



Cyngor Castell-nedd Port Talbot
Neath Port Talbot Council

Neath Port Talbot County Borough Council 2022 Air Quality Progress Report

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: September 2022

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Executive Summary: Air Quality in Our Area

Air Quality in Neath Port Talbot County Borough Council

The main air quality issues in Neath Port Talbot (NPT) are:

- Fine particulates (PM₁₀) in Port Talbot.

This mainly relates to emissions from the steel works, which is regulated by Natural Resources Wales (NRW). The trend since declaration of the Taibach Margam AQMA in 2000 is towards lower pollution levels, but it is not yet considered to be safe to revoke the air quality management area (AQMA).

The Council works with the Welsh Government, Tata and Natural Resources Wales (the regulator) in order to manage air quality.

- Large particulates (nuisance dust) fallout in Port Talbot

Nuisance dust is also mainly an issue in Port Talbot and is related to activities at the steel works.

- Polyaromatic hydrocarbons (PAH) in Port Talbot

This is also an issue which is related to activities at the Port Talbot steel works e.g. coke ovens. More on this can be found in the [Technical report on UK supplementary modelling assessment under the Air Quality Standards Regulations 2010 for 2020](#). The regulator is working with Tata in order to address this issue. The long-term trend is increasing and the 2021 result almost tripled compared with the 2020 concentration.

- Nickel in Pontardawe.

The main source of raised nickel levels in Pontardawe is the Wall Colmonoy works, which is regulated by the Council. 2021 was not compliant and has increased compared to 2020. There were two consecutive weekly nickel concentrations above 20 ng/m³ recorded during 2021. The maximum weekly concentration observed was 75.3 ng/m³. Information received from Wall Colmonoy confirmed there were fan changes in the Atomising Dry extraction system which caused a release of fugitive emissions from the ductwork that coincided with an exceedance of the target value in November 2021. Emissions reported for the Vale refinery were stable throughout the year, showing no clear correlation with ambient nickel concentrations.

Actions to Improve Air Quality

The principal actions in the Taibach Margam AQMA Air Quality Action Plan are described in the NRW dust action plan. These are specific actions agreed between the regulator and Tata to reduce pollution from the steelworks.

In addition to working with Tata and NRW, NPT Council also works with Welsh Government and other organisations to better understand and combat pollution from the works.

The Council is the regulator of the business in Pontardawe which is the principal contributor to nickel levels in the area. The Council works with the operator to ensure that the business is operated using Best Available Techniques (BAT). The aim is to minimise emissions. The Council also works with Welsh Government and other process operators in the region with this aim in mind.

Local Priorities and Challenges

The Council will continue to work with NRW, Tata and the Welsh Government to understand and minimise particulate emissions from the steelworks.

The Council will continue to focus on regulation of Wall Colmonoy in Pontardawe in order to attempt to drive nickel levels below the EU Target, as was the case in 2017.

In both of the above cases the main challenge is to understand the precise sources of emissions of which there are potentially several at each location.

How to Get Involved

The public can engage with NPT Council via their [website](#) which contains further local information on NPT's [Air Quality Strategy](#), the Council's strategic policy for achieving cleaner air in partnership with the whole community.

Data from the automatic (continuous) air quality monitors located across the County Borough can be found on the [Welsh Air Quality Website](#).

Summary of Air Quality Measurements

The long-term Air Quality Objectives for NO₂ were not breached at any locations in Neath Port Talbot.

Continuous measurements of NO₂ at Victoria Gardens have continued the trend toward decreasing concentrations. Measurements at Port Talbot Fire station also decreased and continue to easily comply with air quality objectives.

Neither the long-term nor the short-term Air Quality Objectives for PM₁₀ were breached in Neath Port Talbot. However, the Taibach/Margam AQMA will continue to remain in force.

There were no exceedances of Air Quality Objectives for sulphur dioxide (SO₂), lead (Pb) or carbon monoxide (CO).

Fine particulates of less than 2.5 microns in size (PM_{2.5}) easily complied with the EU Target which was to be complied with by 2015.

Ozone is not covered by Local Air Quality Management because trans-boundary pollution can have a significant effect upon local results. The Fire Station site measured concentrations greater than 100 µg/m³ on 4 occasions during 2021 (data capture was 99%).

The UK standard of 0.25 ng/m³ benzo[a]pyrene was exceeded in 2021. The B[a]P concentration at Port Talbot frequently exceeds the Air Quality Objective of 0.25 ng/m³ but has never exceeded the EU target value of 1 ng/m³ thus far. The 2021 result was nearly triple the 2019 and 2020 concentration.

Arsenic and cadmium easily comply with the EU Target, both in Port Talbot and Pontardawe.

Nickel concentrations continued to exceed the EU Target of 20 ng/m³ at Tawe Terrace. The average concentration of nickel in 2021 was 24.43 ng/m³ which is 122% of the Target value. This is an increase on the figure recorded in 2020 (22.99 ng/m³). A continued programme of enhanced regulation is taking place at Wall Colmonoy. None of the planning applications considered on grounds of air quality were considered to pose a risk to compliance with air quality objectives. There are no plans to revoke or modify the Taibach/Margam AQMA, although the short and long-term air quality objectives have not been breached. The next actions to be taken will be to submit a LAQM Progress report for the calendar year of 2022 and to review Neath Port Talbot's Air Quality Action Plan.

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1 Actions to Improve Air Quality

1.1 Previous Work in Relation to Air Quality

A summary of the reports produced on air quality by NPT County Borough Council to date are detailed below.

1998 Annual Progress Report summarising routine measurements.

1999 Annual Progress Report summarising routine measurements.

2000 Annual Progress Report summarising routine measurements and Review and Assessment of Air Quality, concluding that it would be necessary to declare an Air Quality Management Area (AQMA) for PM₁₀ in Port Talbot. This was due the predicted failure to achieve the Government's Air Quality Objective for PM₁₀ by the deadline of 31st December 2004 without intervention.

2001 Annual Progress Report summarising routine measurements.

2002 Annual Progress Report summarising routine measurements.

2003 Annual Progress Report and Updating and Screening Assessment produced showing that there was no need to proceed to a detailed assessment in respect of all but two pollutants, NO₂ and PM₁₀. NO₂ measurements at Victoria Gardens, Neath had shown some increases that merited further investigation. PM₁₀ measurements at Port Talbot had continued to require further measurement, especially as improvements to a blast furnace might have been expected to abate emissions somewhat.

2004 Annual Progress Report and Updating and Screening Assessment produced for NO₂ and PM₁₀, showing that it would not be necessary to declare an AQMA in the vicinity of Victoria Gardens. PM₁₀ concentrations were found to increase following re-commissioning of blast furnace number 5 at the steelworks. However, the numbers of exceedances were not as numerous as those recorded prior to the re-build of the furnace and the incorporation of cast house fume arrestment.

2005 Annual Progress Report summarising routine measurements.

2006 Annual Progress Report and Updating and Screening Assessment produced showing that it would be necessary to proceed to a Detailed Assessment in respect of NO₂. Several busy roads were identified for which accurate speed information was not

available. Therefore, it would be necessary to deploy diffusion tubes to assess nitrogen dioxide levels at these locations. Measurements of PM₁₀ would continue as before.

2007 Annual Progress Report and Updating and Screening Assessment produced for NO₂, showing that none of the 19 roadside sites identified in the 2006 USA breached the annual average Air Quality Objective. However, two sites were close to the Objective and one site, Water Street, Port Talbot was at risk of exceeding. Diffusion tube monitoring continued at these locations.

2008 Annual Progress Report summarising routine measurements.

2009 Updating and Screening Assessment produced, identifying the need to proceed to a Detailed Assessment of NO₂ in respect of Water Street, Port Talbot. Further sites were also identified for deployment of NO₂ diffusion tubes. The daily averaged Air Quality Objective for PM₁₀ was not exceeded in Port Talbot.

2010 Annual Progress Report and Updating and Screening Assessment produced, showing that Air Quality Objectives were not breached at Water Street, but identifying the need to proceed to a Detailed Assessment of NO₂ in respect of sites at: Swansea Road, Pontardawe; Victoria Gardens, Neath and Water Street, Port Talbot.

2011 Annual Progress Report and Detailed Assessment produced, showing that following improved traffic management and reducing volumes of traffic meant that there were no further problems at Water Street, but confirmed raised levels at Swansea Road, Pontardawe and Victoria Gardens, Neath. The Council committed to deploy continuous NO₂ analysers at these locations.

2012 Updating and Screening Assessment produced, identifying the need to proceed to a Detailed Assessment of NO₂ at Swansea Road, Pontardawe and Victoria Gardens, Neath. The report also identified the need to proceed to a Detailed Assessment for PM₁₀ at respect of Prince Street, Margam.

2013 Annual Progress Report produced, identifying a breach of the short-term air quality objective for PM₁₀ at Prince Street in Port Talbot using equipment owned by Natural Resources Wales (NRW). A new monitor was to be installed in 2014 to replace the NRW device, which was relocated. Consequently, the report identified the need to proceed to a Detailed Assessment for PM₁₀ at respect of Prince Street, Margam. A Detailed Assessment of NO₂ was subsequently produced in 2013, showing that neither air quality objective was breached at Victoria Gardens in Neath. However, a property at 1 Victoria Gardens (39.8 µg/m³) was close to exceeding the short-term Air Quality Objective (AQO).

2014 Annual Progress Report summarising routine measurements.

2015 Annual Progress Report and Updating and Screening Assessment produced, identifying the need to proceed to a Detailed Assessment of NO₂ at Swansea Road, Pontardawe and Victoria Gardens, Neath. A Detailed Assessment of PM₁₀ was subsequently produced in 2015, examining data from 8 sites in Port Talbot, but none were found to breach air quality objectives. Results at Prince Street were more in line with those at Port Talbot Fire Station.

2016 Annual Progress Report and Updating and Screening Assessment produced, identifying the need to proceed to a Detailed Assessment of NO₂ at Victoria Gardens, Neath. A Detailed Assessment of NO₂ was subsequently produced in 2016, recommending the deployment of diffusion tubes in triplicate at 1, Victoria Gardens.

2017 Annual Progress Report produced, reporting the closure of the continuous NO₂ analyser at Pontardawe, on account of the reduction in pollution levels at the Fire Station site. The NO₂ air quality objective was not exceeded at any location.

2018 Annual Progress Report produced, once again reporting a decreasing trend for NO₂ levels at Victoria Gardens and no exceedances of the air quality objectives at any location.

2019 Annual Progress Report summarising routine measurements.

2020 Annual Progress Report produced, no exceedances of the AQOs were reported at any location apart from for Polyaromatic Hydrocarbons and Nickel. The Polyaromatic Hydrocarbons exceed the Air Quality Objective but not the EU target. Nickel only exceeded the EU Target at 1 location, Tawe Terrace. NO₂ levels at the continuous monitor at Victoria Gardens also continued to fall.

2021 Annual Progress Report produced, no exceedances of the AQOs were reported at any location apart from for Polyaromatic Hydrocarbons and Nickel. The Polyaromatic Hydrocarbons exceed the Air Quality Objective but not the EU target. Nickel only exceeded the EU Target at 1 location, Tawe Terrace.

1.2 Air Quality Management Areas

Air Quality Management Areas (AQMA) are declared when air quality is close to or above an acceptable level of pollution (known as the air quality objective (Please see Appendix B)). After declaring an AQMA the authority must prepare an Air Quality Action Plan (AQAP) within 18 months setting out measures it intends to put in place to improve air

quality to at least the air quality objectives, if not even better. AQMA(s) are seen by local authorities as the focal points to channel resources into the most pressing areas of pollution as a priority.

A summary of the AQMA declared by NPT Council can be found in Table 1-1. The table presents a description of the AQMA that is currently declared in response to exceedances of the PM₁₀ 24-hour mean objective. The AQMA boundary can be seen in Appendix D.

Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available on the [Defra website](#).

Table 1-1 – Declared Air Quality Management Areas

AQMA	Relevant Air Quality Objective(s)	Comments on Air Quality Trend	City / Town	Description	Action Plan
AQMA Taibach/Margam	Particulate Matter PM ₁₀ 24-hour mean	There has been a gradual decrease in PM ₁₀ exceedance days since the declaration of the AQMA	Neath Port Talbot	An area covering the majority of land and properties between the Corus Steel Works and the M4 Motorway.	Air Quality Action Plan for the Taibach Margam Air Quality Management Area – 2012

AQMA boundary maps within NPT Council can be viewed on the [Defra website](#).

Due to ongoing compliance with the Air Quality Objectives within the AQMA, during 2021 NPT considered whether or not it should revoke the declaration. It was decided that the AQMA should not be revoked at this time. It is considered important that the AQMA remains in place for at least a short period longer for the following reasons;

- To allow for a period of post Covid air quality monitoring, to establish any impact that Covid had on the pollution levels and to see if long term changes in working practices has an impact on the AQMA.
- A period of monitoring to allow investigation into the impact that the reduced M4 speed limit has had on the AQMA.
- Completion of the Vortex Air Quality Monitoring Pilot Study that aims to more effectively target interventions, identify particular pollution hotspots and sources that were previously hidden, and gain a better understanding of the impact of particular policies; crucial to designing effective strategies for managing air pollution. Further information is available on our website at <https://www.npt.gov.uk/28695>.

- Considerations of any new requirements imposed by the Clean Air Bill which is due to be published shortly.

1.3 Implementation of Action Plans

NPT has taken forward several measures during 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 1-2. More detail on these measures can be found in the Air Quality Action Plan relating to any designated AQMAs.

Air Quality Action Plans are continuously reviewed and updated whenever deemed necessary, but no less frequently than once every five years. Such updates are completed in close consultation with local communities.

NPT's current AQAP has not been reviewed for a number of years and has become stagnant. The progress on measures in Table 1.2 are quite old and could be updated to better reflect the current status of the AQMA, including better measurable targets. Decreases in pollution within the AQMA demonstrates that it has been effective until now but requires a refresh to achieve NPT's goal of continual improvement of air quality in the borough, not just compliance with Air Quality Objectives. NPT began an update of the AQAP in 2021 and intends to publish the review in 2022. The AQAP works closely alongside the [Short Term Action Plan](#) (STAP) which is also under review and likely to have a significant influence on the measures that NPT adopt in their new AQAP.

Despite the need for review NPT continues to implement the current AQAP and has taken forward several measures during 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 1-2. More detail on these measures can be found in the Air Quality Action Plan relating to any designated AQMAs.

