

Appendix 2

Information on Background Concentrations of Pollutants

Benzene

The County Borough Council has one benzene monitoring station, and this is located on Sardis Road, Pontypridd. Aside from this one monitoring station, the Council use the data from the NETCEN website to indicate the likely ground level concentrations of benzene. Research and monitoring work undertaken suggests that the benzene level will remain within the National Air Quality Standard (NAQS) of $16.25 \mu\text{g m}^{-3}$, although the assessment level reduces to $5 \mu\text{g m}^{-3}$ in 2010. As the estimated background concentration for 2010 is less than 2, and the Rhondda Cynon Taf area does not include any "very busy roads" as defined by LAQM.TG03⁽¹⁾, there is no requirement for further work at this stage, and the Council continues to undertake some monitoring around the area. This was supported in both the 2007 and 2008 progress reports.

1,3-Butadiene

Monitoring of Volatile Organic Compounds (VOCs) has been undertaken using a portable GCMS (gas chromatograph, mass spectrometer) over number of years in various locations in the area. Monitoring is regularly performed at Gelli, Clydach Vale and Tonypany, as well as Sardis Road and Llanfair Road in Pontypridd. Levels of 1,3 Butadiene do not exceed the NAQS. This was supported in both the 2007 and 2008 progress reports.

Carbon Monoxide

The County Borough Council has one CO monitoring station, and this was located (until 2005) in Maesycoed in Pontypridd. The station was to be moved to a more appropriate location in 2006, however no further monitoring has been undertaken. Aside from historical data from this one monitoring station, the Council use the data from the NETCEN website to indicate the likely ground level concentrations of CO.

Ground level concentrations of CO are considered unlikely to exceed 3 mg m^{-3} , although around the busiest roads, concentrations may approach 3.5 mg m^{-3} , however this is still well within the NAQS of 10 mg m^{-3} . The 2007 progress report identified that no monitoring of CO was undertaken in 2006/2007, however the evidence available suggested no concerns that the NAQS would be exceeded, and this premise has been supported in the 2008 progress report.

Lead

The initial assessment undertaken by Rhondda Cynon Taf County Borough Council concluded that the risk of exceeding the NAQS for lead was negligible due to the lack of relevant industrial sources in the area and due to the ban on the sale of leaded petrol since 2000. This was supported in both the 2007 and 2008 progress reports, and no monitoring is undertaken of the ground level concentrations of lead in the County.

Nitrogen Dioxide

Monitoring for NO₂ has been undertaken across the county for more than 10 years in some places, and suggests that the annual average NAQS for NO₂ can be exceeded at times. NO₂ is monitored at more than 30 locations across the county, and in previous years, two monitoring locations have been located in Hirwaun.

Monitoring on Brecon Road in Hirwaun in 2000 and 2001 detected NO₂ levels of approximately 21 ug m⁻³, whilst the monitoring station alongside the A465 detected ground level concentrations of between 37.5 and 43.6 ug m⁻³ in 2003 and 2004. The higher concentration detected in 2003 is in excess of the 40 ug m⁻³ annual average limit. The A465 runs approximately 200 m to the south of the site, however this is not considered a “relevant exposure” site. A “relevant exposure” site is one where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective.

The Air Quality progress report of 2005 identified a need to undertake a further detailed assessment of the concentrations of Nitrogen Dioxide in the county, and studies undertaken during 2006 have been reported in the 2007 progress report. The studies provide a Third Stage Detailed Assessment and identifies that ten areas within the Local Authority area are in breach of the NAQS for NO₂. The report recommends that eight Air Quality Management Areas (AQMAs) are established, which will lead to further monitoring in these areas and the preparation of Air Quality Management Plans (AQMPs). Exceedences of the NAQS have been identified as occurring principally due to road traffic emissions and specific topographical and urban features. None of the areas identified are in the vicinity of the proposed Enviroparks development.

Two sample locations are listed in the vicinity of the proposed Enviroparks site. The first is situated approximately 1,375 m to the north east of the site, in Woodland Park, Penderyn, and the second is located approximately 2,750 m south east of the site, on Hirwaun roundabout, Brecon Road. This monitoring point was moved in 2005, to be positioned closer to the “relevant population” and was located in Caswell Close (in the vicinity of the roundabout) in 2005 and 2006. It has now been removed. The most recently available data from the monitoring points in the vicinity are detailed below.

Measured Concentrations of Nitrogen Dioxide from Penderyn and Hirwaun Monitoring Sites. Results are Presented in ug m⁻³

Site	2000	2001	2003	2004	2005	2006	2007
Penderyn (background)	6.07	7.2	11.6	7.6	7.95	9.27	10.11
Hirwaun Brecon Road	21.35	20.9					
Hirwaun Roundabout (A465)			43.6	37.46			
Hirwaun Caswell Close					20.77	27.76	

The data presented in the report shows a gradual increase in NO₂ levels throughout the Local Authority with site specific reasons giving higher than expected fluctuations at some monitoring locations. At sites where monitoring has been maintained since 2000 and influences from development have been minimal it can be observed that a continuing decline in air quality is observed with NO₂ rising both at rural and urban locations.

