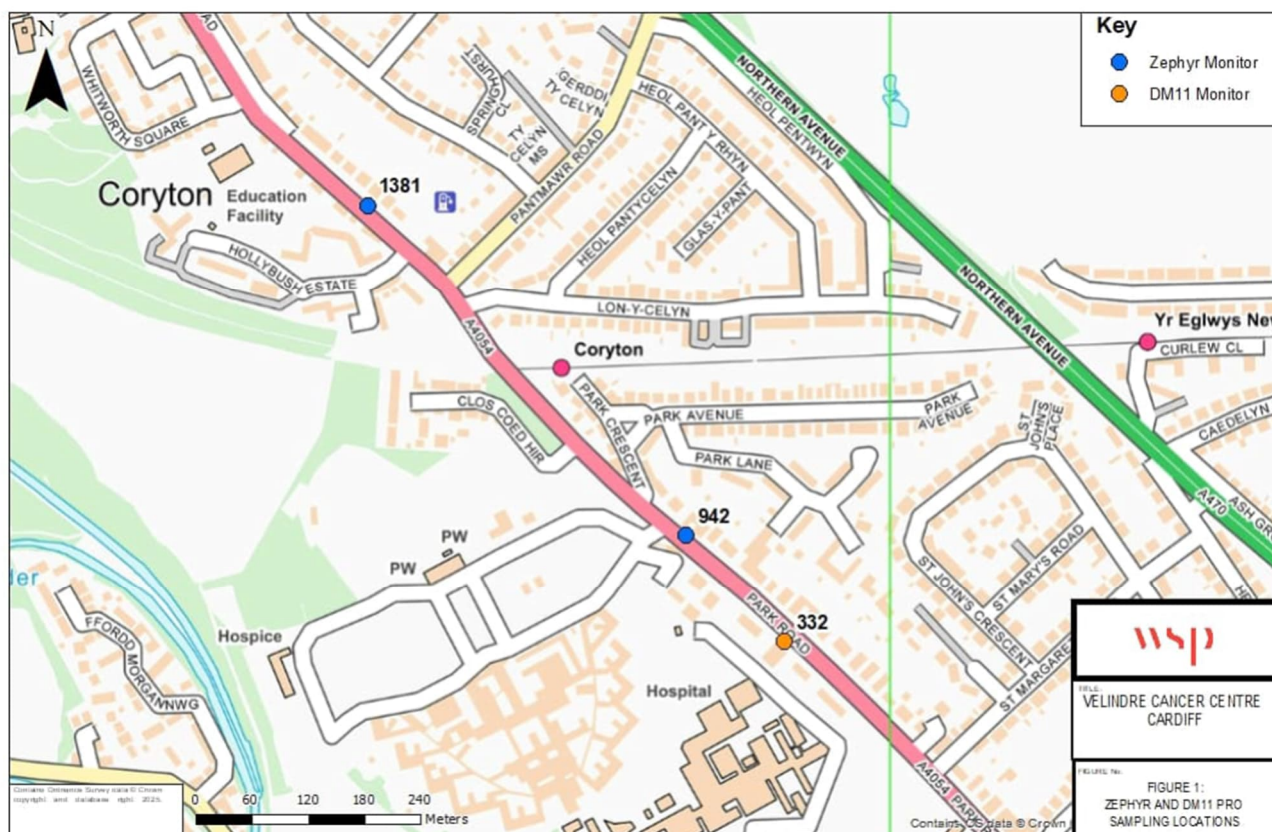


Figure 1 Air Quality Monitoring Locations

## AIR QUALITY OBJECTIVES AND STANDARDS

The Government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS)<sup>1</sup>. The AQS provides a framework for reducing air pollution in the UK with the aim of meeting the requirements of European Union legislation<sup>2</sup>.

The air quality standards are levels recommended by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO) with regards to current scientific knowledge about the effects of each pollutant on health and the environment.

The air quality objectives are policy-based targets set by the Government, which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e., a limited number of permitted exceedances of the standard over a given period.

The relevant standards and objectives for this monitoring programme are given in Table 1.