Table 1-2 – Progress on Measures to Improve Air Quality

No.	Measure	Focus	Lead Authority	Planning Phase	Implementation Phase	Indicator	Target Annual Emission Reduction in the AQMA	Progress to Date	Progress in Last 12 Months	Estimated Completion Date	Comments Relating to Emission Reductions
A1	Multi-agency interaction	Cooperation between various organisations to investigate PM10 exceedances	Welsh Government	2000	2001-present	See previous Progress reports	Impossible to quantify	Various investigations, most recently the King's College monitoring report	UWE report in preparation for 2019	Not known	Impossible to quantify
A2	Dust reduction programme at Tata site	Reduce particulate emissions via NRW regulation	NRW	2000	2001-present	Implementation of various improvement schemes	Impossible to quantify	Various improvements. See previous Progress reports.	Further improvements to programme and arrangements for dealing with complaints	None. The dust reduction programme will continue for the foreseeable future	Impossible to quantify
A3	Planning policies	Resist developments on air quality grounds where appropriate	NPT	2000	2001-present	None	Impossible to quantify	UDP now in force	UDP continued	UDP complete	Impossible to quantify
A4	Tree planting	Trees may help to reduce airborne particulates	Tata, NRW, NPT	N/A	Ongoing	Number of trees and shrubs planted	Impossible to quantify	Tree planting in Port Talbot	Pilot project completed	Not known	Impossible to quantify
A5	Transport infrastructure (PDR)	Provide alternative route for traffic and slightly reduce pollution	NPT	2010	Completed 2013	None	Impossible to quantify	PDR complete	PDR complete	PDR complete	Impossible to quantify

A6	Train haulage emissions	Investigate cases of visible mineral emissions from trains	NPT	N/A	Ongoing	Avoidance of visible emissions	Impossible to quantify	No problems in recent years	No problems reported	Ongoing	Impossible to quantify
A7	NPT regulated activities	Regulate Civil & Marine slag cement to minimise PM10 emissions	NPT	N/A	Ongoing	Compliance with permit	Impossible to quantify	Emissions comply with permit	Emissions comply with permit	Ongoing	Impossible to quantify
A8	Travel plans	Minimise traffic and emissions by use of public transport etc.	NPT	N/A	Ongoing	Travel plan implemented	Impossible to quantify	Part implemented but not complete	None	Not known	Impossible to quantify
A9	School travel plans	Reduce the impact of the school journey in the AQMA	NPT	N/A	Ongoing	Number of plans in place	Impossible to quantify	61 plans in place	4 new plans	Ongoing	Impossible to quantify
A10	Domestic bonfires	Minimise through education and recycling	NPT	N/A	Ongoing	Provision of green waste recycling	Impossible to quantify	Quantities vary from year to year depending on weather etc	Responded to 180 domestic smoke and bonfire complaints between Jan and Dec 2021.42,870 tonnes of recycling - combination of reuse, recycling and composting in 2021.	Ongoing	Impossible to quantify
A11	Industrial fires	Minimise large industrial fires by identifying risky sites and taking remedial action	NPT, NRW	N/A	Ongoing	Avoidance of industrial fires in Port Talbot	Impossible to quantify	No problems in recent years	28 business/ industrial smoke complaints received	Ongoing	Impossible to quantify

A12	Hill fires	Prevent hill fires in vicinity of Port Talbot	MAWWFIRE	N/A	Ongoing	Minimise hill fires through education	Impossible to quantify	Community Fire Safety Team targets schools and farmers	Fire and Rescue responded to 23 hill fires in and around the Port Talbot area in 2021. This is 14 fewer than the year before.	Ongoing	Impossible to quantify
A13	Street sweeping	Can be carried out as required to remove particulates from the highway	NPT	N/A	Ongoing as required	The cleanliness of the street scene	Impossible to quantify	Sweeping has been carried out at Tata's request on several occasions	Sweeping carried out on PDR at Tata's request	Ongoing	Impossible to quantify
A14	Air Alerts	Provide email alert system notifying NRW, WG, Tata etc. to intervene where pollution levels are raised	NPT	N/A	Ongoing	System operates as expected	Impossible to quantify	System has been operational for some years	151 users currently subscribed	Ongoing	Impossible to quantify

2 Air Quality Monitoring Data and Comparison with Air Quality Objectives

2.1 Summary of Monitoring Undertaken in 2021

2.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how results compare with the objectives.

NPT Council undertook automatic (continuous) monitoring at six sites during 2021. Table 2-1 presents the details of the sites. National monitoring results are available on the [Welsh Air Quality Website](#).

NPT has a comprehensive monitoring network that it has operated for many years, providing good air quality data for the area and in particular in and around Port Talbot's Steelworks and the AQMA.

However, the monitors were aging and showing extensive signs of wear and tear. The machines were regularly developing faults and requiring repair. NPT considered various options for repairing the equipment but as the FDMS units are no longer supported the costs were becoming prohibitive to the running of the machines. The only option was to upgrade or discontinue the monitors.

NPT were successful in obtaining grant funding at the end of 2021 to upgrade their Prince Street, Little Warren and Dyffryn School monitors to new Met One BAM monitors all sampling for PM₁₀ and PM_{2.5}, however, data capture in 2021 was affected by the aging monitors and numerous breakdowns.

Maps showing the location of the monitoring sites are provided in Figure 2-1. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Table 2-1 – Details of Automatic Monitoring Sites

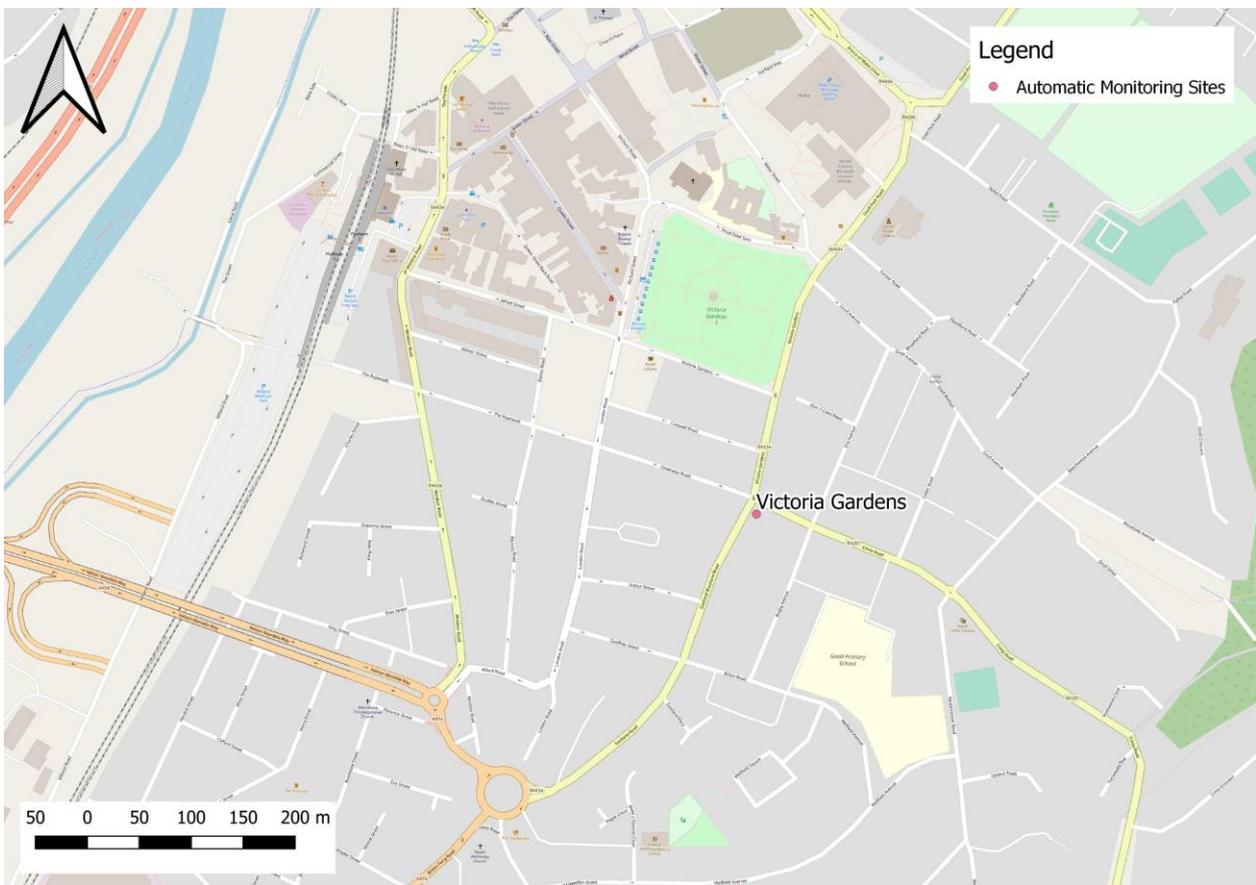
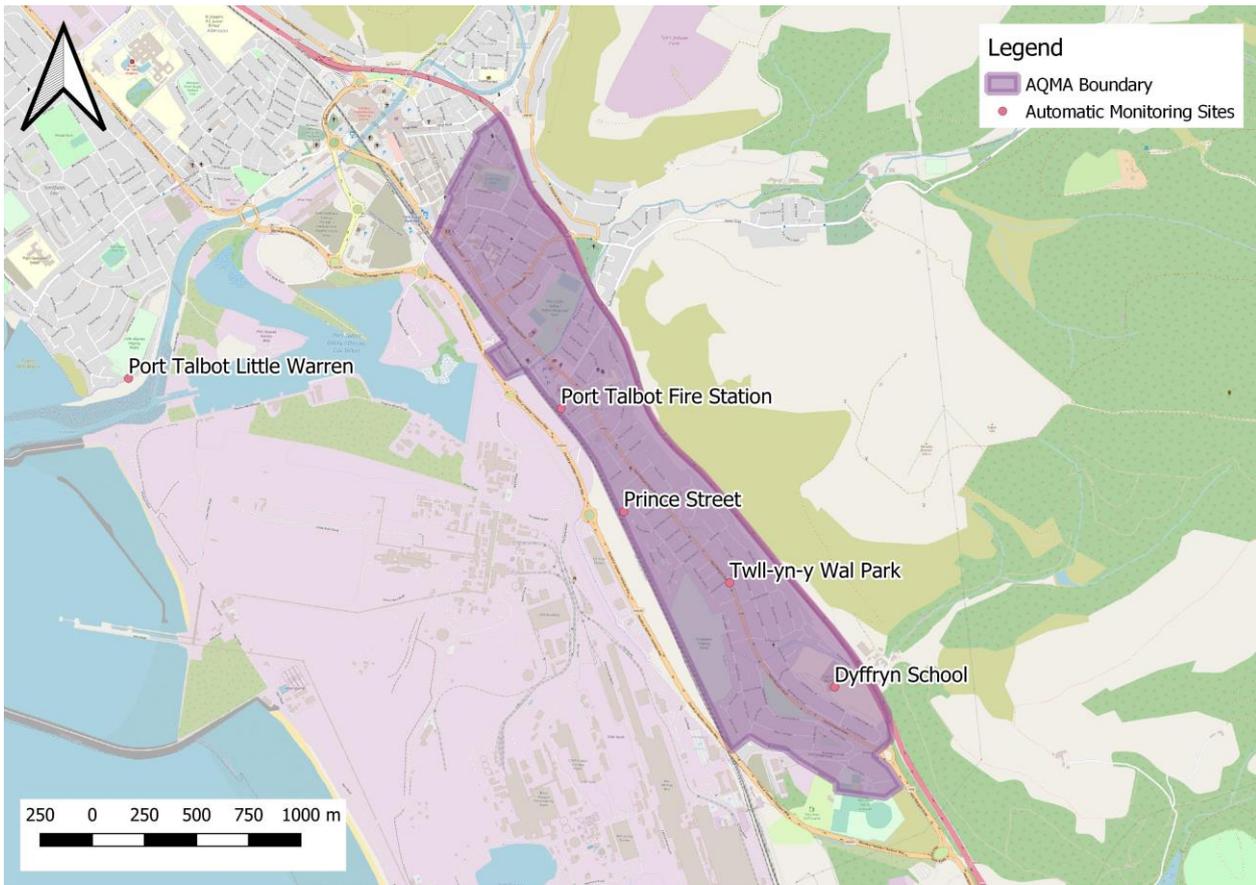
Site ID	Site Name	Site Type	Associated with AQMA?	X OS Grid Reference	Y OS Grid Reference	Pollutants Monitored	Monitoring Technique	Inlet Height (m)	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
PT2	Port Talbot Margam (Fire Station) AURN	Industrial	Y (Taibach Margam)	277388	188733	PM ₁₀ , PM _{2.5} , SO ₂ , CO, O ₃ , NO ₂	BAM, UV fluorescence, IR absorption, UV absorption, chemiluminescence	2.5	16	8	4
DS1	Dyffryn School	Industrial	Y (Taibach Margam)	278700	187387	PM ₁₀	FDMS	1.8	45	4	45
TW1*	Twll-yn-y Wal Park	Industrial	Y (Taibach Margam)	278196	187891	PM ₁₀	FDMS	1.8	14	2	4
LW1	Talbot Little Warren	Industrial	N	275313	188879	PM ₁₀	FDMS	2.5	35	7	53
PS2	Prince Street	Industrial	Y (Taibach Margam)	277689	188235	PM ₁₀ , PM _{2.5}	FDMS	1.8	45	6	57
VG2	Victoria Gardens	Roadside	N	275471	197183	NO ₂	Chemiluminescence	1.2	18	19	2

Notes:

(1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.

* This site stopped monitoring in March 2021 and the council do not intend to bring this monitor back into operation

Figure 2-1 – Maps of Automatic Monitoring Sites



2.1.2 Non-Automating Monitoring Sites

NPT Council undertook non-automatic (passive) monitoring of NO₂ at 27 sites during 2021. Table 2-2 presents the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure 2-2. Further details on Quality Assurance/Quality Control (QA/QC) and bias adjustment for the diffusion tubes are included in Appendix C.

Table 2-2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
1a, 1b, 1c	1 VG (Tube A), (Tube B), (Tube C)	Roadside	No	275463	197217	2	No	0	1	1
3	10 College Green	Urban Background	Yes (Taibach/Margam)	278794	187237	1.5	No	2	4	4
4	8 VG	Roadside	No	275494	197272	1.5	No	2	4	4
5	Eastland Rd. Neath (28 Eastland Rd)	Roadside	No	275438	197164	1.5	No	0	4	4
7a, 7b, 7c	Mobys (Tube A), (Tube B), (Tube C)	Roadside	No	274312	194601	2	No	2	2	2
8	Neath Rd. Briton Ferry (Tube 185)	Roadside	No	274307	194580	2	No	0	2	2
9	Neath Rd. Briton Ferry (Tube 179)	Roadside	No	274305	194563	2	No	0	2	2
10	Neath Rd. Briton Ferry (Tube 187)	Roadside	No	274308	194584	2	No	0	2	2
11	Neath Rd. Briton Ferry (Tube 183)	Roadside	No	274310	194589	2	No	0	2	2
12	Eastland Rd. Neath (34 Eastland Rd)	Roadside	No	275427	197139	1.5	No	0	4	4