It is noted that 2007 continued this trend and is the worst year for air quality in the County Borough for seven years. This may in part be influenced by metrological and transboundary effects, but it is expected that local factors such as infrastructural, economic and social developments are playing a significant part.⁽²⁾

The eight locations across the Borough where Air Quality Management Areas have been declared are as follows:

Aberdare Town Centre, Aberdare;	Broadway, Treforest;
Clifynydd, Pontypridd;	Mwyndy (A4119), Llantrisant;
Nantgarw;	Pontypridd Town Centre, Pontypridd;
Tonteg, Church Village and Llantwit Fardre;	
Tylorstown.	

Three other locations in the Borough remain under close observation and these are:

Llewellyn Street, Pontygwaith;
Porth Town Centre, Porth;
Oxford Street, Mountain Ash.

The Local Authority is currently working towards producing a Fourth Stage Further Assessment of Nitrogen Dioxide. It is expected that this report will be completed in late 2008. Once the Fourth Stage Further Assessment of Nitrogen Dioxide has been completed the Local Authority will be able to work towards producing site specific Air Quality Action Plans for the existing and any new Air Quality Management Areas. It is hoped that all necessary Air Quality Management Areas will be published for consultation in mid 2009.

Sulphur Dioxide

Assessments by Rhondda Cynon Taf County Borough Council have concluded that the risk of exceeding the NAQS for SO₂ is negligible. This was supported in both the 2007 and 2008 progress reports. No monitoring is undertaken of the ground level concentrations of SO₂ in the County, and instead the Council use the data from the NETCEN website to indicate the likely ground level concentrations.

Particulate Matter

Particulate Matter is measured in three locations around the county, with two roadside locations at Nantgawr and Craig yr Hesg. The third monitor is located close to the Penderyn Quarry. Another monitor was located at Maesycloed (subsequently moved to Broadway, Trefforest) however this monitoring was discontinued to allow further resources for the third stage assessment of Nitrogen dioxide. Monitoring results suggest that ground level concentrations of particulates are within the annual average NAQS, and also the 24 hourly average NAQS (taking into account allowable exceedences). None of these monitoring locations are in the immediate vicinity of Hirwaun. No AQMAs have been declared in the county for particulate matter.

Monitoring has been undertaken at Penderyn from the 27th October 2004 to enable analysis of the impact of local quarrying activities. After review in October 2007 it was decided that the Penderyn monitoring project had accomplished its set goals and further monitoring was no longer required. As such monitoring was discontinued. The Local Authority has recognised that due to local quarrying activities the area of Glyncoch, Pontypridd is at risk of suffering from poor air quality due to elevated levels of PM₁₀. The Local Authority has therefore reallocated resources to examine this issue and, in June 2007 installed new monitoring equipment. Therefore the PM₁₀ monitoring locations across the Borough during 2008 are at Nantgawr, Craig yr Hesg and Glyncoch.

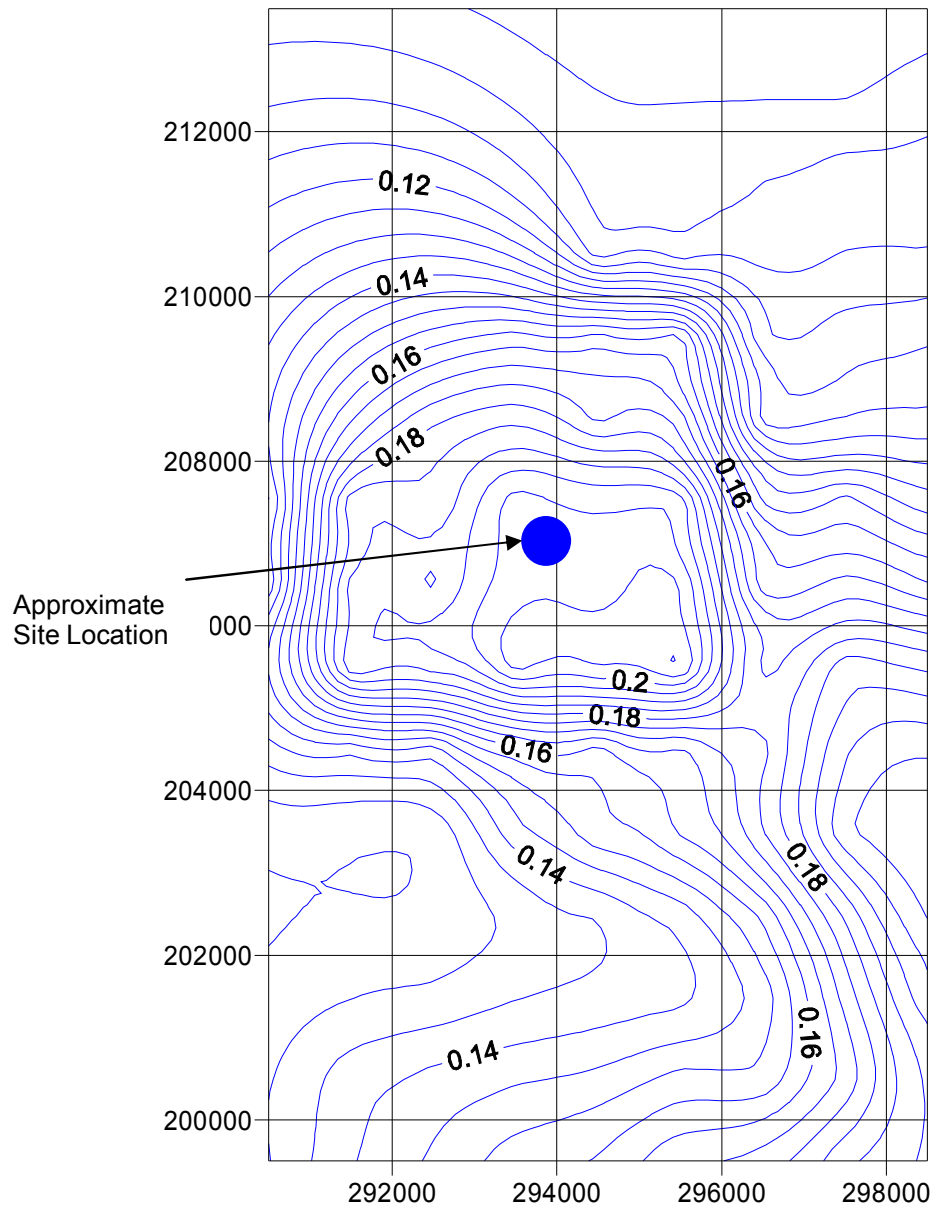
Results from the monitoring at the Penderyn site, which is local to the proposed Enviroparks site, are as follows:

2005	Annual Mean 18.12 $\mu\text{g m}^{-3}$	4 Exceedences of the 24hr mean objective
2006	Annual Mean 17.7 $\mu\text{g m}^{-3}$	1 Exceedence of the 24hr mean objective
2007	Annual Mean 22.48 $\mu\text{g m}^{-3}$	5 Exceedences of the 24hr mean objective

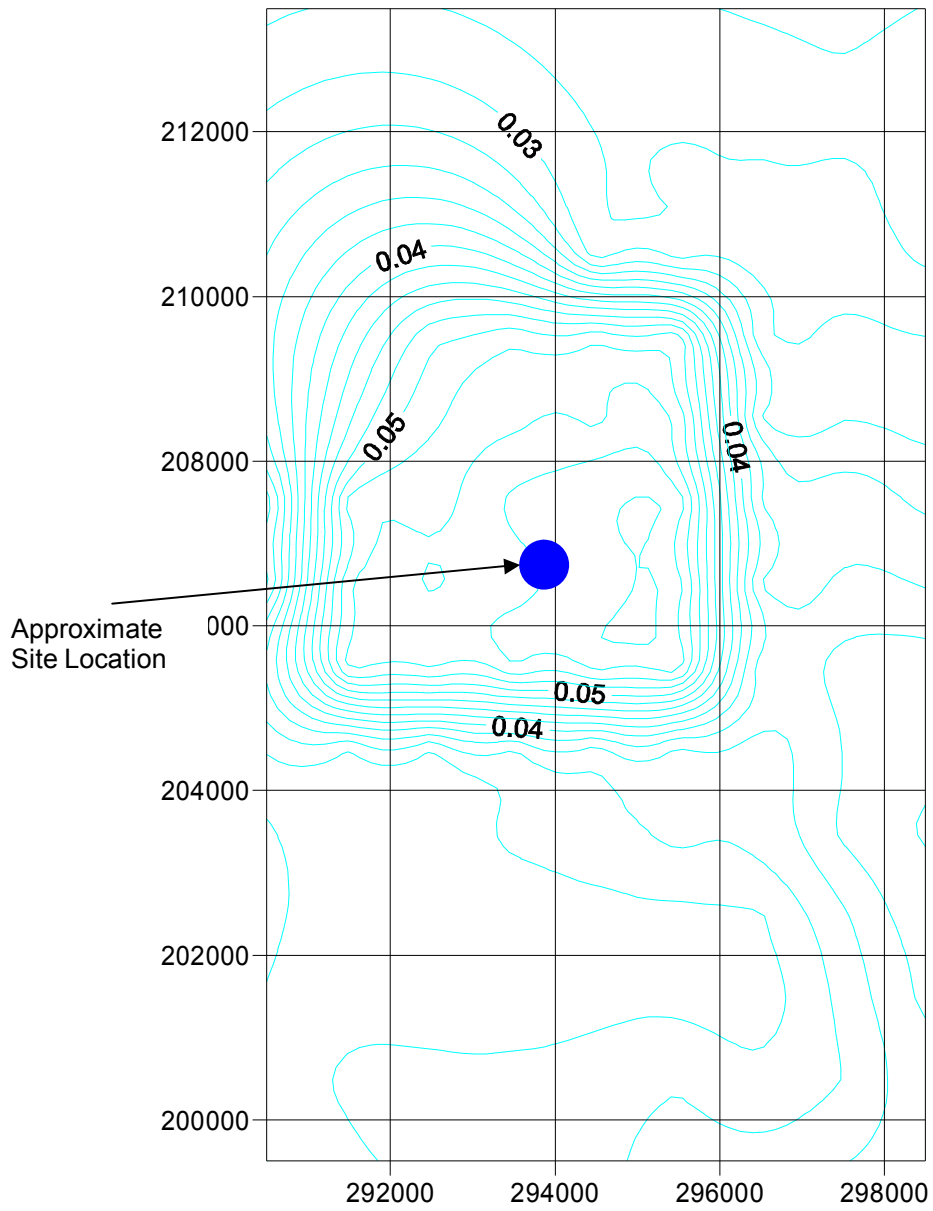
The latest information from the 2008 progress report identifies that the local quarrying activities in Penderyn do not have any significant adverse effect on the levels of PM₁₀ in the community and that there is no indication that either the annual mean or 24-hour mean NAQS for PM₁₀ will be breached in the community of Penderyn.

In order to provide a more comprehensive understanding of the likely background concentrations in the wider area, the predicted ground level concentration contours have been plotted and are compared with the results of monitoring work where available.

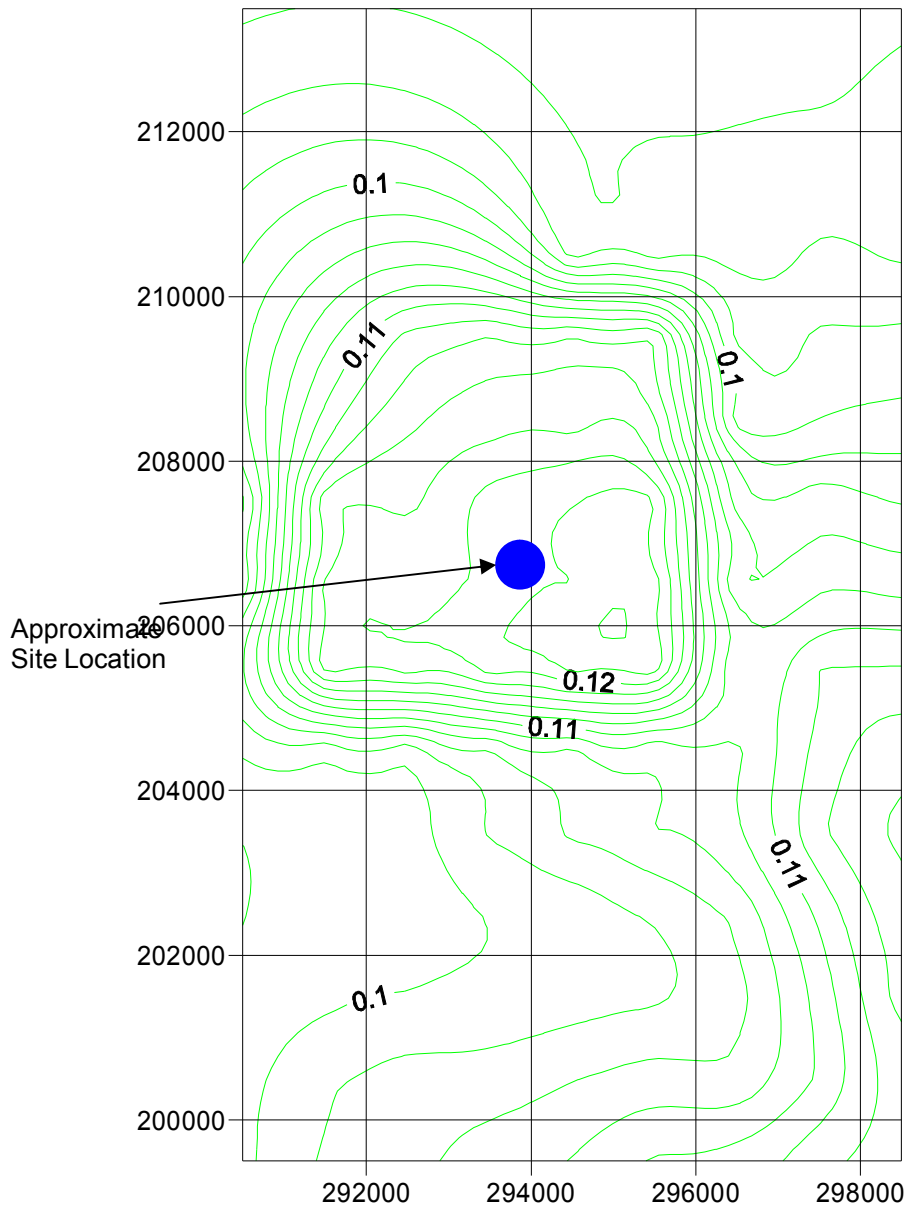
**Modelled Background Concentrations from the Air Quality Website
Annual Average Background Concentrations of Benzene 2008 ($\mu\text{g m}^{-3}$)**



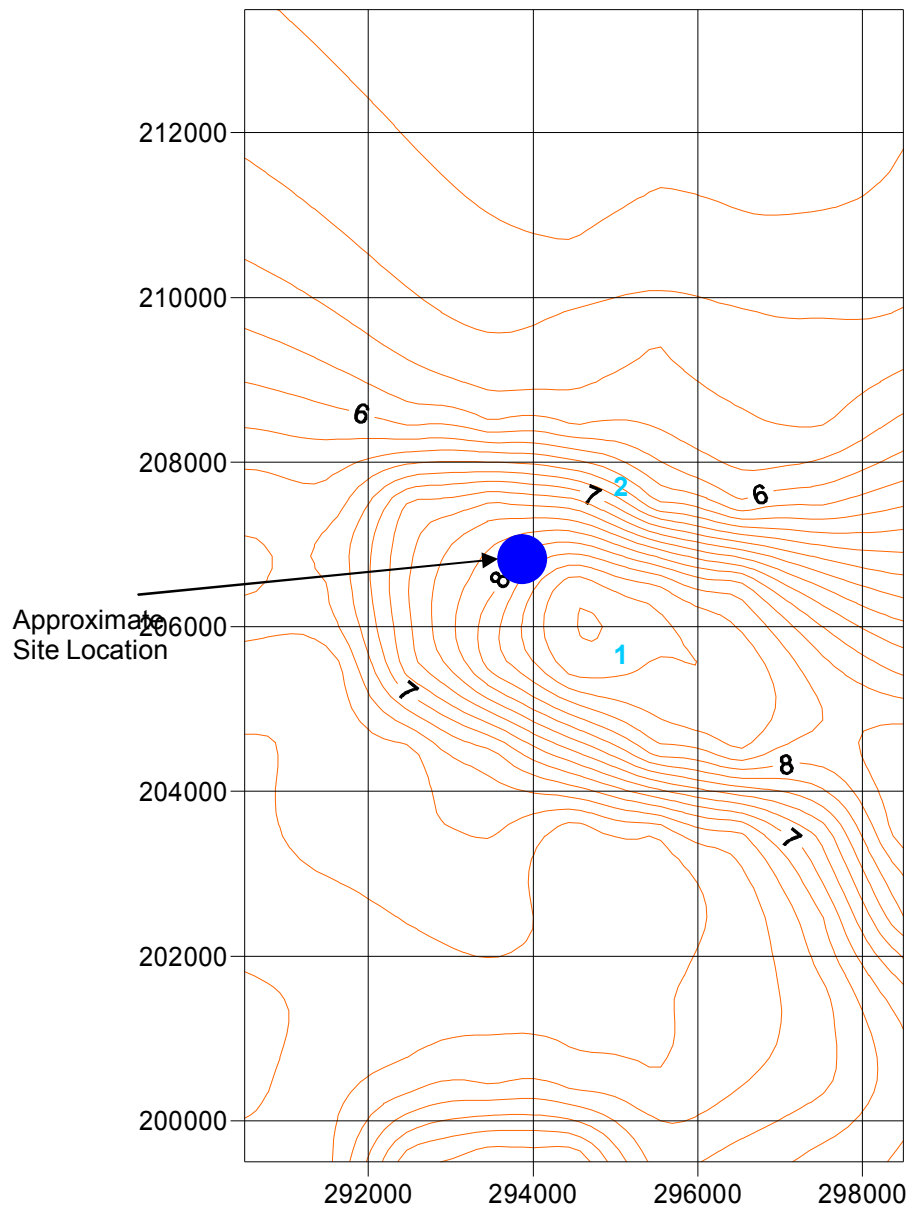
Modelled Background Concentrations from the Air Quality Website
Annual Average Background Concentrations of 1,3 Butadiene 2008 ($\mu\text{g m}^{-3}$)



Modelled Background Concentrations from the Air Quality Website
Annual Average Background Concentrations of Carbon Monoxide 2008 (mg m^{-3})



**Modelled Background Concentrations from the Air Quality Website
Annual Average Background Concentrations of Nitrogen Dioxide 2008 ($\mu\text{g m}^{-3}$)**



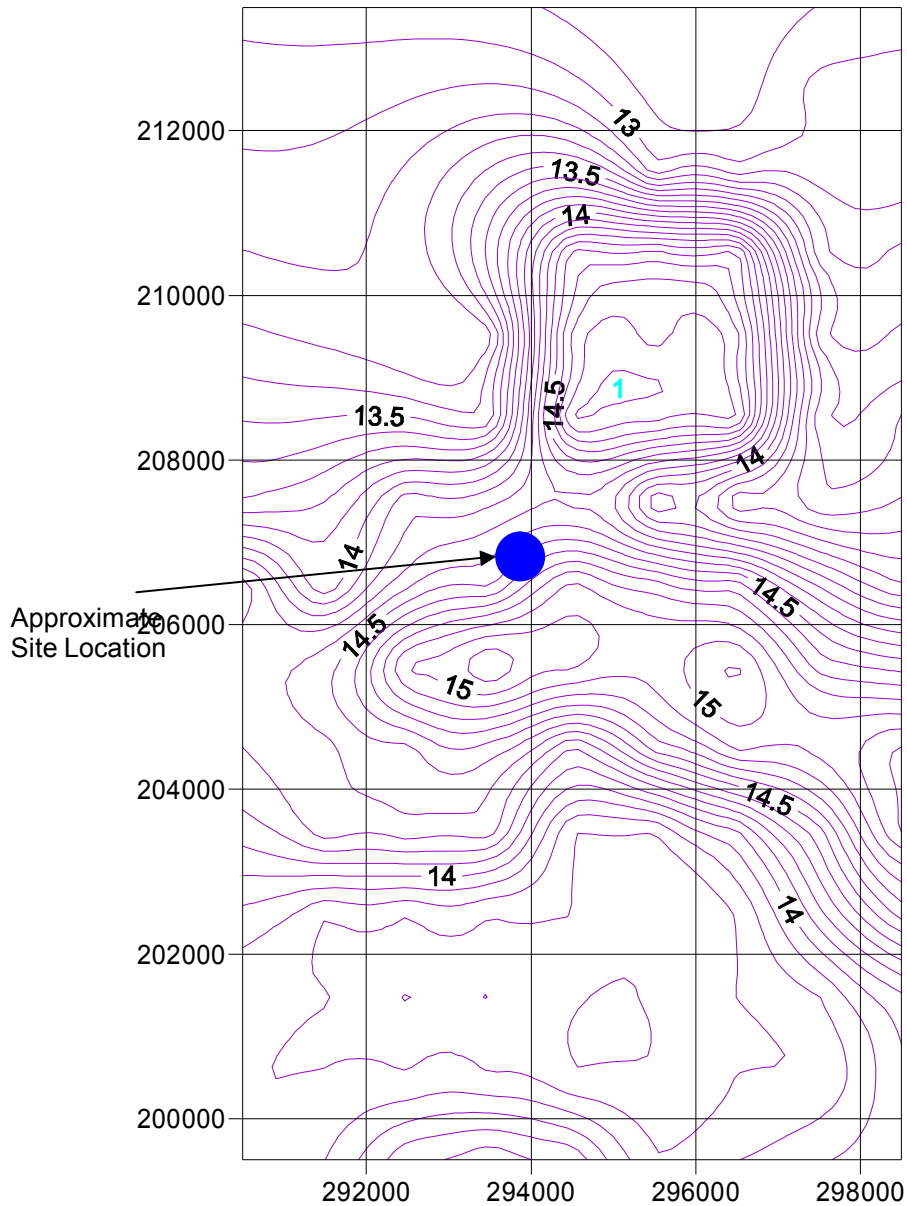
Measured Data:

1) Hirwaun Roundabout; $37.46 \mu\text{g m}^{-3}$ in 2004 (Caswell Close which is close to the roundabout monitoring point is considered more representative of a 'relevant population', and recorded concentrations of $27.76 \mu\text{g m}^{-3}$ in 2006).

2) Penderyn (Background); $10.11 \mu\text{g m}^{-3}$ in 2007

Measured concentrations of Nitrogen Dioxide are seen to be increasing with time, and thus, the predicted contours for 2008 can be considered low by comparison to the measured background data from Penderyn.

**Modelled Background Concentrations from the Air Quality Website
Annual Average Background Concentrations of
Particulate Matter (PM₁₀) 2008 (ug m⁻³)**

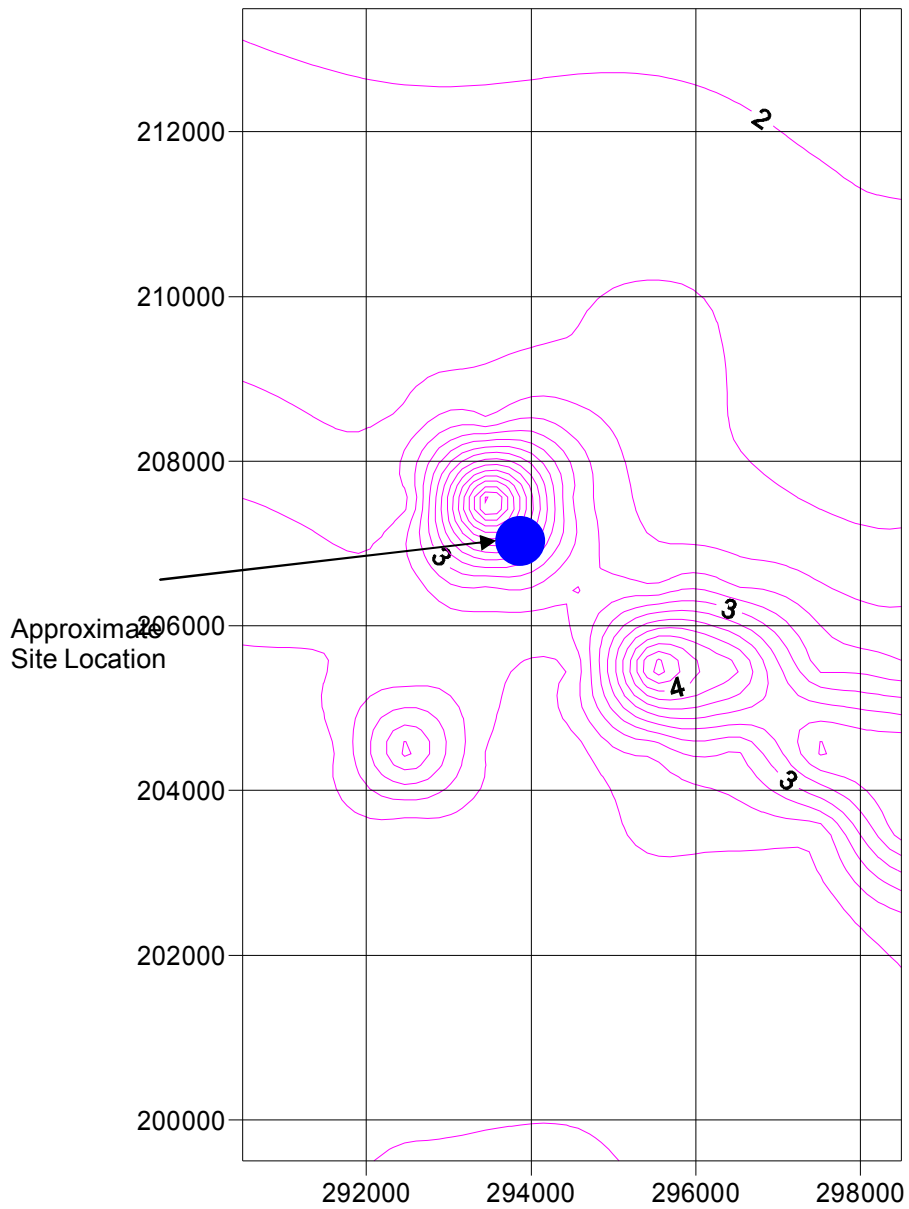


Measured Data:

1) Penderyn Quarry; 22.48 ug m⁻³ in 2007

Measured concentrations of PM₁₀ are higher in the vicinity of the Penderyn Quarry than calculated on the 2008 predicted contours. That said, the measured concentrations of PM₁₀ are still some way off the required National Air Quality Standard.

Modelled Background Concentrations from the Air Quality Website
Annual Average Background Concentrations of Sulphur Dioxide 2008 ($\mu\text{g m}^{-3}$)



Comparison of the Annual Predicted Concentrations of Pollutants, Measured Concentrations and the National Air Quality Standards

Pollutant	Predicted (2008)	Measured (2007)	NAQS
Benzene	0.203 ug m ⁻³		16.25 ug m ⁻³
1,3 Butadiene	0.055 ug m ⁻³		2.25 ug m ⁻³
Carbon Monoxide	0.12 mg m ⁻³		10 mg m ⁻³
Nitrogen Dioxide	7.93 ug m ⁻³	10.11 – 27.76 ug m ⁻³	40 ug m ⁻³
Particulate Matter (PM10)	14.46 ug m ⁻³	22.48 ug m ⁻³	40 ug m ⁻³
Sulphur Dioxide	2.79 ug m ⁻³		125 ug m ⁻³

All data is presented as the annual average concentrations, with the exception of the NAQS for Sulphur Dioxide, represented as the 24 hour average. The allowable annual average concentration of SO₂ for the protection of ecosystems is 20 ug m⁻³.

- 9.1** Predicted data is taken from the Air Quality Archive Background Pollution Maps, with adjustment from base year data to 2008⁽¹⁾. The chosen data point for the data to be taken from is national grid reference 293500 206500, and is representative of the south western corner of the proposed Enviroparks site. Measured data is included where available.
- 9.2** The above contour plots and table of comparisons demonstrate that predicted background concentrations of Benzene, 1,3 Butadiene, Carbon Monoxide and Sulphur Dioxide represent a fraction of the National Air Quality Standard requirements, and although closer to the NAQS, measured background concentrations of Nitrogen Dioxide and Particulate Matter are still well within the limits.

Information on Committed Local Developments

The following information has been obtained from the Rhondda Cynon Taf Local Air Quality Management Progress Report of April 2008, and details committed development in the area which may have an impact on air quality in the region.

a) Emissions to air from certain industrial activities can adversely affect air quality. The most significant activities are regulated by the Environment Agency or the Local Authority who “permit” emissions of specific pollutants up to a specified limit. These activities are regulated under the Pollution Prevention and Control Act 1999. No regulated activities that could have a significant affect on air quality have opened, modified or closed in the County Borough during 2007.

b) The Porth – Lower Rhondda Fach Relief Road opened in December 2006 and is expected to substantially relieve road traffic in the area. The Environmental Impact Assessment (EIA) submitted during the planning process showed that this development will have a positive affect on local air quality by taking traffic from congested roads that currently generate levels of Nitrogen Dioxide in excess of, or close to, the National Air Quality Strategy objectives.

c) *Planning permission has been granted for the Church Village bypass. An Environmental Impact Assessment has been submitted; and dependant upon funding, construction of the project is expected shortly. The EIA showed that this development will have a generally positive affect on local air quality by taking traffic from congested roads that currently generate levels of Nitrogen Dioxide in excess of, or close to, the National Air Quality Strategy objectives.*

d) *No new landfills or quarries have received planning consent in 2007. It is expected however that extension to the working face of already existing quarries may occur in the future.*

e) *Bute Quarry Landfill site, Miskin is a closed landfill site still producing landfill gas which is disposed of using an 'open flare' gas control system. Investigations are currently being undertaken by the Land Reclamation Department of the Local Authority to upgrade this system after issues were raised in connection with the impact on ambient air quality, from fugitive and combustion emissions from the site. Due to the nature of the site it is felt most appropriate that the assessment of Bute Quarry Landfill site including the 'open flare' gas control system will be conducted under the principles of Part IIA and Part III of the Environmental Protection Act 1990. Any issues raised in connection to the impact upon ambient air quality from the site as a whole will be adequately resolved under the aforementioned regimes.*

f) *Planning permission for the initial phases of the Dragon Film Studios development in Llanharan has been granted, further larger housing phases are expected during 2008. This development is expected to generate extra road traffic, which could have an adverse effect on air quality, particularly Nitrogen Dioxide.*

g) *A planning application has been received for the development of 248 dwellings and associated engineering works at the former Llanilid open case site, Llanharan, Pontyclun. This development is expected to generate extra road traffic, which could have an adverse effect on air quality, particularly Nitrogen Dioxide. Further residential development is expected in conjunction with the Dragon Film Studios development.*

h) *It is expected that further housing and industrial development will occur along land bordering the A4119 south of Talbot Green. These developments are expected to generate extra road traffic, which could have an adverse effect on air quality, particularly Nitrogen Dioxide. It is expected that such development will be phased and at the present time the amount of development has not been determined.*

i) *It is expected that housing development of the former Cwm Coke works in Beddau will occur, however at the present time the amount of development has not been determined.*

j) *A planning application has been received for the development of 125 dwellings at the former Vale Castings site, Tylagarw, Pontyclun. This development is expected to generate extra road traffic, which could have an adverse effect on air quality, particularly Nitrogen Dioxide.*

k) A planning application has been received for the commercial redevelopment of the former Brown Lenox site, Pontypridd. The application involves the development of a large white goods store or stores and associated parking. This development is expected to generate extra road traffic, which could have an adverse effect on air quality, particularly Nitrogen Dioxide. The development is close to several Air Quality Management Areas; the Local Authority is exploring ways with the developer to protect these areas from further degradation of air quality.

l) A planning application has been received for the development of 214 dwellings at Tir Founder Fields, Cwmbach, Aberdare. This development is expected to generate extra road traffic, which could have an adverse effect on air quality, particularly Nitrogen Dioxide. Further commercial development of area is also expected.

m) A planning application has been received for the development of a convenience store and residential development on the former CP Motors site, Tonteg. The area comprises part of the Tonteg – Church Village – Llantwit Fardre A493 Corridor Air Quality Management Area. An air quality assessment undertaken by the applicants indicates that the residential part of the development will be in an area in breach of the annual mean NAQS for NO₂. As such the Local Authority is working with the applicants to devise appropriate mitigational measures to protect the occupants of the proposed future development.

n) The Local Authority has received an application for a small residential development of two flats within the Tylorstown Air Quality Management Area. The Local Authority after considering the potential impact of the existing air quality upon future occupants of the proposed development, refused the application.

o) The Local Authority has received an application for a small residential development of a few flats within the Aberdare Town Centre Air Quality Management Area. The Local Authority after considering the issue of air quality granted the application.

Of these proposed developments, l) and o), located in Aberdare are within 10 km of the proposed Enviroparks development, however the nature of the potential air quality impact, being traffic related is likely to be a local concern, and is unlikely to impact on the air quality close to the proposed development.

References

1. Technical Guidance LAQM. TG(03); Part IV of the Environment Act 1995; Local Air Quality Management. 2003. DEFRA, Scottish Executive, Welsh Assembly Government, Department of the Environment. Product code PB7514
2. Rhondda Cynon Taf County Borough Council. Part IV, Environment Act 1995; Local Air Quality Management Progress Report. April 2008