<sup>1</sup> Department for Environment, Food and Rural Affairs (Defra) and the Devolved Administrations (2007). The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2)

<sup>2</sup> The UK formally left the EU on 31<sup>st</sup> January 2020 and new air quality legislation for the UK will be brought forward in due course. The Air Quality (Miscellaneous Amendment and Revocation of Retained Direct EU Legislation) (EU Exit) Regulations 2018 (SI 2018/1407) (see Regulation 5) makes changes to retained direct EU legislation relating to air quality, to ensure that it continues to operate effectively.

**Table 1 – Relevant Air Quality Objectives and Standards**

Pollutant	Concentration (µg/m <sup>3</sup> )	Duration	Exceedances permitted per 12-month period
Nitrogen Dioxide	200	1-hour mean	18
	40	Annual mean	-
Particulate matter (PM <sub>10</sub> )	40	Annual mean	-
	50	24-hour mean	35
Particulate matter (PM <sub>2.5</sub> ) *	20	Annual mean	-

\* Local Authorities are required to work towards reducing emissions/concentrations of particulate matter within their administrative area, however, there is no statutory objective given in the AQS for PM<sub>2.5</sub> at this time, only a framework.

The UK Government published its Environmental Targets (Fine Particulate Matter) (England) Regulations on 30<sup>th</sup> January 2023<sup>3</sup>. The regulations include a long-term target annual mean PM<sub>2.5</sub> concentration of 10µg/m<sup>3</sup> and an exposure reduction target of 35% when compared to 2018 levels, both to be met by 2040. There is also an interim PM<sub>2.5</sub> target, which is to be met by the end of January 2028, of 12µg/m<sup>3</sup> as an annual mean concentration and a 22% reduction in exposure when compared to 2018 levels.

## DEFRA AIR QUALITY INDEX

Defra's Air Quality Index<sup>4</sup> provides a useful indication of the levels of air pollution. The index is divided into four bands (low, moderate, high, very high), and the index is numbered from 1 to 10 within these bands (Figure 2) The bandings are based on hourly/24-hour mean concentrations depending on the pollutant.

<b>Nitrogen Dioxide</b> Based on the hourly mean concentration.										
Index	1	2	3	4	5	6	7	8	9	10
Band	Low	Low	Low	Moderate	Moderate	Moderate	High	High	High	Very High
µg/m <sup>3</sup>	0-67	68-134	135-200	201-267	268-334	335-400	401-467	468-534	535-600	601 or more

<b>PM<sub>10</sub> Particles</b> Based on the daily mean concentration for historical data, latest 24 hour running mean for the current day.										
Index	1	2	3	4	5	6	7	8	9	10
Band	Low	Low	Low	Moderate	Moderate	Moderate	High	High	High	Very High
µg/m <sup>3</sup>	0-16	17-33	34-50	51-58	59-66	67-75	76-83	84-91	92-100	101 or more

<b>PM<sub>2.5</sub> Particles</b> Based on the daily mean concentration for historical data, latest 24 hour running mean for the current day.										
Index	1	2	3	4	5	6	7	8	9	10
Band	Low	Low	Low	Moderate	Moderate	Moderate	High	High	High	Very High
µg/m <sup>3</sup>	0-11	12-23	24-35	36-41	42-47	48-53	54-58	59-64	65-70	71 or more

*Figure 2 – Defra Air Quality Index*

<sup>3</sup> Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

<sup>4</sup> <https://uk-air.defra.gov.uk/air-pollution/daq>

# MONITORING RESULTS

## Zephyr Continuous Monitors

### Data Capture

During the month of February 2025, 100% data capture was recorded at both the Pendwyallt Road (Z1381), and Park Road (Z942) Zephyrs.

### Nitrogen Dioxide

Figure 3 shows the monitored hourly average concentrations for the period 1<sup>st</sup> to 28<sup>th</sup> February 2025 and a summary of the monitored concentrations for this period are provided in Table 2.

Average hourly NO<sub>2</sub> concentrations across the monitoring period at both monitoring sites were well below the air quality objective of 40µg/m<sup>3</sup>. There were no exceedances of the one-hour mean objective (200µg/m<sup>3</sup>) at either of the sites. Several peaks in the data were recorded at both sites, it suggests more of a regional influence driving the spikes rather than a local source.