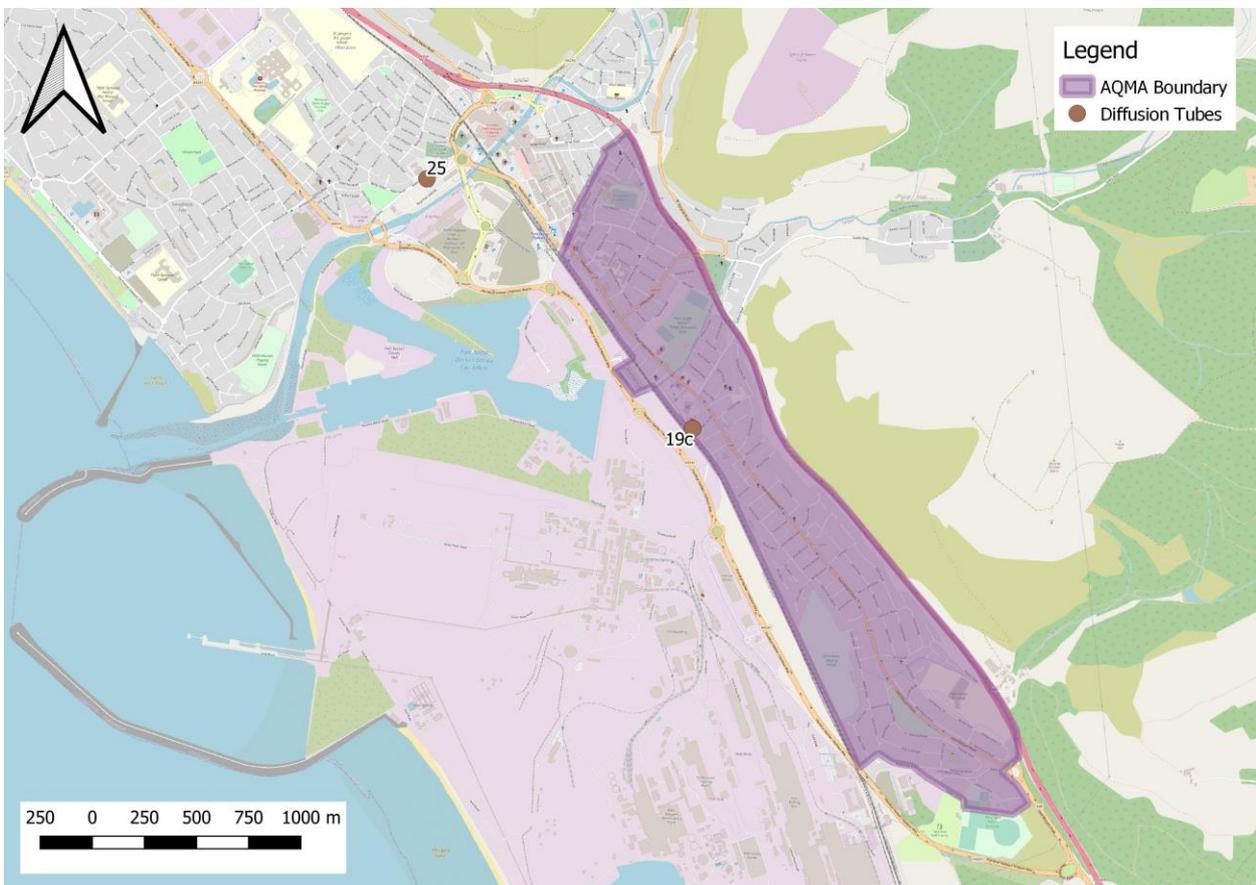
Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
13	Eastland Rd. Neath (40 Eastland Rd)	Roadside	No	275415	197110	1.5	No	0	4	4
14	Eastland Rd. Neath (32 Eastland Rd)	Roadside	No	275431	197149	1.5	No	0	4	4
15	Eastland Rd. Neath (30 Eastland Rd)	Roadside	No	275434	197157	1.5	No	0	4	4
16	5 VG	Roadside	No	275464	197230	1.5	No	0	3	3
17	1 Greenway Rd. Neath	Roadside	No	275455	197211	2	No	0	2	2
18a, 18b, 18c	Pontardawe PO (Tube A), (Tube B), (Tube C)	Roadside	No	272034	203954	2	No	0	2	2
19a, 19b, 19c	Port Talbot Fire Station (Tube A), (Tube B), (Tube C)	Industrial	Yes (Taibach/Margam)	277406	188719	2.5	Yes	16	8	4
20a, 20b, 20c	3 VG (Tube A), (Tube B), (Tube C)	Roadside	No	275463	197223	1.5	No	0	3	3
21	50 Greenway Rd. Neath	Roadside	No	275452	197195	2	No	0	2	2
22	54 Windsor Rd. Neath	Roadside	No	275146	197248	2	No	0	2	2
23	4 VG	Roadside	No	275482	197227	1.5	No	0	3	3
24a, 24b, 24c	Stockhams Corner. Neath (Tube A), (Tube B), (Tube C)	Roadside	No	275200	196905	2	No	0	3	3

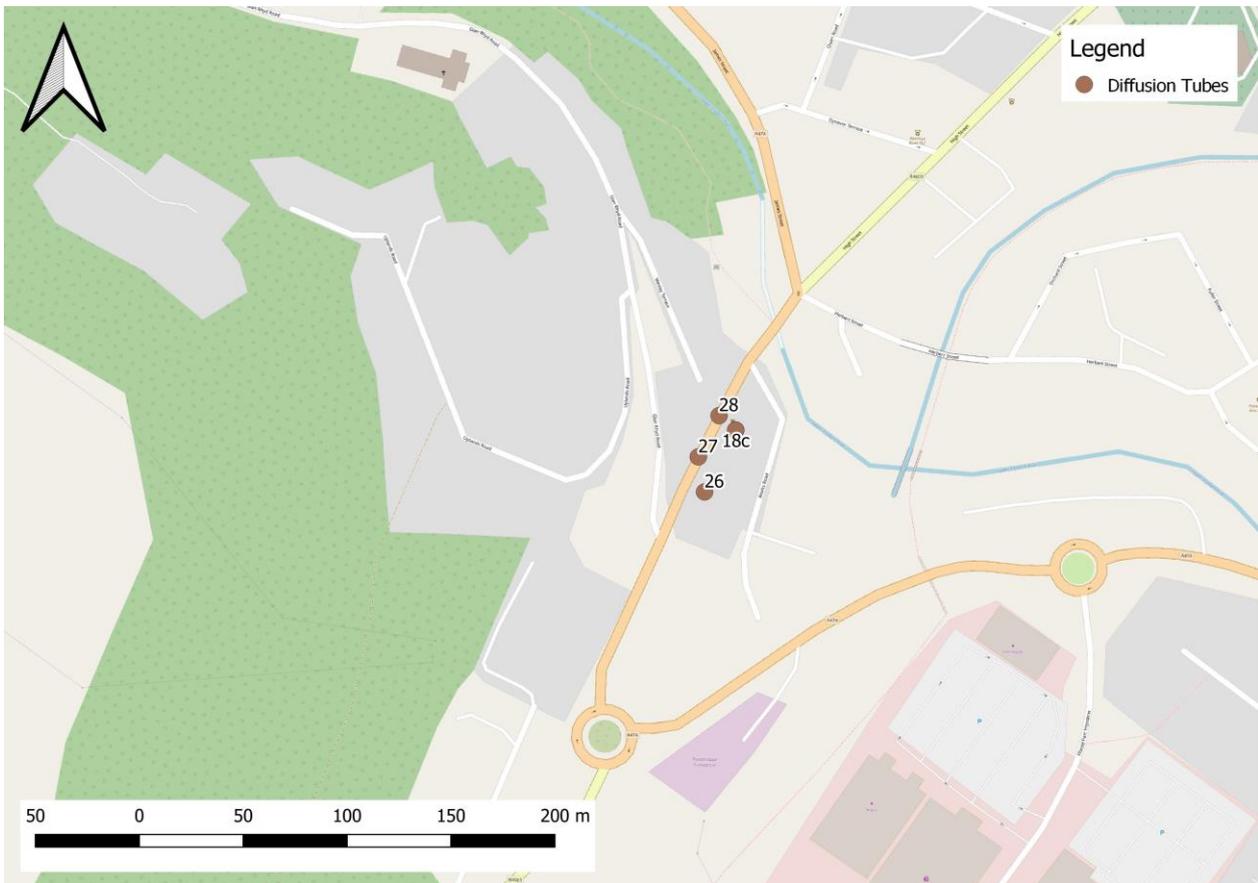
Site ID	Site Name	Site Type	Associated with Named AQMA?	X OS Grid Reference	Y OS Grid Reference	Site Height (m)	Collocated with a Continuous Analyser?	Distance from monitor to nearest relevant exposure (m) ⁽¹⁾	Distance from Kerb to Nearest Relevant Exposure (m)	Distance from Kerb to Monitor (m)
25	Water St. Port Talbot	Roadside	No	276131	189926	2	No	0	2	2
26	Swansea Rd. Pontardawe (10 Swansea Rd)	Roadside	No	272019	203924	2	No	0	2	2
27	Swansea Rd. Pontardawe (11A Swansea Rd)	Roadside	No	272016	203941	2	No	0	2	2
28	Swansea Rd. Pontardawe (7 Swansea Rd)	Roadside	No	272026	203961	2	No	0	2	2
34a, 34b, 34c	Cimla Rd Analyser. Neath (Tube A), (Tube B), (Tube C)	Roadside	No	275475	197186	1.4	Yes	20	2	2

Notes:

(1) 0m indicates that the sited monitor represents exposure and as such no distance calculation is required.

Figure 2-2 – Maps of Non-Automatic Monitoring Sites





2.2 2021 Air Quality Monitoring Results

Table 2-3 – Annual Mean NO₂ Monitoring Results (µg/m³)

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
PT2	Industrial	Automatic	NA	98.6	16.0	15.0	15.0	12.0	13.0
VG2	Roadside	Automatic	NA	99.2	39.0	34.0	32.0	27.0	26.0
1a, 1b, 1c	Roadside	Diffusion Tube	NA	83.33	38.8	32.5	34.0	29.8	32.6
3	Urban Background	Diffusion Tube	-	-	13.2	12.1	12.9	10.7	-
4	Roadside	Diffusion Tube	NA	91.67	27.1	22.7	23.5	20.1	22
5	Roadside	Diffusion Tube	NA	100	31.0	25.7	27.2	23.9	26.8
7a, 7b, 7c	Roadside	Diffusion Tube	NA	91.67	30.2	24.5	26.3	22.3	23.6
8	Roadside	Diffusion Tube	NA	91.67	29.0	24.9	23.9	21.2	23.7
9	Roadside	Diffusion Tube	NA	91.67	28.3	23.5	25.1	21.6	22.7
10	Roadside	Diffusion Tube	NA	91.67	28.9	24.6	26.1	22.7	21.6
11	Roadside	Diffusion Tube	NA	100	29.2	23.8	26.1	22.6	25.4
12	Roadside	Diffusion Tube	NA	100	29.4	24.9	26.7	22.2	24.1
13	Roadside	Diffusion Tube	NA	83.33	24.7	22.2	23.6	20.5	24.4
14	Roadside	Diffusion Tube	NA	100	30.1	25.9	26.6	23.0	25.5
15	Roadside	Diffusion Tube	NA	100	30.8	25.9	27.1	23.7	26.5
16	Roadside	Diffusion Tube	NA	91.67	24.2	29.2	30.2	25.6	26.6
17	Roadside	Diffusion Tube	NA	91.67	38.2	29.3	31.3	26.0	29.5
18a, 18b, 18c	Roadside	Diffusion Tube	NA	58.33	37.1	32.6	36.8	30.3	32.2
19a, 19b, 19c	Industrial	Diffusion Tube	NA	91.67	15.6	13.7	15.7	13.4	15.2
20a, 20b, 20c	Roadside	Diffusion Tube	NA	100	33.6	28.6	29.8	25.9	27.4
21	Roadside	Diffusion Tube	NA	100	35.8	32.8	33.7	32.5	34.8
22	Roadside	Diffusion Tube	NA	83.33	25.7	21.1	21.3	17.6	21.3
23	Roadside	Diffusion Tube	NA	100	34.4	26.1	26.2	22.2	23.3
24a, 24b, 24c	Roadside	Diffusion Tube	NA	100	29.9	25.4	28.0	24.8	26.0
25	Roadside	Diffusion Tube	NA	83.33	26.4	24.1	27.7	21.5	26.6
26	Roadside	Diffusion Tube	NA	100	34.7	29.9	33.0	27.6	28.0
27	Roadside	Diffusion Tube	NA	100	38.3	34.4	37.0	30.4	29.1
28	Roadside	Diffusion Tube	NA	83.33	27.5	24.2	24.4	22.7	17.2

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
34a, 34b, 34c	Roadside	Diffusion Tube	NA	100	39.0	36.7	36.6	30.0	34.0

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure 2-3 – Trends in Annual Mean NO₂ Concentrations

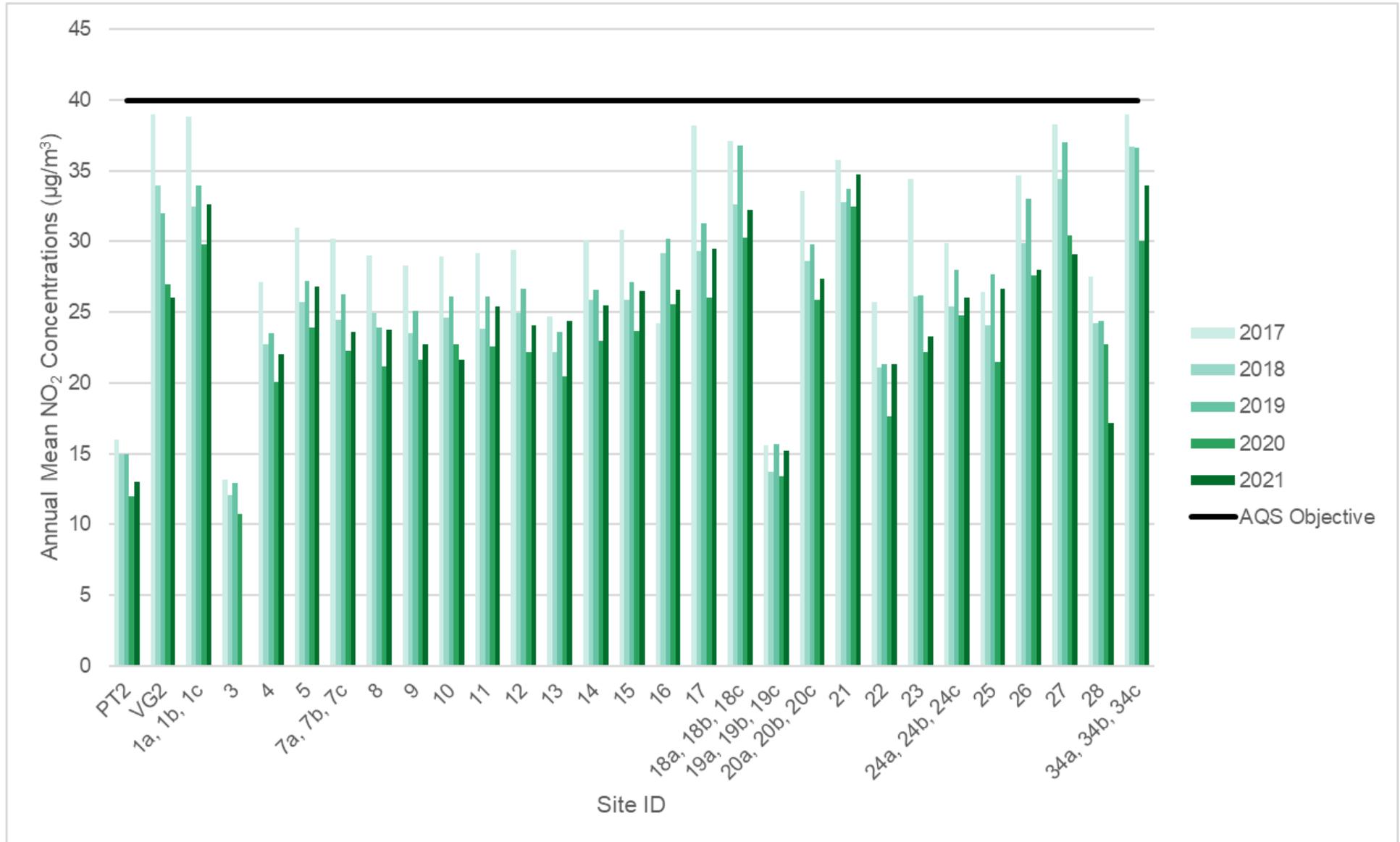


Table 2-4 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
PT2	Industrial	Automatic	NA	98.6	0	0	0	0	0
VG2	Roadside	Automatic	NA	99.2	0	0	0	0	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table 2-5 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
PT2	Industrial	NA	99.5	23	23	21	21	25
DS1	Industrial	NA	21	21	-	22	23	25
TW1*	Industrial	NA	21	21	21	21	20	20
LW1	Industrial	NA	91	21	21	20	21	18
PS2	Industrial	NA	53	25	23.0	20	24	20

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

* This site stopped monitoring in March 2021 and the council do not intend to bring this monitor back into operation

Figure 2-4 – Trends in Annual Mean PM₁₀ Concentrations

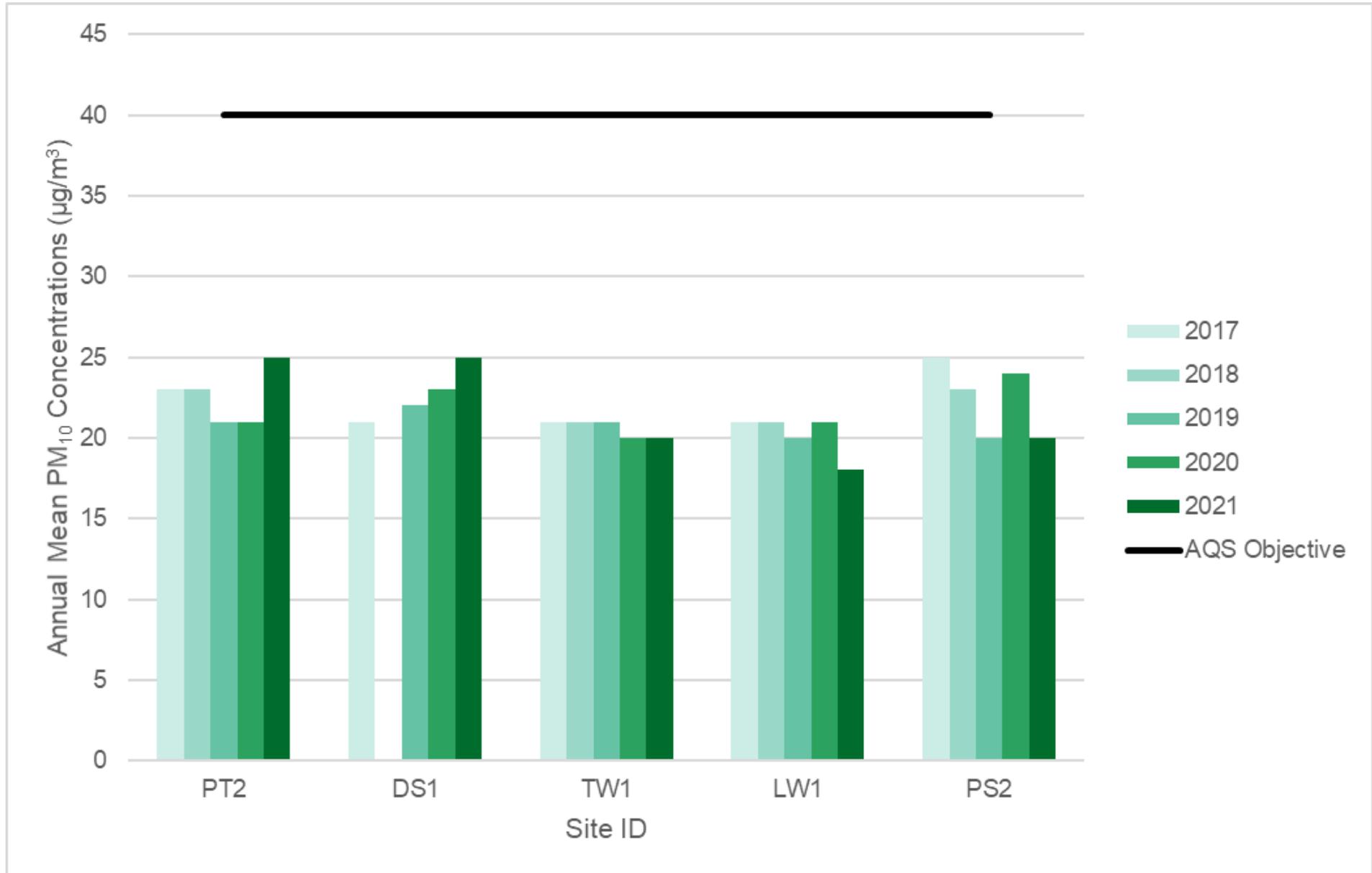


Table 2-6 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
PT2	Industrial	NA	99	17	11	12	11	33
DS1	Industrial	NA	21	2	-	2	0	0
TW1*	Industrial	NA	21	3	9	10	7	0
LW1	Industrial	NA	91	16	9	9	15	7
PS2	Industrial	NA	53	18	12	8	16	3

Notes:

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

* This site stopped monitoring in March 2021 and the council do not intend to bring this monitor back into operation

Table 2-7 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
PT2	Industrial	NA	94.7	10	11	11	9	9
PS2	Industrial	NA	53.7	10	9	9	9	9

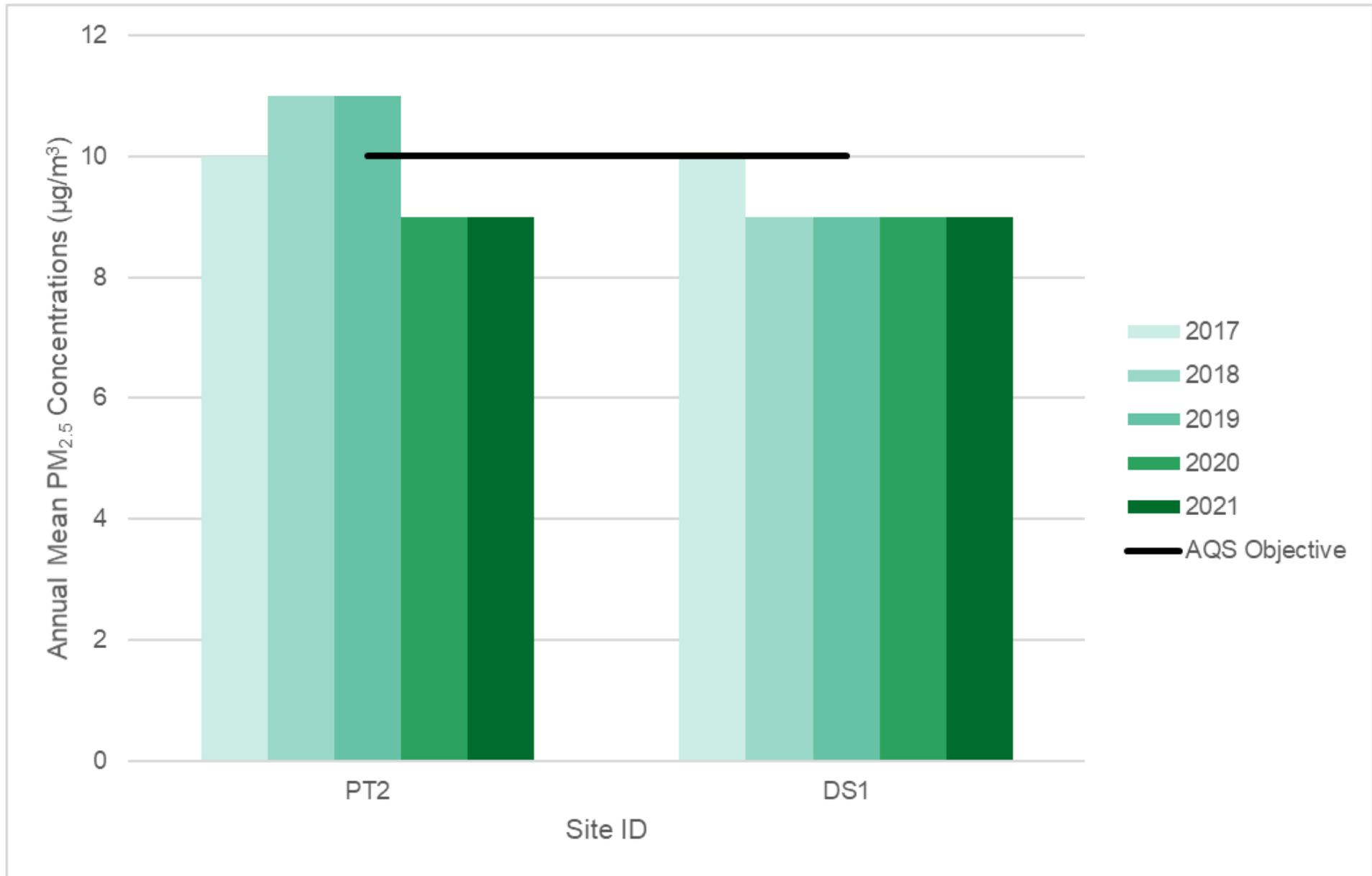
Notes:

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure 2-5 – Trends in Annual Mean PM_{2.5} Concentrations



2.3 Comparison of 2021 Monitoring Results with Previous Years and the Air Quality Objectives

2.3.1 Nitrogen Dioxide (NO₂)

The annual mean objective for NO₂ was not exceeded at any site, whether measurements were conducted using diffusion tubes or continuous analysers.

The maximum concentration at any site was at Diffusion Tube 21 (34.8 µg/m³). This was an increase from the highest concentration during 2020 at Diffusion Tube 21 (32.5 µg/m³). Generally, the trend across all sites showed a decrease in concentrations over the last 5 years with the exception of 2021 when most concentrations increase slightly compared to 2020, this is likely due to the easing of COVID-19 lockdown and restrictions. The average diffusion tube concentration fell by 1.6 µg/m³ in the Taibach Margam area with the largest decrease found at Diffusion Tube 28 (5.5 µg/m³).

No diffusion tube monitoring sites reported an annual mean NO₂ concentration greater than 60µg/m³, therefore in accordance with LAQM.TG(16) it is not believed that there have been any exceedances of the 1-hour NO₂ AQS objective in these areas. Additionally, the automatic monitoring locations at the Fire Station and Victoria Gardens reported no 1-hour NO₂ concentrations greater than 200 µg/m³. Data capture was 98.61% at the Fire Station site and 99.2% at Victoria Gardens. Therefore the 99.8 percentile calculations were not required.

The diffusion tubes and continuous monitors located with the Taibach Margam AQMA have been compliant since 2016. Overall, a trend of decreasing NO₂ levels is shown at all monitoring locations within the AQMA with the diffusion tubes reporting less than 20 µg/m³ for the past 3 years at least.

As all annual mean NO₂ concentrations reported below 36µg/m³, fall-off with distance correction calculations have not been carried out. Additionally, as all automatic monitoring sites had sufficient data capture, annualisation has not been carried out, in accordance with LAQM.TG(16).

Diffusion tube data has been subject to bias adjustment and the calculation methodology is included in Appendix C. A national bias adjustment of 0.78 was used.

The full dataset is included as Appendix A. Annualisation was necessary in one instance for the diffusion tube data, at site 18C.

2.3.2 Particulate Matter (PM₁₀)

There were no exceedances of the short- or long-term averaged air quality objectives.

Data capture rates for all PM₁₀ monitors were below 75%, with the exception of PT2 and LW1 which had a 99.5% and 91% data capture rate. DS1 and TW1 had a 21% data capture for PM₁₀, while PS2 has a 53%. TW1 ceased monitoring in March 2021 and remains non-operational. NPT do not intend to bring this monitor back into operation. These were therefore annualised accordingly- details of the annualisation are included in Appendix C: Air Quality Monitoring Data QA/QC.

Annual mean concentrations of PM₁₀ reported at all the automatic monitoring locations were below the AQS objective of 40 µg/m³ in 2021. The highest concentration location was 25 µg/m³ at PT2 and DS1. A slight decrease has been observed from 2020 (~3µg/m³) for LW1 and PS2. PT2 and DS1 both recorded an increase of 4 µg/m³ and 2 µg/m³ respectively. Note, however, that there is increased measurement uncertainty in the annual mean for LW1 and PS2 due to the lower data capture rates and need for annualisation. However, overall, the annual mean concentration remains relatively consistent to what has previously been reported.

Regarding the 24-hour mean AQS objective whereby there should be no more than 35 24-hour mean concentrations greater than 50 µg/m³, PT2 recorded 33 24-hour means in excess of 50 µg/m³ in 2021, while LW1 recorded 7 exceedances and PS2 recorded 3 exceedances. Due to less than 75% data capture for DS1 TW1 and PS2 the 90.4th percentile of 24-hour means was calculated. This was 22, 39 and 40 µg/m³ respectively and therefore it is unlikely the daily mean objective has been exceeded at these sites.

Monitoring results can be seen in Table 2-5 and Table 2-6 above.

2.3.3 Particulate Matter (PM_{2.5})

The EU Target value (25 µg/m³) and the WHO Guidelines value (10 µg/m³) was not exceeded at either the Prince Street (9 µg/m³) or Port Talbot Fire Station (9 µg/m³) sites. Both sites are representative of public exposure. There is no LAQM air quality objective for PM_{2.5}, however this concentration continues to remain low and consistent with what has previously been reported.

Monitoring results can be seen in Table 2-7 above.

2.3.4 Sulphur Dioxide (SO₂)

There were no exceedances of the 15-minute average of 266 µg/m³ (up to 35 are allowed annually) during 2021 as measured at Port Talbot Fire Station, where the annual data capture rate was 99%. Neither were there any exceedances of the 350 µg/m³ (maximum 120 µg/m³) 1-hour mean or the 125 µg/m³ daily mean (maximum 40 µg/m³). See Table 2-8 for a summary of results. The monitoring station site is representative of relevant public exposure as previously described.

Measurements are carried out using a Thermo 43i UV Fluorescent analyser under the QA/QC arrangements of the Automatic Urban and Rural Network (AURN).

Table 2-8 - Results of Automatic Monitoring for SO₂: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	Number of: c 15-minute Means > 266µg/m ³	Number of: c 1-hour Means > 350µg/m ³	Number of: c 24-hour Means > 125µg/m ³
PT2	Urban Industrial	Y	NA	99	0	0	0

Notes:

In bold, exceedance of the relevant AQS objective (15-min mean = 35 allowed/year; 1-hour mean = 24 allowed/year; 24-hour mean = 3 allowed/year)

¹Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

²Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

2.3.5 Carbon Monoxide (CO)

There were no exceedances of the 8-hour maximum daily running average of 10 mg/m³ (maximum 4.9 mg/m³) during 2021. The annual data capture was 98.6%. See Table 2.9 for a summary of results. The monitoring station site is representative of relevant public exposure as previously described.

Measurements are carried out using a Thermo 48i analyser under the QA/QC arrangements of the AURN.

Table 2-9 – Results of Automatic Monitoring of Carbon Monoxide (CO): Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	Number of Exceedances of 8 hour mean > 10 mg/m ³ (percentile in bracket µg/m ³)c > 266µg/m ³
PT2	Urban Industrial	Y	NA	98.6	0

Notes:

¹Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

²Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

2.3.6 Benzene

Benzene was monitored at Port Talbot Margam between December 2020 and January 2021. However, the results did not highlight an area of concern with a mean of 0.88 µg/m³. There are no new significant local sources of this pollutant which merit further monitoring.

2.3.7 Lead

Lead is monitored at Pontardawe Leisure Centre as part of a study of 13 metals that has been ongoing since 1972. A Thermo Partisol® 2025 gravimetric sampling system is used to collect daily samples using Pall Gelman GN4-Metricel filters. These are exposed on a weekly basis and subsequently analysed using inductively coupled mass spectrometry (ICP-MS). The results for 2021 show that the annual average concentration of lead was 5.7 ng/m³. This is well within the Air Quality Objective of 0.25 µg/m³ (250 ng/m³) to be achieved by 31st December 2008. The analysis and reporting is currently contracted to the National Physical Laboratory.

There are a further four metals national network monitoring stations at Milland Road in Neath, Port Talbot Fire Station, Brecon Road and Tawe Terrace in Pontardawe. The annual average concentrations of lead at these sites in 2021, respectively, were 11.8 ng/m³, 8.1 ng/m³, 5.8 ng/m³, and 6.1 ng/m³, all of which comply with the Air Quality Objective.

2.3.8 Ozone (O₃)

Ozone is a highly reactive chemical which, when present in the lower atmosphere at high concentrations, can irritate the eyes and air passages, causing breathing difficulties.

Ozone is a so-called secondary pollutant since it is produced indirectly by the reaction between hydrocarbons, NO₂ and sunlight. Ozone tends to be lower in urban areas because high levels of NO are produced by vehicles and this helps to break down ozone to oxygen and NO₂. The highest concentrations of ozone therefore tend to occur in rural areas and during the summer months. The ozone forming reactions are complex and have a time lag associated with them which can mean that ozone levels are greatest downwind of the location where the pollution is produced. It is recognised that low level ozone formation is an international problem and that exceedances of the National Air Quality Standard would still occur, even if all sources of hydrocarbons were eliminated in this country.

The Air Quality Standards objective for ozone is 100 µg/m³, measured as a rolling 8-hour average, which is not to be exceeded more than 10 times a year. The Fire Station site measured concentrations greater than 100 µg/m³ on 4 occasions during 2021 (data capture was 99%), not exceeding the permitted number unlike last year which exceeded for the first time in at least the past five years.

The long-term trend of ozone exceedances shows a gradual increase in concentrations across the years. Concentrations decreased in 2021, as shown in Table 2-10 and Figure 2-6.