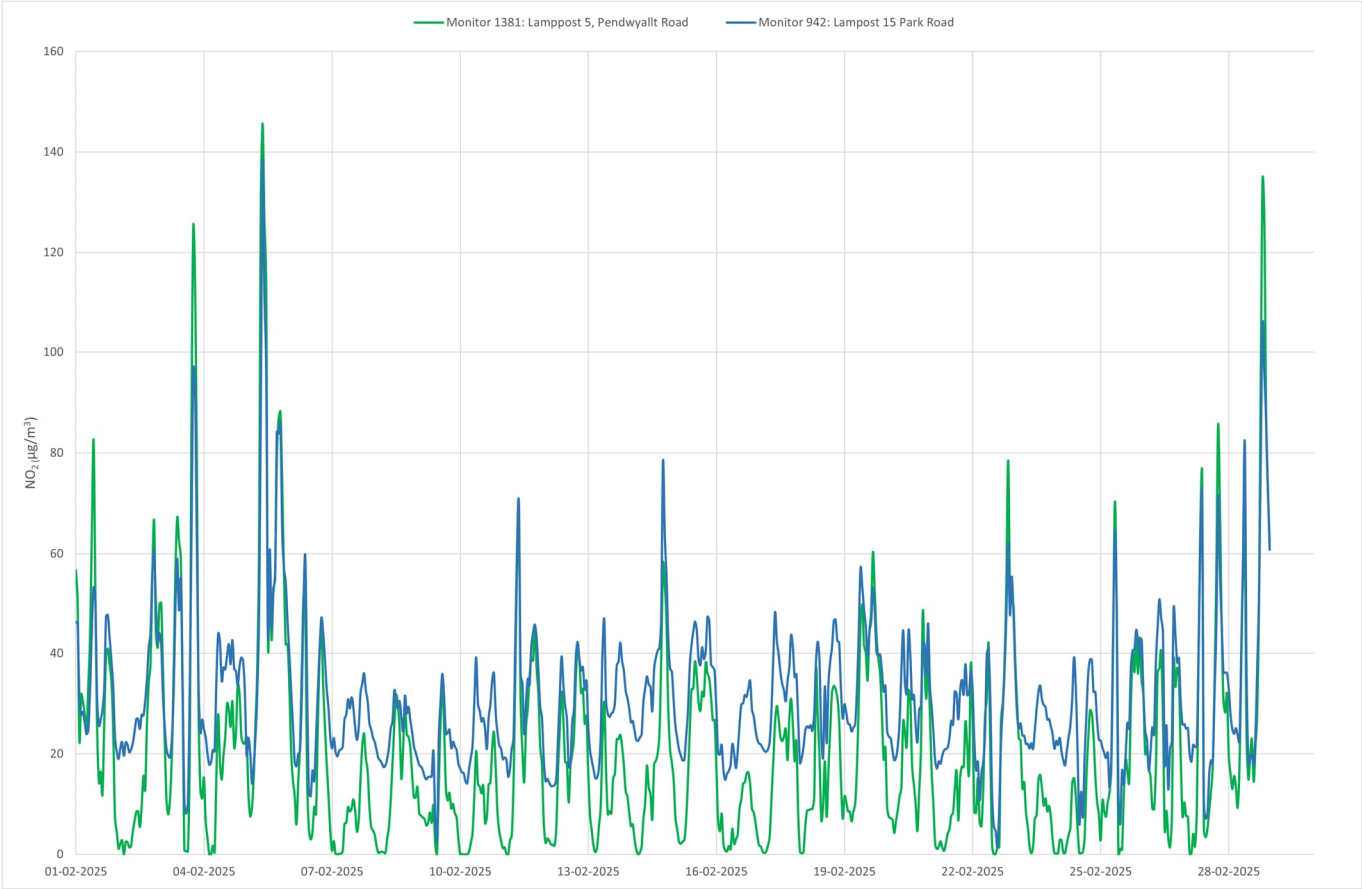


Figure 3 – Monitored Zephyr NO<sub>2</sub> Hourly Concentrations (µg/m<sup>3</sup>)

Table 2 – NO<sub>2</sub> Concentrations, 1<sup>st</sup> to 28<sup>th</sup> February 2025

Monitor	Location	NO <sub>2</sub> Concentration Summary (µg/m <sup>3</sup> )	
		Average	Hourly Maximum
Z1381	Lampost 5, Pendwyallt Road	21.0	145.6
Z942	Lampost 15, Park Road	31.4	138.1



## Particulate Matter (PM<sub>10</sub>)

Figure 4 shows the monitored PM<sub>10</sub> concentrations from 1<sup>st</sup> to 28<sup>th</sup> February 2025 and a summary of the monitored concentrations for this period are provided in Table 3 below.