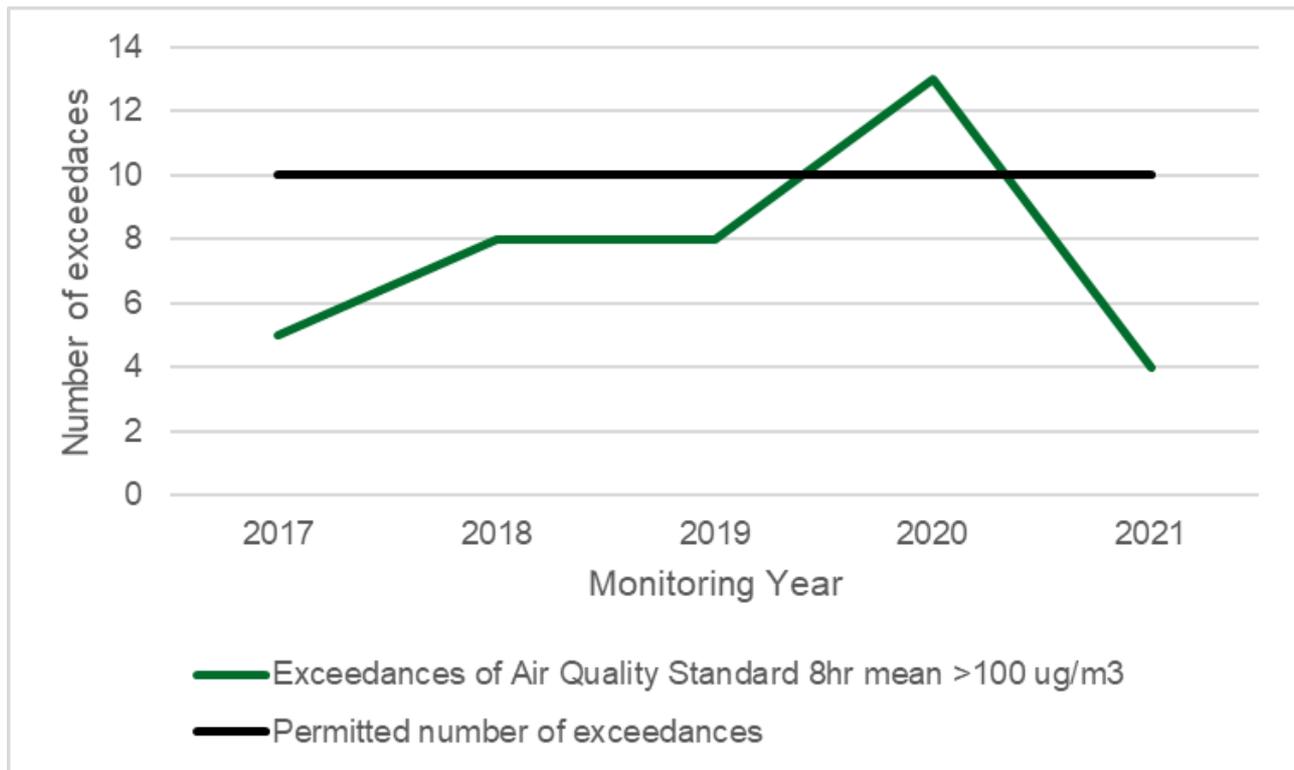
Table 2-10 – Annual Number of Exceedances of 8-hour mean Ozone Concentration 2016 – 2020

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
PT2	Urban Industrial	Y	NA	99	5	8	8	13	4

Notes:

¹Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

²Data capture for the full calendar year (e.g. if monitoring was carried out for six

Figure 2-6 – Number of Ozone Exceedances of the UK recommended AQS

2.3.9 Polycyclic aromatic hydrocarbons (PAH)

Polycyclic aromatic hydrocarbons (PAHs) are a group of persistent organic compounds, some of which are toxic and/or possible or proven human carcinogens; they are produced through industrial and incomplete combustion of carbon containing fuels.

Air quality standards have been set by UK and EU and are based upon measurements of benzo[a]pyrene which is also known as B[a]P.

The UK Air Quality Objective for PAHs is based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS). It specifies an annual air quality standard of 0.25 ng/m³ benzo[a]pyrene to be achieved by 2012.

The EU Air Quality Daughter Directive (2005/107/EC) specifies a target value of 1 ng/m³ for the annual mean concentration of benzo[a]pyrene to be achieved by 2012.

Monitoring of benzo[a]pyrene first commenced at Groeswen Hospital in 1999 using an Anderson sampler. This equipment was replaced by a Digitel sampler in the last quarter of 2007. Monitoring now takes place at Port Talbot Fire Station following the redevelopment of Groeswen Hospital site. Results are displayed in Table 2-11, the UK standard of 0.25 ng/m³ benzo[a]pyrene was exceeded in 2021.

Although the monitored B[a]P concentration at Port Talbot frequently exceeds the Air Quality Objective of 0.25 ng/m³, it has never exceeded the EU target value of 1 ng/m³. In addition to monitored air quality data, modelling techniques are used to predict pollution levels in the wider area beyond the monitoring sites. NPT have recently been made aware by Welsh Government that modelling exercises undertaken by Environment Agency suggests that the target value at Port Talbot is at risk of being exceeded in future years.

A report by Ricardo in 2004 identified four sites on the network where there were compliance problems with the UK Air Quality Objective. Sites in Northern Ireland and Scotland were likely to be related to use of solid fuel in domestic heating. Whereas Scunthorpe and Port Talbot were due to the steel works (likely associated with coke production). This report was updated in 2022 and can be found here: https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2203150935_2020_PCM_technical_report.pdf. Exceedances in 7 km² of the South Wales zone and 3 km² of the Swansea Urban Area have been modelled, associated with industrial emissions from the coke oven at the steel plant at Port Talbot.

Figure 2-7 and Figure 2-8 show the modelled annual mean B(a)P concentration at a 100 m x 100 m spatial resolution in the vicinity of the coke ovens at Scunthorpe and Port Talbot respectively. Figure 2-9 shows the complex terrain surrounding Port Talbot which has been incorporated into the 2020 modelling and influences the dispersion of emissions from the coke ovens in this location.

In order to fully understand the situation and complete a further modelling study, an additional monitoring station is required at a different location in Port Talbot. NPT will work with Welsh Government and Environment Agency to deploy the additional monitoring required.

Table 2-11 – Benzo[a]pyrene annual averages 1999-2021

Year	B[a]P ng/m ³	Year	B[a]P ng/m ³	Year	B[a]P ng/m ³
1999	0.24	2007	0.48	2015	0.8
2000	0.59	2008	0.6	2016	0.94
2001	0.4	2009	0.39	2017	0.65
2002	0.34	2010	0.37	2018	0.69
2003	0.47	2011	0.42	2019	0.32
2004	0.29	2012	0.39	2020	0.33
2005	0.41	2013	0.42	2021	0.48
2006	0.29	2014	0.61		

Figure 2-7 – Modelled total annual mean B(a)P concentration in the vicinity of the Appleby coke ovens at the Scunthorpe steelworks in 2020

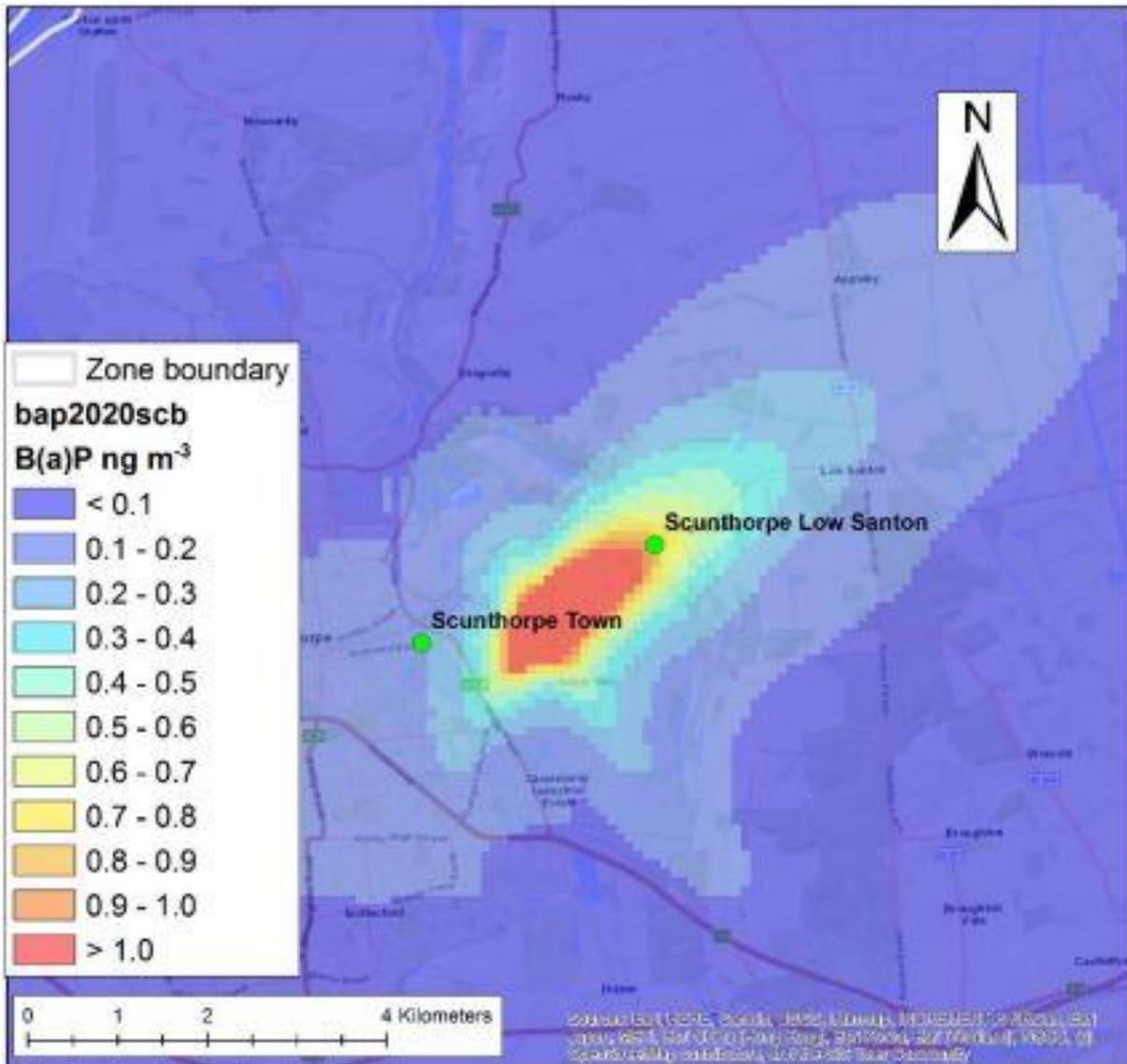
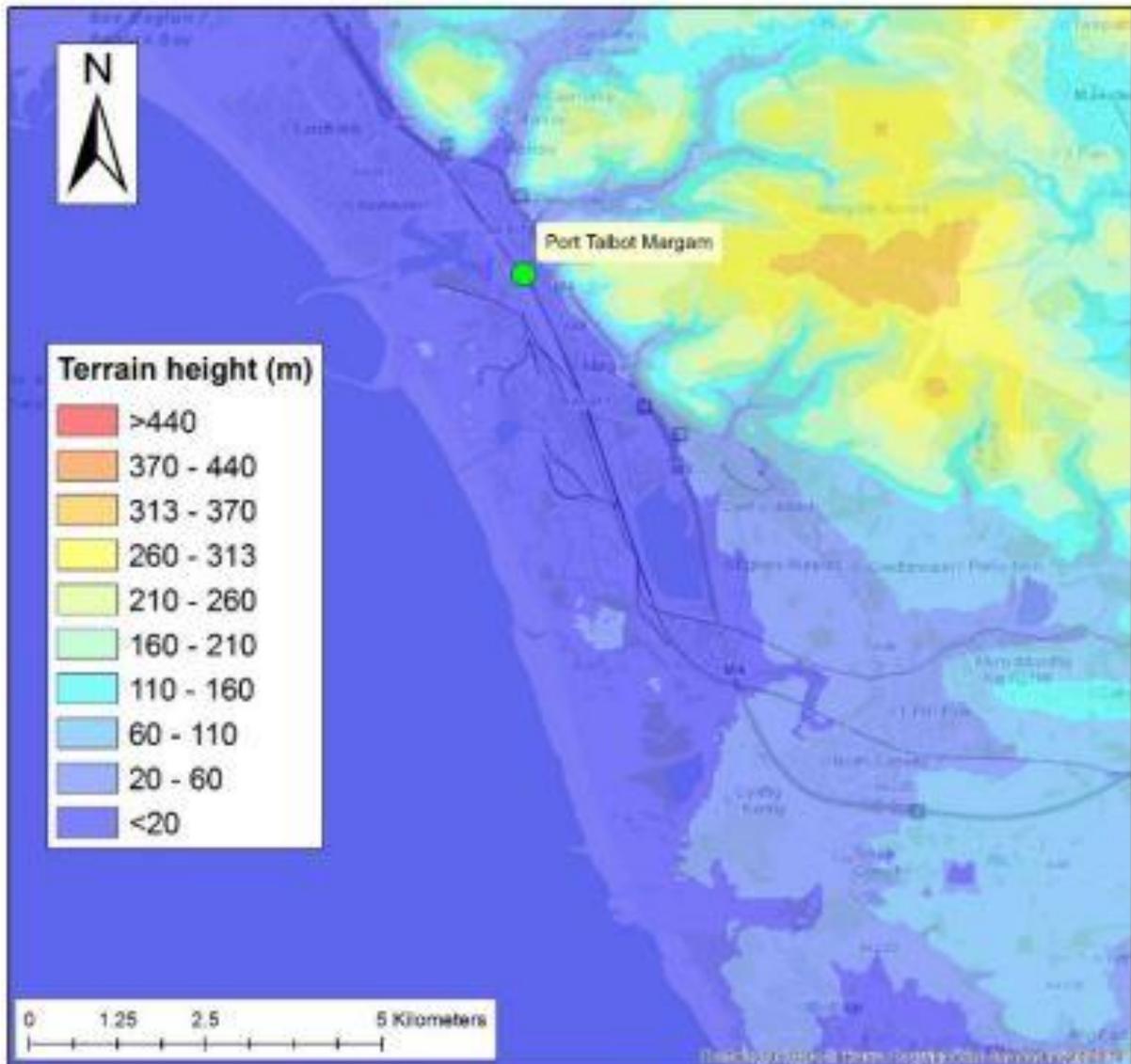


Figure 2-9 - Terrain heights in the vicinity of Port Talbot



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2.3.10 Metals monitoring

Monitoring of the concentrations of 13 airborne metals has been carried out in the Pontardawe area since 1972. Pumps continuously sample ambient air and particles are collected on filters that are analysed by Ricardo. Until 1997, this work was carried out at Trebanos Sewage Works. Following a programme of construction at the site, monitoring was re-located to Pontardawe Leisure Centre. The objectives are to establish whether local industry has any significant impact upon airborne metal concentrations in the area. The Pontardawe site is approximately 4 km downwind of the Nickel works at Clydach, as compared to the Trebanos site, which was about 2 km from the works. The Pontardawe site is also approximately 1 km upwind of Wall Colmonoy, a manufacturer of metal alloys

which is subject to an Environmental Permit issued by this Authority. Measurements are also made in Neath near to another manufacturer of metal alloys, Sandvik Osprey.