Average hourly concentrations of PM<sub>10</sub> at the Pendwyallt Road Zephyr monitor remained below the annual mean objective of 40 µg/m<sup>3</sup>, while at the Park Road monitor, the levels were slightly above this annual mean objective during the monitoring period.

During the period from 8<sup>th</sup> February to 19<sup>th</sup> February, there were 12 exceedances of the 24-hour mean concentration of 50 µg/m<sup>3</sup> recorded at both the Pendwyallt Road (Z1381) Zephyr and Park Road (Z942) Zephyr site. The recorded values ranged from 54.8 to 80.0 µg/m<sup>3</sup> at Pendwyallt Road and from 52.7 to 86.4 µg/m<sup>3</sup> at Park Road. A review of monitoring undertaken by the Council during the month of February at locations within the Cardiff area shows no 24-hour concentrations above 50 µg/m<sup>3</sup> and therefore these elevated concentrations appear to be localised.

The objective permits up to 35 exceedances within a 12-month period. In January 2025, the Pendwyallt Road and Park Road Zephyr monitors recorded eight and nine exceedances, respectively. In February 2025, 12 exceedances were recorded at both Zephyr monitors. Historically, there have been few 24-hour periods where concentrations have been above 50 µg/m<sup>3</sup>, the data will be reviewed going forward to determine whether there have been greater than 35 days within a 12-month period when PM<sub>10</sub> has exceeded 50 µg/m<sup>3</sup>, as a daily mean.