Monitoring is carried out in respect of the following metals:

- Lead (Pb)
- Nickel (Ni)
- Zinc (Zn)
- Arsenic (As)
- Cadmium (Cd)
- Chromium (Cr)
- Copper (Cu)
- Iron (Fe)
- Cobalt (Co)
- Selenium (Se)
- Antimony (Sb)
- Cerium (Ce)
- Scandium (Sc)
- Manganese (Mn)
- Vanadium (V)

In December 2004 the European Union published a Directive relating to arsenic, cadmium, mercury, nickel and PAH, (2004/107/EC). This “4th Daughter Directive” set target values for arsenic, cadmium, nickel and benzo[a]pyrene (a PAH) for the total content in the PM₁₀ fraction averaged over a calendar year. No limits or targets were set for mercury. The Directive target values for metals are shown below and were to be achieved by 31st December 2012:

- Nickel: 20 ng/m³
- Arsenic: 6 ng/m³
- Cadmium: 5 ng/m³

The Directive requires measurement of air concentrations to be made using valid PM₁₀ monitoring methods. The polypropylene ducts previously used to hold the filters did not conform exactly to a PM₁₀ inlet specification and monitoring using a compliant method commenced during 2006. This necessitated the purchase of a Partisol 2025 sampler manufactured by Rupprecht & Patashnick Inc. The new and existing samplers were run concurrently for a period in order to assess the comparability of the results. The existing

sampler was discontinued at the end of 2006 following completion of the comparability test.

The metals results for 2021 are summarised in Table 2-12, and discussed in the following sections.

Table 2-12 – 2021 annual mean concentrations of heavy metals across five monitoring sites (ng/m³)

Element	Port Talbot Fire Station	Pontardawe Brecon Road	Pontardawe Leisure Centre	Pontardawe Tawe Terrace	Neath Milland Road
As	0.87	0.70	0.63	0.67	0.94
Cd	1.00	0.27	0.26	0.31	0.39
Ce	-	-	-	-	-
Co	0.20	0.36	0.97	2.67	0.78
Cr	3.58	1.55	2.14	5.49	11.89
Cu	13.47	4.83	2.87	4.64	29.82
Fe	2616.99	206.40	157.24	219.19	442.04
Hg*	-	-	-	-	-
Mn	28.76	3.84	4.11	6.22	8.25
Ni	1.10	6.16	9.36	24.43	4.93
Pb	8.05	5.84	5.56	6.08	11.79
Sb	-	-	-	-	-
Sc	-	-	-	-	-
Se	0.73	0.48	0.54	0.53	0.51
Zn	48.07	14.01	11.51	13.96	30.27
V	3.63	0.51	0.56	0.57	0.74

2.3.10.1 Metals Monitoring Results – Pontardawe Leisure Centre

Nickel: The annual average concentration was 9.4 ng/m³. This is below the Fourth Daughter Directive's Lower Assessment Threshold value of 10 ng/m³. There were two weekly concentrations above 20 ng/m³ recorded. The maximum weekly concentration observed was 75 ng/m³ (375 % of the Target Value). The Fourth Daughter Directive Target Value for nickel is 20 ng/m³.

Cadmium: The annual average concentration was 0.3 ng/m³. This is below the Fourth Daughter Directive's Lower Assessment Threshold of 2 ng/m³ and represents 5.7% of the Target Value (5.2 ng/m³). The maximum weekly concentration observed was 0.8 ng/m³ (15 % of the Target Value).

Arsenic: The annual average concentration was 0.6 ng/m³. This is below the Fourth Daughter Directive's Lower Assessment Threshold of 2.4 ng/m³ and represents 10% of the Target Value (6 ng/m³). The maximum weekly concentration observed was 1.7 ng/m³ (28% of the Target Value and above the Lower Assessment Threshold value of 2.4 ng/m³).

Lead has been discussed in Section 2.3.7

2.3.10.2 Metals Monitoring Results – Port Talbot Margam

Metals have also been measured as part of the UK Metals Network at Port Talbot Fire Station since February 2008. Some of the metals monitored in the network are different to those measured at Pontardawe Leisure Centre e.g. platinum (Pt), vanadium (V) and mercury (Hg).

The nickel concentration at Port Talbot in 2021 (1.1 ng/m³) was 5.5% of the EU Target of 20 ng/m³.

The annual mean concentrations of arsenic and cadmium were 0.9 ng/m³ and 1.0 ng/m³ respectively. These concentrations represent approximately 15% and 20% of their EU target values of 6 and 5 ng/m³ respectively.

Lead was discussed in Section 2.3.7.

The level of iron in the atmosphere at Port Talbot was 2617 ng/m³. Whilst iron does not represent a risk in respect of toxicity, this concentration comprises approximately 10% of the PM₁₀ measured in Port Talbot and highlights the influence of the Port Talbot steelworks. The corresponding figure for 2020 was 14% iron.

2.3.10.3 Metals Monitoring Results – Pontardawe Tawe Terrace

This monitoring station was set up in September 2009, which is approximately 270 m from Wall Colmonoy's Part B permitted site in Pontardawe. This monitoring station was set up in order to further investigate the potential for nickel emissions from this site, which Neath Port Talbot uses approximately 500 tonnes of the metal each year to manufacture a variety of hardwearing products. The monitoring station uses a Partisol 2000 sampler with filters provided and analysed by the National Physical Laboratory (NPL) in accordance with BS EN 14902.

The average concentration of nickel in 2021 was 24.7 ng/m³ which is 122% of the Target value. This is an increase on the figure recorded in 2020 (23.0 ng/m³).

The Council as regulator of Wall Colmonoy, continues to place the emphasis on maintenance checks to bring ambient nickel levels in compliance with the Target.

The annual mean concentrations of arsenic and cadmium were 0.7 ng/m³ and 0.3 ng/m³ respectively. These concentrations represent approximately 12% and 6% of their EU target values of 6 and 5 ng/m³ respectively.

2.3.10.4 Metals Monitoring Results – Brecon Road, Pontardawe

The monitoring station was set up in August 2011 and is approximately 500 m northeast of the Wall Colmonoy site. The monitoring station was set up to be as close as possible to the area predicted to have the highest modelled nickel downwind concentrations in a residential location. The monitoring station uses a Partisol 2000 sampler with filters provided and analysed by the National Physical Laboratory (NPL) in accordance with BS EN 14902.

The average concentration of nickel in 2021 was 6.2 ng/m³ which is 31% of the Air Quality Objective.

The annual mean concentrations of arsenic and cadmium were 0.7 ng/m³ and 0.2 ng/m³ respectively. These concentrations represent approximately 12% and 6% of their EU target values of 6 and 5 ng/m³ respectively.

2.3.10.5 Metals Monitoring Results – Milland Road, Neath

The monitoring station was set up in Milland Road car park in December 2014. It lies between the Sandvik Osprey plant and the nearest receptors in King Street. The monitoring station uses a Partisol 2000 sampler with filters provided and analysed by the National Physical Laboratory (NPL) in accordance with BS EN 14902.

The average concentration of nickel in 2021 was 4.9 ng/m³ which is 25% of the Air Quality Objective.

The annual mean concentrations of arsenic and cadmium were 0.9 ng/m³ and 0.4 ng/m³ respectively. These concentrations represent approximately 15% and 8% of their EU target values of 6 and 5 ng/m³ respectively

2.3.11 Grit and Dust Monitoring

Previous reports have described how deposit gauges have been used to collect atmospheric fallout from several locations. During 2021, sampling of this kind took place at six sites in the County Borough (locations shown in

There were two periods during 2021 where the IAQM nuisance limit was not exceeded for overall deposition rates, but was exceeded when the conversion factor for Unburnt Coal/Carbonaceous Matter as Coal was applied. A summary of the average Scanning electron microscopy (SEM) / energy dispersive X-ray spectroscopy (EDS) results are presented in Table 2-14, providing a breakdown of the components.

Table 2-14 Summary of Dust Deposition SEM-EDS Results

Site	% Unburnt Coal/ Carbonaceous Matter	% Carbonised Coal	% Silicon Rich	% General Dirt	% Fly Ash Spheres	% Plant/ Animal Fragments	% Calcium Rich	% Iron Rich
Prince St, Port Talbot	59.1	0.0	6.7	24.1	0.0	1.1	6.9	2.0
Tairwaith Community Hall	40.0	0.0	9.7	26.1	0.0	0.7	8.9	14.6
Little Warren, Port Talbot	37.5	0.0	14.7	26.6	0.0	0.8	6.2	14.1
Wembley Avenue, Onllwyn	44.8	0.0	6.8	25.0	0.0	2.2	10.4	10.8
Dyffryn Upper School, Bertha Road, Port Talbot	39.3	0.0	10.5	24.8	0.0	0.8	7.8	16.8
Port Talbot Fire Station	35.5	0.0	9.5	25.3	0.2	1.7	7.8	20.0

Figure 2-10).

The report includes results from the following locations:

- Prince Street, Margam, Port Talbot – measuring dust from Steelworks
- Little Warren, Port Talbot – measuring dust from Steelworks (was moved in Dec 2021 as continuously vandalised)
- Dyffryn Upper School, Bertha Road, Port Talbot – measuring dust from Steelworks
- Port Talbot Fire Station – measuring dust from Steelworks
- Wembley Avenue, Onllwyn – measuring opencast mine
- Tairwaith Community Hall – measuring opencast mine

Table 2-13 details the annual average and maximum deposition, alongside a comparison with the “nuisance limit” (200 mg/m²/day), which is recognised by the IAQM Guidance as relevant for this method of monitoring. However, it should be noted that this “limit” is not statutory and is relevant to construction guidance. Public perception of what constitutes a nuisance might suggest that a lower “limit” would be appropriate. The Minerals Technical Advice note from Welsh Government suggests a limit of 80 mg/m²/day for coal working, this has also been presented for comparison purposes.

As in previous years, the Port Talbot sites at the Fire Station and Prince Street remained the highest in terms of average deposition, with the addition of Little Warren. When considering the average values, half of the sites reported below the IAQM Nuisance Limit,

and the other half exceeded the Minerals Technical Advice Limit – Prince Street, Fire Station and Little Warren sites in Port Talbot. It is worth noting that this limit is associated with coal works, and there is no statutory limit for dust.

Table 2-13 – Summary of Dust Deposition Results Compared with Recommended Limit Values

Site	Maximum Deposition (mg/m ² /day)	Average Deposition (mg/m ² /day)	IAQM Nuisance Limit (mg/m ² /day)	Minerals Technical Advice Limit (mg/m ² /day)
Prince St, Port Talbot	201	103.5	200	80
Tairwaith Community Hall	127	45.5	200	80
Little Warren, Port Talbot	270	48.7	200	80
Wembley Avenue, Onllwyn	190	53.8	200	80
Dyffryn Upper School, Bertha Road, Port Talbot	188	72.7	200	80
Port Talbot Fire Station	508	88.7	200	80

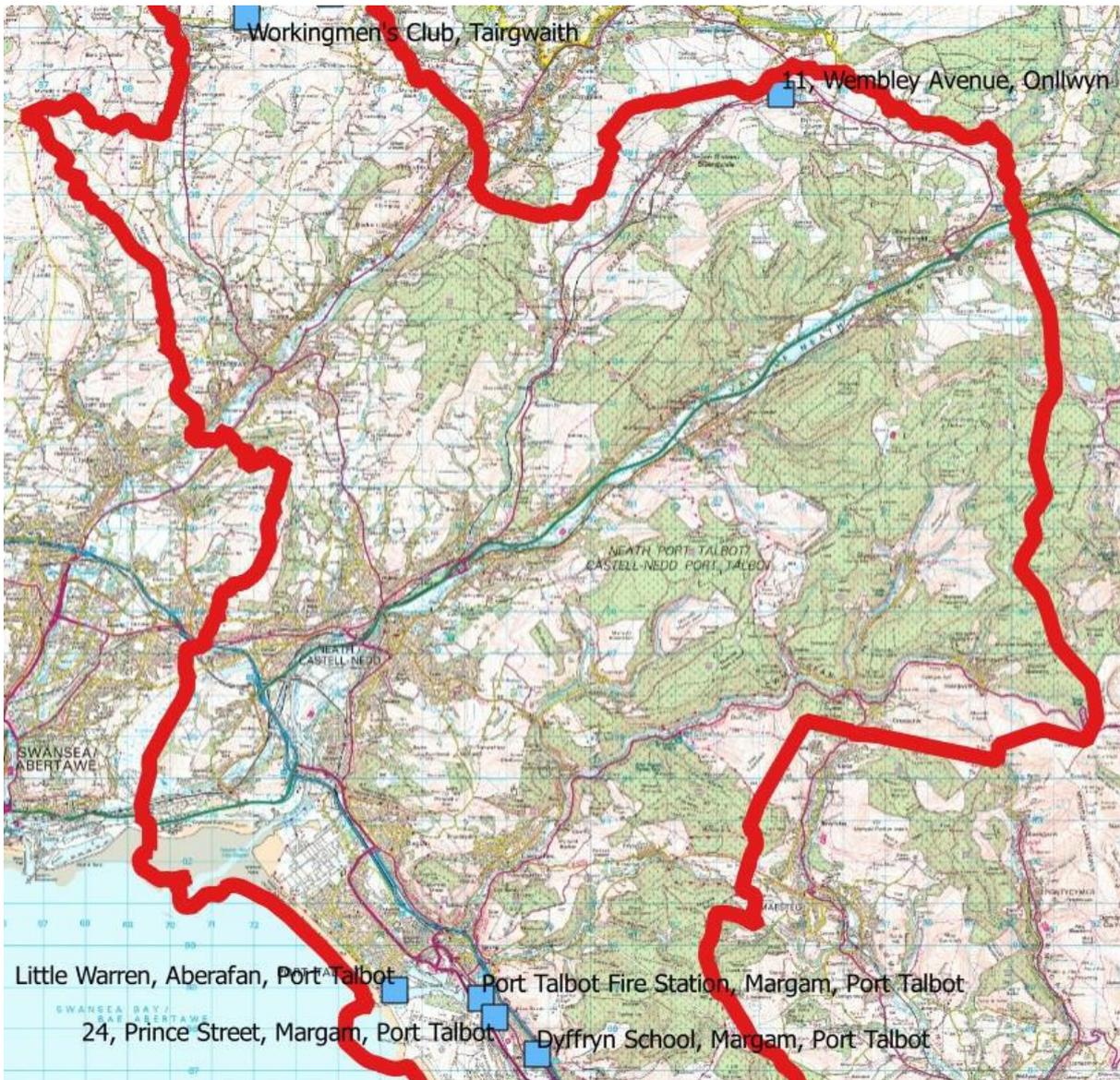
There were two periods during 2021 where the IAQM nuisance limit was not exceeded for overall deposition rates, but was exceeded when the conversion factor for Unburnt Coal/Carbonaceous Matter as Coal was applied. A summary of the average Scanning electron microscopy (SEM) / energy dispersive X-ray spectroscopy (EDS) results are presented in Table 2-14, providing a breakdown of the components.

Table 2-14 Summary of Dust Deposition SEM-EDS Results

Site	% Unburnt Coal/Carbonaceous Matter	% Carbonised Coal	% Silicon Rich	% General Dirt	% Fly Ash Spheres	% Plant/Animal Fragments	% Calcium Rich	% Iron Rich
Prince St, Port Talbot	59.1	0.0	6.7	24.1	0.0	1.1	6.9	2.0
Tairwaith Community Hall	40.0	0.0	9.7	26.1	0.0	0.7	8.9	14.6
Little Warren, Port Talbot	37.5	0.0	14.7	26.6	0.0	0.8	6.2	14.1
Wembley Avenue, Onllwyn	44.8	0.0	6.8	25.0	0.0	2.2	10.4	10.8
Dyffryn Upper School, Bertha	39.3	0.0	10.5	24.8	0.0	0.8	7.8	16.8

Road, Port Talbot								
Port Talbot Fire Station	35.5	0.0	9.5	25.3	0.2	1.7	7.8	20.0

Figure 2-10 – Location of Deposit Gauges



2.4 Summary of Compliance with AQS Objectives as of 2021

NPT has examined the results from monitoring in the borough. Concentrations are all below the Objectives, therefore no further action is required.

Given the falling concentrations at the monitoring locations within and adjacent to the Taibach Margam AQMA over the last five years, with the exception of PM₁₀. NPT will consider revoking the Taibach Margam AQMA if further declines in the number of

exceedances of the 24-hour PM₁₀ objective are observed into 2022. PT2 was an exception with the number of exceedances increasing compared to 2020.

Nickel exceeded at Pontardawe Leisure Centre (in 2 consecutive weeks with a maximum of 74 ng/m³) and Pontardawe Tawe Terrace (with an average 24.7 ng/m³). Nickel meetings have not been taking place. NPT will contact the Welsh Government to make them aware of the exceedances.

3 New Local Developments

3.1 Road Traffic Sources (and Other Transport)

There have been no changes to road traffic sources during 2021 that meet the associated criteria for further consideration.

3.2 Industrial / Fugitive or Uncontrolled Sources / Commercial Sources

There have been no new industrial sources during 2021 that meet the associated criteria for further consideration.

There have been no new fugitive or uncontrolled particulate matter sources during 2021 that meet the associated criteria for further consideration.

There have been no new commercial sources during 2021 that meet the associated criteria for further consideration.

3.3 Other Sources

There were no PM₁₀ exceedance days measured at any of the four monitoring sites around 5th November 2021. Subsequently, it has been interpreted that there was no evidence of adverse air quality arising from fireworks displays. Neither was there any indication to suggest that bonfires, domestic wood burning, or other localised pollution incidents gave rise to a significant pollution incident.

NPT confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

NPT confirms that all the following have been considered:

- Road traffic sources
- Other transport sources
- Industrial sources
- Commercial and domestic sources
- New developments with fugitive or uncontrolled sources.

3.4 Planning Applications

NPT have requested further information on the planning application for Land West of Junction 38 of the M4 (Reference - P2021/1255) due to potential impacts on the M4 Junction. It is a full planning application of the development of a metal processing facility totalling 28,500 sq.m of floorspace comprising a powder processing plant (17,377 sq.m), warehouse and store (5,428 sq.m) office building (1,442 sq.m), amenity building (776 sq.m), laboratory (200 sq.m), services building (470 sq.m), substation (107 sq.m), phase 2 (2,700 sq.m), CCTV, storage tanks and plant, parking, servicing and roads and associated works. Further information can be found on the [planning portal](#).

3.5 Planned Proactive Monitoring

3.5.1 Vortex

NPT are currently undertaking a pilot study to test the concept of localised air pollution monitoring. It forms part of the Swansea Bay City Deal project called 'Supporting Innovation and Low Carbon Growth', led by NPT Council. It is delivered as part of the council's Decarbonisation and Renewable Energy (DARE) Strategy.

The aim of the pilot study is to achieve a better understanding of air quality on a local level by using digital technology. Sensors are located in; Margam; Taibach; Aberavon; Sandfields and Baglan Energy Park. The area will act as a test bed for the technology and will provide real time data on how air quality varies between different neighbourhoods.

NPT are collaborating with a local company Vortex IoT who have developed this innovative technology. Vortex IoT provide the sensors, wireless network and maintenance support. It is the first project of this kind in Wales

The project is hoped to help the council more effectively target interventions, identify any pollution hotspots and pollution sources that were previously hidden and help it improve air quality and health outcomes.

The results of the study will be released on completion of the pilot project which is due to run for 3 years.

3.5.2 Short Term Operating Reserve (STOR) at Afan Way

In May 2021 concerns were raised about the local Air Quality near the Short Term Operating Reserve (STOR) at Afan Way. Although the air quality modelling data for the facility suggested it would not give rise to any breach of Air Quality objectives, there was an ask for Environmental Health to undertake local air quality monitoring for Nitrogen Dioxide (NO₂) and Carbon Monoxide (CO). NPT has commenced a 12 month study using real time data from 3 of the Vortex sensors and a number of diffusion tubes located at various locations circulating the STOR and at nearby residential receptors. Unfortunately there was not a low cost option for monitoring CO and therefore the decision was made to focus on NO₂. The full results of this localised monitoring project will be reported in the 2024 APR, with interim monitoring data provided in next year's report.

4 Policies and Strategies Affecting Airborne Pollution

The Council's air quality strategy (AirWise) was first drawn up in 2000 and was subsequently revised in 2006 and 2013. The latest version of the document can be found on the Council's [website](#).

Progress being taken towards implementation of the strategy is contained within strategy document.

4.1 Local / Regional Air Quality Strategy

NPT adopted the Local Development Plan (LDP) on 27th January 2016. The extract below captures all relevant policies in respect of air quality / pollution, namely:

- Strategic Policy SP16 – Environmental Protection;
- Policy EN8 – Pollution and Land Stability; and
- Policy EN9 – Developments in the Central Port Talbot Area.

Subsequently in October 2016, NPT adopted a number of Supplementary Planning Guidance (SPG) documents to support the LDP, which set out more detailed topic or site-specific guidance on the way in which the policies of the LDP will be applied in particular circumstances or areas. Supplementing the three LDP policies referred to above, the 'Pollution' SPG provides detailed information about pollution issues in NPT and sets out the relevant matters that will need to be taken into consideration when developments are being planned. While only policies in the LDP have special status in the determination of planning applications, the SPG will be taken into account as a material consideration in the decision-making process.

NPT are in the process of creating a new LDP and one part of the consultation has now closed but there is more ongoing. More information is available at:

<https://www.npt.gov.uk/29462>.

4.2 Local Transport Plans and Strategies

The Regional Transport Plan is the result of joint working between the four local authorities (Carmarthenshire, Neath Port Talbot, Swansea and Pembrokeshire) in southwest Wales. It replaces the individual local transport plans previously adopted by the four councils. As well as acting as a bidding document for major transport schemes it will shape transport

policy in the region for the period 2016 -2021 and beyond. Details can be found on the Council's [website](#).

4.3 Active Travel Plans and Strategies

NPT's Active Travel information can be found on their [website](#). This includes the existing route map (ERM) and the Integrated Network Map (INM).

4.4 Local Authorities Well-being Objectives

The Environmental Health team address the wider determinants of health, which is the basis of the Act, and as such deals with a number of issues either directly or indirectly that contribute to the goals set out in the Well-being of Future Generations Act. For example: accumulations of rubbish and pest control; air quality strategy, monitoring and regulation; commercial and industrial pollution control; contaminated land strategy and regulation; dampness in housing; derelict houses and unsightly land; domestic air pollution control (garden fires/bonfires); health and safety regulation in Local Authority enforced businesses; health and safety regulation in houses in multiple occupation (HMOs); housing health and safety rating system in private rented accommodation; illegal eviction and harassment; industrial and commercial noise; neighbour nuisance and antisocial behaviour; planning consultations; public health protection and health promotion (sunbeds, tattooing etc); smoking ban and smoke free legislation; water quality.

4.5 Green Infrastructure Plans and Strategies

NPT is taking a more strategic approach to the management, enhancement and creation of Green Infrastructure, for the benefit of people and wildlife. Funding was secured from Welsh Government from the GI Capital Fund in 2018 to develop GI opportunity and demand maps, and deliver a demonstration project, whilst funding for further implementation was secured as part of the ENRaW (Enabling Natural Resources and Well-being) WG fund for 2019/20. As part of this grant, over 6000 saplings were planted and 160 large standards were planted throughout the county borough, in schools and urban locations, including the Port Talbot area.

An update is being awaited on further funding that has been sought from a second ENRaW application, for the period from April 2020 until March 2023. This funding bid was

successful with funding received in September 2021 after significant delays. This provided the opportunity to further deliver GI intervention in Neath Port Talbot.

4.6 Climate Change Strategies

NPT has endorsed a Decarbonisation and Renewable Energy Strategy, a draft version of which is available via their [website](#).

5 Conclusion and Proposed Actions

5.1 Conclusions from New Monitoring Data

The NO₂ monitoring data from 2021 shows that at all monitoring locations, annual mean NO₂ concentrations have complied with the annual mean NO₂ AQS objective. Compliance with NO₂ objectives was also reported in 2020 and the preceding years. Slight increases in 2021 concentrations compared to 2020 however they are still lower than 2019 levels. The lower 2021 levels are believed to be due to the impacts of the COVID-19 pandemic, whereby traffic volumes were observed to have decreased following the national lockdowns and “stay at home” guidance. Despite this, in previous years most of the monitoring locations reported relatively stable, if not slightly decreasing, trends in NO₂ concentrations year-on-year. In 2021, there was an average increase of 1.6 µg/m³ in annual mean NO₂ concentrations across the County Borough. The 2020 data should be considered as a slightly unique year in regard to the overall trends of pollutant concentrations in NPT with concentrations returning to business-as-usual levels in 2021.

Monitored PM₁₀ concentrations at all the continuous monitoring locations continue to report well below the annual mean PM₁₀ AQS objective. The highest of these being PT2 and DS1 with an annual average concentration of 25 µg/m³. The other three locations all experienced a decrease of up to 3 µg/m³ in their annual averages but PT2 and DS1 recorded an increase of 4 µg/m³ and 2 µg/m³ respectively. In regard to the 24-hour mean AQS objective whereby there should be no more than 35 24-hour mean concentrations greater than 50 µg/m³, no sites exceeded the 35 limits with the highest being PT2 with 33 incidences. 4 additional exceedances were recorded as 24-hour rolling means that were not bookended by exceedance days. SEQ also detected breaches. Given the relatively stable levels across NPT over the last five years, consideration will be given to the revocation of the Taibach Margam AQMA within the 2023 APR, following the updated AQAP.

5.2 Conclusions relating to New Local Developments

Ongoing implementation and development of local strategies, as detailed in Table 1-2, will continue to assist in reducing pollution concentrations and emissions. The Council also continues to request air quality assessments for new planning applications where relevant,

to ensure that there is no significant degradation of air quality or that no new sensitive receptors are being introduced into areas of existing poor air quality.

5.3 Other Conclusions

Fine particulates of less than 2.5 microns in size (PM_{2.5}) easily complied with the EU Target which is to be complied with by 2015. The EU Target value (25 µg/m³) and the WHO Guidelines value (10 µg/m³) was not exceeded at either the Prince Street (9 µg/m³) or Port Talbot Fire Station (9 µg/m³) sites.

Ozone is not covered by Local Air Quality Management because trans-boundary pollution can have a significant effect upon local results. Exceedances of the 8-hour mean objective of 100 µg/m³ have remained relatively consistent over the past five years but generally been below the permitted 10 exceedances per year. 2021 showed a decrease from 13 exceedances in 2020 to below the permitted number of exceedances in 2021 (4 exceedances reported in 2021).

The concentration of polyaromatic hydrocarbons at Port Talbot continues to exceed the Air Quality Objective of 0.25 ng/m³, but it has never exceeded the EU target value of 1 ng/m³. The 2021 annual average concentration almost tripled compared to the concentration reported in 2020, reporting 0.48 ng/m³ in 2021 compared with 0.33 in 2020 ng/m³.

Arsenic, Lead and Cadmium easily comply with the EU Target, both in Port Talbot and Pontardawe. Nickel concentrations comply with the EU Target at all locations in Neath and Port Talbot with the exception of Pontardawe Leisure Centre and Pontardawe Tawe Terrace. Pontardawe Leisure Centre had 2 consecutive exceedances weeks with a maximum of 74 ng/m³. While the result at Tawe Terrace was much improved on the previous year but fell short of the compliance with the Target (reporting 122% of the Target value in 2021). The Council will continue with enhanced regulation of Wall Colmonoy with the emphasis being on maintenance procedures.

5.4 Proposed Actions

1. NPT will continue to actively monitor pollutant concentrations, reviewing the monitoring network where necessary.
2. NPT will participate in the current Short Term Action Plan and participate in relevant meetings as detailed in the plan

3. NPT will not be revoking the AQMA in the short term and will be assessing the impact of the points detailed in section 1.2
4. NPT intends to publish a review of the AQAP in 2022 to better reflect the current status of the AQMA
5. NPT will contribute to the review of the Short Term Action Plan
6. NPT will liaise closely with Wall Colomonoy to prevent further exceedances of the nickel target
7. NPT will review new planning applications with particular attention to any likely to have an impact on the AQMA
8. NPT will continue with its 3 year Vortex Air Quality Pilot Study

References

- Decarbonisation and Renewable Energy Strategy (DARE)
- Joint Transport Plan for South West Wales 2016 – 2021
- Local Air Quality Management in Wales. Policy Guidance June 2017
- Mid and West Wales Air Quality: A Guide for Developers (2012)
- Neath Port Talbot Air Quality Action Plan 2012
- Neath Port Talbot Borough Council's Annual Progress Report 2020
- Neath Port Talbot CBC Local Development Plan (2011-2026)
- Neath Port Talbot's Local Air Quality Strategy, "Air Wise - clean air for everyone"
- Part IV of the Environment Act 1995, Local Air Quality Management, Technical Guidance LAQM.TG(16) 2021
- Supplementary Planning Guidance
- Welsh Air Quality Forum data downloads

Appendices

Appendix A: Monthly Diffusion Tube Monitoring Results

Appendix B: A Summary of Local Air Quality Management

Appendix C: Air Quality Monitoring Data QA/QC

Appendix D: AQMA Boundary Maps

Appendix A: Quality Assurance / Quality Control (QA/QC) Data

Table A.1 – Full Monthly Diffusion Tube Results for 2021 ($\mu\text{g}/\text{m}^3$)

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.78) and Annualised ⁽¹⁾
1a	48.3	32.4	-	-	39.8	32.8	36.0	32.0	44.8	48.2	54.1	46.7	41.8	32.6
1b	48.2	37.5	33.4	59.9	39.9	37.1	40.4	29.7	43.3	47.2	51.5	45.5		
1c	49.8	37.4	-	-	37.5	32.7	38.8	29.8	42.7	49.7	49.2	42.5		
4	35.3	29.4	-	31.2	22.5	23.1	23.3	22.7	27.0	30.6	30.1	35.0	28.2	22.0
5	40.2	30.2	28.2	46.1	29.8	28.0	31.8	22.6	35.9	38.1	47.3	34.1	34.4	26.8
7a	38.8	-	23.6	39.0	26.4	26.5	25.5	21.2	29.9	36.5	36.1	31.1	30.3	23.6
7b	37.7	29.4	24.7	38.3	27.6	24.3	27.3	15.4	29.4	37.0	33.7	33.0		
7c	38.8	31.2	24.5	39.5	25.8	26.0	26.4	24.4	29.4	33.1	37.8	30.5		
8	66.4	1.2	23.4	42.5	-	25.8	16.7	22.0	29.3	38.1	37.6	31.7	30.4	23.7
9	-	31.4	21.5	36.0	25.1	23.1	26.9	24.5	25.3	34.7	38.0	34.2	29.2	22.7
10	39.4	1.3	23.8	39.9	26.3	21.2	26.0	21.5	-	35.7	35.2	34.5	27.7	21.6
11	68.7	29.4	23.6	42.8	24.5	24.3	24.8	20.9	30.4	36.8	37.4	26.9	32.5	25.4
12	38.1	28.4	24.4	44.3	12.5	24.1	27.6	21.3	34.4	37.9	44.8	32.4	30.9	24.1
13	38.7	-	21.3	36.3	26.5	-	35.7	21.0	28.7	33.0	41.0	30.9	31.3	24.4
14	44.1	29.4	29.8	30.6	30.4	25.6	28.7	24.4	34.0	37.7	44.1	33.1	32.7	25.5
15	44.3	29.7	26.2	47.5	29.3	27.0	30.4	23.6	34.2	38.6	40.9	36.0	34.0	26.5
16	-	32.7	28.2	47.5	32.9	28.1	34.0	27.4	34.0	39.6	31.6	38.5	34.0	26.6
17	-	39.6	28.4	53.4	23.7	31.4	34.1	27.8	35.7	49.2	46.1	46.8	37.8	29.5
18a	46.5	40.9	30.3	52.6	26.1	39.6	33.2	30.0	42.0	47.4	40.1	40.7	41.3	32.2
18b	47.0	37.2	34.5	52.3	32.1	42.8	40.8	34.7	39.6	46.6	41.4	47.4		

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.78) and Annualised ⁽¹⁾
18c	46.1	-	-	54.6	-	34.7	-	-	43.8	55.2	37.8	42.4		
19a	29.3	28.8	19.5	14.8	14.2	10.7	10.5	14.0	16.5	24.8	20.4	23.8	19.4	15.2
19b	27.6	24.2	21.0	14.3	14.1	11.6	12.5	10.4	13.4	23.1	-	24.6		
19c	22.8	24.8	18.9	15.7	12.9	11.7	47.8	14.2	16.9	23.9	22.6	23.8		
20a	42.0	32.9	26.8	46.8	36.0	29.3	31.6	25.9	38.5	39.6	36.8	34.4	35.1	27.4
20b	43.1	29.4	25.9	47.3	32.1	30.4	33.2	24.3	38.2	43.7	43.2	28.9		
20c	40.6	30.0	28.0	44.8	30.2	30.2	34.4	27.0	39.1	41.1	42.4	35.4		
21	55.9	37.7	36.6	60.9	41.8	34.4	40.9	32.4	45.2	48.3	54.9	46.0	44.6	34.8
22	36.9	26.2	-	33.7	16.8	16.9	20.5	-	27.2	31.6	34.6	29.2	27.4	21.3
23	36.1	31.5	20.7	44.0	18.2	26.7	23.3	23.3	27.9	37.4	35.3	33.8	29.9	23.3
24a	40.9	29.7	27.4	36.5	33.3	25.8	29.7	24.9	35.2	36.1	41.9	35.4	33.4	26.0
24b	36.7	30.4	27.0	44.8	25.9	26.0	31.0	24.3	35.7	37.1	45.9	32.1		
24c	44.0	30.4	26.1	43.0	30.5	25.8	30.1	25.2	35.2	40.1	45.6	31.5		
25	40.9	35.3	48.8	-	30.0	25.7	30.6	29.2	31.4	-	32.4	37.3	34.2	26.6
26	45.8	37.9	29.2	25.9	36.0	34.8	32.0	32.3	37.1	40.8	41.5	38.0	35.9	28.0
27	1.4	40.9	16.2	59.8	36.2	36.7	35.6	38.3	43.4	48.2	44.8	45.9	37.3	29.1
28	31.0	-	19.8	-	27.5	23.1	28.3	23.3	16.9	23.4	24.5	2.3	22.0	17.2
34a	55.7	43.1	34.0	57.3	30.3	36.6	42.4	35.6	47.3	51.0	42.8	44.7	43.6	34.0
34b	54.1	42.9	32.2	56.7	24.4	38.0	43.0	37.5	43.4	51.5	47.9	43.9		
34c	54.2	44.6	32.8	58.0	39.9	40.4	39.2	33.9	44.0	53.1	45.9	46.9		

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment and annualisation.