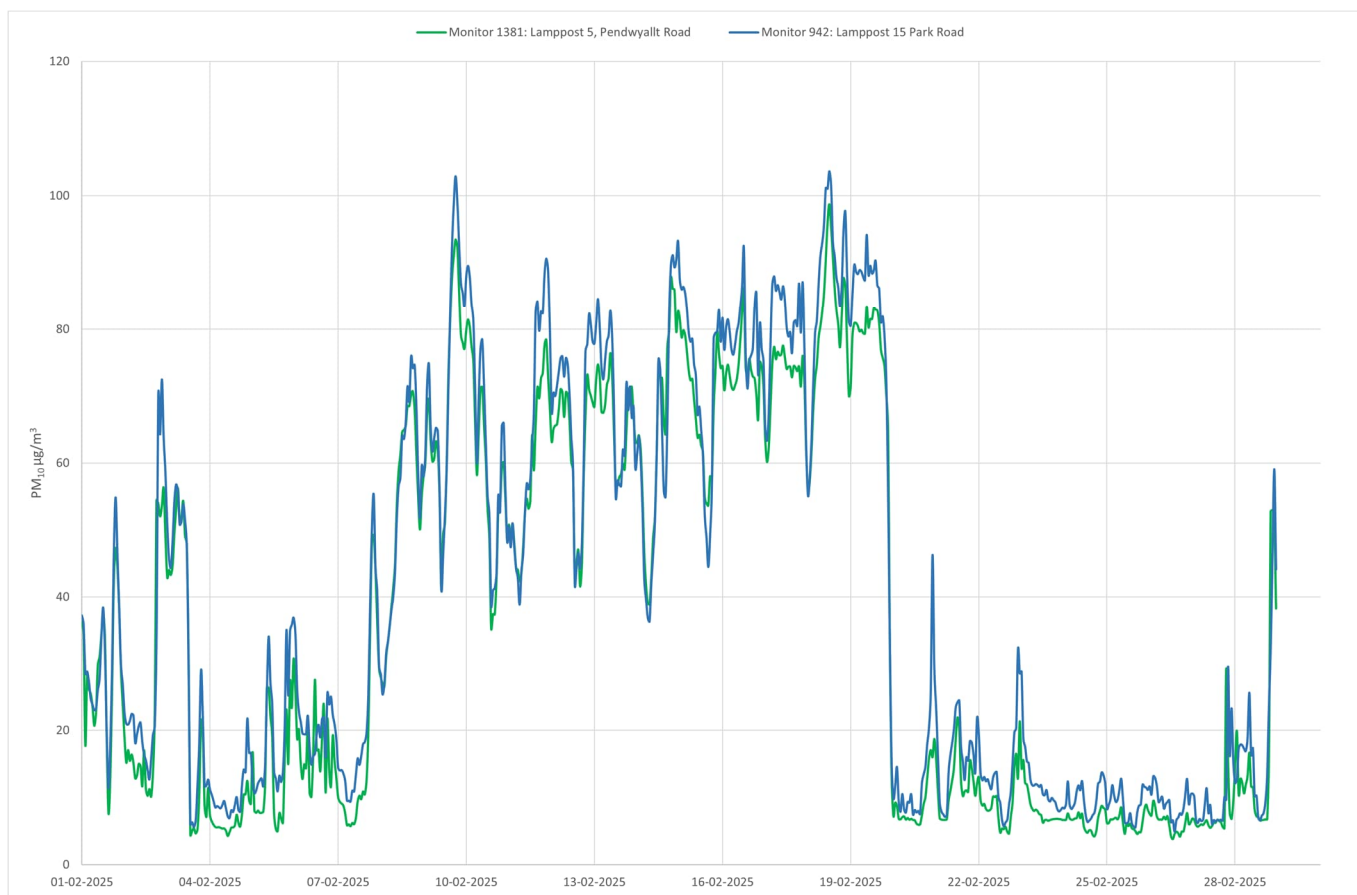


Figure 4 – Monitored Zephyr PM<sub>10</sub> Hourly Concentrations (µg/m<sup>3</sup>)

## Particulate Matter (PM<sub>2.5</sub>)

Figure 5 indicates monitored PM<sub>2.5</sub> concentrations from 1<sup>st</sup> to 28<sup>th</sup> February 2025, and the summary of monitored concentrations for this period are provided in Table 3 below.

Average hourly concentrations of PM<sub>2.5</sub> were slightly above the 20 µg/m<sup>3</sup> objective level over the monitoring period of February 2025. PM<sub>2.5</sub> concentration patterns between the two monitors Pendwyallt Road (1381) and Park Road (942) were almost identical, suggesting that influences of PM<sub>2.5</sub> were either regional or at least not highly localised, and perhaps outside the influence of the construction site.

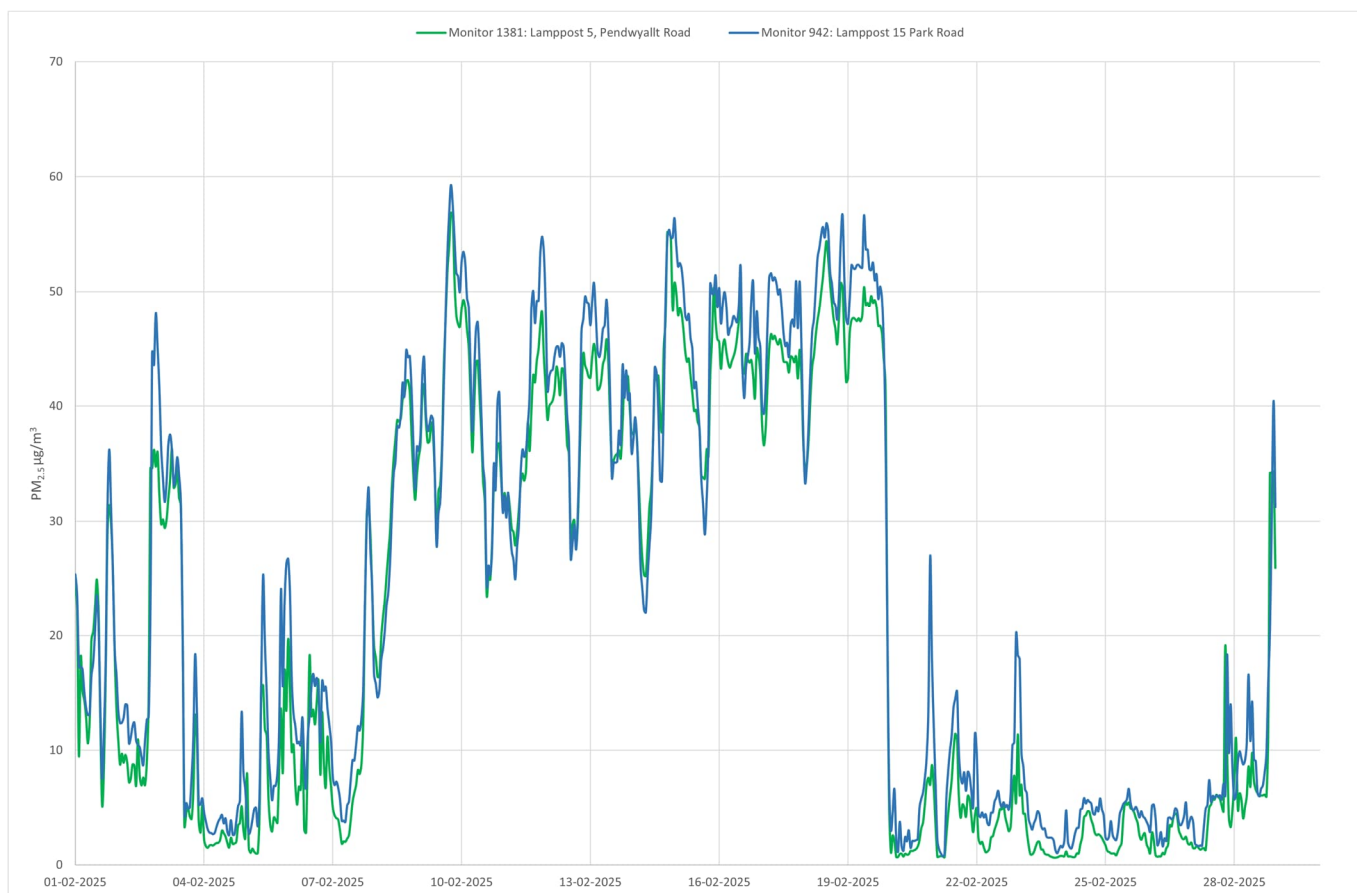


Figure 5 – Monitored Zephyr PM<sub>2.5</sub> Hourly Concentrations (µg/m<sup>3</sup>)

Table 3 – PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations Recorded by Zephyr Monitors, 1<sup>st</sup> to 28<sup>th</sup> February 2025

Monitor	Location	PM <sub>10</sub> Concentrations (µg/m <sup>3</sup> )			PM <sub>2.5</sub> Concentrations (µg/m <sup>3</sup> )	
		Average	Maximum Hourly	Maximum 24-hour mean	Average	Maximum Hourly
Z1381	Lampost 5, Pendwyallt Road	36.6	98.7	80.0	21.6	56.8
Z942	Lampost 15, Park Road	40.3	103.6	86.4	23.8	59.3

Note that background colour applied is based on bandings which are classed for a 24-hour running mean PM concentration not an hourly concentration presented.

## DM11 Pro Continuous Monitors

### Data Capture

During the period 1<sup>st</sup> to 28<sup>th</sup> February 2025, Park Road monitor recorded 100% data capture.

### Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

Figure 6 shows the hourly average PM<sub>10</sub> and PM<sub>2.5</sub> concentrations monitored at the DM11 Pro continuous monitor located at Park Road. A summary of the monitored concentrations is provided in Table 4.

Average hourly concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> were below the respective annual mean objectives of 40µg/m<sup>3</sup> and 20µg/m<sup>3</sup> during the monitoring period. In addition, there were no 24-hour mean concentrations above 50µg/m<sup>3</sup>.

As noted in previous reports, as the monitoring device located at 19 Park Road is set slightly back from the roadside, it is more representative of exposure of residential receptors along Park Road, than the Zephyr monitoring locations, which are mounted upon lampposts at the Kerbside.

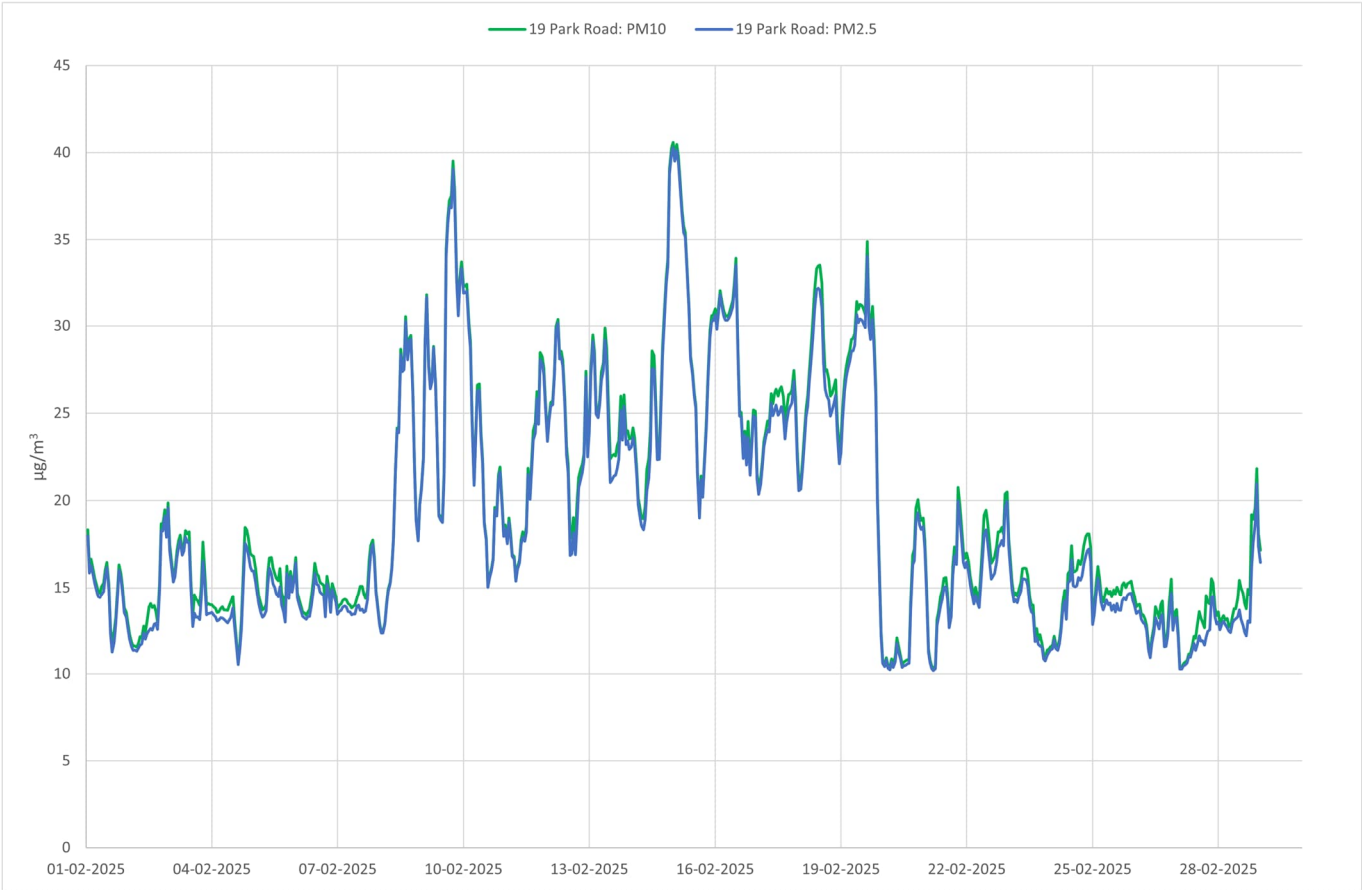


Figure 6 – Monitored DM11 PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations 19 Park Road (µg/m<sup>3</sup>)

Table 4 – PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations, 1<sup>st</sup> to 28<sup>th</sup> February 2025

Monitor	Location	PM <sub>10</sub> Concentrations (µg/m <sup>3</sup> )			PM <sub>2.5</sub> Concentrations (µg/m <sup>3</sup> )	
		Average	Maximum Hourly	Maximum 24-hour mean	Average	Maximum Hourly
332	19 Park Road	19.3	40.6	29.9	18.8	40.3

Note that background colour applied is based on bandings which are classed for a 24-hour running mean PM concentration not an hourly concentration presented.