Appendix B: A Summary of Local Air Quality Management

Purpose of an Annual Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) process as set out in the Environment Act 1995 and associated government guidance. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas and to determine whether or not the air quality objectives are being achieved. Where exceedances occur, or are likely to occur, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) within 18 months of declaration setting out the measures it intends to put in place in pursuit of the objectives. Action plans should then be reviewed and updated where necessary at least every five years.

For Local Authorities in Wales, an Annual Progress Report replaces all other formal reporting requirements and have a very clear purpose of updating the general public on air quality, including what ongoing actions are being taken locally to improve it if necessary.

Air Quality Objectives

The air quality objectives applicable to LAQM in Wales are set out in the Air Quality (Wales) Regulations 2000, No. 1940 (Wales 138), Air Quality (Amendment) (Wales) Regulations 2002, No 3182 (Wales 298), and are shown in Table B.1.

The table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

Table B.1 – Air Quality Objectives Included in Regulations for the Purpose of LAQM in Wales

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as	Date to be achieved by
Nitrogen Dioxide (NO₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
Nitrogen Dioxide (NO₂)	40µg/m ³	Annual mean	31.12.2005
Particulate Matter (PM₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2010
Particulate Matter (PM₁₀)	40µg/m ³	Annual mean	31.12.2010
Sulphur dioxide (SO₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
Sulphur dioxide (SO₂)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
Sulphur dioxide (SO₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005
Benzene	16.25µg/m ³	Running annual mean	31.12.2003
Benzene	5µg/m ³	Annual mean	31 12 2010
1,3 Butadiene	2.25µg/m ³	Running annual mean	31.12.2003
Carbon Monoxide	10.0mg/m ³	Maximum Daily Running 8-Hour mean	31.12.2003
Lead	0.25µg/m ³	Annual Mean	31.12.2008

Appendix C: Air Quality Monitoring Data QA/QC

QA/QC of Diffusion Tube Monitoring

NO₂ diffusion tubes are sourced from the Environmental Scientifics Group Socotec and are prepared using the 50% Acetone TEA in Acetone Method.

Defra has provided a spreadsheet to facilitate the calculation of local bias adjustment factors. The National Bias Adjustment Factor Spreadsheet can be found on the [LAQM Support Website](#).

Diffusion Tube Annualisation

Annualisation was required at one site during 2021 due to data capture being <75%. This was diffusion tube 18c. The Swansea Cwm Level Park and Narberth continual monitors were used to annualise the tube, as shown in Table C.1. The annualisation factor for Swansea Cwm Level Park was 1.02 and for Narberth was 0.90. Together this gave an average annualisation factor of 0.96, which produced an annualised figure of 43.09 µg/m³ compared to the raw mean of 44.9 µg/m³.

Table C.1 – Diffusion Tube Annualisation Summary (concentrations in µg/m³)

Site ID	Annualisation Factor Swansea Cwm Level Park	Annualisation Factor Narberth	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
18c	1.02	0.90	0.96	44.9	43.09

Diffusion Tube Bias Adjustment Factors

NPT have applied a national bias adjustment factor of 0.78 to the 2021 monitoring data. A summary of bias adjustment factors used by NPT over the past five years is presented in Table C.2.

NPT typically uses a bias adjustment factor based upon the average of the two continual analyser locations along with their co located triplicate sites. However, due to poor data

capture at the continuous analysers in 2021 the decision was made to use the more conservative factor from the National Bias Adjustment Factor Spreadsheet¹.

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 06/22			
Follow the steps below in the correct order to show the results of relevant co-location studies							This spreadsheet will be updated at the end of September 2022			
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods							LAQM Helpdesk Website			
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet							Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.			
This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.										
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.										
Step 1:		Step 2:		Step 3:		Step 4:				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.				
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.		If a year is not shown, we have no data.		If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953				
Analysed By ¹	Method	Year ²	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁵	Bias Adjustment Factor (A) (Cm/Dm)
Socotec Didcot	50% TEA in acetone	2021	UB	Gravesham Borough Council	12	23	21	7.9%	G	0.93
Socotec Didcot	50% TEA in acetone	2021	UB	Gravesham Borough Council	11	27	23	18.2%	G	0.85
Socotec Didcot	50% TEA in acetone	2021	R	Horsham District Council	12	27	20	34.5%	G	0.74
Socotec Didcot	50% TEA in acetone	2021	R	Ipswich Borough Council	12	29	23	23.8%	G	0.81
Socotec Didcot	50% TEA in acetone	2021	R	Ipswich Borough Council	12	38	29	33.3%	G	0.75
Socotec Didcot	50% TEA in acetone	2021	UB	Kingston upon Hull City Council	11	24	17	39.7%	G	0.72
Socotec Didcot	50% TEA in acetone	2021	R	Kingston upon Hull City Council	12	30	25	22.9%	G	0.81
SOCOTEC Didcot	50% TEA in acetone	2021	UB	City of York Council	11	17	13	38.2%	G	0.72
SOCOTEC Didcot	50% TEA in acetone	2021	R	City of York Council	12	25	20	27.0%	G	0.79
SOCOTEC Didcot	50% TEA in acetone	2021	R	City of York Council	12	22	17	29.0%	G	0.77
SOCOTEC Didcot	50% TEA in acetone	2021	R	City of York Council	12	37	25	45.5%	G	0.69
SOCOTEC Didcot	50% TEA in acetone	2021	UL	North Lincolnshire Council	12	17	14	19.9%	G	0.83
Socotec Didcot	50% TEA in acetone	2021	R	Bridgend Borough Council / Shared Reg.	12	36	25	42.9%	G	0.70
Socotec Didcot	50% TEA in acetone	2021	UB	Derry City and Strabane District Council	12	11	9	28.4%	G	0.78
Socotec Didcot	50% TEA in acetone	2021	R	Derry City and Strabane District Council	12	30	30	2.4%	G	0.98
Socotec Didcot	50% TEA in acetone	2021	R	East Suffolk Council	11	30	25	22.3%	P	0.82
Socotec Didcot	50% TEA in acetone	2021	KS	Marylebone Road Intercomparison	10	56	42	32.9%	P	0.75
Socotec Didcot	50% TEA in acetone	2021	R	North East Lincolnshire Council	10	27	29	-7.6%	G	1.08
Socotec Didcot	50% TEA in acetone	2021	R	North East Lincolnshire Council	9	45	33	34.5%	P	0.74
Socotec Didcot	50% TEA in acetone	2021	R	Leeds City Council	13	40	29	35.5%	G	0.74
Socotec Didcot	50% TEA in acetone	2021	KS	Leeds City Council	12	34	25	37.9%	G	0.73
Socotec Didcot	50% TEA in acetone	2021	R	Leeds City Council	9	43	31	40.8%	G	0.71
Socotec Didcot	50% TEA in acetone	2021	UC	Leeds City Council	12	31	23	37.4%	G	0.73
Socotec Didcot	50% TEA in acetone	2021	R	Cambridge City Council	12	32	21	48.5%	G	0.67
Socotec Didcot	50% TEA in acetone	2021	UB	Torfaen County Borough Council	9	12	9	35.0%	G	0.74
SOCOTEC Didcot	50% TEA in acetone	2021		Overall Factor³ (25 studies)					Use	0.78

The national bias adjustment factor for the 50% Acetone TEA in Acetone Method was 0.78.

Table C.2 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	06/22	0.78
2020	National	06/21	0.76
2019	National	09/20	0.75
2018	Local	-	0.71
2017	Local	-	0.71

¹ National Diffusion Tube Bias Adjustment Factor Spreadsheet version 06/21 available at <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/>

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within Neath Port Talbot County Borough Council required distance correction during 2021.

QA/QC of Automatic Monitoring

The AURN site is subject to the quality control procedures of the network. NPT Council staff act as Local Site Operator, carrying out calibrations on an approximately fortnightly basis. There are regular site audits and validation, and ratification are carried out by AURN staff prior to dissemination of the data via UK Air. All PM₁₀ analysers are FDMS/TEOMs with C/B driers. No factors are applied to this data during the collection process. All equipment is covered by service and maintenance contracts with suppliers. These contracts provide for 6-monthly servicing and emergency callouts.

Monitoring stations are covered by a QA/QC contract with Ricardo which provides for two site audits per year and QA/QC of the data which is polled by Ricardo and disseminated on the Welsh Air Quality Forum website. Data is subject to a similar QA/QC standard as the AURN.

PM₁₀ and PM_{2.5} Monitoring Adjustment

All PM₁₀ analysers are FDMS/TEOMs with C/B driers. No factors are applied to this data during the collection process.

The type of PM₁₀ and PM_{2.5} monitors utilised within Neath Port Talbot do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within NPT recorded data capture of greater than 75%, with the exception of DS1 (21%), TW1 (21%) and PS2 (53%) for PM₁₀ and PS2 (54%) for PM_{2.5}. The PM₁₀ and PM_{2.5} data for these sites were therefore annualised in accordance with the guidance in LAQM.TG(16). Details are shown in Table C.3 and Table C.4 below.

Table C.3 – PM₁₀ Automatic Station Annualisation Summary (concentrations in µg/m³)

Site ID	Annualisation Factor Little Warren	Annualisation Factor Port Talbot Margam - Fire Station	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DS1	1.51	3.03	2.27	11.21	25.43
TW1	0.96	1.09	1.02	19.59	20.08
PS2	1.02	1.03	1.03	19.49	20.00

Table C.4 – PM_{2.5} Automatic Station Annualisation Summary (concentrations in µg/m³)

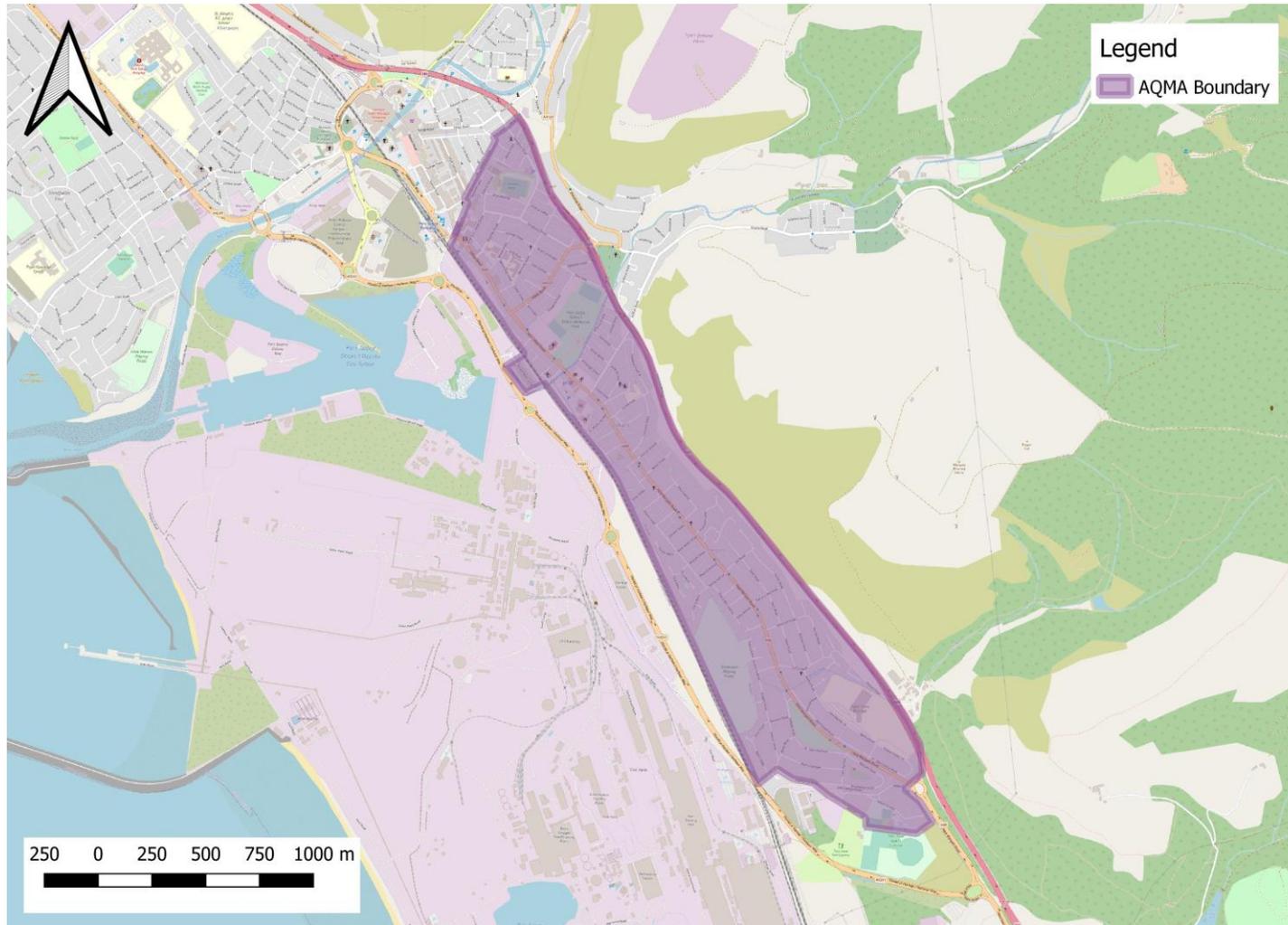
Site ID	Annualisation Factor Port Talbot Margam - Fire Station	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
PS2	1.00	1.00	8.73	8.73

NO₂ Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within NPT required distance correction during 2021.

Appendix D: AQMA Boundary Maps

Figure D.1 – Taibach/Margam AQMA Boundary



Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the LA intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
APR	Air quality Annual Progress Report
AURN	Automatic Urban and Rural Network (UK air quality monitoring network)
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NPT	Neath Port Talbot County Borough Council
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide