



Cyngor Bwrdeisdref Sirol

Blaenau Gwent

County Borough Council

LOCAL AIR QUALITY
REVIEW AND ASSESSMENT

Progress Report 2008

Environment Directorate
Public Protection Division
Environmental Health Section

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Executive Summary

This progress report is the latest in a series of reports relating to air quality and has been compiled and published by Blaenau Gwent County Borough Council. This report contains the latest air quality data for the calendar year of 2007 applicable to the County Borough, and provides current information relating to any new local developments that may have an impact on air quality.

The UK's National Air Quality Strategy sets air quality standards and objectives for seven pollutants which Local Authorities are required to have regard to. These include benzene, 1,3-butadiene, carbon monoxide, lead, nitrogen dioxide, particulate matter (PM₁₀) and sulphur dioxide.

Local authorities are obliged to periodically review the air quality within their area to determine the risk of the air quality objectives set out in the national strategy being exceeded. If a Local Authority identifies a risk of any of the objectives being exceeded then they must proceed to a Detailed Assessment for that pollutant.

To-date the following reports have been produced by Blaenau Gwent County Borough Council (BGCBC):

- 1999 First Stage Review and Assessment
Initial screening of sources of air pollution sources within the Borough
- 2003 Updating and Screening Assessment
Report on air quality within the Borough and consideration of any new sources with potential to impact on air quality
- 2004 Progress Report
Outlining any significant changes that may affect air quality
- 2005 Progress Report
Outlining any significant changes that may affect air quality
- 2006 Updating and Screening Assessment
Review of all local developments, industry, air quality monitoring and traffic data to-date since the last review concluded
- 2007 Progress Report
Outlining any significant changes that may affect air quality

The previous reports produced by BGCBC have concluded that none of the objectives for any of the pollutants are likely to be exceeded within the Borough and therefore no Detailed Assessment for any pollutant has been carried out to-date.

This 2008 Progress Report does not identify the requirement for a Detailed Assessment to be carried out for any of the seven pollutants identified in the UK's National Air Quality Strategy.

The next Updating and Screening Assessment is scheduled to be published in April 2009.

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Abbreviations & Glossary

AQMA	Air Quality Management Area
AQO	Air Quality Objectives
BGCBC	Blaenau Gwent County Borough Council
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
DEFRA	Department for Environment, Food and Rural Affairs
EIA	Environmental Impact Assessment
mgm ⁻³	Milligrams per cubic metre of air
µgm ⁻³	Micrograms per cubic metre of air
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
PAH's	Polycyclic aromatic hydrocarbons
PM ₁₀	Particulate Matter equivalent to or less than 10µm (micrometre)
PM _{2.5}	Particulate Matter equivalent to or less than 2.5µm (micrometre)
'PPC' Regulations	Pollution Prevention and Control Regulations 2000
SO ₂	Sulphur Dioxide
USA	Updating and Screening Assessment
WAG	Welsh Assembly Government

1.0 Introduction

1.1 The Administrative Area of Blaenau Gwent

The County Borough of Blaenau Gwent is located in South East Wales and was formerly part of the County of Gwent. It is approximately 20 miles south to the city of Newport, 30 miles south west to the City of Cardiff and directly north is the Brecon Beacons National Park.

Blaenau Gwent is the smallest of all the Welsh local authorities, at about 10,900 hectares. In Blaenau Gwent there are three distinctive valleys supporting the five main towns or settlements of Abertillery, Brynmawr, Ebbw Vale, Nantyglo and Blaina, and Tredegar.

Although the towns give the county borough a busy, urban feel, Blaenau Gwent is actually a largely rural area. Forty five per cent of the land area is undeveloped, and the greater part of this is defined as open countryside.

The Borough has witnessed steady population loss over recent years. The most recent figures suggest that there are 68,400 people living in the area (Mid Year Estimate 2005). This compares to 70,064 in 2001, and 72,254 in 1991 (Censuses).

The main trunk route that runs through the County Borough is the A465, Heads of the Valleys road which provides good communication to the Midlands and the North via the M50/M5 and to London via the M4.

Much of the traditional coal and steel industry that historically populated the Borough has been replaced by a diverse industrial base comprising of businesses such as pharmaceuticals, battery and computer systems, electronic and high tech engineering companies. The closure of much of the heavy industry in the area has had an adverse impact on the local economy but conversely it has meant the removal of significant sources of air pollution.

Map 1 provided in Appendix One outlines the administrative area of Blaenau Gwent.

1.2 Legislative Background to Local Air Quality Management & the UK's National Air Quality Strategy

The Environment Act 1995 introduced the legislative framework for local air quality management in the United Kingdom (UK). It imposed a requirement for the UK Government and the devolved administrations for Wales and Scotland to develop a National Air Quality Strategy containing standards, objectives and measures for improving the ambient air quality within the UK. Northern Ireland has also implemented equivalent legislation.

The first UK National Air Quality Strategy was produced in 1997. The Strategy was then revised in 2000 and more recently in 2007. The UK Government and the devolved administrations published the latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007 Strategy) on the 17th July 2007. The latest 2007 Strategy identifies the latest air quality objectives and standards to be achieved and can be viewed at <http://www.defra.gov.uk/environment/airquality/strategy/index.htm>.

For the purposes of the 2007 Strategy:

• **standards** are the concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on assessment of the effects of each pollutant on human health including the effects on sensitive subgroups or on ecosystems

• **objectives** are policy targets often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedences, within a specified timescale.'

(UK Air Quality Strategy, 2007, pg. 13)

The standards for air pollution which are given in all three versions of the UK National Air Quality Strategies published to-date are based on the latest scientific evidence that is available regarding the health and environmental effects of each pollutant.

The current 2007 Strategy provides a revised set of AQO's the majority of which have now been adopted in the UK. The Strategy re-establishes some of the existing AQO's, introduces new targets such as those for PM_{2.5}, and removes some objectives, such as that for PM₁₀, 2010.

Some air quality limit values were required by the EU Daughter Directives on Air Quality to be transposed into UK law, this has been done through the implementation of the Air Quality Standards Regulations 2007 which came into effect on the 15th February 2007.

A copy of the Air Quality Standards Regulations 2007 can be viewed at http://www.legislation.gov.uk/si/si2007/uksi_20070064_en_1.

Table 1 below is a summary of the 2007 Strategy's objectives and European Directive limit or target values. The final column of the table indicates whether the objective is new or has changed from the previous 2000 Strategy and its 2003 Addendum.

The relevant AQO's which must be reported upon by Local Authorities are detailed in Section 2 of this Report.

Table 1: National AQO's and European Directive limit & target values for the protection of human health

National air quality objectives and European Directive limit and target values for the protection of human health								
Pollutant	Applies	Objective	Concentration measured as ¹⁰	Date to be achieved by and maintained thereafter	European obligations	Date to be achieved by and maintained thereafter	New or existing	
Partides (PM ₁₀)	UK	50µg.m ⁻³ not to be exceeded more than 35 times a year	24 hour mean	31 December 2004	50µg.m ⁻³ not to be exceeded more than 35 times a year	1 January 2005	Retain existing	
	UK	40µg.m ⁻³	annual mean	31 December 2004	40µg.m ⁻³	1 January 2005		
	Indicative 2010 objectives for PM ₁₀ (from the 2000 Strategy and 2003 Addendum) have been replaced by an exposure reduction approach for PM _{2.5} (except in Scotland – see below)							
	Scotland	50µg.m ⁻³ not to be exceeded more than 7 times a year	24 hour mean	31 December 2010				Retain existing
Scotland	18µg.m ⁻³	annual mean	31 December 2010					
Partides (PM _{2.5}) Exposure Reduction	UK (except Scotland)	25µg.m ⁻³	annual mean	2020	Target value 25µg.m ⁻³ ¹²	2010	New (European obligations still under negotiation)	
	Scotland	12µg.m ⁻³		2020	Limit value 25µg.m ⁻³	2015		
	UK urban areas	Target of 15% reduction in concentrations at urban background ¹¹		Between 2010 and 2020	Target of 20% reduction in concentrations at urban background	Between 2010 and 2020		
Nitrogen dioxide	UK	200µg.m ⁻³ not to be exceeded more than 18 times a year	1 hour mean	31 December 2005	200µg.m ⁻³ not to be exceeded more than 18 times a year	1 January 2010	Retain existing	
	UK	40µg.m ⁻³	annual mean	31 December 2005	40µg.m ⁻³	1 January 2010		
Ozone	UK	100µg.m ⁻³ not to be exceeded more than 10 times a year	8 hour mean	31 December 2005	Target of 120µg.m ⁻³ not to be exceeded more than 25 times a year averaged over 3 years	31 December 2010	Retain existing	

(UK Air Quality Strategy, 2007, pg. 20)

Table 1: National AQO's and European Directive limit & target values for the protection of human health (continued)

National air quality objectives and European Directive limit and target values for the protection of human health							
Pollutant	Applies	Objective	Concentration measured as	Date to be achieved by and maintained thereafter	European obligations	Date to be achieved by and maintained thereafter	New or existing
Sulphur dioxide	UK	266 $\mu\text{g.m}^{-3}$ not to be exceeded more than 35 times a year	15 minute mean	31 December 2005			Retain existing
	UK	350 $\mu\text{g.m}^{-3}$ not to be exceeded more than 24 times a year	1 hour mean	31 December 2004	350 $\mu\text{g.m}^{-3}$ not to be exceeded more than 24 times a year	1 January 2005	
	UK	125 $\mu\text{g.m}^{-3}$ not to be exceeded more than 3 times a year	24 hour mean	31 December 2004	125 $\mu\text{g.m}^{-3}$ not to be exceeded more than 3 times a year	1 January 2005	
Polycyclic aromatic hydrocarbons	UK	0.25 ng.m^{-3} B[a]P	as annual average	31 December 2010	Target of 1 ng.m^{-3}	31 December 2012	Retain existing
Benzene	UK	16.25 $\mu\text{g.m}^{-3}$	running annual mean	31 December 2003			Retain existing
	England and Wales	5 $\mu\text{g.m}^{-3}$	annual average	31 December 2010	5 $\mu\text{g.m}^{-3}$	1 January 2010	
	Scotland, Northern Ireland	3.25 $\mu\text{g.m}^{-3}$	running annual mean	31 December 2010			
1,3- butadiene	UK	2.25 $\mu\text{g.m}^{-3}$	running annual mean	31 December 2003			Retain existing
Carbon monoxide	UK	10 mg.m^{-3}	maximum daily running 8 hour mean in Scotland as running 8 hour mean	31 December 2003	10 mg.m^{-3}	1 January 2005	Retain existing
Lead	UK	0.5 $\mu\text{g.m}^{-3}$	annual mean	31 December 2004	0.5 $\mu\text{g.m}^{-3}$	1 January 2005	Retain existing
		0.25 $\mu\text{g.m}^{-3}$	annual mean	31 December 2008			

(UK Air Quality Strategy, 2007, pg. 21)

Table 1: National AQO's and European Directive limit & target values for the protection of human health (continued)

National air quality objectives and European Directive limit and target values for the protection of human health							
Pollutant	Applies	Objective	Concentration measured as	Date to be achieved by and maintained thereafter	European obligations	Date to be achieved by and maintained thereafter	New or existing
National air quality objectives and European Directive limit and target values for the protection of vegetation and ecosystems							
Nitrogen oxides	UK	30µg.m ⁻³	annual mean	31 December 2000	30µg.m ⁻³	19 July 2001	Retain existing in accordance with 1 st Daughter Directive
Sulphur dioxide	UK	20µg.m ⁻³	annual mean	31 December 2000	20µg.m ⁻³	19 July 2001	Retain existing in accordance with 1 st Daughter Directive
	UK	20µg.m ⁻³	winter average	31 December 2000	20µg.m ⁻³	19 July 2001	Retain existing in accordance with 1 st Daughter Directive
Ozone: protection of vegetation & ecosystems	UK	Target value of 18,000µg m ⁻³ based on AOT40 to be calculated from 1 hour values from May to July, and to be achieved, so far as possible, by 2010	Average over 5 years	1 January 2010	Target value of 18,000µg m ⁻³ based on AOT40 to be calculated from 1 hour values from May to July, and to be achieved, so far as possible, by 2010	1 January 2010	New EU target

(UK Air Quality Strategy, 2007, pg. 22)

1.3 Local Authorities role in Local Air Quality Management

As part of the Local Air Quality Management process each local authority in the UK is under a statutory duty under Part IV of The Environment Act 1995 to regularly review the current and likely future, air quality in its area.

The primary objective of the review is to identify areas within each local authority administrative area where the air quality is unlikely to meet the AQO's prescribed in the 2007 UK's National Air Quality Strategy.

Local authorities are currently not required to consider all of the AQO's. The AQO for Ozone, for example, is assessed at a UK level rather than a local level. The local authorities must, at present, have regard to the AQO's for the following pollutants:

- Particulate Matter (PM₁₀)
- Nitrogen Dioxide (NO₂)
- Sulphur Dioxide (SO₂)
- Benzene
- 1,3-butadiene
- Carbon Monoxide (CO)
- Lead

Local authorities are required to assess risk of exceedance of any of the AQO's in relation to areas where there is relevant public exposure, this is defined as being:

'locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present'.

(LAQM.TG(03), Pg 1-8)

Relevant public exposure does not include occupational exposure. The guidance advises that it is reasonable to consider land designated for some form of public use but which is not currently in use, as being a location with relevant exposure, so for example an area which has received planning permission for a residential development.

Where a local authority considers that one or more of the AQO's, is unlikely to be met by the required date, it must declare an air quality management area (AQMA) covering the area where the problem is expected. The local authority must then prepare an action plan outlining the measures they intend to use to improve air quality within that area.

Local Authorities should have regard to the following guidance which has been published by DEFRA when undertaking their assessments:

- Policy Guidance (LAQM.PG(03))
- Policy Guidance: Addendum (LAQM.PGA(05))
- Technical Guidance (LAQM.TG(03))
- Progress Report Guidance (LAQM.PRG(03))

1.4 The Phased Approach to Review and Assessment in Blaenau Gwent

The Government seeks to ensure that the burdens placed upon Local Authorities with regards to the management of Local Air Quality are fair and reasonable, and so has developed a 'phased approach' to the review and assessment of local air quality. Local Authorities are only required to undertake a level of assessment commensurate with the risk of an air quality objective being exceeded within their area.

Local Authorities are required to take an in-depth look at the air quality within their areas every three years via the production of an Updating and Screening Assessment (USA). Progress Reports are then required each intervening year until the next USA is required.

Where there are risks identified that any of the AQO's may not be met during the review and assessment cycle, then a Detailed Assessment of air quality for the particular pollutant of concern must be carried out. The purpose of a Detailed Assessment is to provide an accurate assessment of the likelihood of an AQO being exceeded at locations with relevant public exposure.

If the Detailed Assessment indicates that the exceedance of the AQO is likely then the Local Authority must declare that area within the Borough as an AQMA.

The process of continuous review and assessment started in Blaenau Gwent with the first report being produced in 1999. This report concluded that the likelihood of the AQO's for any of the key pollutants being exceeded within the administrative area of Blaenau Gwent was negligible.

In 2003 a further USA was carried out. Using the additional data gathered in the period between the previous report it was established that the likelihood of exceeding the AQO's for any of the key pollutants was again negligible.

Progress Reports were produced in 2004 and 2005 using the then current monitoring data and information regarding any significant developments or which could have an impact on air quality. Both reports concluded that the likelihood of any of the AQO's for the key pollutants being exceeded were negligible.

In 2006 a further USA was carried out, undertaking a comprehensive review of all local developments, industry, current air quality monitoring and traffic data from the conclusion of the last review. Again the report concluded that the likelihood of exceeding the AQO's for any of the key pollutants was negligible.

BGCBC produced a further progress report in 2007 using the current monitoring data and relevant information with regards to air quality for the calendar year of 2006. The report again concluded that the likelihood of any of the AQO's for any of the key pollutants was negligible.

To date it has not been necessary to proceed to a Detailed Assessment for any of the key pollutants identified in the AQO's or to declare an Air Quality Management Area within Blaenau Gwent.

All the reports that are produced by BGCBC are submitted to and accepted by the Welsh Assembly Government to demonstrate that the Local Authority is fulfilling its statutory obligations with regards to local air quality management.

An Update and Screening assessment is scheduled to be carried out in 2009 to report the current state of air quality in BGCBC administrative area for the calendar year of 2008.

1.5 The Purpose of BGCBC Progress Report 2008

Progress Reports have been introduced into the review and assessment process to provide greater continuity and a longer-term vision to local air quality management. The overall aim of a Progress Report is to report progress on local air quality management within a local authority's area and progress in achieving the AQO's.

Progress Reports are also intended to assist the Local Authority by the following:

- To help retain a profile for LAQM within the authority.
- To provide a means of communicating air quality information to members and the public.
- To maximize the usefulness and interpretation of the monitoring effort being carried out by the Local Authority.
- To maximize the value of the investment in monitoring equipment.
- To make the next round of review and assessment easier, as relevant information will be readily available.
- To help respond to requests for up-to-date information on air quality.
- To provide information to assist other policy areas, such as transport and land use planning.
- To provide a ready source of information on air quality for developers carrying out environmental assessments for new schemes.
- To demonstrate progress with implementation of Air Quality Action Plans and/or air quality strategy, rather than delaying until the next full round of review and assessment.

This document represents the fourth progress report for Blaenau Gwent County Borough Council and covers the calendar year 2007.

The objective of this latest Progress Report is to identify those matters that have changed since the previous Progress Report produced in 2007, which may lead to a risk of any of the AQO's being exceeded.

This report has been written in accordance with the appropriate guidance issued by DEFRA.

The previous air quality reports that have been produced can be viewed on BGCBC website at <http://www.blaenau-gwent.gov.uk>

1.6 Useful Air Quality Information

Further information regarding the UK's National Air Quality Strategy and supporting documentation can be found at <http://www.defra.gov.uk/environment/airquality/index.htm>

National air quality monitoring data, forecasts additional air quality information can be obtained at the National Government Air Quality website at <http://www.airquality.co.uk/archive/>

Information relating to Air Quality in Wales can be accessed at <http://www.welshairquality.co.uk/index.php>

2.0 New Monitoring Results

2.1 Benzene

Benzene	AQO		
	16.25 μgm^{-3}	Running annual mean	31 st December 2003
	5 μgm^{-3}	Annual average	31 st December 2010
	European Obligations		
	5 μgm^{-3}	Annual average	1 st January 2010

2.2 Description of Benzene and main UK sources

Benzene is a Volatile Organic Compound (VOC) that is a minor constituent of petrol. The main sources of benzene in the atmosphere are due to the distribution and combustion of petrol, and petrol refining. Of these, combustion by petrol vehicles is the single biggest source.

2.3 Previously reported monitoring data for Benzene

The USA 2006 produced by BGCBC reported that background concentrations of Benzene within the Borough are below 0.3 μgm^{-3} for 2003 and were projected to be below 0.3 μgm^{-3} for 2010.

The 2006 report concluded for Benzene that there was little risk of any of the AQO's for this pollutant being exceeded within the relevant time periods, therefore no local monitoring for this pollutant has been undertaken by BGCBC to-date.

It was reported in the 2007 Progress Report that the current monitoring data for Benzene available from the nearest continuous monitoring station at Cardiff Centre indicated that there were no exceedences of the running annual mean concentrations during 2006 and that the running annual mean was below the current UK AQO at 0.79 μgm^{-3} .⁽¹⁾

The results reported in 2007 were found to be almost half that reported in BGCBC USA 2006 for the running annual mean of 2003 which was predicted to be 1.2 μgm^{-3} at the same site, demonstrating that levels for this pollutant are steadily decreasing as expected.

The monitoring information held by the UK National Air Quality Archive indicated at the time of the 2007 report that there were no exceedences within Wales during 2006 of the 2003 or 2010 AQO for Benzene.

2.4 New monitoring data for Benzene

The nearest continuous monitoring station for Benzene is still located in Cardiff Centre. The monitoring data available from the site for the calendar year 2007 indicates that there were no exceedences of the running annual mean objective of 16.25 μgm^{-3} .⁽²⁾

The results from Cardiff Centre also indicate that for the calendar year 2007 there were no exceedances of the Annual Average $5 \mu\text{gm}^{-3}$ 2010 AQO for Benzene. ⁽³⁾

Monthly mean figures for Benzene concentrations at the Cardiff Centre monitoring station are available for the months of January through to August 2007 and are provided in Table 2 below:

Table 2: Monthly Mean Benzene concentrations at Cardiff Centre ⁽⁴⁾

Monthly Mean benzene 2007									
Site Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Units
Cardiff Centre	0.53	0.69	0.71	0.73	0.31	0.34	0.26	0.38	μgm^{-3}

Due to data capture of less than 75% figures are not available for the months of September through to December 2007 inclusive.

Ideally monitoring for pollutants should be carried out over a period of 12 months to account for any seasonal variations in pollution levels that may occur. However, the Technical Guidance (LAQM.TG(03)) recognises that this may not always be possible, and that data collected from shorter monitoring periods will still be useful if the concentrations observed are well below or above the relevant AQO.

The average of the monthly mean levels of Benzene for the monitoring data available for the period of January through to August 2007 inclusive gives a level of $0.49 \mu\text{gm}^{-3}$, which is well below the current running annual mean of $16.25 \mu\text{gm}^{-3}$ and the annual mean for 2010 of $5 \mu\text{gm}^{-3}$.

A comparison of the monthly mean monitoring results for Benzene for the periods that data is available from the Cardiff Centre monitoring station for the calendar years of 2006 and 2007 is presented in Table 3 below.

Table 3: Comparison of Monthly Mean Benzene concentrations at Cardiff Centre for 2007 and 2006 ⁽⁵⁾

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Units
2007	0.53	0.69	0.71	0.73	0.31	0.34	0.26	0.38	μgm^{-3}
2006	1.39	1.14	0.71	0.74	0.54	0.54	n/a	0.35	μgm^{-3}
Difference in levels between 07/06	- 0.86	- 0.45	0	- 0.01	- 0.23	- 0.2	n/a	+ 0.03	μgm^{-3}

n/a = data capture below 75%

The results presented in Table 3 indicate that, with the exception of the marginal increase for the month of August, the monthly mean levels of Benzene at the Cardiff Centre have decreased from the period 2006 to 2007 supporting the previously reported projections that Benzene levels are expected to decrease annually.

2.5 1,3 – Butadiene

1,3-butadiene	AQO		
	2.25 μgm^{-3}	Running annual mean	31 st December 2003

2.6 Description of 1,3 – Butadiene and main UK sources

The 1, 3 - butadiene in air derives solely from human activity. It is an important industrial chemical being used particularly in the manufacture of synthetic rubber for tyres. Apart from accidental releases from such industrial activities, the 1,3 - butadiene in the ambient air comes mainly from motor vehicle exhausts.

There is little or no preformed 1, 3 - butadiene in diesel or in petrol, either leaded or unleaded; the emissions in the exhaust gases being produced by the combustion process itself. The chemicals in petrol from which the 1,3 - butadiene is derived, higher olefins, have been present in increasing proportion in petrol over the last decade, and it is likely that the amounts of 1,3 - butadiene released into the atmosphere have therefore been rising.

However, information provided in LAQM.TG(03), Chapter 4, Pg. 4-1, advises that studies show that 1,3 - butadiene is removed efficiently by catalytic converters on motorcars and the increasing numbers of vehicles fitted with three way catalysts, expected reductions in emissions from vehicles and improvements to fuel quality are expected to counteract this trend.

2.7 Previously reported monitoring data for 1,3 – Butadiene

BGCBC USA 2006 reported that there was little risk of the existing Air Quality Objective for 1,3-Butadiene being exceeded, and as a result no monitoring for 1,3-Butadiene within the County Borough was not considered necessary.

The 2007 Progress Report reported that 1,3-Butadiene was being monitored at Cardiff Centre using an automatic Gas Chromatograph based analyser, and also at Cwmbran using diffusion tube samplers. The Cwmbran site was no longer actively measuring for this 1,3-Butadiene at the time of the 2007 report. Running annual mean concentrations reported in BGCBC USA 2006 for 1,3-Butadiene in 2003 was significantly below the UK Air Quality Objective of 2.25 μgm^{-3} at 0.15 μgm^{-3}

The data available from the Cardiff Centre monitoring site for the period of 2007 indicated that the running annual mean concentrations for 1,3 Butadiene had decreased from that reported in 2006, and were at the time significantly below the UK AQO of 2.25 μgm^{-3} at 0.09 μgm^{-3} .⁽⁶⁾

It was reported in the 2007 report that there were no exceedances within Wales during 2006 of the AQO for 1,3 Butadiene.⁽⁷⁾

2.8 New monitoring data for 1,3 – Butadiene

Monitoring for 1,3-Butadiene was being carried out at the Cardiff Centre monitoring location during 2007, the results reported no exceedances of the AQO for 1,3 Butadiene.⁽⁸⁾

Monitoring data available from the UK National Air Quality Archive indicates that there were no reported exceedances of the AQO for 1,3 –Butadiene across Wales during the monitoring period of 2007.⁽⁹⁾

Monthly mean figures for 1,3 - Butadiene concentrations at the Cardiff Centre monitoring station are available for the months of January through to August 2007 and 2006 and are provided in Table 4 below:

Table 4: Comparison of Monthly Mean 1,3-Butadiene concentrations at Cardiff Centre for 2007⁽¹⁰⁾ and 2006⁽¹¹⁾

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Units
2007	0.04	0.03	0.03	0.05	0.03	0.05	0.04	0.06	µgm ⁻³
2006	0.21	0.27	0.05	0.07	0.06	0.05	n/a	0.06	µgm ⁻³
Difference in levels between 07/06	- 0.17	- 0.24	- 0.05	- 0.02	- 0.03	0	n/a	0	µgm ⁻³

n/a = data capture below 75%

The results presented in Table 4 indicate that there was mainly a decrease in year on year monthly mean levels of 1,3 – Butadiene, with the exception of the months June and August where levels remained the same during 2006 and 2007.

2.9 Carbon Monoxide

Carbon Monoxide	AQO		
	10 mg.m ⁻³	Maximum daily running 8 hour mean	31 st December 2003
	European Obligations		
	10 µgm ⁻³	Maximum daily running 8 hour mean	1 st January 2005

2.10 Description of Carbon Monoxide and main UK sources

Carbon Monoxide is produced by the incomplete combustion of organic substances or those that are essentially just carbon, such as coke. Complete combustion, in the presence of sufficient oxygen, leads to the production of carbon dioxide, whereas, if there is a slight deficiency of oxygen some carbon monoxide is formed. The main combustion processes produce some carbon monoxide depending on the efficiency of the process and the availability of oxygen.

The major source of carbon monoxide is road traffic with the highest concentrations occurring at roadsides on winter days with low wind speeds.

“Annual emissions of Carbon Monoxide have been falling steadily since the 1970’s, are expected to continue to do so.”

(LAQM.TG(03), Pg 2-1)

2.11 Previously reported monitoring data for Carbon Monoxide

The USA 2006 reported that the background concentrations for Carbon Monoxide for Blaenau Gwent in 2001 to be in the region of 0.2mg.m⁻³, and based on this figure the estimated background concentration in 2005 to be in the region of 0.14 mg.m⁻³.

BGCBC USA 2006 reported that during the period of 2004 at the three closest sites to Blaenau Gwent which had undertaken monitoring for Carbon Monoxide, namely Cardiff Centre, Cwmbran and Pontypridd, had reported no breaches of the UK AQO for Carbon Monoxide during that period.

The results presented in the 2007 Progress Report using the latest data available at the time from the Cardiff Centre⁽¹²⁾ and Cwmbran⁽¹³⁾ monitoring sites, which were still actively monitoring Carbon Monoxide, indicated no exceedances of the UK AQO during 2006.

It was reported in 2007 that there were no exceedances within Wales during 2006 of the UK AQO for Carbon Monoxide.⁽¹⁴⁾

2.12 New monitoring data for Carbon Monoxide

BGCBC at present does not currently monitor for Carbon Monoxide.

The nearest active monitoring locations for Carbon Monoxide are Cardiff Centre and Cwmbran. The monitoring results for both the Cardiff⁽¹⁵⁾ and Cwmbran⁽¹⁶⁾ sites indicate that there were no exceedances of the AQO for Carbon Monoxide during the period of 2007.

The areas where the data was obtained have significantly higher traffic flows than in Blaenau Gwent so it reasonable to assume that levels within Blaenau Gwent will also still be below the objective level.

Monitoring data available from the UK National Air Quality Archive indicates that there were no reported exceedances of the AQO for Carbon Monoxide across Wales during the monitoring period of 2007.⁽¹⁷⁾

2.13 Lead

Lead	AQO		
	0.5 μgm^{-3}	Annual mean	31 st December 2004
	0.25 μgm^{-3}	Annual mean	31 st December 2008
	European Obligations		
	0.5 μgm^{-3}	Annual mean	1 st January 2005

2.14 Description of Lead and main UK sources

Lead occurs in the earth's crust and is released naturally through various processes including weathering of rocks, volcanic activity and uptake and subsequent release from plants.

Lead is also released into the atmosphere through the mining and smelting of ores, the production use, recycling and disposal of lead containing products, the production of non-ferrous metals and the burning of fossil fuels.

The use of tetraethyl-lead was used as a petrol additive to increase the octane rating. The use of leaded petrol was discontinued from January 2000. LAQM.TG(03), Chapter 5, Pg's.5-1 and 5-13 reports that the measured lead-in-air concentrations taken from data collected at UK national network sites for the period 1999-2001 shows a decrease in lead levels over the measurement period, and that the measured levels are well below the AQO's for 2004 and 2008.

2.15 Previously reported monitoring data for Lead

It was reported in BGCBC USA 2006 that the air quality archive provides data that at a lead in petrol site in Cardiff the Annual mean for 2004 was $0.017\mu\text{gm}^{-3}$, well below the AQO for lead for both 2004 and 2008.

The 2007 Progress Report reported that the monitoring data held by the UK Air National Air Quality Archive indicated that there were no exceedances within Wales during 2006 of the UK AQO for Lead.

2.16 New monitoring data for Lead

Blaenau Gwent County Borough Council do not current undertake monitoring for atmospheric lead.

The nearest locations carrying out monitoring for lead are based at Cardiff and Swansea. Results from the ambient monitoring carried out at these two locations for the monitoring periods 2006 and 2007 are presented in Table 5 below.

Table 5: Annual Mean concentrations of Lead for 2006 and 2007 at nearest monitoring locations ⁽¹⁸⁾

Year	Cardiff	Swansea	Units
2007	0.0138	0.0105	μgm^{-3}
2006	0.0187	0.0132	μgm^{-3}
Difference in levels between 07/06	- 0.0049	- 0.0027	μgm^{-3}

The results presented in Table 5 indicate a drop in ambient annual mean levels of lead at both monitoring locations from the year 2006 to 2007. The results are also significantly below the current AQO for lead for 2004 of $0.5 \mu\text{gm}^{-3}$ and the AQO for the 31st December 2008 of $0.25 \mu\text{gm}^{-3}$

2.17 Nitrogen Dioxide

Nitrogen Dioxide	AQO		
	200 μgm^{-3} not to be exceeded more than 18 times per year	1 hour mean	31 st December 2005
	40 μgm^{-3}	Annual mean	31 st December 2005
	European Obligations		
	200 μgm^{-3} not to be exceeded more than 18 times per year	1 hour mean	1 st January 2010
	40 μgm^{-3}	Annual mean	1 st January 2010

2.18 Description of Nitrogen Dioxide and main UK sources

Nitrogen Dioxide (NO_2) is a gas produced by the reaction of nitrogen and oxygen in combustion processes. By far the largest amount of Nitrogen Dioxide in the atmosphere is formed as a consequence of combustion of fossil fuels – petrol, oil, coal and gas, especially by motor transport and non-nuclear power stations.

Generally, ground level concentrations of nitrogen dioxide outdoors are influenced more by emissions from motor vehicles than from other sources, such as power stations, which disperse pollutants from tall stacks.

“Urban traffic Nitrogen Oxides emissions are estimated to fall by about 20% between 2000 and 2005 and by 46% between 2000 and 2010”.

(LAQM.TG(03), Pg 6-1)

2.19 Previously reported monitoring data for Nitrogen Dioxide

The Public Protection Division of BGCBC currently undertakes diffusion tube monitoring at 17 sites throughout the County Borough. The diffusion tubes are typically exposed for four week periods in accordance with the National NO_2 exposure calendar.

Table 6 below lists all sites at which monitoring was undertaken during 2007 and previous years as reported in BGCBC 2007 Progress Report.

Table 6: Location of Nitrogen Dioxide Diffusion Tube Monitoring Sites within BGCBC

WAQF Reference	Location	Roadside/Urban Background
BGBC-01	The Darren, Darenfelin Road, Brynmawr	Roadside
BGBC-03	272 King Street, Brynmawr	Urban Background
BGBC-04	Parkhill, Beaufort, Ebbw Vale	Urban Background
BGBC-05	Willow Tree Bungalow, Aberbeeg	Urban Background
BGBC-07	Aberbeeg Medical Centre, Aberbeeg	Urban Background
BGBC-09	Ynys Dawel, Darenfelin Road, Brynmawr	Roadside
BGBC-10	Mill Terrace, Cwm, Ebbw Vale	Roadside
BGBC-11	Cwm Craig, Cwm, Ebbw Vale	Urban Background
BGBC-13	Kings Arms Cottages, Trefil, Tredegar	Roadside
BGBC-15	Bush Bach, Nantybwich, Tredegar	Roadside
BGBC-016	Aberbeeg Road, Aberbeeg	Roadside
BGBC-017	Cwmyrdderch Court, Station Terrace, Cwm, Ebbw Vale	Roadside
BGBC-018	Welfare Hall, Beaufort Hill, Ebbw Vale	Roadside
BGBC-019	The Rise, Beaufort, Ebbw Vale	Roadside
BGBC-020	Beaufort Road, Tredegar	Roadside
BGBC-021	Bryn Rhosyn, Tredegar	Roadside
BGBC-022	King Street, Brynmawr	Roadside

A plan indicating the approximate location of each current monitoring site is provided in Appendix 2.

BGCBC uses two laboratories to analyse and provide data from the Nitrogen Dioxide diffusion tube monitoring. This is due to an historical arrangement where the four of the seventeen sites namely, BGBC1,3,4 and 9, were originally part of a national survey and the remainder were locally determined monitoring sites. With the demise of the national survey the same arrangements have been maintained for future years of monitoring and there are no proposals to alter this arrangement at this time.

The laboratory for the four former national survey sites, Harwell Scientifics, and laboratory for the remaining sites, namely Cardiff Scientific Services, both use the 50% TEA in Acetone method to prepare the diffusion tubes for analysis.

The 2007 Progress Report stated that the laboratory's used by BGCBC had reported a bias adjustment factor for the results of the diffusion tube monitoring as follows:

- Harwell Scientifics – bias adjustment factor for 2006 to be 0.75
- Cardiff Scientific Services - bias adjustment factor for 2006 to be 0.85

Each Progress Report produced by BGCBC is submitted to the Welsh Assembly Government (WAG). WAG assess the report and provide comments to the Local Authority.

In relation to the 2007 Progress Report WAG have advised that the bias adjustment factors provided are incorrect and the correct factors that should have been used are as outlined below:

- Harwell Scientifics – bias adjustment factor for 2006 to be 0.78
- Cardiff Scientific Services - bias adjustment factor for 2006 to be 0.78

WAG have also advised that the values used in the 2007 Report make no significant difference to the values reported. However, to ensure accuracy the reported figures for the period of 2006 provided in the 2007 Progress Report, (Table 2 and Figure 1 2007 Report), have been adjusted to account for the new bias and re-presented below in Table 7 below.

Table 7: Measured NO₂ Levels for 2006 & Projected Levels for 2010 at Diffusion Tube Monitoring Sites within Blaenau Gwent

WAQF Reference	Location	Annual Mean 2006 [$\mu\text{g}\text{m}^{-3}$] (1 decimal place)	Roadside Location	Projected Annual Mean 2010 [$\mu\text{g}\text{m}^{-3}$] (1 decimal place)
BGBC-01	The Darren, Darenfelin Road, Brynmawr	15.7	Yes	13.4
BGBC-03	272 King Street, Brynmawr	12.5	No	N/A
BGBC-04	Parkhill, Beaufort, Ebbw Vale	9.2	No	N/A
BGBC-05	Willow Tree Bungalow, Aberbeeg	12.3	No	N/A
BGBC-07	Aberbeeg Medical Centre, Aberbeeg	13.1	No	N/A
BGBC-09	Ynys Dawel, Darenfelin Road, Brynmawr	18.2	Yes	15.5
BGBC-10	Mill Terrace, Cwm, Ebbw Vale	14.0	Yes	11.9
BGBC-11	Cwm Craig, Cwm, Ebbw Vale	10.6	No	N/A
BGBC-13	Kings Arms Cottages, Trefil, Tredegar	5.6	Yes	4.8
BGBC-15	Bush Bach, Nantybwhch, Tredegar	10.7	Yes	9.1
BGBC-016	Aberbeeg Road, Aberbeeg	17.7	Yes	15.1
BGBC-017	Cwmyrdderch Court, Station Terrace, Cwm, Ebbw Vale	13.5	Yes	11.5
BGBC-018	Welfare Hall, Beaufort Hill, Ebbw Vale	22.1	Yes	18.8
BGBC-019	The Rise, Beaufort, Ebbw Vale	21.0	Yes	17.9
BGBC-020	Beaufort Road, Tredegar	18.4	Yes	15.6
BGBC-021	Bryn Rhosyn, Tredegar	14.8	Yes	12.6
BGBC-022	King Street, Brynmawr	14.4	Yes	12.2

Note: The data provided for the monitoring sites in Table 7 (Excluding Monitoring sites at BGBC 1, 3, 4 and 9) does not include data for the period of 03/05/06/ through to 27/06/06 inclusive as there was a problem with the analysis at the laboratory. Therefore the annual mean for these sites is based upon 11 months of data which is accepted as being adequate as per the guidance given in LAQM. TG(03).

LAQM.TG(03) Pg. 6-9 provides a formula for estimating the annual average NO₂ concentrations in future years from measured data at roadside sites. Where the monitoring location in Table 7 is a roadside location, the annual average NO₂ concentration for the year 2010 has been calculated to allow comparison with the future AQO for NO₂ in 2010.

The laboratories bias adjustment factors for the reporting year of 2006 were both 0.78. If the bias adjustment factor is below 1, this is an indication that the measured results of NO₂ at the measurement location are being over-estimated and the actual level of the pollutant at the site is slightly lower as per the results reported in Table 7 which have been adjusted accordingly.

It can be seen from the monitoring results for 2006 provided in Table 7 that the levels for NO₂ at each site are considerably below the current annual mean UK AQO for this pollutant. The projected 2010 concentrations based on the 2006 monitoring information are also still well below the annual mean UK AQO for NO₂.

2.20 New monitoring data for Nitrogen Dioxide

BGCBC has undertaken diffusion tube monitoring for NO₂ at 17 sites throughout the County Borough. The conditions and locations for monitoring at the sites and arrangements for analysis of the diffusion tubes for the monitoring period of 2007 remains as per previously reported for

the monitoring period of 2006. The sites at which monitoring has been undertaken are therefore as per reported in Table 6.

The results of the monitoring undertaken at the 17 sites for 2007 are presented in Table 8 below:

Table 8: Measured NO₂ Levels for 2007 & Projected Levels for 2010 at Diffusion Tube Monitoring Sites within Blaenau Gwent

WAQF Reference	Location	Unadjusted Annual Mean 2007 [$\mu\text{g}\text{m}^{-3}$] (1 decimal place)	Roadside Location	Annual Mean 2007* [$\mu\text{g}\text{m}^{-3}$] (1 decimal place)	Projected Annual Mean 2010 ** [$\mu\text{g}\text{m}^{-3}$] (1 decimal place)
BGBC-01	The Darren, Darenfelin Road, Brynmawr	24.7	Yes	20.0	17.6
BGBC-03	272 King Street, Brynmawr	17.9	No	14.5	N/A
BGBC-04	Parkhill, Beaufort, Ebbw Vale	12.2	No	9.9	N/A
BGBC-05	Willow Tree Bungalow, Aberbeeg	16.7	No	14.9	N/A
BGBC-07	Aberbeeg Medical Centre, Aberbeeg	17.3	No	15.4	N/A
BGBC-09	Ynys Dawel, Darenfelin Road, Brynmawr	24.7	Yes	20.0	17.6
BGBC-10	Mill Terrace, Cwm, Ebbw Vale	18.2	Yes	16.2	14.3
BGBC-11	Cwm Craig, Cwm, Ebbw Vale	14.4	No	12.8	N/A
BGBC-13	Kings Arms Cottages, Trefil, Tredegar	7.2	Yes	6.4	5.6
BGBC-15	Bush Bach, Nantybawch, Tredegar	12.9	Yes	11.5	11.4
BGBC-016	Aberbeeg Road, Aberbeeg	21.5	Yes	19.1	16.9
BGBC-017	Cwmyrdderch Court, Station Terrace, Cwm, Ebbw Vale	16.3	Yes	14.5	12.8
BGBC-018	Welfare Hall, Beaufort Hill, Ebbw Vale	23.1	Yes	20.6	18.2
BGBC-019	The Rise, Beaufort, Ebbw Vale	25.5	Yes	22.7	20.0
BGBC-020	Beaufort Road, Tredegar	23.6	Yes	21.0	18.5
BGBC-021	Bryn Rhosyn, Tredegar	19.3	Yes	17.2	15.2
BGBC-022	King Street, Brynmawr	19.8	Yes	17.6	15.5

*Adjusted using the bias adjustment factors obtained from AQM Spreadsheet (version 04/08) on University of West of England Website www.uwe.ac.uk/aqm/review/. (Cardiff Scientific Services = 0.89, Harwell Scientifics = 0.81).

** Estimated using the formula provided in LAQM.TG(03) Pg. 6-9 for estimating the annual average NO₂ concentrations in future years from measured data at roadside sites.

Note: Data was unavailable for the following periods at the following sites due to missing or damaged diffusion tubes:

- BGBC-10 period 04/07/07 to 01/08/07
- BGBC-20 period 30/10/07 to 28/11/07
- BGBC-22 period 29/08/07 to 30/10/07

The annual mean for the above monitoring locations is therefore based upon 11 months of data which is accepted as being adequate as per the guidance given in LAQM.TG(03).

The results provided in Table 8 indicate that the levels for NO₂ at each site are considerably below the current annual mean UK AQO. The projected 2010 concentrations based on the 2007 monitoring information are also still well below the annual mean UK AQO for NO₂.

Using the corrected monitoring data for 2006 and the monitoring information now available for 2007 a comparison can be made between the annual means at each monitoring location. The results of the comparison are presented in Table 9 below:

Table 9: Comparison of NO₂ Levels for 2006/07 at Diffusion Tube Monitoring Sites within Blaenau Gwent

WAQF Reference	Location	Annual Mean 2006 [$\mu\text{g}\text{m}^{-3}$] (1 decimal place)	Annual Mean 2007 [$\mu\text{g}\text{m}^{-3}$] (1 decimal place)	Difference between Annual Means for 2006/07
BGBC-01	The Darren, Darenfelin Road, Brynmawr	15.7	20.0	+4.3
BGBC-03	272 King Street, Brynmawr	12.5	14.5	+2
BGBC-04	Parkhill, Beaufort, Ebbw Vale	9.2	9.9	+0.7
BGBC-05	Willow Tree Bungalow, Aberbeeg	12.3	14.9	+2.6
BGBC-07	Aberbeeg Medical Centre, Aberbeeg	13.1	15.4	+2.3
BGBC-09	Ynys Dawel, Darenfelin Road, Brynmawr	18.2	20.0	+1.8
BGBC-10	Mill Terrace, Cwm, Ebbw Vale	14.0	16.2	+2.2
BGBC-11	Cwm Craig, Cwm, Ebbw Vale	10.6	12.8	+2.2
BGBC-13	Kings Arms Cottages, Trefil, Tredegar	5.6	6.4	+0.8
BGBC-15	Bush Bach, Nantybwich, Tredegar	10.7	11.5	+0.8
BGBC-016	Aberbeeg Road, Aberbeeg	17.7	19.1	+1.4
BGBC-017	Cwmyrdderch Court, Station Terrace, Cwm, Ebbw Vale	13.5	14.5	+1
BGBC- 018	Welfare Hall, Beaufort Hill, Ebbw Vale	22.1	20.6	-1.5
BGBC-019	The Rise, Beaufort, Ebbw Vale	21.0	22.7	+1.7
BGBC-020	Beaufort Road, Tredegar	18.4	21.0	+2.6
BGBC-021	Bryn Rhosyn, Tredegar	14.8	17.2	+2.4
BGBC-022	King Street, Brynmawr	14.4	17.6	+3.2

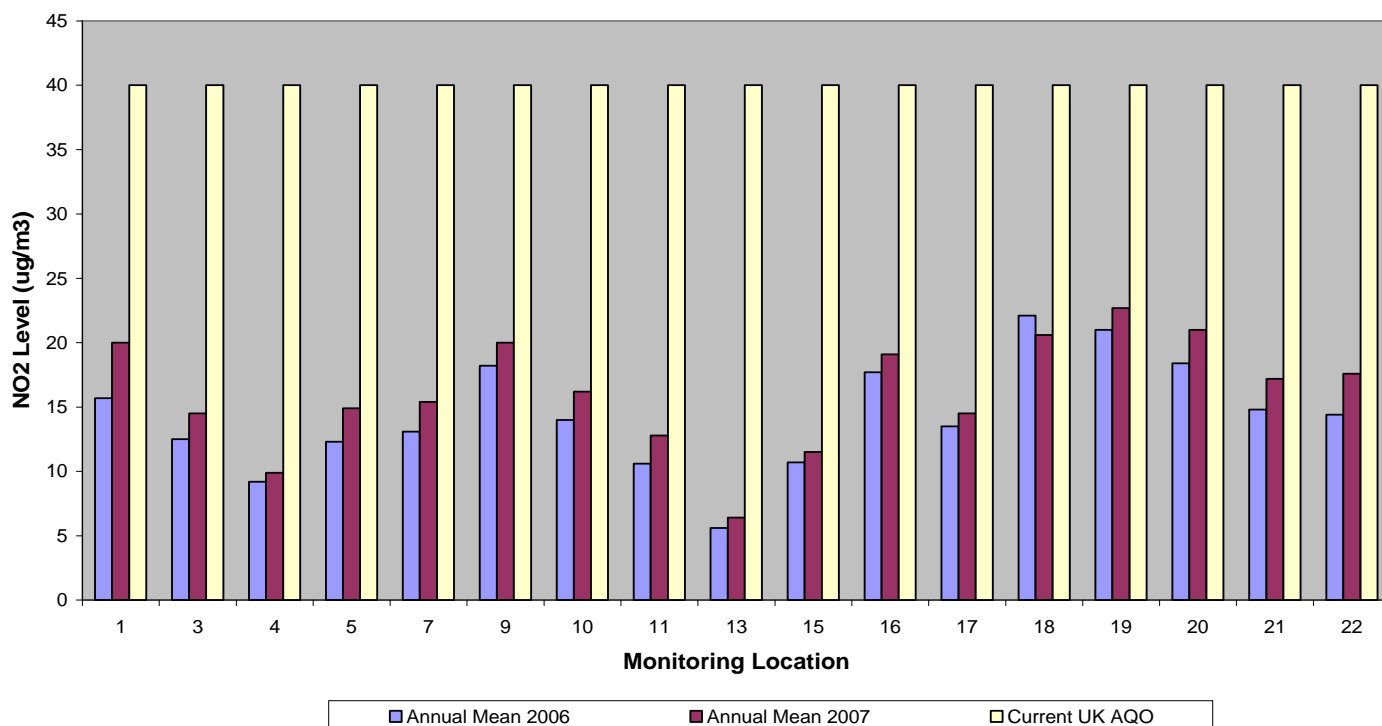
The results presented in Table 9 show that there has been a marginal increase in the annual mean concentration of NO₂ at each monitoring location, with the exception of the monitoring site BGBC-018.

BGCBC will continue to monitor at all 17 locations for the period of 2008 to assess whether there is any significant increases in the annual mean concentrations of NO₂ at these locations and assess the results to determine if there are any significant trends in concentrations.

However, the monitoring results for both the period of 2006 and 2007 are significantly below the current UK AQO for NO₂ of 40 $\mu\text{g}\text{m}^{-3}$. The estimated levels for 2010 using both the 2006 and 2007 monitoring information are also both significantly below the 2010 UK AQO of 40 $\mu\text{g}\text{m}^{-3}$.

Figure 1 provides a graphical representation of the 2006 and 2007 measured levels of NO₂ at each monitoring location in comparison with the UK AQO.

Figure 1 : Measured levels of Nitrogen Dioxide 2006/07 comparison with UK AQO



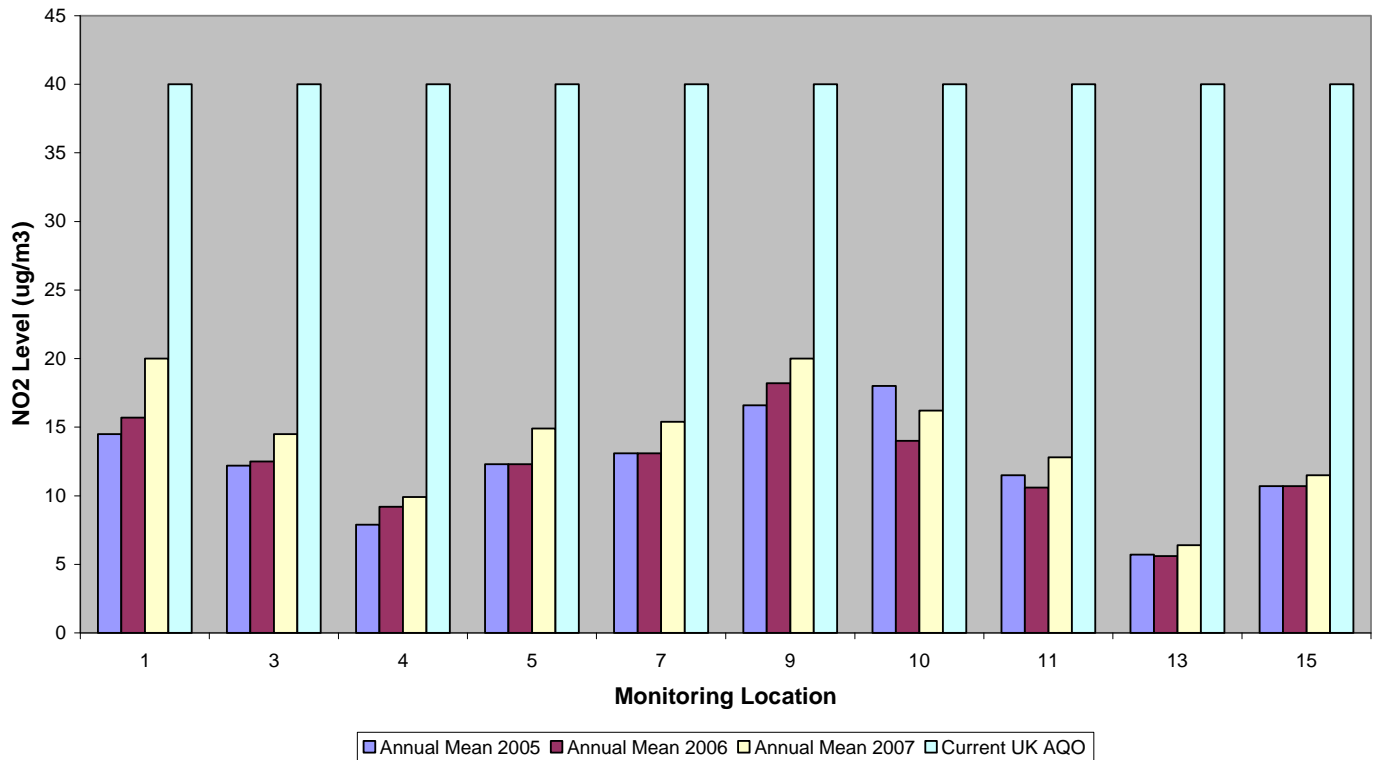
Seven of the monitoring sites used for 2006 and 2007 were not present during 2005. Therefore a comparison of the measured levels for 2005 are only available for certain sites, as presented in Table 10 below:

Table 10: Comparison of NO₂ Levels for 2005, 2006 and 2007 at Diffusion Tube Monitoring Sites within Blaenau Gwent

WAQF Reference	Location	Annual Mean 2005 [$\mu\text{g m}^{-3}$] (1 decimal place)	Annual Mean 2006 [$\mu\text{g m}^{-3}$] (1 decimal place)	Annual Mean 2007 [$\mu\text{g m}^{-3}$] (1 decimal place)
BGBC-01	The Darren, Darenfelin Road, Brynmawr	14.5	15.7	20.0
BGBC-03	272 King Street, Brynmawr	12.2	12.5	14.5
BGBC-04	Parkhill, Beaufort, Ebbw Vale	7.9	9.2	9.9
BGBC-05	Willow Tree Bungalow, Aberbeeg	12.3	12.3	14.9
BGBC-07	Aberbeeg Medical Centre, Aberbeeg	13.1	13.1	15.4
BGBC-09	Ynys Dawel, Darenfelin Road, Brynmawr	16.6	18.2	20.0
BGBC-10	Mill Terrace, Cwm, Ebbw Vale	18.0	14.0	16.2
BGBC-11	Cwm Craig, Cwm, Ebbw Vale	11.5	10.6	12.8
BGBC-13	Kings Arms Cottages, Trefil, Tredegar	5.7	5.6	6.4
BGBC-15	Bush Bach, Nantybawch, Tredegar	10.7	10.7	11.5

Figure 2 provides a graphical representation of the 2005, 2006 and 2007 measured levels of NO₂ at monitoring locations within Blaenau Gwent in comparison with the UK AQO.

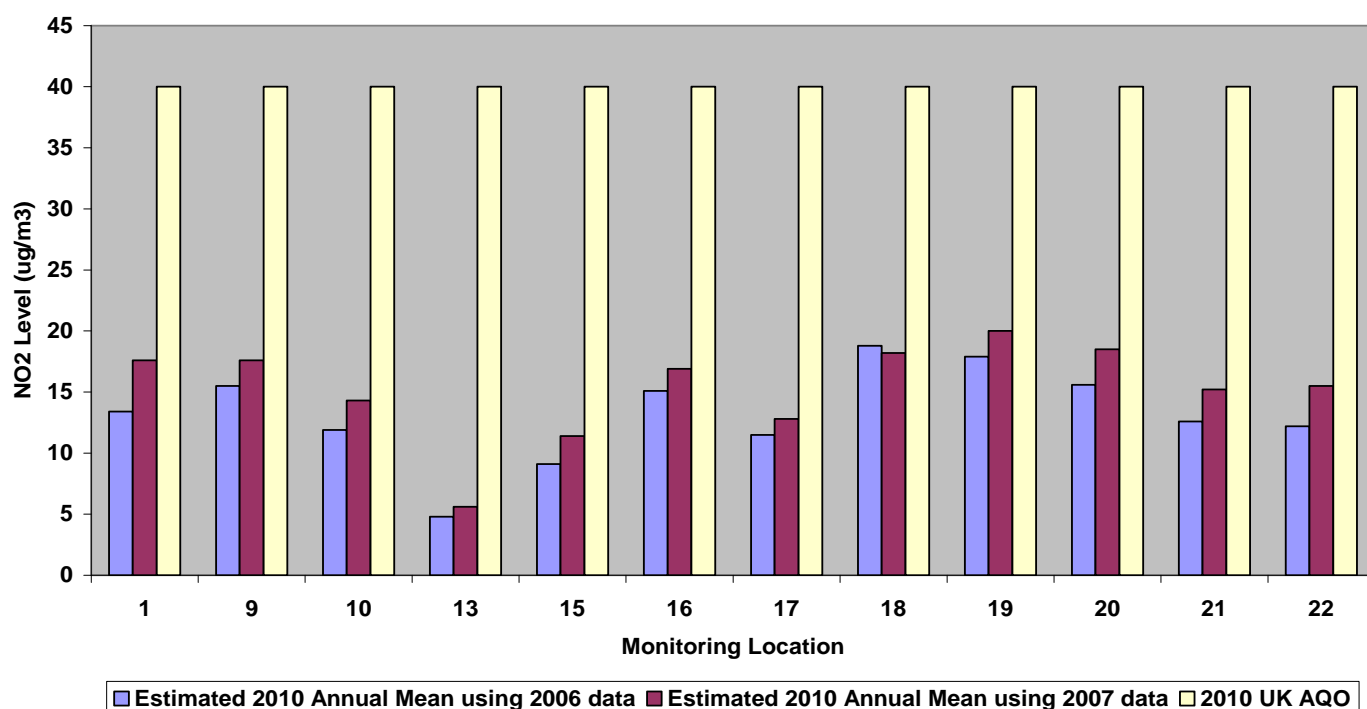
Figure 2: Measured levels of Nitrogen Dioxide 2005/06/07 comparison with UK AQO



It can be seen from Figures 1 and 2 that the levels at each monitoring location for each of the measurement periods (i.e. 2005, 2006, and 2007) are significantly below the current UK AQO for NO₂ of 40 µgm⁻³.

Figure 3 provides a graphical representation of the predicted 2010 NO₂ levels at relevant roadside monitoring locations using 2006 and 2007 measured levels in comparison with the UK AQO of 40 µgm⁻³ for 2010.

Figure 3: Estimated 2010 Nitrogen Dioxide Level using 2006/07 measured data comparison with UK AQO 2010



BGCBC does not currently undertake any monitoring for NO₂ levels which would allow comparison of the results with the hourly mean AQO of 200 µg^m⁻³ not to be exceeded more than 18 times per year.

The nearest monitoring location which monitors hourly NO₂ levels is located at Cwmbran. The monitoring results for both the Cwmbran⁽¹⁹⁾ site indicate that there were no exceedances of the hourly mean AQO during the period of 2007.

The areas where the data was obtained have significantly higher traffic flows than in Blaenau Gwent so it reasonable to assume that levels within Blaenau Gwent will also be below the objective level for the hourly mean AQO.

2.21 PM₁₀

Particulate Matter (PM ₁₀) *	50 µgm ⁻³ not to be exceeded more than 35 times per year	24 hour mean	31 st December 2004
	40 µgm ⁻³	Annual mean	31 st December 2004
	European Obligations		
	50 µgm ⁻³ not to be exceeded more than 35 times per year	24 hour mean	1 st January 2005
	40 µgm ⁻³	Annual mean	1 st January 2005

2.22 Description of PM₁₀ and main UK sources

The ability of a particle to remain suspended in the air depends essentially on size, shape and density. Large heavy particles fall rapidly, while fine light particles remain suspended for longer. The same properties determine where in the human respiratory track a particle can penetrate. In general, spherical particles below 10µm in diameter (PM₁₀) have the greatest likelihood of reaching the furthest parts of the lung air spaces where delicate tissues involved in the essential processes of respiration are to be found.

Particles may arise from a wide variety of sources, either natural or man made. Biological sources are ubiquitous, and particularly in rural areas considerable numbers of pollen grains, fungal spores and their fragments contribute to the total mass of airborne particles. Man-made airborne particles result mostly from combustion processes, from the working of soil and rock, and from many other industrial processes and from the abrasion of road surfaces by motor vehicles.

2.23 Previously reported monitoring data for PM₁₀

The Review and Assessment carried out in 2003 concluded that it was unlikely that the 2004 Air Quality Objective would be exceeded.

No monitoring for PM₁₀ has been or is currently being carried out in Blaenau Gwent.

It was reported in BGCBC USA 2006 that the estimated annual mean background gravimetric PM₁₀ concentration for Blaenau Gwent was 15-20 µgm⁻³ and that the level for 2010 was estimated to decrease to 10-15 µgm⁻³.

Torfaen County Borough Council monitor PM₁₀ levels at their Cwmbran monitoring station. BGCBC USA 2006 reported that during 2004 the annual mean for this site was 18 µgm⁻³ (20). The Progress Report produced in 2007 reported that the results at this site for 2006 indicate a slight increase at 19 µgm⁻³ (21), this is still substantially below the UK AQO annual mean for PM₁₀ of 40 µgm⁻³.

Merthyr Tydfil County Borough Council started monitoring for PM₁₀ in 2005, It was reported in BGCBC USA 2006 that the estimated gravimetric concentration of PM₁₀ for 2005 was 14.8 µgm⁻³. Merthyr Tydfil County Borough Council reported in their Progress Report for the monitoring period of 2006 that there were no exceedances of either of the UK AQO's for PM₁₀.

Taking into account that this was the best data available at the time and that both neighbouring authorities are similar in location, size and population density to BGCBC, it was accepted in the Progress Report for 2007 for the monitoring period of 2006 that the PM₁₀ levels in Blaenau Gwent are likely to also be within the air quality objective levels for PM₁₀.

The information held by the UK Air National Air Quality Archive indicated that there were no exceedances within Wales during 2006 of either of the UK AQO's for PM₁₀⁽²²⁾.

2.24 New monitoring data for PM₁₀

Torfaen County Borough Council continue to monitor PM₁₀ levels at their Cwmbran monitoring station. There were no reported exceedances of the annual mean AQO of 40 µgm⁻³⁽²³⁾ at this monitoring location.

The data held by the UK National Air Quality Archive for the monitoring station at Cwmbran for the period of 2007 indicates that there were no reported exceedances of the 24 hour mean AQO of 50 µgm⁻³ not to be exceeded more than 35 times per year⁽²⁴⁾.

Torfaen County Borough Council have reported in their Progress Report for the monitoring period of 2007 that the annual mean concentration for PM₁₀ levels at their Cwmbran monitoring station is 19 µgm⁻³. The level reported is the same as the level reported for the previous monitoring period during 2006, and remains substantially below the UK AQO annual mean for PM₁₀ of 40 µgm⁻³.

The data held by the UK National Air Quality Archive for the monitoring period of 2007 indicates that there were no reported exceedances of the annual mean AQO of 40 µgm⁻³⁽²⁵⁾, or the 24 hour mean AQO 50 µgm⁻³ not to be exceeded more than 35 times per year⁽²⁶⁾ for Wales.

There is no data available for PM₁₀ levels within Merthyr Tydfil County Borough for the monitoring period of 2007.

2.25 Sulphur Dioxide

Sulphur Dioxide	350 µg/m ³ not to be exceeded more than 24 times a year	1 hour mean	31 st December 2004
	125 µg/m ³ not to be exceeded more than 3 times a year	24 hour mean	31 st December 2004
	266 µg/m ³ not to be exceeded more than 35 times a year	15 minute mean	31 st December 2005
	<i>European Obligations</i>		
	350 µg/m ³ not to be exceeded more than 24 times a year	1 hour mean	1 st January 2005
	125 µg/m ³ not to be exceeded more than 3 times a year	24 hour mean	1 st January 2005

2.26 Description of Sulphur Dioxide and main UK sources

From the time of the industrial revolution until the early 1960's the main source of sulphur dioxide emissions in towns and cities was the domestic, commercial and industrial burning of coal. However, this pattern of emissions in the UK has changed significantly since the 1960's. Following the Clean Air Act 1956 and subsequent moves to the increased use of energy sources, such as natural gas and electricity, emissions in towns and cities have fallen significantly.

The generation of electricity by combustion of fossil fuel has now become concentrated mainly in rural areas rather than close to towns and cities.

In contrast to other pollutants, motor vehicles are a relatively unimportant source nationally, being responsible for only about 2% of the total sulphur dioxide emissions. However, the combustion of diesel fuels can make a significant contribution to background levels in urban areas.

2.27 Previously reported monitoring data for Sulphur Dioxide

The review and assessment carried out in 2003 concluded that the risk of the objectives for sulphur dioxide being exceeded was negligible.

No monitoring for Sulphur Dioxide is currently carried out in Blaenau Gwent.

BGCBC USA 2006 reported that the estimated annual mean background sulphur dioxide (SO₂) concentrations for 2001 were obtained from the Air Quality Archive. The results at that time estimated the annual mean background SO₂ concentration to fall to below 6 µg/m³. It was then reported that based on this information the level was assumed to fall to below 4.5 µg/m³ by the end of 2004 and 2005 using the assumption (75% of 2001 values) using the methodology detailed in the DEFRA guidance.

The information held by the UK Air National Air Quality Archive indicated at the time of the Progress Report 2007 that there were no exceedances within Wales during the monitoring period of 2006 of any of the UK AQO's for SO₂⁽²⁷⁾.

2.28 New monitoring data for Sulphur Dioxide

The information held by the UK Air National Air Quality Archive indicated at the time of the Progress Report 2007 that there were no exceedances within Wales during the monitoring period of 2007 of any of the UK AQO's for SO₂⁽²⁸⁾.

2.29 Other Air Quality Data

Blaenau Gwent County Borough Council ceased radiation monitoring in July 2004.

No monitoring is carried out within the Borough by BGCBC for any other air pollutants other than those already mentioned in the previous sections of this report.

2.30 Future Monitoring Plans

Lead monitoring:

Envirowales Ltd is a lead acid battery recycling plant sited at the Rassau Industrial Estate in Ebbw Vale which was given planning permission on 21st June 2005. Further information regarding this development is given in the section of this Progress Report relating to New Local Developments.

It was reported in error in BGCBC USA 2006 (Pg 12) that as part of their permit to operate issued by the Environment Agency under the Pollution Prevention (England and Wales) Regulations 2000 (as amended) Envirowales Ltd were required to set-up a lead monitoring station at a nearby sensitive receptor to their site, namely Garnlydan Primary School.

Remote (i.e. off-site) monitoring at Garnlydan School is not a requirement of their Permit issued by the Environment Agency under the above mentioned Regulations.

However, formal agreement was secured under Section 106 of the Town and Country Planning Act 1990 with Envirowales Ltd during the planning process for remote monitoring of ambient levels of lead and meteorological data at a site to be determined in agreement with the Local Authority.

It was reported in the Progress Report 2007 that discussions were ongoing with the company regarding the exact requirements of the Section 106 agreement and it was hoped that monitoring would commence shortly.

It was determined as a result of the discussions that it would be advisable to commence monitoring when the Envirowales site was fully operational.

The company envisaged that the site would be fully operational by the end of Summer 2008, it was agreed that monitoring would commence at this time for a minimum period of 12 months after which the results would be assessed to determine whether a further period of monitoring would be required.

Nitrogen Dioxide Monitoring:

BGCBC will continue to review the location of its diffusion tubes using information supplied by other relevant Local Authority Departments (i.e. Highways, Planning), to determine the most appropriate location for monitoring in light of any maintenance/improvements to the road networks in/around Blaenau Gwent and as a result of any new significant developments.

3.0 New Industrial Processes

3.1 New Industrial Processes

A list of the current Part A1, A2 and B Processes within the Borough previously regulated under the Pollution Prevention (England and Wales) Regulations 2000 (as amended) and now regulated under the Environmental Permitting (England and Wales) Regulations 2007 is provided in Appendix 3.

There have been no significant changes to any of the existing Part A1, A2 and B processes since the 2007 Progress Report that would be likely to have a significant impact on air quality.

It has been identified that GTS Flexible Materials Ltd have substantially reduced their annual solvent consumption and as a result now fall below the 200 hundred tonne threshold to classify for Permitting as an A2 process. Their permit is in the process of being varied to reflect this and they will be classified as a Part B process and regulated accordingly.

It was reported in the 2007 Progress Report that BGCBC had identified a potentially new Part B process since the information reported in the USA 2006. The process involves adhesive coating and had been operating for sometime, but it is only recently that the process appeared to come within the threshold of annual solvent consumption to require a Permit. Discussions are still ongoing with the Operator to establish the need for application for a Permit.

It is unlikely due to the nature of the activities at the site that the process will have any significant impact on local air quality with reference to the relevant UK AQO's.

A review of the existing Permits issued for Petrol Filling Stations is ongoing, as it has been identified that the annual throughput of petroleum at some of the Stations within the Borough may fall below the threshold of 500m³ per annum and therefore will no longer require regulation under the Environmental Permitting (England and Wales) Regulations 2007.

3.2 Up-date on significant Industrial Processes reported in 2007 Progress Report

BGCBC reported in the USA 2006 that on the 21st June 2005 a new lead acid battery recycling plant was given planning permission at the Rassau Industrial Estate in Ebbw Vale on a former Greenfield site. The plant was to be located on the same industrial state as a long established process, which also has the potential to emit significant quantities of lead, namely Yuasa Battery (UK) Ltd.

As part of the planning process the company, Envirowales Ltd, submitted to BGCBC an Environmental Impact Assessment (EIA). The EIA provided a report of the potential impact of the proposed development on local air quality also having regard to existing processes in the area.

The results of the EIA were scrutinised and accepted by BGCBC and an independent consultant, namely Dr Tim Chatterton, of the University of the West of England.

The EIA identified that the main pollutant of concern in terms of air quality was lead, and as a result the report also provided details of a modelling exercise which was carried out to predict

ambient lead levels at the nearest locations where there may be relevant public exposure (as defined by the UK National Air Quality Strategy).

The relevant sections of the EIA (including the results of the modelling exercise and details of the input data used) were provided in Appendix 4 of the 2007 Progress Report at the request of WAG.

The report concluded that the impact of the process upon air quality was negligible and the resulting levels of lead at the nearest locations of relevant public exposure would not result in an exceedance of the UK AQO's for lead for 2004 and 2008.

The Envirowales Ltd installation at Rassau Industrial Estate is **still** not yet fully operational and a significant proportion is still undergoing development. It is envisaged that the site will be fully operational at the end of Summer 2008.

The company submitted a planning application during 2007 to the Local Authority and a variation application to the Environment Agency in relation to a variation to their Permit, to allow an extension of the site and operations on-site. The extension was to include an additional lead processing plant which would have also included an additional emission source. This application has since been withdrawn.

As part of the A1 Permit for Envirowales Ltd issued by the Environment Agency, the Operator is required to submit monitoring information. At present only two of the five emission points (Stacks A3 and A5) are operational and so monitoring data is only available for these emission points.

Using on-site monitoring data from the A3 and A5 stack and assuming that the remaining A1, A2 and A4 stacks are emitting at their maximum permitted levels as per the requirements of their Permit, the Operator has recently provided to the Environment Agency a revised modelling exercise.

The results of the revised modelling exercise have only recently been received by the Local Authority for comment from the Environment Agency. It is intended that a meeting between BGCBC and the Environment Agency will take place shortly to discuss the findings of the report.

It is not appropriate to comment on the findings of the revised modelling exercise at this stage as the report requires careful consideration to assess accuracy and actions required (if any) in light of the new information provided. A full consideration of the report and findings will be presented in the next proposed USA or sooner as necessary, depending on the findings of the report.

As previously mentioned in Section 2.30 it is also hoped that remote monitoring data will also be available at this time, and possibly further on-site monitoring data from the stacks which are not yet operational.

4.0 Planning and Policies

4.1 Planning Consultation Policy

Each week a list of new planning applications that are received by the Planning Division is provided to the Team Leader of Pollution Control & General Services. The Team Leader of the Pollution Control & General Services Team then examines the applications that have been received and requests further details in relation to any applications that may have the potential to impact of local air quality.

Consultation with the Planning Applicant and the Planning Division will take place for any developments that are identified as having the potential to have a significant impact on air quality. The applicant may then be required to submit an Environmental Impact Assessment or an air quality assessment as necessary prior to any planning permission being granted.

4.2 New Planning Applications

Each planning application is judged on its merits and due regard is given to the Planning Policy Wales document regarding Air Quality published by the Welsh Assembly Government, and other relevant guidance.

The Planning Division classify applications that are received into minor and major developments in accordance with the Welsh Office Planning Statistics guidance. Major developments are classified as being the following:

- major dwelling is 10 or more dwellings or if an outline application 0.5 hectares
- For other types of applications major equates to 1000m² floor area or 1 hectare if the application is in outline

Table 11 below provides a breakdown of the major applications that were received during 2007 and comments in relation to potential impact on air quality with Blaenau Gwent.

Table 11: Applications for major developments received by BGCBC during 2007

Planning Reference	Type of development	Location	Potential Impact on Local Air Quality
C/2006/0596	Residential Development	Letchworth Road, Ebbw Vale	Negligible
C/2006/0600	Residential Development	Land North Of Cwmyrdderch Court Flats, Ebbw Vale	Negligible
C/2006/0619	Residential Development	Unit 1 Noble Square Industrial Estate, Brynmawr	Negligible
C/2006/0085	Residential Development	Old 45 Yard Off Steelworks Road, Ebbw Vale	See Section 4.3
C/2006/0597	Residential Development	Derelict Bus Garage Adjacent To Woodfield Road, Tredegar	Negligible

Table 11 (cont): Applications for major developments received by BGCB during 2007

Planning Reference	Type of development	Location	Potential Impact on Local Air Quality
C/2007/0381	Residential Development	Stockton Way, Tredegar	Negligible
C/2007/0052	Residential Development	Beaufort Garage Beaufort Road, Ebbw Vale	Negligible
C/2007/0531	Residential Development	The Old 45 Yard (phase 1) Off Steelworks Road, Ebbw Vale	See Section 4.3
C/2007/0320	Residential Development	Land Adjacent To Gwaun Helyg Road, Ebbw Vale	Negligible
C/2005/0663	Residential Development	Land Opposite Maes-Bach Merthyr Road Tredegar	Negligible
C/2007/0382	Residential Development	Ystrad Deri Tredegar	Negligible
C/2006/0549	Residential Development	Woodlands Club Formally Known as Ashvale Sports Club Griffiths Gardens Tredegar	Negligible
C/2006/0590	Revised location to approval C/2006/0368 for proposed new unit for processing of non-ferous metals	Site At Rassau Industrial Estate Ebbw Vale	Application withdrawn (Envirowales Ltd) See Section 3.2
C/2006/0628	Proposed Factory Extension	Takao Manufacturing Unit 17 Rassau Industrial Estate Ebbw Vale	Negligible
C/2002/0061	Redevelopment of land for industrial development, ecological mitigation and public open space	Land At Bryn Serth Road Ebbw Vale	Negligible
C/2007/0334	Proposed extension with additional parking facilities	Unit B Crown Business Park Tredegar	Negligible
C/2007/0294	Single storey industrial units with associated yards and parking	Land at Rassau Industrial Estate Ebbw Vale	Negligible
C/2005/0610	Business Park Comprising Of B1, B2 And B8 Uses	Rassau Industrial Estate Ebbw Vale	Negligible
C/2007/0079	Proposed changes to front elevation and change of use from store to office.	46 Beaufort Street Brynmawr	Negligible
C/2007/0245	Two storey retail unit	Festival Shopping Ebbw Vale	Negligible
C/2006/0640	Erection of Three Storey Hotel	Brewers Fayre, Victoria Park, Gwent Court, Opposite Victoria Avenue Ebbw Vale	Negligible
C/2006/0055	Off Road Motorcycle Track	Hafod-y-Dafal Farm Abertillery	Negligible

Table 11 (cont): Applications for major developments received by BGCBC during 2007

Planning Reference	Type of development	Location	Potential Impact on Local Air Quality
C/2007/0477	Conversion of disused railway to shared use community walking and cycling route	Disused Railway Between Heathfield Roundabout & Bedwellty Pits Tredegar	Negligible
C/2007/0669	Residential Development	Plot 7 Site of former Poultry Farm Tredegar	Negligible
C/2007/0562	Disabled adaptations to existing residential premises	28 Somerset Street Brynmawr	Negligible
C/2007/0125	Outline planning application for mixed use development comprising residential, hospital, learning campus, employment uses, theatre, leisure	Former Steelworks Site Steelworks Road Ebbw Vale	See Section 4.3

It can be seen from Table 11 that the majority of planning applications received during the period of 2007 were determined to be negligible, having regard to relevant guidance issued by DEFRA, in terms of their potential impact upon local air quality.

The applications which were identified as having the potential to impact significantly on local air quality are:

- C/2006/0085
- C/2007/0531
- C/2007/0125

These applications are connected in that they are part of a larger regeneration project of the former steelworks site in Ebbw Vale which is known as 'The Works – Ebbw Vale', co-ordinated jointly by WAG and BGCBC. An Environmental Impact Assessment has been undertaken for the proposed redevelopment of the site, which includes an assessment of air quality the results of which are discussed in Section 4.3.

No applications for any mineral developments or landfill developments were received by BGCBC during the period of 2007.

4.3 'The Works – Ebbw Vale'

The closure of the Ebbw Vale steelworks in July 2002 resulted in a fundamental change to the economic structure of Blaenau Gwent, this resulted in the need for an option appraisal as to how best to utilise the site to help regenerate Ebbw Vale and improve the economy and social environment of the town and wider community.

This has led to an outline planning application initially being received accompanied by a supporting Environmental Statement prepared by Environmental Resource Management. The outline application is for a mixed use redevelopment of former industrial land comprising of:

- Residential Units (up to a maximum of 720)
- Associated mixed use of up to 12,500 square metres including local amenities and services for retail, food and drink, leisure (Use Class A1, A2, A3 and B1) and day centre (Use Class D1)

- Hospital (up to 16,45 square metres) (Use Class C2)
- Learning Campus (up to 14,000 square metres) (Use Class D1)
- Employment Use (up to 60,143 square metres) (Use Class B1)
- Theatre (up to 2,000 square metres) (Use Class:su generic)
- Leisure Centre (up to 1,485 square metres) (Use Class D2) and sports pitches (up to 1.6 hectares)
- Open green space as extension to Wetland Park and associated education and training facilities (up to 1 hectare)
- Railway Terminus
- Associated car parking, public transport facilities and highway infrastructure and improvements including a new public bridge and town centre link, associated landscaping and public squares and associated engineering, enabling earthworks to facilitate the development

The full details for the proposed development can be viewed at <http://www.erm.com/ebbwvale>. Picture 1 shows the former Steelworks site at Ebbw Vale and gives an idea of the scale of the proposed development.

Picture 1: Former Steelworks Site, Ebbw Vale



Extracts from the Environmental Statement which are considered relevant to the 2007 Progress Report are provided in Appendix 4. These include the following Chapters from the Environmental Statement:

- Chapter 2 – The Proposed Scheme (including details of the phasing of the development)
- Chapter 8 – Air Quality, Dust and Climate Change

In summary of the findings of the Environmental Impact Assessment in terms of Air Quality presented in Chapter 8 of the Environmental Statement, three pollutants are identified as being relevant in terms of potential significant impact on local air quality. The pollutants identified include PM₁₀, NO₂ and Carbon Dioxide (CO₂).

The sources of the potential increase in the above pollutants are mainly due to increases in road traffic during construction and operational phases of the proposed development, and also from the construction activities on-site during the actual development process.

There is currently no UK AQO for CO₂ which is required to be reported upon by Local Authorities. The maximum increase in ambient CO₂ emission as a result of the development is reported to be estimated to be equivalent to 0.002% of the total UK emissions from Road Transport in 2004, which is considered to be a minor impact.

Table 8.17 of the Environmental Statement (presented in Appendix 4 of this report) provides a summary of the predicted PM₁₀ and NO₂ at relevant exposure locations for the three main phases of the development at 2011, 2014 and 2019.

The predicted levels are significantly below the relevant annual mean UK AQO's for both pollutants.

At the time of this Report the initial stages of the remediation of the site are underway to ensure that the land is suitable for the proposed end use.

BGCBC will continue to assess monitoring requirements and potential locations for undertaking monitoring during the construction and operational phases of the development.

5.0 Local Transport Planning

5.1 Local Transport Plan

Local Authorities are no longer required to develop and produce Local Transport Plans, they are now required to work with neighbouring Authorities to produce Regional Transport Plans in order to promote efficient and effective services.

The first Regional Transport Plan which will include Blaenau Gwent is being developed with publication scheduled for March 2009. This document will be a five year plan considering both local and regional transport networks.

Part of the process of the development of the Regional Transport Plan requires the production of a Strategic Environmental Assessment (SEA) which will give consideration to air quality issues.

The Pollution Control and General Services Team will liaise closely with Technical Services (which incorporates Highways) to offer assistance and input into the SEA.

5.2 New Local Transport Developments

'The Works – Ebbw Vale':

'The Works – Ebbw Vale' regeneration project represents a significant local transport development. The details and potential impact of this project have already been considered in Section 4.3.

'Ebbw Valley Railway':

Arriva Trains Wales started to operate passenger train services between Ebbw Vale and Cardiff on Wednesday, 6 February, 2008. The service would only stop at Llanhilleth Station commencing Sunday 27th April 2008. An hourly service is provided in each direction.

Blaenau Gwent Council worked with the Welsh Assembly Government, Network Rail, Arriva Trains Wales, Capita Symonds, Amey Rail, Caerphilly County Borough Council and Newport City Council on the Ebbw Valley Railway project.

The railway passes through an urban and rural landscape, for much of its length the railway line runs alongside or close to the river. Large scale construction works on the track were not required as the track bed was still in situ.

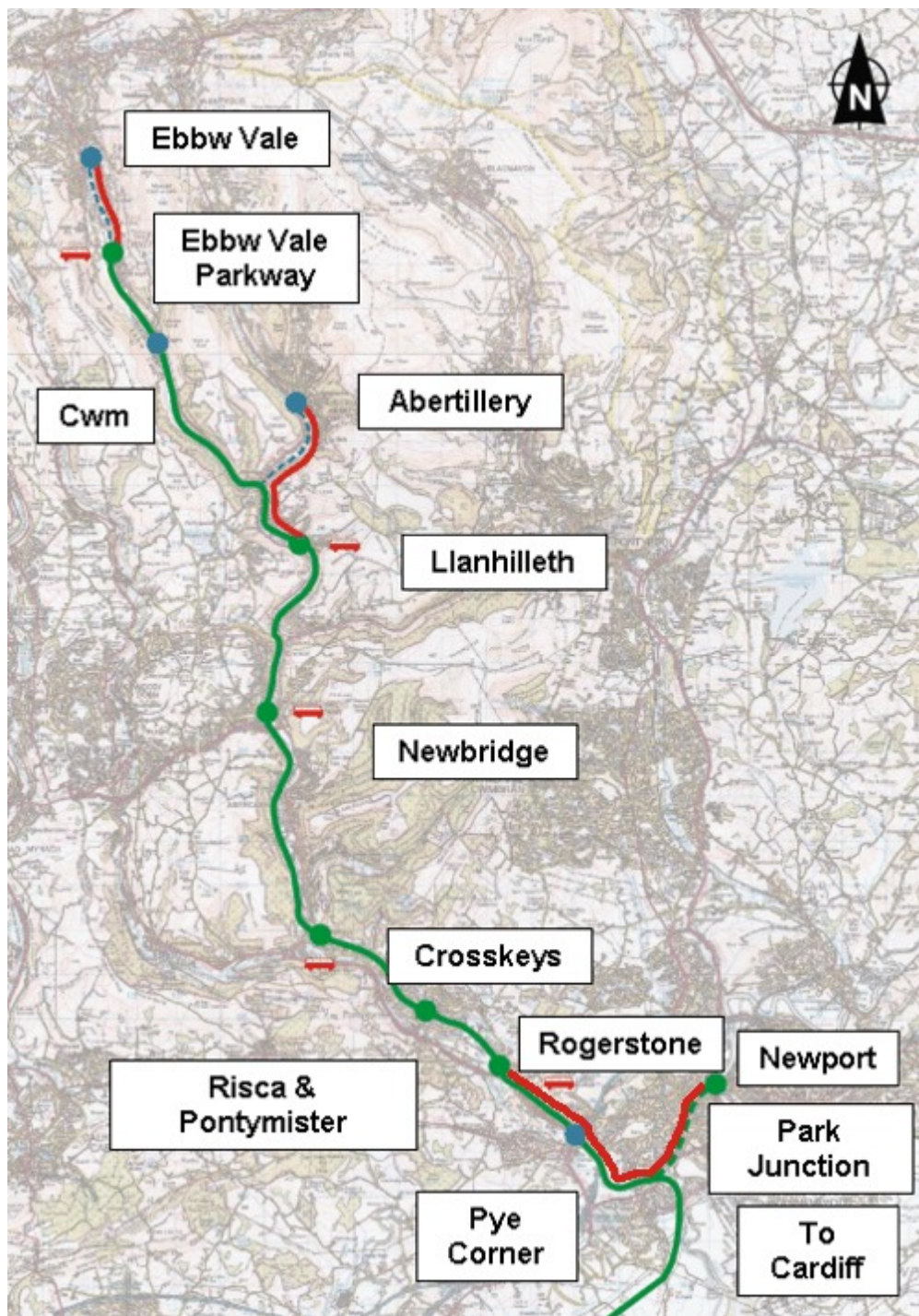
The requirement to undertake an environmental assessment for the proposed Ebbw Valley Railway Stations was identified as part of the planning process during the initial stages of the application process.

The proposed and existing stations within Blaenau Gwent include:

- Ebbw Vale (proposed)
- Ebbw Vale Parkway
- Cwm (proposed)
- Abertillery (proposed)
- Llanhilleth

Picture 2 below indicates the route plan of the rail link.

Picture 2: Ebbw Valley Railway



An environmental assessment was undertaken for each of the existing stations which included an assessment of air quality in accordance with relevant DEFRA guidance. No significant environmental impacts were reported in the Environmental Assessment provided by Capita Symonds. The summary findings of the report are provided in Appendix 5.

Guidance within LAQM.TG(03) recommends that a Detailed Assessment should only be required in circumstances where diesel or coal-fired locomotives are stationary and in close proximity (15 metres) to locations where members of the public may be present on a regular basis. The two active stations at Llanhilleth and Ebbw Vale Parkway do not meet this criteria at this time.

Further Air Quality assessments will be required for the proposed stations if the developments proceed to Phase 2.

There are no other significant transport related developments that were undertaken during the reporting period of 2007.

There are no significant transport related developments which are ongoing at the time of the production of the Progress Report for 2008 or which are proposed within the Borough at this time.

5.3 Up-date on Local Transport Developments reported in 2007 Progress Report

The A465 Heads of the Valley Road - Dualling Scheme reported upon in the USA 2006 and 2007 Progress Report is ongoing.

Monitoring for Nitrogen Dioxide is ongoing in the areas where there is considered that there may be relevant public exposure as outlined in Section 2 of this report, and as reported in previous Air Quality reports produced by BGCBC.

As the various sections of the dualling scheme are completed the location of the monitoring sites and the need for relocation or introduction of new sites will be continuously assessed using information provided by ongoing consultation between the Pollution Control and General Services Team and Highways Division.

Further information regarding the scheme can be found at <http://www.a465dualling1.co.uk/>

6.0 Conclusions

6.1 Conclusions of Progress Report 2008

Having considered the current information available regarding new monitoring data and new developments within the Borough of Blaenau Gwent it can be determined that it is unlikely that any of the UK AQO's for the seven key pollutants will be exceeded.

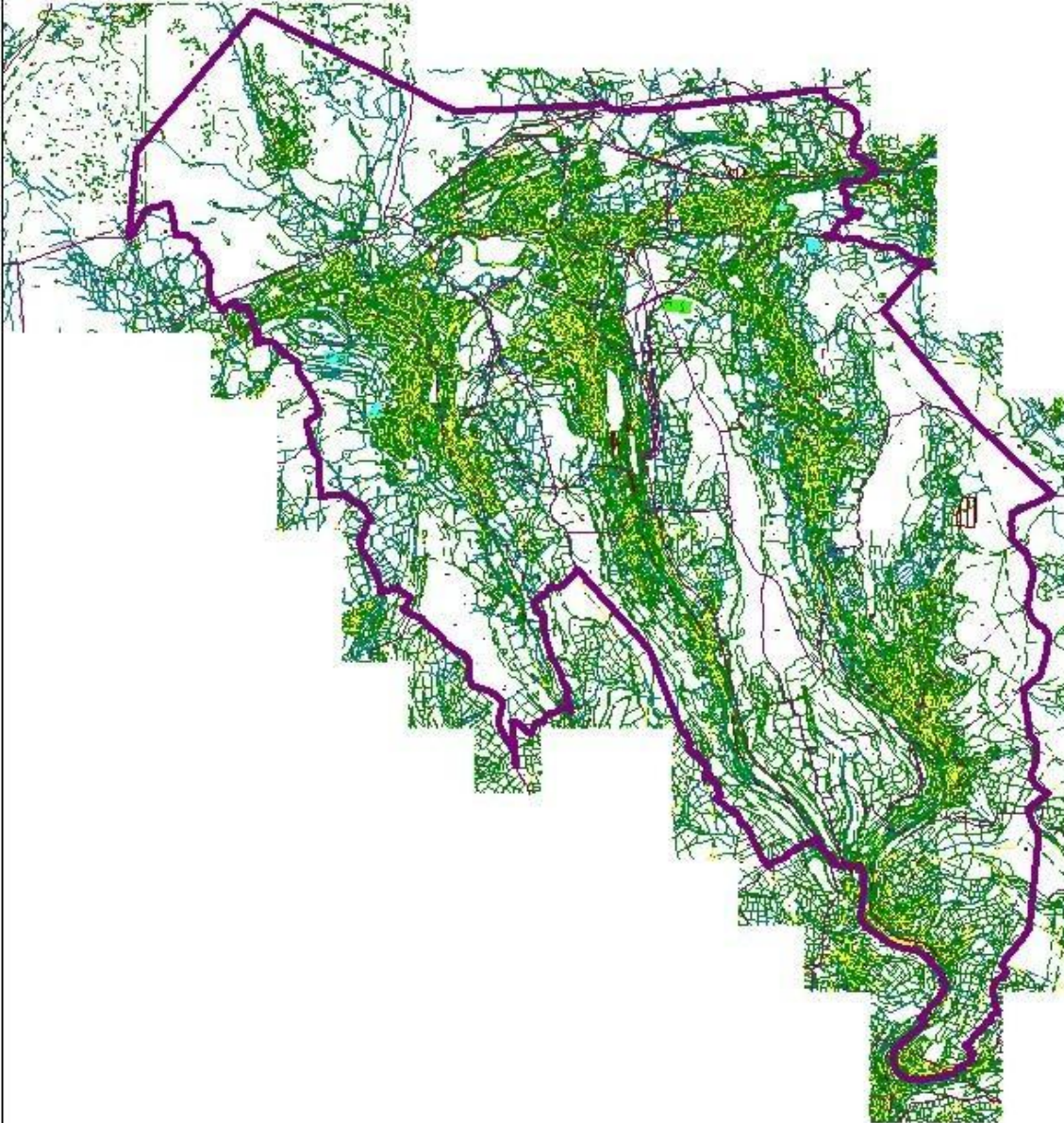
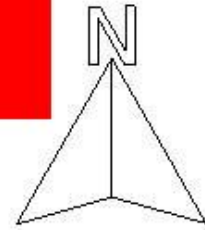
6.2 Future considerations

It is proposed that the following matters be given further consideration in preparation for the Updating and Screening Assessment scheduled for 2009:

- Review monitoring data available from Nitrogen Dioxide diffusion tube monitoring
- Liaise with BGCBC Technical Services regarding Regional Transport Plan to assess further monitoring needs with particular regard to location of Nitrogen Dioxide diffusion tube monitoring locations
- Review monitoring data available from remote monitoring carried out by Operator of Envirowales Ltd
- Monitor development of 'The Works – Ebbw Vale', Ebbw Vale Railway Link and A465 Heads of the Valley Road - Dualling Scheme to continually assess monitoring requirements

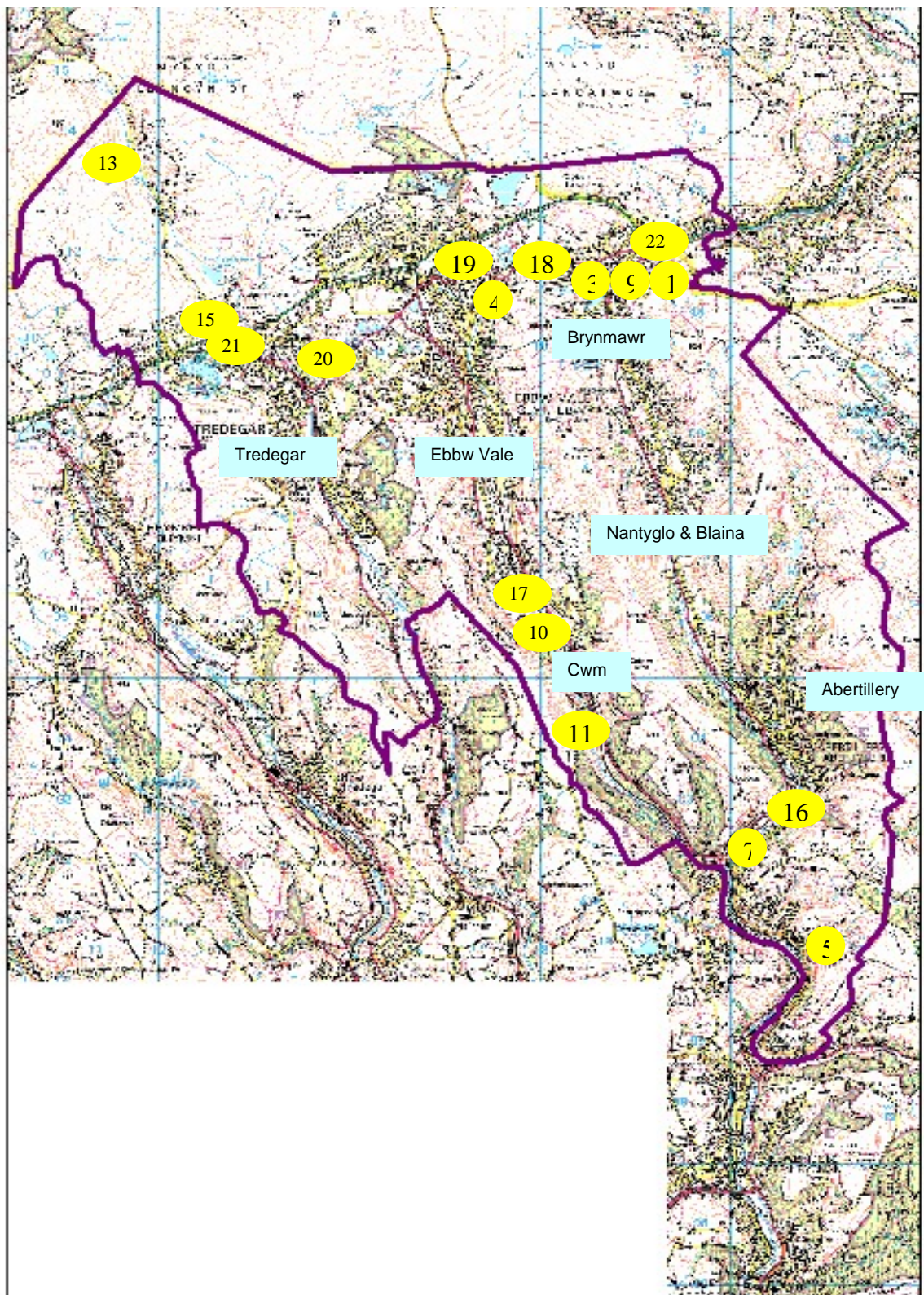
Appendix 1

Administrative Area of Blaenau Gwent



Appendix 2

Location of NO₂ Monitoring Sites within Blaenau Gwent



Appendix 3

List of Part A1, A2 and B installations.

Part A1 Installations:

Company Name	Address of Installation	Activity Permitted
Silent Valley Landfill Site	Silent Valley Waste Services, Beechwood House, Cwm, Ebbw Vale, NP23 6PZ	Landfill Site
Continental Tea Leaves (UK) Limited	Waun Y Pound Industrial Est., Ebbw Vale, NP23 6PL	Surface Treatment of Metals
Yuasa Battery UK Ltd	Unit 22 Rassau Industrial Estate, Ebbw Vale, NP23 5SD	Melting of Non-Ferrous Metals
Envirowales Ltd	Rassau Industrial Estate, Ebbw Vale, NP23 5SD	Melting of Non-Ferrous Metals
High Chemicals	Tarfarnaubach Industrial Estate, Tredegar. NP22 3AA	Production of Ferric Chloride
Tredegar Biodiesel BioTech Oils Uk Ltd	Tarfarnaubach Industrial Estate, Tredegar, NP22 3AA	Production of bio-diesel

Part A2 Installations:

Company Name	Address of Installation	Activity Permitted
GTS Flexible Materials Ltd	Unit 41, Rassau Industrial Estate, Ebbw Vale, Blaenau Gwent. NP23 5SD	Film Coating
Corus Colours Consumer Products	Tarfarnaubach, Tarfarnaubach Industrial Estate, Tredegar. NP22 3AA.	Coil Coating

Part B Installations:

Company Name	Address of Installation	Activity Permitted
Tarmac Topmix Limited	Trefil Quarry, Trefil, Tredegar, NP22 4HF	Cement Batching
Hanson Premix Limited	Waun-y-Poud Industrial Estate, Ebbw Vale, NP23 6PL	Cement Batching
Thomas Waste Management	Hafod Garage Transfer Station, Old Abergavenny Road, Brynmawr, NP23 4BU	Mobile Crushing and Screening
Studiosmart Ltd (Formerly known as Cardinal Packaging Limited)	Unit 29 Rassau Industrial Estate, Ebbw Vale, NP23 5SD	Printing of Flexible Packaging
Blackwood Engineering Works Limited	Glandwr Industrial Estate, Aberbeeg, Abertillery, NP13 2LN	Coating of Metal Counterweights
Yamada Europe Limited	Festival Drive, Ebbw Vale, NP23 6XS	Casting of Aluminium
Cotech Senitising Ltd	Units 13-16 Tarfarnaubach Industrial Estate, Tredegar. NP22 3AA.	Film Coating
Gryphonn Quarries Ltd	Trefil Quarry, Trefil, Tredegar. NP12 4HG.	Mobile Crushing and Screening
Capert Tile Factory Ltd (formerly know as Tandus Europe Ltd)	Units 8 & 9, Rising Sun Industrial Estate, Blaina, NP13 3JW	Tar and Bitumen process
Lafarge Roofing Limited	Unit 15, Rassau Industrial Estate, Ebbw Vale, NP23 5SD	Fibre and Reinforced Plastics
Sogefi Filtration Ltd	Crown Business park, Tredegar, Blaenau Gwent, NP22 4EF.	Di-isocynate Process
Geith International UK	Crown Business Park, Tredegar, Gwent. NP22 4EE.	Coating of Metal
Chapel Road Garage	Blaina Road, Nantyglo, NP23 4PT	Unloading of Petrol at Filling Station
Central Garage,	Abertillery Road, Blaina, NP13 3DN	Unloading of Petrol at Filling Station

Part B Installations (Continued):

Company Name	Address of Installation	Activity Permitted
Festival Service Station	By-pass Road, Ebbw Vale, NP23 8UW	Unloading of Petrol at Filling Station
Nantybawch Service Station	Nantybawch, Tredegar, NP22 3SB	Unloading of Petrol at Filling Station
Central Depot Filling Station – BGCBC	Barleyfield Industrial Estate, Brynmawr.	Unloading of Petrol at Filling Station
Hilltop Garage	King Street, Brynmawr. NP23 4JD.	Unloading of Petrol at Filling Station
Tesco Service Station	Castle Street, Abertillery, NP13 1UR	Unloading of Petrol at Filling Station
Tesco Service Station	North Western Approach, Ebbw Vale, NP23 6TS	Unloading of Petrol at Filling Station
Park Road Garage	Bypass Road, Ebbw Vale, NP23 8UP	Unloading of Petrol at Filling Station
Roundabout Services, Sirhowy Bridge	Dukestown Road, Tredegar, NP22 4XL	Unloading of Petrol at Filling Station
Morrisons Service Station	Bryn Serth Road, Beaufort, Ebbw Vale, NP23 5YD	Unloading of Petrol at Filling Station

Appendix 4

**EXTRACT FROM ENVIRONMENTAL STATEMENT PROVIDED BY
ENVIRONMENTAL RESOURCES MANAGEMENT**

'THE WORKS – EBBW VALE'

2 *THE PROPOSED SCHEME*

2.1 *INTRODUCTION*

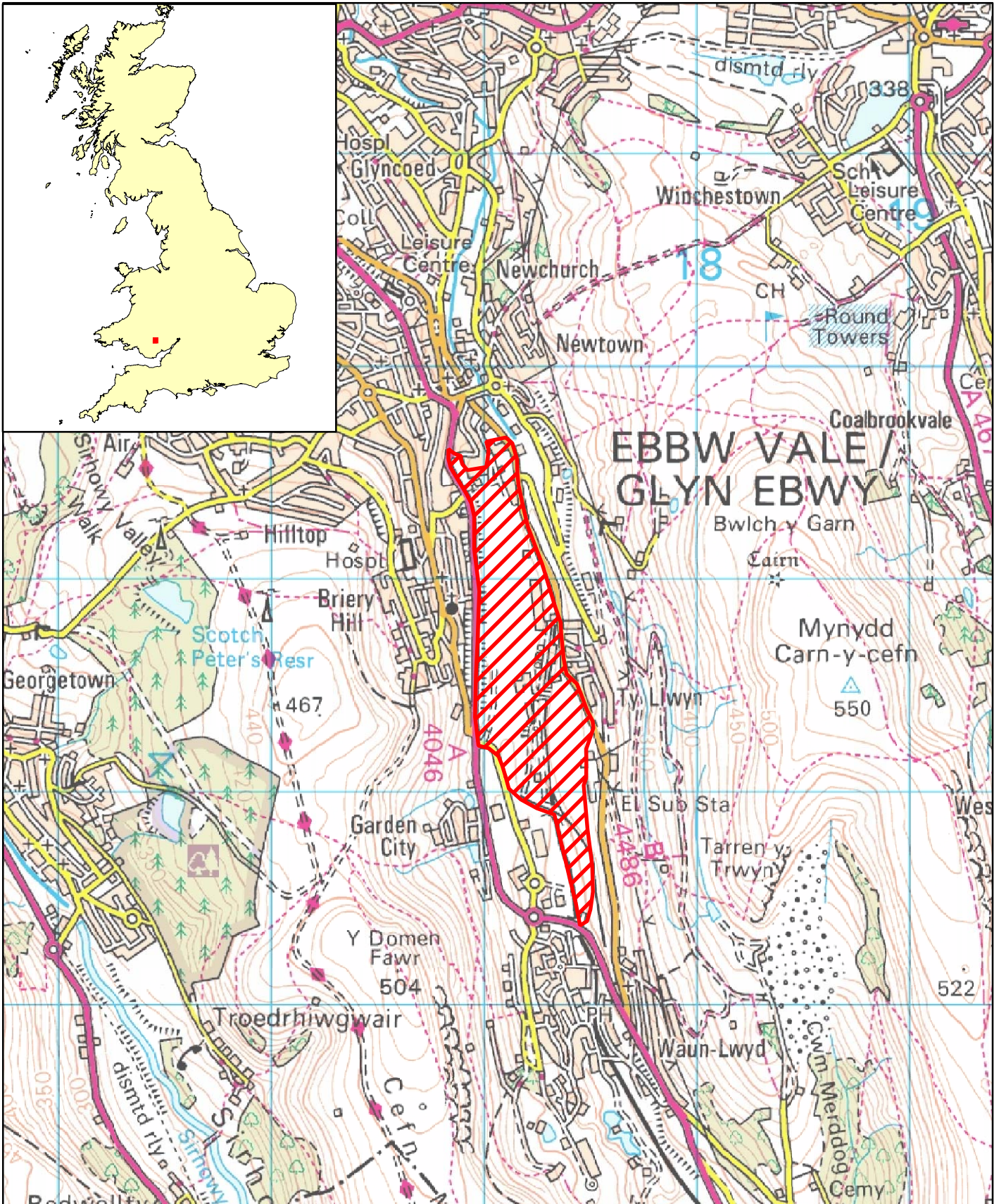
The first part of this chapter describes the built and natural characteristics of the development site and its context, documents its historic development and sets out the nature of the current Phase 1 reclamation works being carried out. The second part describes the components of the scheme including proposed uses as well as the future road and rail hierarchy. This is followed by a discussion on the phasing of development and the proposed scope of impact assessment.



The proposal is to create a high quality, vibrant, mixed use development consisting of commercial, residential, health, education and leisure facilities on the former Ebbw Vale Steelworks site. The site represents a key opportunity to re-use previously developed land in line with Government objectives (*Refer to Chapter 4*) as well as facilitate regeneration through employment and economic activity. A Masterplan has been developed as a vehicle for enabling the future development of the site to 2018 in a manner which creates local and regional opportunities while protecting environmental assets.

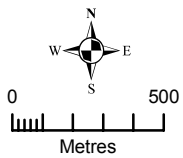
2.2 *THE DEVELOPMENT SITE*

2.2.1 *Location and Context*

The Ebbw Vale Steelworks site is located on the floor of the Ebbw Fawr Valley to the south and east of Ebbw Vale Town Centre Blaenau Gwent, South Wales. The site is centred on national Grid Reference 317500, 208500 – refer *Figure 2.1*. The site was formerly the Corus Steelworks, which closed in 2002.



KEY:  Site Area	CLIENT: Bleanau Gwent County Borough Council	SIZE: A4	TITLE: Figure 2.1 Site Location		
	ERM Llandarcy House 11a – The Courtyard Llandarcy, SA10 6EJ T: 01792 325000 F: 01792 817396			DATE: 06/02/2007	CHECKED: RC
SOURCE: Reproduced from Ordnance Survey digital map data. © Crown copyright. All rights reserved. 2007 License number 0100031673. PROJECTION: British National Grid	DRAWN: KM			APPROVED:	SCALE: 1:25,000



The Ebbw Fawr valley forms part of the larger Ebbw Vale, which is one of the main valleys in the area known as the South Wales Valleys. It has a north-south orientation, extending some 8km towards Aberbeeg in the south, and is relatively narrow, being less than 1km wide in the area of the site.

To the east of the valley is Mynydd Carn-y-cefn, which rises to a height of 540 M Above Ordinance Datum (AOD). To the west the valley walls rise to a height of between 467 and 504 M AOD. The lowest point on the valley floor is approximately 240m AOD

Steelworks Road (the B4486) forms the eastern boundary of the site. To the east of Steelworks Road at the northernmost point of the site lies the River Ebbw, which is culverted for a short distance beneath the access road to the Cwm Draw industrial estate. The river emerges from the culvert to the south of the access road and remains above ground until it reaches the village of Ty Llwyn. Immediately north of Ty Llwyn the river is again culverted, emerging to the south west of the A4046, Station Road.

Ty Llwyn is a small village located to the east of the site and consists of a number of streets of terraced properties, a school and a church.

To the south east and south west of the site are Waun Llwyd and Victoria, respectively. Waun Llwyd contains predominantly terraced houses, while Victoria is a more modern development with detached properties. Adjoining the site to the south west is the Victoria Business Park, which contains a number of small industrial and business units. Immediately to the west of Victoria Business Park is Garden City, a village of semi-detached houses on the steep valley side. Above and to the west, the site is bounded by the A4046, which provides access to the town centre from the south. The slope separating the site from the road varies in height between 9m and 22m, (the highest point being at the northern end close to the town).

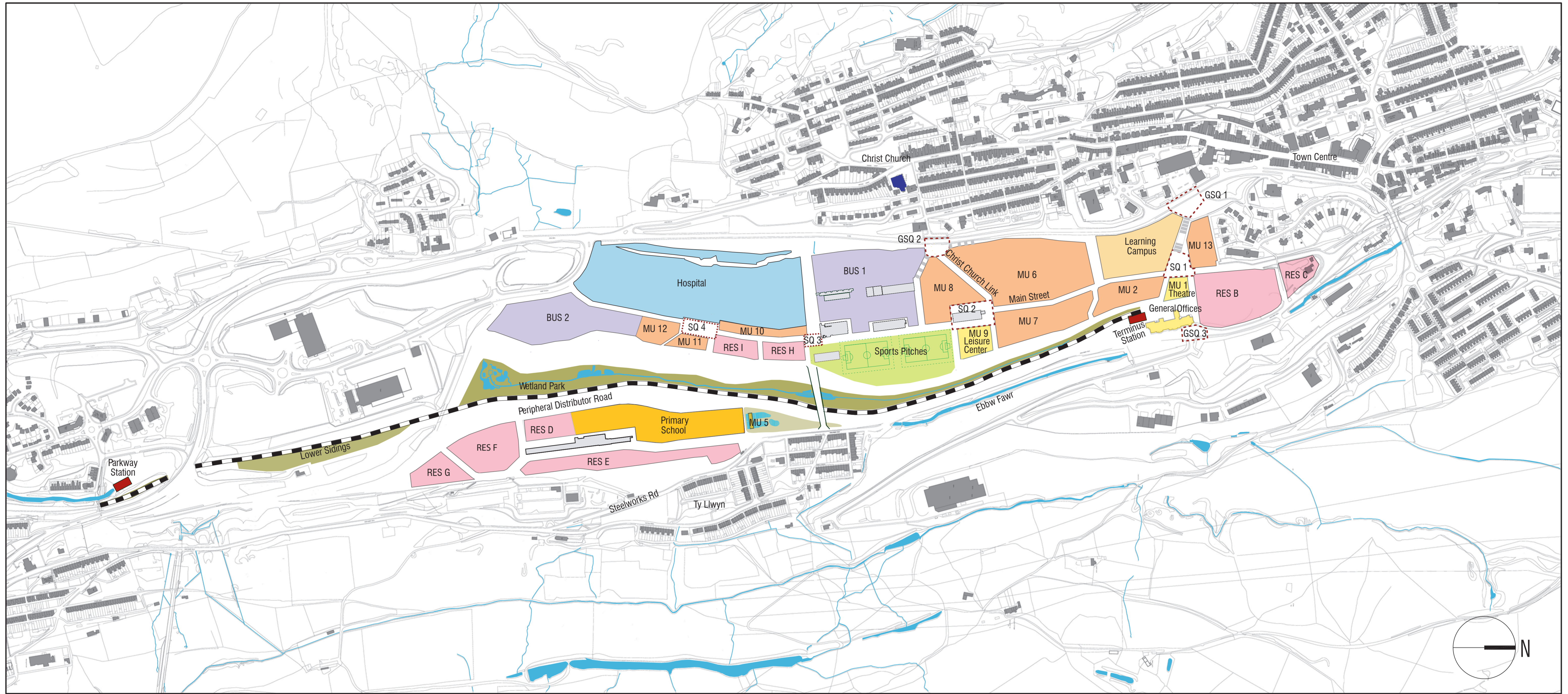
To the north the site is bounded by The Crescent, a street of semi-detached properties and Steelworks Road (the B4486).

The Cwm Merddog beech woodlands are located on the slopes of Cefn yr Arail approximately 1.5km to the south-east of the site. The woodlands are a Site of Special Scientific Interest (SSSI). Further details of this designation can be found in *Chapter 11, Ecology and Nature Conservation*. Details of planning designations in the vicinity of the site are provided in Section 4, Planning and Policy Context.

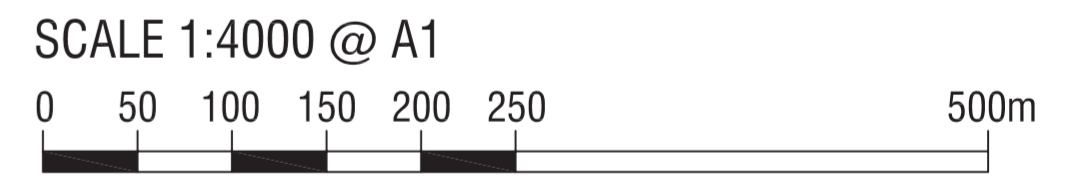
2.2.2 *The Site*











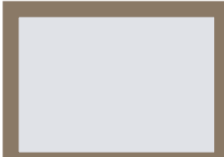


The site is approximately 75 hectares in size and about 3 kilometres long and half a kilometre wide, tapering towards the south. The site is divided into two plateaus: the Hot Mill plateau and the Cold Mill plateau. The Hot Mill plateau covers the south and east part of the site, having an elevation of 263 metres AOD. The Cold Mill plateau covers the north and west part of the site, having

an elevation of 275 metres AOD. A Central Valley runs north south between the two plateaus which, as part of the ongoing Phase 1 reclamation strategy, is being developed as a Valley Park including a new wetlands habitat at the southern end (*Figure 2.2*).



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	RAIL CORRIDOR		SPORT PITCHES		MIXED USE RESIDENTIAL		PRIMARY SCHOOL		RESIDENTIAL
	RAIL STATION		WETLAND PARK		MIXED USE ARTS, EDUCATION AND LEISURE		BUSINESS		
	PUBLIC SQUARES SQ/ GSQ		BASEMENT RETAINED AS OPEN FEATURE		LEARNING CAMPUS		HOSPITAL		

Corus completed their demolition works in 2005. The site phase 1 reclamation works will be complete in 2008. Following those works, the two principal features remaining will be the former General Offices Building and the retained below ground basement structures. The former General Offices building is a Grade II* listed building at the northern end of the site, which is proposed for re-use as part of the scheme proposals. The retained basement structures form part of a strategy for the sustainable re-use of below ground structures. A range of reuse options exist including Sustainable Urban Drainage (SUD) systems, landscape gardens and water features, leisure amenities and a renewable energy system for heating and cooling.

Access to the site is via the main gateway at the northern end. Other access points include the East Gate located off Steelworks Road, an access associated with the Western Power Switching Station, the south gate at the southern boundary of the site and Westgate off the A4046.

2.2.3 *Existing Services*

Public Transport

A number of bus services use the A4046 and stop for passengers alongside the steelworks site. These include the X18 Ebbw Vale to Newport and the E3 and E4 Ebbw Vale to Brynmawr services. The No 22 Ebbw Vale to Newport via Pontypool service collects passengers along Steelworks Road (B4486) just to the east of the site. The bus services operate on an hourly basis between 7am and 6pm, Monday to Saturday.

Electricity Supply

The former steelworks used electricity in abundance. The adjacent off-site infrastructure has the capacity to supply the site with 40MW of power. This is made possible by the network of high voltage overhead cables which supply a Western Power Distribution switching station located close to the south east corner of the site. New on-site substations could deliver the electricity at suitable voltages.

Gas Supply

The former Corus site was a heavy consumer of gas. The high demand for gas was supplied by a 300mm gas main entering the site at its eastern boundary. Subject to confirmation, it is anticipated that there is sufficient existing infrastructure and capacity to deliver gas to future users on the site.

Water Supply

The annual potable water demand for the steelworks was 90 000m³. This was supplied by adjacent Welsh Water/Dwr Cymru owned mains that enter the site at several locations. It is understood from Welsh Water that there is existing capacity to supply the site with drinking water.

Telecommunications

Telecommunications within the Ebbw Vale area are dominated by traditional copper wire technology. Broadband is available via BT ADSL exchange.

Drainage

The site is traversed by two public sewers which are located at significant depth. The Western Valley Trunk Sewer which is owned by Welsh Water/ Dwr Cymru runs down the valley from north to south and is some 9m below ground level. A 300mm public sewer serving Ebbw Vale Town Centre, known as the Town Sewer, crosses the site from west to east and is up to 16m deep.

Surface Drainage

Surface drainage on the site and its surrounds has changed significantly since the steelworks was decommissioned in 2002. The removal of structures in particular the concrete base slabs during Phase 1 reclamation will have affected a reduction in run-off and an increase in infiltration. The site does however still remain largely isolated from the local surface drainage regime.

Basements

A large complex of interconnected basements and tunnels underlies the steelwork site. The majority of these structures are located in the former Cold Mill plateau with a smaller proportion under the Hot Mill plateau. The total volume of basements and tunnels is estimated to be between 220,000 and 250,000m³. A series of inaccessible basements and galleries are also known to exist in the Cold and Hot Mill plateaus.

As part of the Phase 1 reclamation works for the site, a basement strategy has been prepared which identifies:

- Basements to be demolished to a depth of 1.5-2 metres and completely backfilled. The aim is to remove these as development constraints, some with appropriate granular material to act as part of the SUDs system.
- Basements to be left partially backfilled to form shallow depressions which can be incorporated in the future development e.g. as water features or as part of the landscaping.
- Basements to remain in their current form so that they can be incorporated into the future development e.g. as hibernacula or roosts, car parking or underground heating/cooling.

As part of the decommissioning works, Corus has sealed a large number of the basement and culvert openings. Refer to the masterplan for further information on the proposed uses of the basements.

2.2.4 *Historic Development of the Site*

Industrial activity began on the site in 1778 with the opening of the Ebbw Vale Ironworks. Over the following 100 years the site and surrounding area were subject to a rapid expansion of industrialisation with the numerous coal and iron stone mines. In addition to mining, the production of iron and later steel expanded during the 19th Century. During the early 20th Century, mining activity declined. However iron, steel and later tin plate production continued to expand with the consolidation of the steelworks in the 1930s. More recently the works on the site concentrated on the finishing of steel products rather than steel production with the most notable process being tin plating. The material arising from mining and iron and steel production was used to form the existing plateaux, which were largely in place by 1888.

The River Ebbw and associated tributaries were placed in a series of culverts under the site to allow the expansion of the steelworks. The River Ebbw culvert was completed in the 1930s. During the 1970s a waste process water treatment plant was built on the site to treat waste process water from the works before discharge to the river. During the 1990s the “River Protection System” was built adjacent to the water treatment plant to accommodate accidental discharges of contaminated surface water runoff from the high risk areas of the site.

2.2.5 *Phase 1 Reclamation Works*

The following reclamation works approved in December 2005 are currently being undertaken on the site and do not form part of the outline planning application or accompanying Environmental Statement:

- selective retention of some basements and tunnel structures for reuse and demolition and infilling of the remainder;
- land re-profiling to prepare platforms suitable for future development;
- ground treatment to render the site suitable for its intended after-use and treatment of mine entries;
- establishment of an environmental design and landscaping strategy;
- remedial works to the culverts, slopes, mine entries and retaining walls; and
- diversion of existing foul and surface water drainage infrastructure to enable constraint free development platforms.

The planned completion date for the phase 1 reclamation works is 2008. The completed Phase 1 reclamation works forms, for the most part, the baseline for the EIA for the scheme.

2.3 THE PROPOSED SCHEME

2.3.1 The Vision

The Vision for the Masterplan is as follow:

“The Masterplan for the former steelworks site aims for the development to set new standards in sustainability and urban design quality. It will be an internationally recognised example of how to turn around brownfield site to meet the needs of the local community. The scheme will raise the profile of Ebbw Vale and enhance the identity of the heads of the valleys.

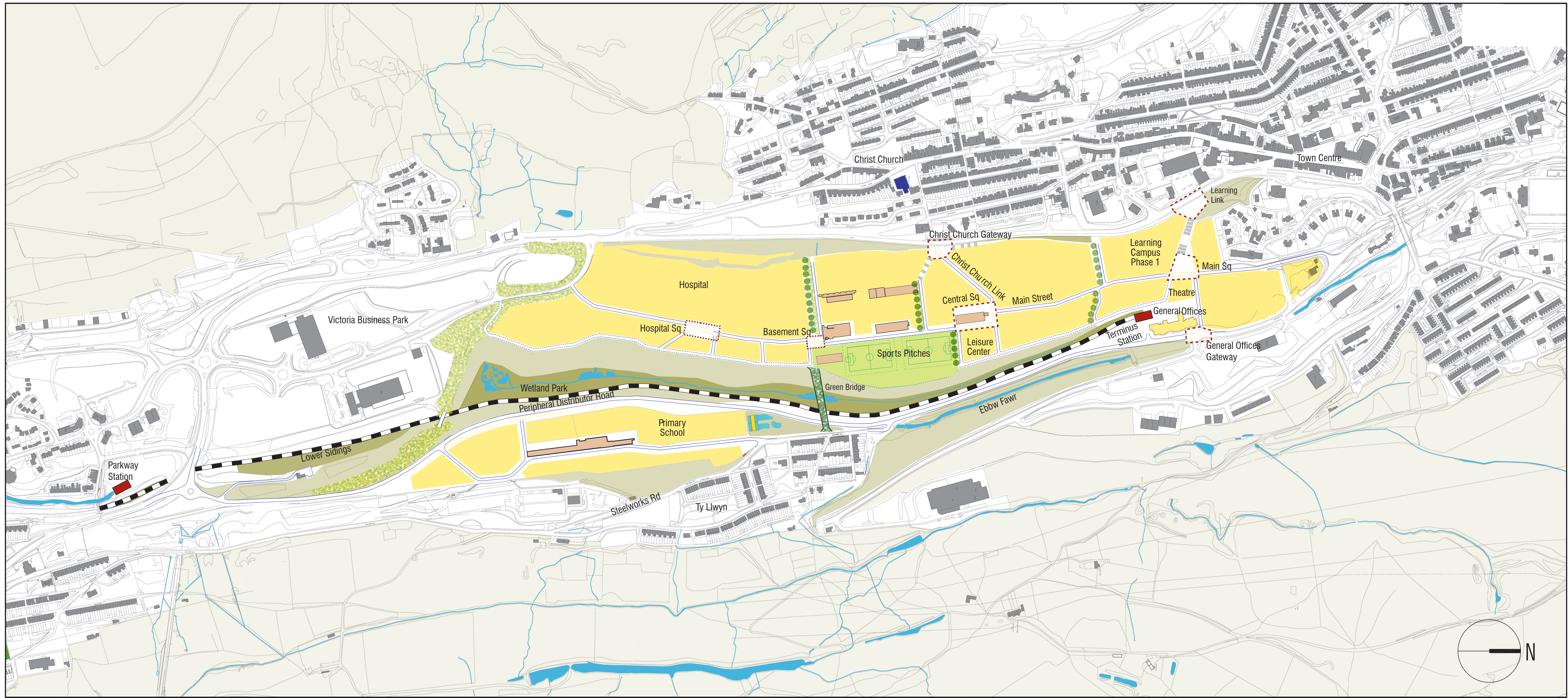
The Masterplan has been developed with the community and stakeholders and offers something for everyone in Blaenau Gwent: community healthcare in the new hospital, education and skills training in the Learning Campus, an important new rail link to Cardiff, new homes and open green spaces to help Ebbw Vale a place of growth and change.

Refer to the masterplan for the full Vision for the scheme.

The redevelopment will:

- *facilitate regeneration through employment and economic activity associated with the development of new community facilities, business uses and residential development;*
- *create benefits including opportunities for new business and employment, new education opportunities, improved transport links and services and new recreation facilities;*
- *protect environmental values through the establishment of a Wetland Park, and strong green linkages and pathways;*
- *set new standards in urban design, housing, energy efficiency, public spaces and buildings, streets and mixed uses.”*

A Masterplan has been prepared for the site which enables the vision by setting a framework for future development. The framework identifies character areas and uses, key public spaces and built landmarks, building densities and massing, and principal movement routes for all modes of transport. (Figure 2.3)



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Key

- URBAN LINK
- SEMI URBAN LINK
- RURAL LINK

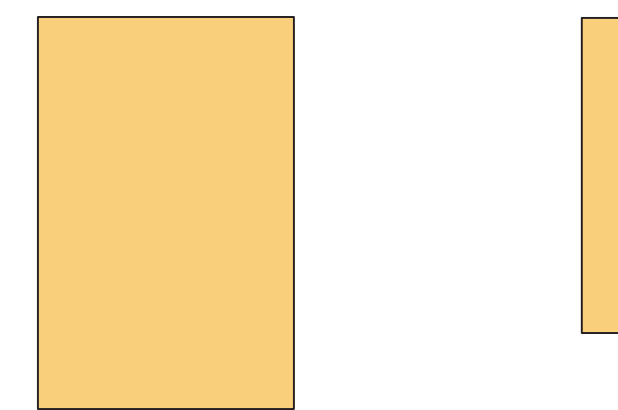
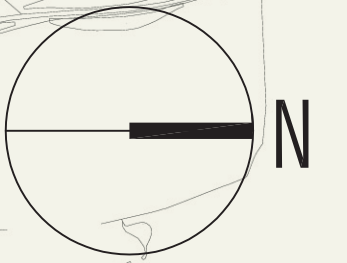
- PUBLIC SQUARES
- RAILSTATION
- RAIL CORRIDOR

- SLOPE
- OPEN SPACE

- WETLAND PARK
- SPORT PITCHES

- DEVELOPMENT PLOTS
- BASEMENT RETAINED AS OPEN FEATURE

SCALE 1:4000 @ A1
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There will be a phased approach to delivering regeneration on the steelworks site over a period of 10 years. Development will be delivered on an incremental basis, hand in hand with appropriate physical and social infrastructure to ensure that the project is sustainable at every stage. Phase 1 of the project at the northern end of the site is anticipated to commence in 2008.

The key objectives are to build on the local character of the town by responding to local topography and climate and promote the integration of sustainable environmental systems such as renewable energy, energy conservation, waste recycling, grey water harvesting and sustainable urban drainage.

A sustainability framework has been developed for the scheme and will continue to be used to underpin the design and development process. Further details are provided in *Chapter 3*. The ambition is that the high-level sustainable development objectives for the regeneration of the steelworks site will establish the scheme as a best practice example for brownfield regeneration in Wales.

2.3.2 *Main Components of the Scheme*

Land Use Areas

The masterplan divides the site into a number of land use areas and sets character, uses and appropriate levels of development for each in terms of massing and density. Table 2.1 below sets out the proposed land uses across the site and their respective areas.

Table 2.1 *Proposed land uses across the site*

Proposed land use	Area in ha
Mixed use	7.94
Learning campus phase 1	1.76
Primary school	2.0
Business	5.83
Residential	7.17
Hospital	6.15
Public squares	1.07
Parkland	2.75
Wetland Park	3.18

Development briefs for individual areas will be prepared as appropriate, for example, for the Community Hospital and Learning Campus sites. These are envisaged to be the subject of submissions of detailed designs subsequent to the outline planning application.

Learning Campus

The Learning Campus is to be located at the northern end of the site bordering the Main Square and the proposed Learning Link steps that connect the site with the Town Centre.

The masterplan sets an indicative building height for the Learning Campus of 3 to 5 storeys. Building Design Partnership (BDP) have produced an illustrative masterplan for the Learning Campus (December 2004). This sets out education buildings with a building area of up to 14,000m² over 2 phases. In addition to this a new arts centre/theatre, a sports and leisure building, two outdoor sports pitches and associated changing facilities of an area up to 3,500 m². The proposed business incubator units are currently included as part of the education buildings.

The Learning Campus will integrate post-16 education, leisure, community and business facilities on one site. The key objective of the Learning Campus is to create an open, accessible learning environment integrated with the existing town as well as a new destination for the communities of Ebbw Vale and the wider Blaenau Gwent area.

Community Hospital

The proposed community hospital is to be located at the southwest corner of the Steelworks site close to the A4046. The masterplan sets a proposed building height for the hospital of 2 - 3 storeys. The hospital will provide approximately 11,750m² of accommodation, with an allowance for an additional 40% expansion to 16,450m², and is envisaged to be an important early project for the regeneration of the site. In brief, the new hospital is to include the following:

- outpatient facilities to allow the transfer of activity from the existing Nevill Hall Hospital in Abergavenny, to Blaenau Gwent and development of local specialist primary care clinics, as well as out of hours services;
- the expansion of local diagnostics services such as radiology to support the transfer of outpatients;
- a minor injuries unit to consolidate and replace three existing outdated facilities throughout the borough;
- comprehensive local therapy services including physiotherapy, occupational therapy, dietetics, speech therapy, cardiac and pulmonary rehabilitation;
- inpatient facilities (96 beds) for rehabilitation, palliative care and elderly support services, but also to develop reablement and step up services, which will enable more people in Blaenau Gwent to receive care locally;

- an integrated 11 bed Adult Mental Health inpatient and day care unit;
- general administration facilities and staff support services

Access to the hospital will generally be obtained into the development site from the south via Festival Drive.

Primary School

The proposed primary school is to be located close to the eastern perimeter of the site and is to occupy an area of 2 ha. The masterplan sets a proposed building height of 2-3 storeys.

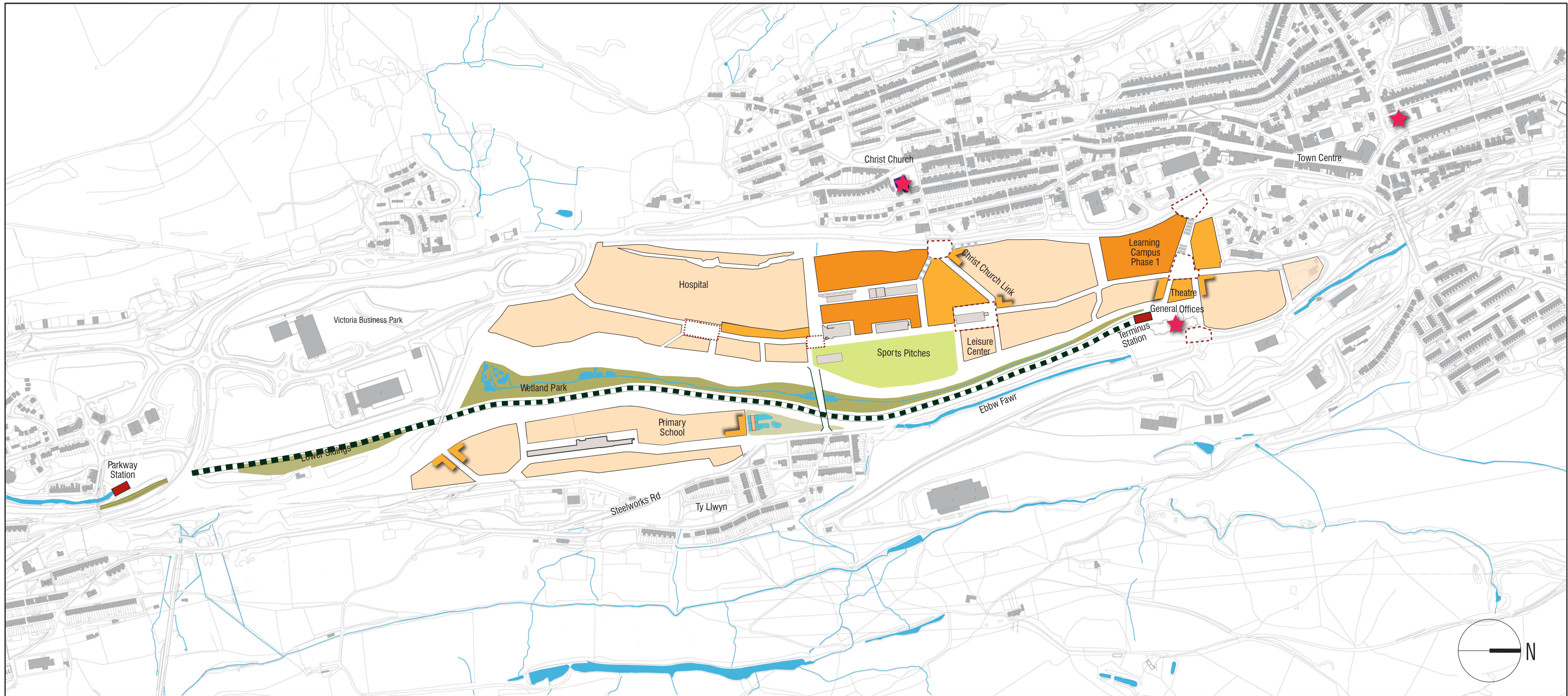
Residential Areas

The masterplan sets aside 7.17 of land for future residential use. There is allocation for residential units up to a maximum of 720, including affordable and live/work units, and a range of residential units/dwellings in the form of houses and apartments (approximately 400 units will be provided in residential only areas and approximately 320 units will be accommodated within the mixed use areas. Residential land parcels are located within the northern part of the site adjoining The Crescent (2.8ha), between the central valley and hospital (0.8ha) and adjoining the primary school on the eastern side of the site (3.5ha). The masterplan sets out proposed residential densities varying between 30-35 and 45-50 dwellings per hectare (DPH). Table 2.2 below sets proposed density by residential area:

Table 2.2 *Proposed residential densities*

Description of area	Size of land parcel	Proposed density
Area adjoining The Crescent	2.8ha	35-45DPH
Area close to hospital	0.8ha	30-35DPH
Area adjoining primary school	3.5ha	30-35DPH

Figure 2.4 below set out typical layouts for the three proposed densities, with heights typically being 2-3 storeys. It should be noted that residential unit numbers used in this assessment are based on high density residential development. This is considered to be a reasonable worst case assumption, which will allow for possible future development trends.



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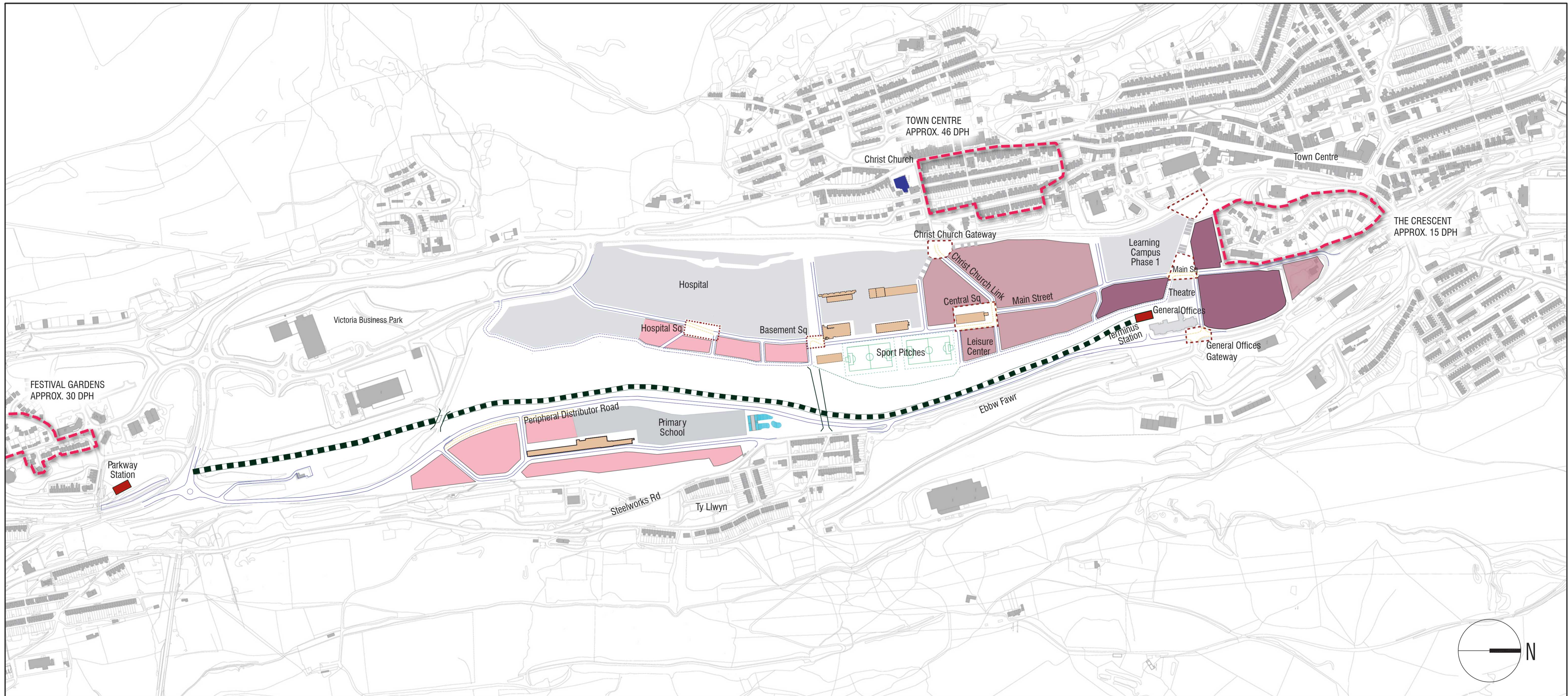
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Key

	2 - 3 STOREYS		3 - 4 STOREYS		3 - 5 STOREYS		LANDMARK FEATURE		CORNER FEATURE
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Mixed Use Areas

The masterplan sets aside 7.94 ha of land for mixed use purposes, with the majority of this (7ha) being located on the northern half of the site close to the learning campus and on either side of the central access road. The masterplan also sets out a proposed density of between 35 and 45 DPH for most of the mixed use area (other than a 0.7 ha parcel opposite the Learning Campus where a density of 45-50 DPH is proposed). The masterplan sets indicative building heights of 2-3 storeys. *Figure 2.5* below sets out a typical layout for a medium density mixed use block .

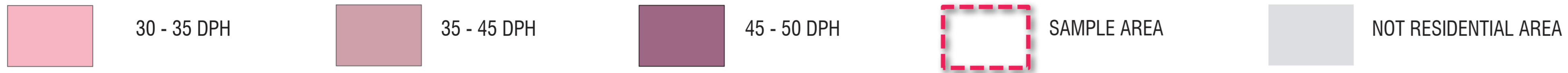


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SCALE 1:4000 @ A1
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Key

INCREASING DENSITY →



Business Areas

The masterplan sets aside 6.8ha of land for business purposes. Two business areas adjoin the hospital (3.3ha and 2.5ha respectively), with a third (1ha) located alongside the proposed railway close to the south-east corner of the site. Table 2.3 below sets out indicative building heights for future buildings within the business areas:

Table 2.3 Indicative Building heights

Description of area	Size of land parcel	Indicative building height
Area on northern side of hospital	3.3ha	3-5 storeys
Area on southern side of hospital	2.5ha	2-3 storeys
Area close to south-east corner	1ha	Maximum 3-4 storeys

Public Squares

The masterplan proposes a series of public squares, which include:

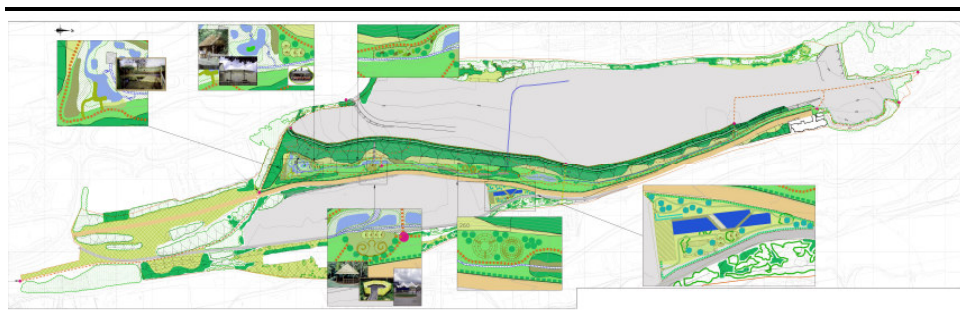
- Main Square - this is the principal public space at the northern end of the site. It is enclosed by mixed-use development including the Learning Campus, arts and leisure facilities and residential properties. The Main Square forms a key node on the route between the Town Centre and the Terminus Station.
- General Offices Square – this forms the northern gateway to the site from the Peripheral Distributor Road and provides an appropriate setting to the Grade II* listed building.
- Christ Church Link Square – this is created at the junction of Christ Church Link and the Main Street and incorporates one of the retained open basement structures.
- Basement Park Square - this terminates the southern end of the main open green space on the site and also incorporates the western arrival, point of the Green Bridge and one of the retained basement structures.
- Hospital Square - this creates a focal point for activity around the main entrance area to the community hospital.

The Central Valley & Wetland Park

The central valley which will be completed as part of the phase 1 reclamation works, is to consist of a linear landscaped park containing woodland, grassland and water features which will link the Grade II* Listed General Offices to the lower sidings as shown on *Figure 2.6*. Key elements of the

central valley scheme include lowering of the existing slopes, establishment of woodland, grassland and wetland features in the central valley and retention, reinforcement and management of existing peripheral planting.

Figure 2.6 Central Valley Landscape Use



Transport (Railway stations and Street Hierarchy)

The masterplan establishes an overall movement hierarchy for the site for all modes for transport , Broadly, the hierarchy comprises:

- The Main Street, which provides the principal north-south corridor through the site and runs through a series of nodes based around public spaces and key junctions;
- Christ Church Link, which connects the site with the A4046 approach to the town centre;
- Valley Edge, which provides a shared surface street along the edge of the Wetland Park; and
- Secondary Streets, which provide local access within individual development plots.

A new bus route is to be created to link the town centre with new development on the steelworks site. This is to be provided within the first phase of development to ensure sustainable transport choices are available from the start.

Pedestrian and cycle access ways will be integrated into the overall landscape framework throughout the site to provide safe and convenient routes linking key attractions and destinations.

A passenger rail service to Ebbw Vale from Newport is proposed, initially running to Ebbw Vale Parkway station at Victoria, just to the south of the site, and subsequently being extended to the Terminus station behind the General Offices building when complete. . The detailed assessment of the railway will be subject to a future Transport and Works Act application.

The existing steelworks road will also be upgraded as part of the scheme.

The masterplan builds on these proposals to develop the concept of a short term Basement Park in the centre of the site that reuses retained basement structures to form a series of landscaped courts with a variety of active and more passive leisure amenities, for example, climbing walls, art galleries and community gardens. In the long term, the framework proposes that commercial development around the Basement Park incorporates and adopts these structures and there is also the opportunity for the basements to be used as part of a renewable energy system.

Sustainable Development Framework

A Sustainability Development Framework (SDF) has been drawn up which sets out the economic, social, environmental and resource objectives which underpin the future development of the site and surrounding area (refer *Chapter 3*)

2.4

DEVELOPMENT PHASING

The scheme is to be constructed over a period of approximately 10 years (2008 to 2018) based on reasonable worst case, as all project details are not yet finalised. Several factors are likely to influence the timing of individual components including:

- the need to generate revenues from early development to fund the overall proposals;
- the market demand for different types of residential, employment or other uses; and
- the interest of developers in taking up different components.

An overall strategy for development phasing has been drawn up based on the following key principles:

- development starting from the north (with the exception of the community hospital) to the south;
- phases contained by green streets which create a landscaped boundary to each phase of development and serve as a buffer during construction phases; and
- introducing a new link into the site (Christ Church Link) to create a vehicular connection to the town in initial phases of development.

The masterplan proposes a sequence of five phases based on the above, each representing two years. These are illustrated at *Figure 2.7*. Phases have been

proposed to include a mixture of uses, transport and landscaping in each and to ensure that whilst construction occurs, those living and working in the development area can do so without major disruption.

Figure 2.7.1 Masterplan Phase 1

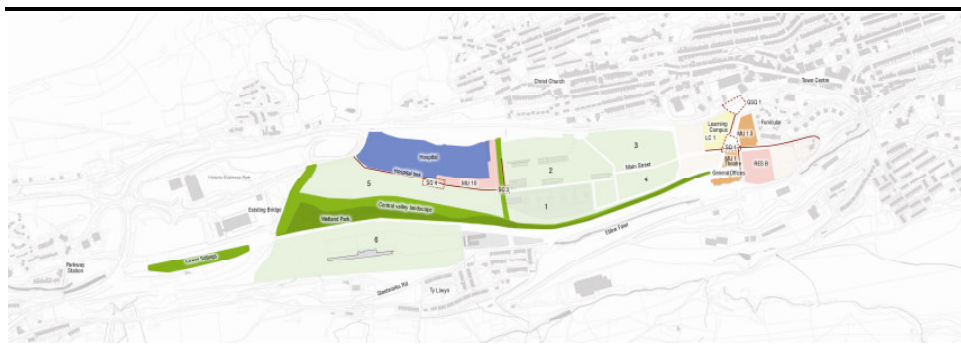


Figure 2.7.2 Masterplan Phase 2

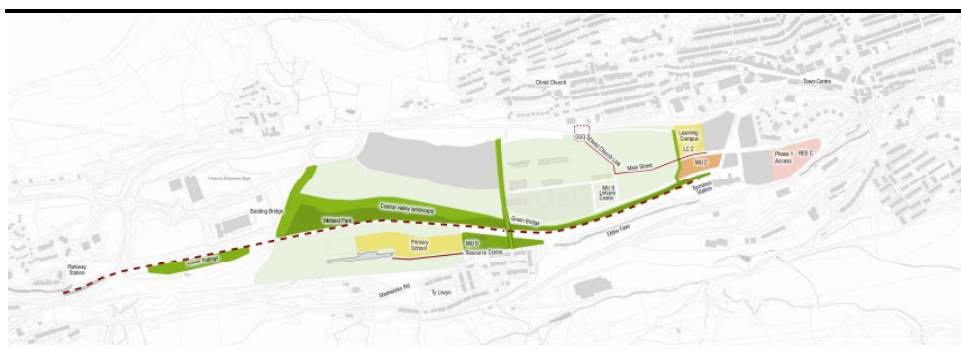


Figure 2.7.3 Masterplan Phase 3

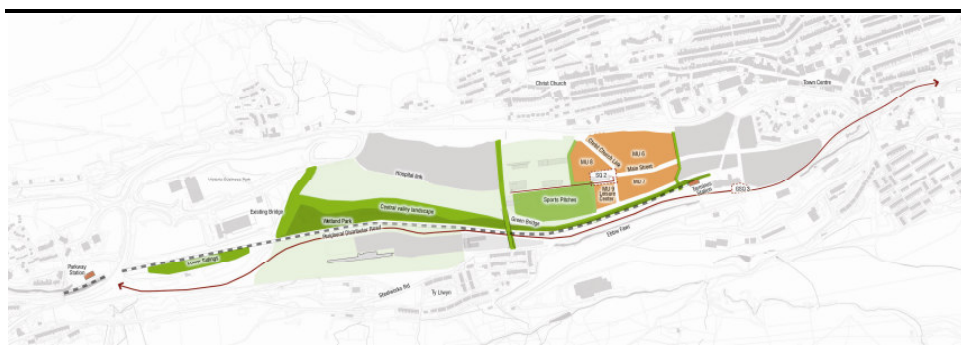


Figure 2.7.4 Masterplan Phase 4



Figure 2.7.5 Masterplan Phase 5



Table 2.4 below sets out the components of the scheme to be completed during each phase.

Table 2.4 Development Phasing

Phase	One 2008-2010	Two 2010-2012	Three 2012-2014	Four 2014-2016	Five 2018-2018
Hospital	100%				
Learning Campus	60%- 9000m ²	40% - 6000m ²			
Residential	121 units	56 units	188 units	149 units	71 units
Commercial	850-1300m ²	15000-23000m ²	21100 – 29800m ²	23100-30250m ²	25200-36000m ²
General offices	1274m ² -100%				
Theatre	2000m ² - 100%				
Primary school		100%			
Terminus station		100%			
Leisure centre			4800m ² - 100%		
Sports pitches			100%		
Business floor space				22,000m ² - 100%	32,968m ² - 100%
Basement square			100%		

Phase 1 of the masterplan includes the construction of internal roads around the community hospital and the northern part of the site. Phase 2 sees the introduction of the Christ Church Link and the rail link to the terminus station. Phase 3 sees the completion of the peripheral development road (PDR). Phase 4 sees the completion of the basement, central Valley and wetland Park and phase 5 will see the completion of phase 2 of the basement park and 70 units of residential properties developed at Hot Mills.

2.4.1 Scope of Impact Assessment

For the purposes of assessing the environmental impacts of the proposal, the assessment is undertaken for three phases of the project. The first stage of the assessment addresses impacts (mostly construction but some operational) in developing the scheme from the reclaimed site base line (2008) towards the end of Phase 3 of the masterplan, but prior to the construction of the peripheral development road (assumed to be 2013). The second stage of the assessment addresses impacts (construction and operational) from developing the scheme from a 2013 baseline to completion of the masterplan (assumed to be 2018). The third stage addresses operational impacts on completion of the scheme (2018).

2.5 *CONSTRUCTION*

Construction activities for the scheme will be undertaken in five phases commencing in 2008 with completion in 2018.

2.5.1 *Construction traffic*

Construction traffic is likely to be generated by the following activities:

- construction workers accessing and regressing the worksite;
- the supply of construction materials;
- the mobilisation of plant; and
- other activities, including visitors and service vehicles.

The removal of waste from the site is expected to be negligible as the majority of this will be reused onsite and is not, therefore, considered further in this assessment.

2.5.2 *Hours of working*

BGCBC permitted the following working hours for the phase 1 reclamation works and these are assumed to remain valid for this scheme. These are as follows:

- Monday to Friday: 0730 – 1900
- Saturday: 0800 – 1600
- No works on Sundays or Bank Holidays

8.1 INTRODUCTION

This section provides an air quality, dust and climate change assessment for the scheme.

This assessment focuses on the principal pollutants relating to road traffic and construction: nitrogen dioxide (NO₂), particulate matter (PM₁₀), carbon dioxide (CO₂); and dust. No industrial facilities are currently planned on site.

The report is structured as follows:

- *Section 8.2:* a description of the assessment, scope and methodology;
- *Section 8.3:* a description of the baseline air quality for the study area;
- *Section 8.4:* an assessment of the air quality impact during the first assessment year (2011);
- *Section 8.5:* an assessment of the air quality impacts during the second assessment year (2014);
- *Section 8.6:* an assessment of the air quality impacts during operation of the scheme (2019 onwards); and
- *Section 8.7:* a summary of the residual impacts.

8.2 ASSESSMENT SCOPE AND METHODOLOGY

8.2.1 *Planning Policy Context*

This section provides a summary of the national and local planning policies that relate to air quality in BGCBC. See chapter 3 for more detail on other planning policies.

National Policy

National policies that relate to air quality are set out in the following document:

Planning Policy Wales (2002), Chapter 13 - Minimising and Managing Environmental Risks and Pollution. This sets out the Assembly Government's views on improving the quality of water and air. Key points relating to air quality include:

- The planning system should determine whether a development is an acceptable use of land rather than seek to control the processes or substances used in any particular development.
- Planning authorities should operate on the basis that pollutant control regimes will be applied and enforced by other agencies. These regimes are set out in the Environment Act 1990, the Environmental Protection Act 1990, the Water Resources Act 1991 and the Pollution Prevention and Control Act 1999.
- Where pollution considerations affect the use of development of land they can be material planning considerations. This includes the air quality objectives from Part IV of the Environment Act 1995 and local authority's action plans for Air Quality Management Areas.

Local Policy

The BGCBC adopted Unitary Development Plan ⁽¹⁾ includes several policies that relate to air quality that have been taken into account in this assessment:

G2 General Strategy: Development proposals will be considered having regard to sustainability including the impact of development on air quality and water resources.

T1 Integrated Transport Strategy: To develop an integrated transport strategy priority will be given to promoting a transport network which has regard to the safety of all road users, reduces congestion and which causes minimal disturbance to amenity through danger, noise and air pollution.

(1) Blaenau Gwent County Borough Council Adopted Unitary Development Plan (July 2006).

T9 Community Route/ Cycle route Network: where practical a community route/cycle route network will be developed throughout Blaenau Gwent. This involves providing sections of the national cycle route network and local cycle routes which link communities. The provision of a cycle route network in Blaenau Gwent can assist in meeting the need to offer alternative means for transport reducing air pollution.

8.2.2 *Sources of Information*

Data to establish the background air quality in the study area were collected from the following sources:

- the ES, completed for Phase 1 reclamation works;
- BG CBC, from the Updating and Screening Assessment 2006 ⁽¹⁾ ;
- the Welsh Air Quality Forum website ⁽²⁾ ; and
- the National Air Quality Information Archive (NAQIA) ⁽³⁾.

8.2.3 *Assessment Criteria*

Nitrogen Dioxide (NO₂) and Particulate Matter (PM₁₀)

Directives set by the European Commission (EC) and adopted into law via the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002 prescribe Air Quality objectives as set out in the National Air Quality Strategy. A summary of the air quality objectives relevant to the study area are shown in *Table 8.1* ⁽¹⁾ below.

Pollutant concentrations within the study area are compared with the assessment criteria set out in *Table 8.1*. Any Air Quality Management Areas (AQMAs) are identified, as produced by the local authority, as these represent areas that contain elevated pollutant concentrations, and therefore are areas of particular sensitivity.

Whilst road traffic generation will be kept to a minimum by measures such as the Travel Plans and public transport provision. the development is likely to generate additional road traffic during the operational phases. As such, nitrogen dioxide (NO₂) and particulate matter (PM₁₀) have been assessed. Annual concentrations of these two pollutants are of particular interest, which are of concern to local authorities because they are linked to health problems in humans. The operational air quality impact of increased traffic levels within the study area has been addressed using the UK Department for Transport Design Manual for Roads and Bridges (DMRB) screening

(1) Blaenau Gwent County Borough Council Local Air Quality Review and Assessment (2006)

(2) <http://www.welshairquality.co.uk/>

(3) National Air Quality Information Archive (NAQIA) www.airquality.co.uk funded by the UK Department for Environment, Food and Rural Affairs.

methodology for the assessment of the impact to air of roads. The DMRB methodology has been used for many years in support of planning applications for new residential/commercial developments and road building projects.

This screening method predicts annual average ground level concentrations at sensitive receptors by applying an average roadside emission dispersion curves and correcting for vehicle type and speed. The screening method incorporates the latest vehicle classifications and emission factors used in the National Atmospheric Emissions Inventory (NAEI).

DMRB requires the following information to assess the impact at sensitive receptor locations:

- distance from road link to sensitive receptor location;
- annual average daily traffic (AADT) flows;
- annual average speed;
- fleet composition; and
- ambient background concentrations

As mentioned previously, there are no industrial facilities currently planned on site.

Table 8.1 *Ambient Air Quality Objectives for the Study Area*

Pollutant	Concentration	Measured as	Date
<i>Nitrogen dioxide (NO₂)</i>	200 µg m ⁻³	1 hour mean not to be exceeded more than 18 times a year (99.79%ile)	Dec 31, 2005
	40 µg m ⁻³	Annual mean	Dec 31, 2005
<i>Particulate Matter (PM₁₀)</i>	50 µg m ⁻³	24 hour mean not to be exceeded more than 35 times a year (90.41%ile)	Dec 31, 2004
	40 µg m ⁻³	Annual mean	Dec 31, 2004

NB: Objectives for the protection of vegetation and ecosystems have not been included in this Table as these objectives are not applicable in urban areas. However there are semi-natural acidic grasslands, heathland and woodland habitats in close proximity – in a predominantly rural environment

Dust

Construction work has the potential to generate dust, in varying amounts. The extent to which this dust causes nuisance or an air quality impact is dependent upon the efficacy of control measures and the proximity of people, residences or other receptors. As there are no established criteria for impacts, the potential effects of dust have been assessed qualitatively. A risk-based approach has been developed to identify construction activities with the potential to generate significant quantities of dust near to sensitive receptors. Construction sites are a temporary operation and some degree of nuisance would normally be tolerated if the activity lasts for no more than a few months. Studies by the Building Research Establishment also suggest that nuisance is unlikely to occur at distances greater than 50 metres from a

(1) The Air Quality Limit Values Regulations 2002. Welsh Statutory Instrument 2002 No.3138 (W.229)

construction site boundary ⁽¹⁾. One particular study ⁽²⁾ has also shown that at least half the people living within 50 metres of the site boundary of a road construction scheme were seriously bothered by construction nuisance due to dust, but that beyond 100 metres less than 20 percent of the people were seriously bothered.

On this basis, a risk evaluation matrix has been devised and is presented in *Table 8.2* below.

Table 8.2 *Evaluation of Potential Significant Effects of Dust Deposition*

Duration of on-site dust raising activity	Distance from Site Boundary to Sensitive ^(a) Receptors (m)		
	< 50 m	50 – 100 m	> 100 m
> 12 months	Significant	Significant	Potentially Significant
6 – 12 months	Significant	Potentially Significant	Not Significant
< 6 months	Potentially Significant	Not Significant	Not Significant

(a) Sensitive receptors defined as: residential, commercial office, hospital, surgery etc

This will be used to determine the significance of effects arising from construction dust deposition.

Carbon Dioxide (CO₂)

As there is no air quality objective set for carbon dioxide, the impact of the scheme on global emissions will be identified through assessing absolute changes in carbon dioxide (CO₂).

8.3 **BASELINE ASSESSMENT**

8.3.1 **Introduction**

The baseline air quality was determined by reviewing the ES for the phase 1 reclamation works and by examining monitoring undertaken by both the local and national authorities in the area.

At the time of writing this report, there were no Air Quality Management Areas within BGCBCG⁽³⁾.

8.3.2 **Nitrogen Dioxide (NO₂)**

Monitoring of NO₂ concentrations is conducted by passive diffusion tube sites maintained by the County Borough. Information on continuous monitoring sites was found on the Welsh Air Quality Forum website ⁽⁴⁾.

(1) Buildings Research Establishment (BRE) (2003). Control of dust from construction and demolition activities. Kukadia, V., Upton, S. and Hall, D. BRE Bookshop, London. February 2003.

(2) Baughan, C.J. (1980) **Nuisance from road construction : a study at the A31 Poulner Lane Diversion, Ringwood: TRRL Supplementary Report 562**. In: Design Manual for Roads and Bridges, 1994.

(3) <http://www.airquality.co.uk/archive/laqm/laqm.php>

(4) www.welshairquality.co.uk/

Presently, there are no air quality monitoring sites in the immediate vicinity of the development. *Table 8.3* below summarises data for the nearest diffusion tube and continuous monitoring sites.

Table 8.3 *NO₂ Monitoring Results for Sites in the Vicinity of Ebbw Vale from 2003 to 2005 (µg m⁻³).*

Site	Site type	Averaging period	2003	2004	2005
Cwmbran ^(a)	Continuous	Annual mean	18.7	16.6	16.8
Willow Tree Bungalow, Aberbeeg ^(b)	Diffusion tube	Annual mean	18.4	15.5	14.2
Parkhill, Beaufort, Ebbw Vale ^(b)	Diffusion tube	Annual mean	16.4	12.0	12.8
Ynys Dawel, Darenfelin Road, Brynmawr ^(b)	Diffusion tube	Annual mean	26.0	23.2	23.3

(a) 86% data capture for 2003, 99% for 2004 and 2005. Values calculated by taking average of hourly means.

(b) Values calculated by taking the average of monthly data.

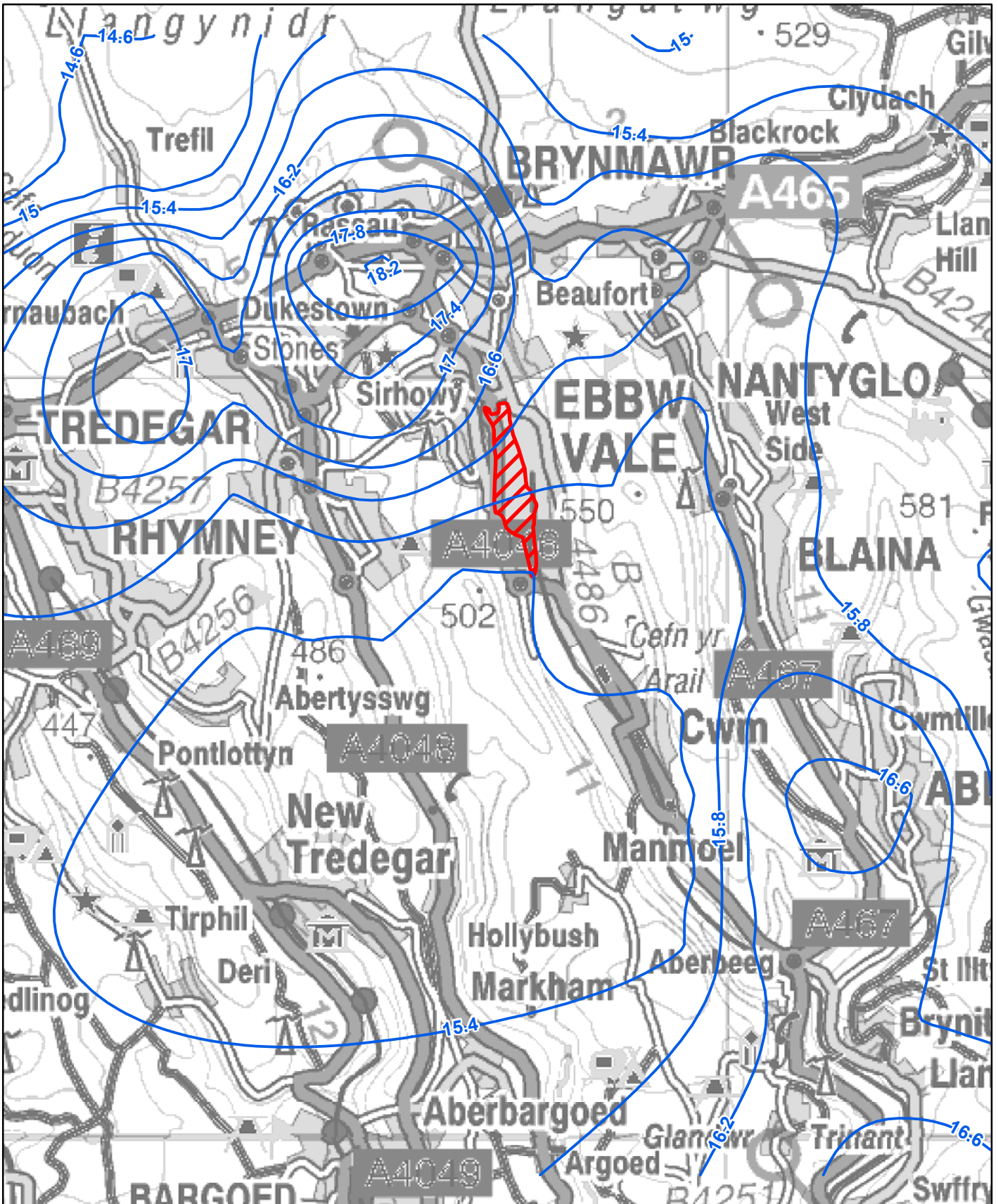
NO₂ and PM₁₀ background concentration maps for the area around the development site have been created using 2004 data from the National Air Quality Information Archive ⁽¹⁾. **Error! Reference source not found.** illustrates the 2004 background concentration of NO₂ ranges from 9.5 to 11.5 µg m⁻³ at the development site.




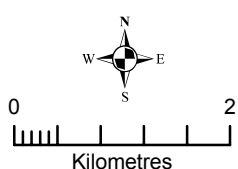
The results of the 2006 Updating and Screening Assessment indicate that “there is little chance of the air quality objective for nitrogen dioxide being exceeded in Blaenau Gwent” ⁽²⁾. This is consistent with the results of previous Reviews and Assessments of air quality undertaken for the Borough in 1999 and 2003 that also concluded that it was unlikely the 2004 air quality objective of 40 µg as an annual mean would be exceeded.

Evidence suggests that, it is unlikely that the Air Quality Objective would be exceeded for NO₂ in the area surrounding the development site at Ebbw Vale.

(1) <http://www.airquality.co.uk/archive/laqm/tools.php?tool=background04>

(2) Local Air Quality Review and Assessment, Updating and Screening Assessment 2006, page 18, paragraph 6.14.1.



KEY:  Site Area  NO ₂ Concentration	CLIENT: Blaenau Gwent County Borough Council	SIZE: A4	TITLE: Figure 8.1 2004 Background NO ₂ Concentrations		
	ERM Llandarcy House 11a – The Courtyard Llandarcy, SA10 6EJ T: 01792 325000 F: 01792 817396			DATE: 07/02/2007	CHECKED: SZD
	<small>SOURCE: Reproduced from Ordnance Survey digital map data. © Crown copyright. All rights reserved. 2007 License number 0100031673. PROJECTION: British National Grid (ORD SURV GB)</small>		DRAWN: KM	APPROVED: SXD	SCALE: 1: 70,000
DRAWING: Air_NO2_2004.mxd					REV: 0

8.3.3 *Particulate Matter (PM₁₀)*

Currently PM₁₀ is not monitored within BGCBC. However, monitoring is conducted at Cwmbran and Rhondda Cynon Taf Nantgarw. Both sites use a Tapered Element Oscillating Micro-balance (TEOM) monitor. TEOM instruments are known to underestimate PM₁₀ concentrations at certain locations as a result of the loss of volatiles, such as ammonium nitrate, through the sampling inlet being heated. As a result of this, DEFRA recommend that a factor of 1.3 is applied to TEOM results. Results for these sites have been obtained from the Welsh Air Quality Forum website ⁽¹⁾ and multiplied by a factor of 1.3. They are summarised in *Table 8.4*. Similarly to NO₂, there are no monitoring sites in the immediate vicinity of the development.

Cwmbran and Rhondda Cynon Taf Nantgarw are 19.3 and 23.5 km away respectively.

Table 8.4 *PM₁₀ Monitoring Results for Sites in the Vicinity of Ebbw Vale, 2003-2005 (µg m⁻³).*

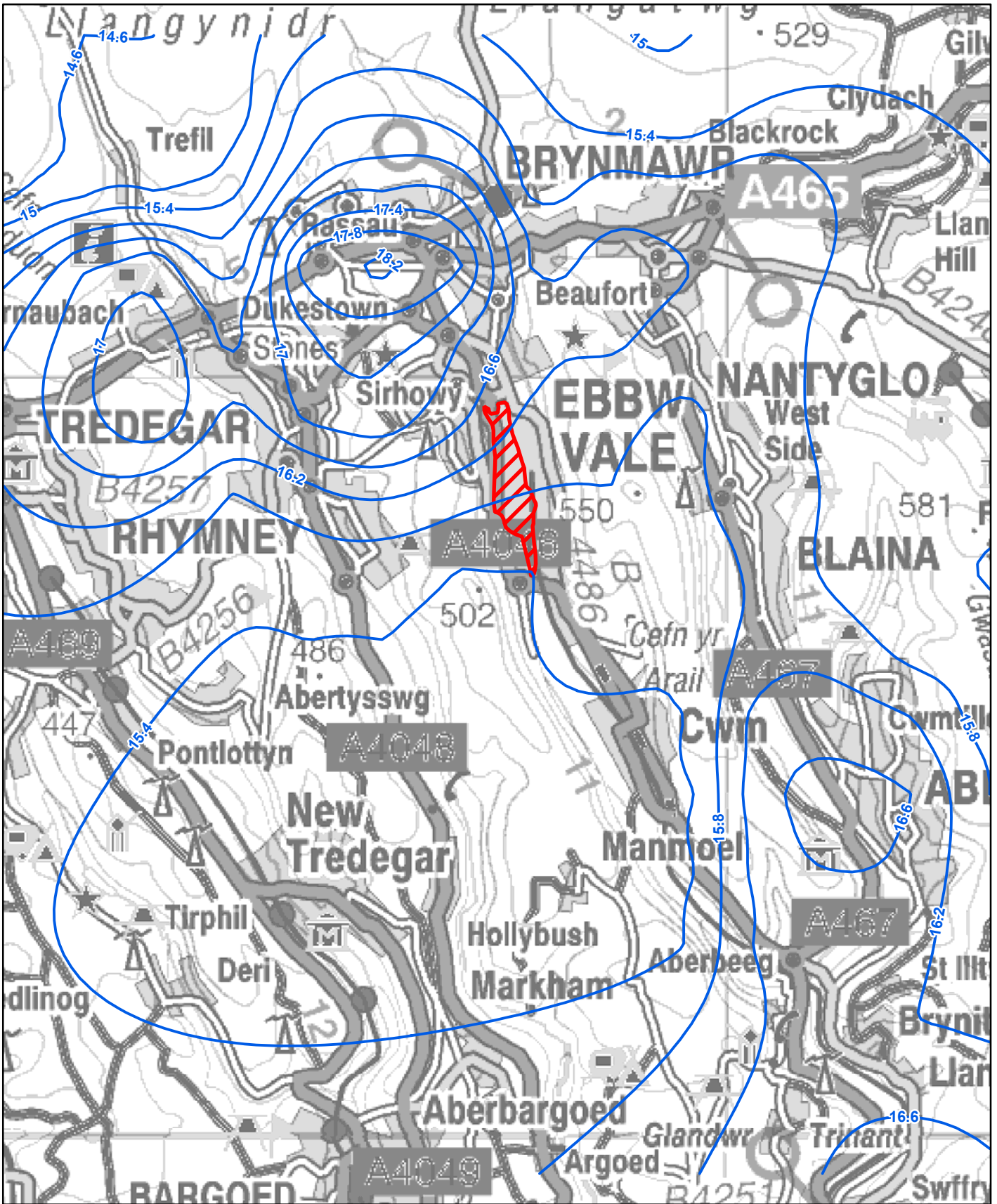
Site Name	Site Type	Averaging period	2003	2004	2005
Cwmbran ^(a)	continuous	Annual	20.5	17.5	17.6
Rhondda-Cynon-Taf Nantgarw ^(b)	continuous	Annual	n/a	27.8	27.8




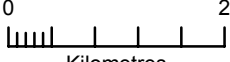

(a) 99% data capture for 2003, 2004, and 2005. Values calculated by taking the average of hourly means.
(b) 75% data capture for 2004 and 90% for 2005. Values calculated by taking the average of hourly means.

Error! Reference source not found. shows the 2004 background concentration of PM₁₀ ranges from 15.4 to 16.4 µ m⁻³ at the development site.

Given the data available, it can be concluded that the PM₁₀ concentration in the area surrounding the development site at Ebbw Vale is well within the Air Quality Objective concentrations detailed in *Table 8.1*.

(1) www.welshairquality.co.uk/



KEY:  Site Area  PM ₁₀ Concentration  	CLIENT: Blaenau Gwent County Borough Council	SIZE: A4	TITLE: Figure 8.2 2004 Background PM ₁₀ Concentrations	
	ERM Llandarcy House 11a – The Courtyard Llandarcy, SA10 6EJ T: 01792 325000 F: 01792 817396		DATE: 07/02/2007 DRAWN: KM	CHECKED: SZD APPROVED: SXD PROJECT: 0042871 SCALE: 1: 70,000
	SOURCE: Reproduced from Ordnance Survey digital map data. © Crown copyright. All rights reserved. 2007 License number 0100031673. PROJECTION: British National Grid (ORD SURV GB)		DRAWING: Air_PM10_2004.mxd	REV: 0

8.3.4 *Local Air Quality Management*

As a requirement of *Part IV* ⁽¹⁾ of the *Environment Act 1995*, local authorities are required to conduct a series of review and assessments of air quality to determine whether air quality objectives are likely to be met in future years, and where necessary designate Air Quality Management Areas (AQMAs). Local authorities then have to implement air quality action plans to improve the air quality within AQMAs in order to meet the objectives.

An updating and screening assessment for 2006 was recently completed by BGCBC. The assessment determined that none of the Air Quality Objectives would be exceeded in the County Borough for any of the seven pollutants evaluated (benzene, 1,3 butadiene, carbon monoxide, lead, nitrogen dioxide, particulate matter, and sulphur dioxide). As a result, detailed assessments were not required and no AQMAs have been declared.

8.3.5 *Nearby Sensitive Receptors*

Receptors have been identified as having the potential to be affected by the proposed development, together with their likely level of sensitivity.

The sensitivity of a particular location to changes in air quality depends on the specific use or activity, and its duration or regularity. A playing field might be sensitive to changes in short term concentrations of a pollutant (1 hour mean) and not to an annual average, while a school or a residential property might be sensitive to both short and long term concentrations (hourly and annual mean). The sensitivity at some receptors will also vary depending on the pollutants involved (eg some habitats might be sensitive to nitrogen deposition but not to particulate matter). Professional judgement has been used to identify whether a particular location is sensitive to any pollutant, and the nature of that sensitivity.

The sensitivity classifications used in this assessment are summarised below:

- High sensitivity – receptors of greatest sensitivity to air quality such as those identified under LAQM guidance (schools, hospitals, residential properties etc). Habitats supporting nationally or internationally important ecosystems that are sensitive to changes in air quality.
- Medium sensitivity – air quality sensitive receptors that are not included under LAQM guidance, such as places of employment. Habitats supporting regionally important wildlife and vegetation communities that are sensitive to changes in air quality.
- Low sensitivity – air quality receptors with some sensitivity to changes in air quality. Habitats supporting locally important ecosystems that are sensitive to deterioration in air quality.

(1) Environment Act 1995 (c.25). Part IV Air Quality. www.hmso.gov.uk/acts/acts1995/Ukpga_19950025_en_1.htm

- Negligible – receptors with no sensitivity to changes in air quality.
Receptors with no sensitivity to changes in air quality.

It should be noted that, in terms of air quality legislation, all non-occupational human receptors should be considered to be sensitive. Hospitals, schools and residential receptors are often referred to as being of high sensitivity, but under the regulations all members of the public are given the same level of protection.

Table 8.5 below lists the sensitive receptors that have been identified in proximity to the development site. Figure 5.1 in Chapter 5 illustrates these receptors.

Table 8.5 Identified Sensitive Receptors

Name	Description	Sensitivity	Distance from site (km) ^(a)	Nearest road included in assessment	Distance from nearest road (m) ^(a)
Newtown	Residential area	High	0.36	Steelworks B4486 road from E-F	250
Hilltop	Residential area	High	0.66	A4046 (R-O)	400
Briery Hill	Residential area	High	0.36	A4046 (R-O)	350
Ty Llwyn	Residential area	High	0.024	Steelworks B4486 Road PDR	<20 125
Garden City	Residential area	High	0.096	Park Road (M-K)	<20
Victoria	Residential area	High	0.36	Station Road (J – K)	
Festival Park	Retail	Medium	1.1	Station Road south from J	475
Ebbw Vale town centre	Existing mixed use	High	2.2	Station Road (J-K)	75
Cwm	Industrial/Business	Medium	2.2	Station Road (J-K)	75
Hospital (after phase 1)		High	Within site boundary	Development roads L-P, P-O, and A4046 O-M	<20
Primary School (after phase 3)		High	Within site boundary	Steelworks B4486 Road PDR	125 <20

(a) Distances estimated using an OS map.

8.4 IMPACT ASSESSMENT: FIRST ASSESSMENT YEAR 2011

8.4.1 Introduction

As reported within Chapter 2, the first assessment year has been chosen to be 2011, marking the end of phase 1. Construction activities and operational traffic have been considered during the impact assessment for this assessment year.

Dust emissions associated with construction activities, and emissions from construction vehicles and operational traffic are expected to be the predominant factors that could affect air quality during this phase.

The results of the impact assessment for this first assessment year have been reported below within *Sections 8.4.2 and 8.7.5*.

8.4.2 *Temporary Impacts*

Dust

The air quality effects associated with construction are normally limited to releases of dust. The potential for dust to be emitted during construction is strongly dependent on the type of activities taking place, on wind speed and on whether winds carry emitted particles towards sensitive receptors, such as hospitals or schools and residential property.

Dust emissions arising from construction activities can cause nuisance both within the site and outside the site boundary. Within the site (outside of the scope of this assessment), dust can cause mechanical or electrical faults to equipment, such as computers, and will increase abrasion of moving parts in plant and clogging of filters. In the surrounding environment, it can cause annoyance to neighbours by the soiling of property, in particular, windows, cars and also of washed clothes that have been hung out to dry.

Dust becomes airborne due to the action of winds on material stockpiles and other dusty surfaces, or when thrown up by mechanical action, for example the movement of tyres on a dusty road or activities such as drilling. Certain activities, such as demolition, will have higher emissions of dust. General construction will cause occasional rather than continuous emissions of dust, as only certain activities (such as grinding and cutting) will result in dust emissions.

The quantity of dust released during construction depends on a number of factors, including:

- the type of construction activities occurring (*eg* crushing and grinding);
- the volume of material being moved;
- the moisture and silt content of the materials;
- the distance travelled on unpaved roads;
- the mitigation measures employed; and
- the area of exposed materials.

The significance of the effect of dust also depends on the wind direction and the relative location of the dust source and receptor. When considering

significance, it is also important to consider whether the dust has been generated through the exposure of contaminated ground.

In addition to the above issues that relate specifically to dust, the laying of tarmac and the associated use of hot bitumen can generate emissions of black smoke particles.

Construction Traffic

Construction traffic is expected to consist of heavy goods vehicles (HGV's) , minibuses and cars transporting workers to site. It is expected that the A4046 and the B4486 will be the main roads used the construction workforce.

Construction will occur between the hours of 7:30 am to 7:00 pm on weekdays and 8:00 am to 4:00 pm on Saturdays. A comparison of the baseline plus development traffic and the additional traffic created by the construction phase of the scheme can be seen in *Table 8.1* below.

Table 8.6 *Construction Traffic flows (2011)*

Road Name	AADT Baseline plus Development	AADT Baseline plus Development and Construction	%HGV Baseline	%HGV Construction
Steelworks Road B4486 (from J to I)	4832	4874	4.5	4.9
A4046 (A to Beaufort Rise)	16894	16978	4.5	4.7

As the flows created by the construction phase are only marginally larger than flows in baseline case, a separate air DMRB assessment for construction traffic during this phase was not carried out. For more information on the emissions associated with these links please refer to *Section 8.4.3* below.

8.4.3 *Permanent Impacts*

Air Quality

Projected operational traffic for the year 2011 was used to calculate the contribution to air quality using the DMRB methodology. This year represents the end of phase 1. Pollutant concentrations have been calculated at a distance of 5m from the road centre. Traffic-related pollution decays with distance from the road side therefore any sensitive receptors further than 5m from the road centre will experience smaller changes in concentrations. No change in pollutant concentrations is anticipated over 200m for the road centre. A summary of the input parameters for the assessment can be found in *Table 8.7* below. A diagram denoting the different junctions where turning counts were provided can be found in Annex D of this report.

Table 8.7 DMRB Input Parameters (2011)

Road Name	AADT Baseline 2011 ^(a)	AADT Development 2011 ^(a)	Speed (km/hr) ^(b)
Existing Roads			
Minor Road (A)	4197	4534	48.3
A465 (West)	20912	21183	80.5
A465 (East)	22985	23573	80.5
A4046 (A to Beaufort Rise)	15698	16894	48.3
Beaufort Rise (A4047)	9884	9884	48.3
College Road (B to D)	19456	20651	48.3
Waun-Y-Pound Road	12079	13095	48.3
Letchworth Road	7342	7342	48.3
A4046 (D - R)	18710	19457	48.3
Cemetery Road	5043	6418	48.3
Beaufort Road	7720	8252	56.35
Libanus Road	5332	6293	48.3
Victoria Road	2014	2403	48.3
A4046 (K to J)	10035	10275	64.37
Augusta Street	5129	5129	48.3
Park Place (south of junction J)	11850	12510	48.3
Park Road (bet N and M)	15807	16834	64.4
A406 aka Park Road (M to K)	13161	13161	48.3
Steelworks Road B4486(joins I to G)	4281	4832	48.3
Steelworks Road B4486 B4486 (joins G to F)	4281	5830	48.3
Steelworks Road B4486 B4486 (joins F to E)	2273	6811	48.3
Festival Drive (M - L)	2754	3781	48.3
Festival Drive (L - K)	2754	2996	48.3
A4046 (bet R and O)	11700	12926	48.3
Park Road (bet O and N)	11700	12926	48.3
New Roads			
Road joining Q to F	0	554	48.28
Road joining points G to Q	0	1810	48.28
Road joining points Q to P	0	1720	48.28
Road joining points P to O	0	55	48.28
Road joining P to L	0	1270	48.28
(a) AADT baseline and development values for road sections derived from turning counts provided by Halcrow			
(b) Speeds derived from speed limit data provided by Halcrow and converted to kilometres per hour. Roads listed as having unrestricted speeds were taken to be 50 mph (80.5 kph) and new development roads were taken as 30 mph.			

2001 average background concentrations for BCBG were used for all assessments. Average concentrations of 22.3 µg m⁻³ NO_x, 16.3 µg m⁻³ NO₂ and 17.5 µg m⁻³ PM₁₀ were obtained using data from the National Air Quality archive ⁽¹⁾. The DMRB spreadsheet automatically uses these to predict concentrations in the future assessment year.

(1) www.airquality.co.uk

The percentage of HGVs was taken to be to be 4.5% for all roads each assessment scenario. This was a conservative estimate based on HGV information provided by Halcrow from the traffic counter on the A4046 adjacent to Tesco that yielded a figure of 4.5% northbound and 4.1% southbound for a 12 hour day (7000-1900). All operational traffic data provided takes into account the available public transport and the green travel plan provision.

The results of the DMRB assessment can be seen in *Table 8.8* below.

Table 8.8 *DMRB Outputs (2011)*

Road Name	Baseline NO ₂ (µg m ⁻³)	Development NO ₂ (µg m ⁻³)	Baseline PM ₁₀ (µg m ⁻³)	Development PM ₁₀ (µg m ⁻³)
Existing Roads				
Minor Road (A)	13.6	13.7	16.5	16.6
A465 (West)	17.5	17.5	17.9	17.9
A465 (East)	17.7	17.7	18.0	18.0
A4046 (A to Beaufort Rise)	16.9	17.0	17.7	17.8
Beaufort Rise (A4047)	15.4	15.4	17.2	17.2
College Road (B to D)	16.7	16.7	17.7	17.7
Waun-Y-Pound Road	15.6	15.8	17.3	17.3
Letchworth Road	14.4	14.4	16.8	16.8
A4046 (D - R)	17.1	17.2	17.9	17.9
Cemetery Road	13.8	14.2	16.6	16.7
Beaufort Road	14.5	14.6	16.8	16.8
Libanus Road	13.9	14.1	16.6	16.7
Victoria Road	13.0	13.1	16.3	16.4
A4046 (K to J)	15.4	15.5	17.1	17.1
Augusta Street	13.8	13.8	16.6	16.6
Park Place (south of junction J)	15.5	15.7	17.2	17.3
Park Road (bet N and M)	16.3	16.4	17.4	17.4
A406 aka Park Road (M to K)	16.3	16.3	17.5	17.5
Steelworks Road B4486 B4486 (joins I to G)	13.6	13.7	16.5	16.6
Steelworks Road B4486 B4486 (joins G to F)	13.6	14.0	16.5	16.7
Steelworks Road B4486 B4486 (joins F to E)	13.0	14.3	16.4	16.8
Festival Drive (M - L)	13.2	13.5	16.4	16.5
Festival Drive (L - K)	13.2	13.2	16.4	16.4
A4046 (bet R and O)	15.5	15.8	17.2	17.3
Park Road (bet O and N)	15.5	15.8	17.2	17.3
New Roads				
Road joining Q to F	12.4	12.6	16.1	16.2
Road joining points G to Q	12.4	12.9	16.1	16.3
Road joining points Q to P	12.4	12.9	16.1	16.3
Road joining points P to O	12.4	12.4	16.1	16.1
Road joining P to L	12.4	12.7	16.1	16.3

Based on the 2011 traffic flows, the DMRB methodology predicts annual average concentrations of NO₂ and PM₁₀ that are well below the annual average assessment criteria of 40 µg m⁻³ for both the baseline and with development scenarios.

With the development in 2011 the maximum concentration of NO₂ are recorded along A465 with concentrations of 17.5 µg m⁻³ west of junction A and 17.7 to the east. However, this represents no change from the baseline concentrations, suggesting these roads are not greatly affected by the development. The largest increase over the baseline concentrations occur on Steelworks Road B4486 B4486 joining junctions F to E. This road will experience an increase of 1.2 µg m⁻³ as a consequence of the development, resulting a total in concentration of 14.3 µg m⁻³. This is a small increase.

Likewise, the annual mean PM₁₀, concentrations predicted by the DMRB methodology are also far below the assessment criterion of 40 µg m⁻³. The highest concentration is 18.0 µg m⁻³ occurring east of junction A on the A465. The second highest is 17.9 occurring west of junction A on the A465 and along the A4046 from junction D to R. There is no increase when compared to the baseline concentrations for these road sections. Similar to NO₂, the largest increase over the baseline PM₁₀ concentrations occur on Steelworks Road B4486 joining junctions E to F. The road incurs an increase of 0.4 µg m⁻³ resulting in a concentration of 16.8 µg m⁻³.

Although the residential area of Ty Llwyn has been identified as a sensitive receptor in close proximity to Steelworks Road B4486 (E-F), it is unlikely that it will be affected by the increases in NO₂ and PM₁₀ identified above. This is because these increases are considered minor and the annual concentrations are still well below the air quality objectives.

Climate Change

The contribution to greenhouse gas emissions was also calculated using the DMRB methodology. Table 8.9 lists the annual CO₂ emissions from traffic using 2011 traffic data.

Table 8.9 *First Assessment Year CO₂ Emissions*

	CO ₂ (tonnes year ⁻¹)
Baseline 2011	7,102
With Development 2011	7,842

When compared with the baseline an additional 740 tonnes of CO₂ per year will be emitted from traffic associated with the development. This represents 0.0006% of 2004 UK emissions from road transport ⁽¹⁾.

8.4.4 *Mitigation Measures*

Dust Mitigation

It is not possible to eliminate completely the emissions of dust from the construction site. However, the construction process can incorporate certain measures that will assist in minimising particle emissions, and reducing the significance of the potential impacts.

(1) <http://www.naei.org.uk/emissions/emissions.php>

There are a number of good site practices that can be employed to reduce the risk of dust effects arising during construction. It is anticipated that the following measures will form the basis of the Code of Construction Practice (CoCP) for the site:

- wheel washing of vehicles leaving the construction site to minimise the re-suspension of dust due to construction traffic;
- water suppression or dust extraction technology fitted to drilling and grinding equipment;
- drilling and excavation surfaces to be wetted, where appropriate;
- surfaces damped down prior to clearing;
- debris piles to be kept watered or sheeted as necessary so that no dust nuisance may be caused to receptors;
- containers to be totally enclosed or covered by tarpaulins or nets to prevent escape of dust or waste materials during loading and transfer from site; and
- lorries to be sheeted during transportation of construction materials and spoil export.

Tarmac laying and the associated use of hot bitumen can generate significant amounts of black smoke particles. This can be minimised by the application of the following measures suggested by the Building Research Establishment (BRE) ⁽¹⁾:

- bitumen will not be overheated;
- pots and tanks containing hot bitumen will be covered to minimise fume production;
- spillages will be minimised; and
- where possible, bitumen will not be heated with open flame burners.

8.5 *IMPACT ASSESSMENT: SECOND ASSESSMENT YEAR 2014*

8.5.1 *Introduction*

2014 has been chosen as the second assessment year. At this stage the proposed scheme will be nearing the end of Phase 3 of the masterplan, and the site will comprise a combination of completed operational aspects constructed

(1) Buildings Research Establishment (BRE), 2003. *Control of dust from construction and demolition activities*. Kukadia, V., Upton, S. and Hall, D. BRE Bookshop, London. February 2003.

between 2008 and 2013, partially constructed aspects, and areas that are yet to be developed. This year allows an assessment to be undertaken immediately prior to the opening of the Peripheral Distributor Road (PDR), and gives a 'worst case' traffic situation at this stage of the development with the maximum amount of traffic on the network without new infrastructure to accommodate it.

Air quality impacts from this phase are expected to result from both operational and construction activities. The results of the impact assessment for this second assessment year have been reported within *Section 8.5.2* and *Section 8.5.3*, below.

8.5.2 *Temporary Impacts*

Construction Traffic

Similarly to 2011, construction traffic will consist of HGV's, minibuses and cars. The A4046 and the B4486 will be the main roads used the construction workforce. The working hours will be identical to those described in *Section 8.4.2* above.

For a comparison of the baseline plus development traffic and the additional traffic created by the construction phase, please refer to *Table 8.10* below.

Table 8.10 *Construction Traffic flows (2014)*

Road Name	AADT Baseline plus Development	AADT Baseline plus Development and Construction	%HGV Baseline	%HGV Construction
Steelworks Road	5522		4.5	4.9
B4486 (from J to I)		5564		
A4046 (A to Beaufort Rise)	35304	35388	4.5	4.6

As with the 2011 scenario, the flows created by the construction phase are only marginally larger than flows in baseline case. As such a separate air DMRB assessment for construction traffic during this phase was not undertaken.

8.5.3 *Permanent Impacts*

Air Quality

A summary of the input parameters for the assessment can be found in *Table 8.11*. As mentioned previously, 2001 background concentrations for PM₁₀ and NO_x were used and 4.5% HGVs were assumed for all scenarios. The phase 3 DMRB outputs are can be found in *Table 8.12*.

Table 8.11 DMRB Input Parameters (2014)

Road Name	AADT Baseline 2014 ^(a)	AADT Development 2014 ^(a)	Speed (km/hr) ^(b)
Existing Roads			
Minor Road (A)	4339	5009	48.3
A465 (West)	21621	22149	80.5
A465 (East)	23765	25028	80.5
A4046 (A to Beaufort Rise)	30429	35304	48.3
Beaufort Rise (A4047)	10220	10220	48.3
College Road B to D	20116	22553	48.3
Waun-Y-Pound Road	12488	14727	48.3
Letchworth Road	7590	7590	48.3
A4046 (D - R)	19345	22277	48.3
Cemetery Road	5123	8332	48.3
Beaufort Road	7982	9183	56.35
Libanus Road	5514	5871	48.3
Victoria Road	2072	3022	48.3
A4046 (K to J)	10376	10771	64.37
Augusta Street	5303	5303	48.3
Park Place (south of junction J)	12253	13685	48.3
Park Road (bet N and M)	16343	17193	64.4
A406 aka Park Road (M to K)	13608	13612	48.3
Steelworks Road B4486 (joins J to G)	4426	5522	48.3
Steelworks Road B4486 (joins G to F)	4426	8052	48.3
Steelworks Road B4486 (joins F to E)	5428	8957	48.3
Festival Drive (M - L)	3117	3693	48.3
Festival Drive (L - K)	2847	3239	48.3
A4046 (bet R and O)	12097	13406	48.3
Park Road (bet O and N)	12097	13737	48.3
New Roads			
Road joining Q to F	0	464	48.28
Road joining points G to Q	0	4342	48.28
Road joining points Q to P	0	4362	48.28
Road joining points P to O	0	1884	48.28
Road joining P to L	0	1266	48.28

(a) AADT baseline and development values for road sections derived from turning counts provided by Halcrow.

(b) Speeds derived from speed limit data provided by Halcrow and converted to kilometres per hour. Roads listed as having unrestricted speeds were taken to be 50 mph (80.5 kph) and new development roads were taken as 30 mph.

Table 8.12 DMRB Outputs (2014)

Road Name	Baseline NO ₂ (µg m ⁻³)	Development NO ₂ (µg m ⁻³)	Baseline PM ₁₀ (µg m ⁻³)	Development PM ₁₀ (µg m ⁻³)
Existing Roads				
Minor Road (A)	12.8	12.9	16.4	16.4
A465 (West)	16.3	16.3	17.5	17.6
A465 (East)	16.4	16.5	17.6	17.6
A4046 (A to Beaufort Rise)	16.6	16.9	17.8	17.9
Beaufort Rise (A4047)	14.4	14.4	16.9	16.9
College Road (B to D)	15.5	15.7	17.4	17.4
Waun-Y-Pound Road	14.6	15.1	17.0	17.2
Letchworth Road	13.5	13.5	16.6	16.6
A4046 (D - R)	15.9	16.1	17.5	17.6
Cemetery Road	13.0	13.7	16.4	16.7
Beaufort Road	13.6	13.9	16.6	16.7
Libanus Road	13.1	13.1	16.5	16.5
Victoria Road	12.2	12.5	16.2	16.3
A4046 (K to J)	14.4	14.5	16.8	16.9
Augusta Street	13.0	13.0	16.5	16.5
Park Place (south of junction J)	14.6	14.9	17.0	17.1
Park Road (bet N and M)	15.2	15.3	17.1	17.2
A406 aka Park Road (M to K)	15.2	15.2	17.2	17.2
Steelworks Road B4486 (joins I to G)	12.8	13.1	16.4	16.5
Steelworks Road B4486 (joins G to F)	12.8	13.6	16.4	16.7
Steelworks Road B4486 (joins F to E)	13.0	13.8	16.5	16.7
Festival Drive (M - L)	12.5	12.6	16.3	16.3
Festival Drive (L - K)	12.4	12.5	16.3	16.3
A4046 (bet R and O)	14.5	14.8	17.0	17.1
Park Road (bet O and N)	14.5	14.9	17.0	17.1
New Roads				
Road joining Q to F	11.7	11.8	16.0	16.1
Road joining points G to Q	11.7	12.8	16.0	16.4
Road joining points Q to P	11.7	12.8	16.0	16.4
Road joining points P to O	11.7	12.2	16.0	16.2
Road joining P to L	11.7	12.0	16.0	16.1

NO₂ and PM₁₀ concentrations 5m from roads centres are well below the assessment criterion of 40 µg m⁻³ in both the baseline and development scenarios.

Maximum NO₂ concentrations are 16.9 µg m⁻³ and 16.5 µg m⁻³, occurring on the A4046 south of junction A to Beaufort Rise and A465 east of junction A. There is very little change (0.3 µg m⁻³) for the A4046 link and the A465 road link (0.1) suggesting the development has little effect on concentrations on these roads. The largest net increases as a result of the development are 1.1 µg m⁻³ on new development roads joining junctions G to Q and Q to P. These result in concentrations of 12.8 µg m⁻³ for both road sections in the development scenario.

The highest PM₁₀ concentration is 17.9 µg m⁻³ along A4046 south of junction A to Beaufort Rise which is well below the assessment criterion. This is an increase of 0.1 µg m⁻³ over the baseline concentration.

The largest net increase in PM₁₀ concentration is 0.3 µg m⁻³ which occurs along new roads connecting junctions G to Q, Q to P, Steelworks Road B4486 G to F, and Cemetery Road . The resulting with development concentrations of PM₁₀ 16.4 µg m⁻³ , 16.4 µg m⁻³ , 16.7 µg m⁻³ and 16.7 µg m⁻³ respectively.

The closest sensitive receptor to the roads with the largest change is again the residences of Ty Llwyn. The community is not expected to be affected by these minor changes in NO₂ and PM₁₀ concentration as a result of the development.

Climate Change

Table 8.13 illustrates the net increase in CO₂ emissions using 2014 traffic data.

Table 8.13 *Second Assessment Year CO₂ Emissions*

	CO ₂ (tonnes year ⁻¹)
Baseline 2014	7,496
With Development 2014	8,745

When comparing the baseline with development traffic data, a net increase of 1,249 tonnes of CO₂ per year can be seen. This represents 0.001% of the total 2004 UK CO₂ emissions from road transport ⁽¹⁾.

8.5.4 *Mitigation Measures*

Mitigation measures implemented during this phase relate to dust and are identical to those mentioned in *Section 8.4.4*.

8.6 *IMPACT ASSESSMENT: STAGE 3 ASSESSMENT: OPERATION*

8.6.1 *Introduction*

The third assessment year chosen for this environmental impact assessment is 2018. This represents the year of scheme completion, when all construction activities have been completed. The assessment of impacts reported within *Section 8.6.2* and *Section 8.5.3* below, therefore considers operational impacts alone. Temporary impacts in this context therefore generally relate to aspects of the site that are immature and to the removal and restoration of construction compound related areas.

8.6.2 *Temporary Impacts*

As 2019 is expected to be the first year of operation, there are no construction related impacts associated with this assessment year.

(1) <http://www.naei.org.uk/emissions/emissions.php>

8.6.3 Permanent Impacts

Air Quality

Projected traffic data for 2019 were used to quantify the pollution contribution from vehicles using the DMRB methodology. A summary of the input parameters can be found in *Table 8.14*. The outputs are illustrated in *Table 8.15*.

Table 8.14 DMRB Input Parameters (2019)

Road Name	AADT Baseline 2019 ^(a)	AADT Development 2019 ^(a)	Speed (km/hr) ^(b)
Existing Roads			
Minor Road(A)	4545	5792	48.3
A465 (West)	22647	23574	80.5
A465 (East)	24894	27430	80.5
A4046 (A to Beaufort Rise)	31874	41294	48.3
Beaufort Rise (A4047)	10705	10705	48.3
College Road (B to D)	21071	25781	48.3
Waun-Y-Pound Road	13081	17404	48.3
Letchworth Road	7439	7949	48.3
A4046 (D - R)	17359	22728	48.3
Cemetery Road	8270	11935	48.3
Beaufort Road	8359	10645	56.35
Libanus Road	5774	7272	48.3
Victoria Road	2181	4485	48.3
A4046 (K to J)	7964	8887	64.37
Augusta Street	5756	5556	48.3
Station Road (south of junction J)	12834	14899	48.3
Park Road (bet N and M)	14194	17506	64.4
A406 aka Park Road (M to K)	11349	11353	48.3
PDR A (joins I to J)	7540	8684	48.3
PDR B (joins I to H)	7540	8422	48.3
PDR C (joins H to G)	7540	9375	48.3
PDR D (joins G to F)	7540	11802	48.3
PDR E (joins F to E)	8002	12799	48.3
Festival Drive (M - L)	2982	6560	48.3
Festival Drive (L - K)	2982	3900	48.3
A4046 (bet R and O)	9767	16631	48.3
Park Road (bet O and N)	9767	14225	48.3
New Roads			
Road joining Q to F	0	534	48.28
Road joining points G to Q	0	4172	48.28
Road joining points Q to P	0	4194	48.28
Road joining points P to O	0	5542	48.28
Road joining P to L	0	4918	48.28
(a) AADT baseline and development values for road sections derived from turning counts provided by Halcrow.			
(b) Speeds derived from speed limits provided by Halcrow and converted to kilometers per hour. Roads listed as having unrestricted speeds were taken to be 50 mph (80.5kmph) and new development roads were taken to be 30 mph (48.3 kmph)			

Table 8.15 DMRB Outputs (2019)

Road Name	Baseline NO ₂ (µg m ⁻³)	Development NO ₂ (µg m ⁻³)	Baseline PM ₁₀ (µg m ⁻³)	Development PM ₁₀ (µg m ⁻³)
Existing Roads				
Minor Road(A)	12.4	12.7	16.4	16.5
A465 (West)	15.6	15.7	17.5	17.6
A465 (East)	15.8	15.9	17.6	17.7
A4046 (A to Beaufort Rise)	15.9	16.4	17.7	17.9
Beaufort Rise (A4047)	14.0	14.0	17.0	17.0
College Road (B to D)	14.9	15.2	17.3	17.4
Waun-Y-Pound Road	14.1	14.7	17.0	17.2
Letchworth Road	13.0	13.1	16.6	16.7
A4046 (D - R)	15.1	15.4	17.4	17.5
Cemetery Road	13.2	13.9	16.7	17.0
Beaufort Road	13.2	13.6	16.7	16.8
Libanus Road	12.7	13.0	16.5	16.6
Victoria Road	11.9	12.4	16.3	16.4
A4046 (K to J)	13.3	13.5	16.7	16.8
Augusta Street	12.7	12.6	16.5	16.5
Station Road (south of junction J)	14.1	14.5	17.0	17.2
Park Road (bet N and M)	14.3	14.7	17.0	17.1
A406 aka Park Road (M to K)	14.1	14.1	17.0	17.0
PDR A (joins I to J)	13.0	13.3	16.7	16.7
PDR B (joins I to H)	13.0	13.2	16.7	16.7
PDR C (joins H to G)	13.0	13.4	16.7	16.8
PDR D (joins G to F)	13.0	13.9	16.7	17.0
PDR E (joins F to E)	13.1	14.1	16.7	17.0
Festival Drive (M - L)	12.1	12.8	16.3	16.6
Festival Drive (L - K)	12.1	12.3	16.3	16.4
A4046 (bet R and O)	13.8	15.0	16.9	17.4
Park Road (bet O and N)	13.5	14.3	16.8	17.1
New Roads				
Road joining Q to F	11.4	11.5	16.1	16.2
Road joining points G to Q	11.4	12.3	16.1	16.4
Road joining points Q to P	11.4	12.3	16.1	16.4
Road joining points P to O	11.4	12.6	16.1	16.5
Road joining P to L	11.4	12.5	16.1	16.5

All predicted output concentrations are well within the assessment criteria for NO₂ and PM₁₀.

The maximum NO₂ concentration is predicted to be 16.4 µg m⁻³ along the A4046 from junction A to Beaufort Rise. This represents a change of 0.4 µg m⁻³ from the baseline concentration of 15.9 µg m⁻³.

The largest impact is and increases of 1.2 µg m⁻³ which occurs on the A4046 between R and O and along the new development road joining junctions P to O. This change results in concentrations of 15.0 µg m⁻³ and 12.6 µg m⁻³ for NO₂. This impact is minor.

For PM₁₀, the highest concentration with the development is 17.9 µg m⁻³ occurring along the A4046 from junction A to Beaufort Rise. The largest change is 0.5 µg m⁻³ along the A4046 between the junctions of R and O. This impact is not considered to be significant.

Although Hilltop and Briery Hill are sensitive receptors identified as being closest to the A4046 (R-O) link, it is unlikely they will be affected by the increases to NO₂ and PM₁₀ concentrations as a result of the development. This is due to the low concentrations expected and the distances from both residential areas to the identified road (400m and 300m).

Climate Change

The CO₂ emissions calculated using the 2019 traffic data are illustrated in *Table 8.16* below.

Table 8.16 *Third Assessment Year CO₂ Emissions*

	CO ₂ (tonnes year ⁻¹)
Baseline 2019	7,504
With Development 2019	9,899

Approximately 2,395 additional tonnes of CO₂ per year will be emitted as a result of the additional traffic generated by the development, representing 0.002% of the total 2004 UK CO₂ emissions from road transport ⁽¹⁾.

8.6.4 *Mitigation Measures*

Mitigation measures implemented during this phase relate to dust and are identical to those mentioned in *Section 8.4.4*.

8.7 *SUMMARY OF RESIDUAL IMPACTS*

8.7.1 *Construction Traffic*

As the increase in traffic due to construction for both the 2011 and 2014 assessment years were considered to be minor, the impact to air quality was not assessed separately from the operational data.

8.7.2 *Dust*

Construction dust is likely to have an impact on sensitive receptors within 50m of the construction site. The effective application of mitigation measures should reduce the significance of the impact to minor.

8.7.3 *Air Quality*

Table 8.17 summarises the greatest impact to NO₂ and PM₁₀ concentrations and the highest predicted concentrations.

(1) <http://www.naei.org.uk/emissions/emissions.php>

Table 8.17 *NO₂ and PM₁₀ Emissions Summary*

	Pollutant	First Assessment Year 2011 (µg m-3)	Second Assessment Year 2014 ((µg m-3)	Third Assessment Year 2019 ((µg m-3)			
maximum concentration	NO ₂	17.7	A465 east of junction A	16.9	A4046 south of junction A to Beaufort Rise	16.4	A4046 south of junction A to Beaufort Rise
	PM ₁₀	18.0	A465 east to junction A	17.9	A4046 south of junction A to Beaufort Rise	17.9	A4046 south of junction A to Beaufort Rise
maximum change in concentration	NO ₂	1.2	Steelworks Road B4486 from E-F	1.1	development road G- Q and Q-P	1.2	A4046 from R- O and development road P-O
	PM ₁₀	0.4	Steelworks Road B4486 from E-F	0.3	development road G-Q, Q- P, Steelworks Road B4486 G -F, Cemetery Road	0.5	A4046 from R- O

The highest concentrations occur on the busiest roads, namely A465 (east of junction A) and the A4046 (junction A to Beaufort rise). These concentrations are all well within the air quality objectives.

The greatest impacts occur along the new roads constructed as part of the development – Steelworks Road B4486, New Development Road. By Phase 3, the largest impacts are experienced along A4046 between R and O and on the new development road from P – O. The increase along the A4046 could be an indication of the main route being used to access the development. All of the impacts to NO₂ concentrations are less than 1.2 µg m⁻³ and can therefore be considered as minor. The impacts to PM₁₀ concentrations are less than 0.5 µg m⁻³ and can be considered as insignificant.

None of the sensitive receptors listed in *Table 8.5* are predicted to experience a significant impact to air quality.

8.7.4 *Climate Change*

The predicted annual emissions of CO₂ from road traffic associated with the development is summarised in *Table 8.18* below.

Table 8.18 *CO₂ Emissions Summary*

Year	Baseline CO ₂ Emission	Development CO ₂ Emission
2011	7,102	7,842
2014	7,496	8,745
2019	7,504	9,899

There is a general trend of increasing CO₂ emissions in the baseline scenarios for 2011 to 2014 and then to 2019. This is due to traffic growth. The development is predicted to cause an increase in emission from the baseline scenario, with the magnitude of this increment increasing from phase 1 to

phase 3. This is as a result of the additional traffic generated by the development.

The maximum increase in annual CO₂ emissions, in Phase 3 is equivalent to 0.002% of the total UK emissions from Road Transport in 2004. This is a minor impact.

8.7.5 *Cumulative Impacts*

A review of live and approved planning applications from the last five years in the vicinity of the site was provided by Blaenau Gwent County Borough Council. While the majority of the proposals were for small residential or business developments, one development of particular significance is the 188 additional residential units proposed at Old '45' Yard, immediately to the north of the site. This could result in increase demand on the local road network. However, the construction of the Peripheral Distributor Road will serve to reduce the impact. For more information on proposed developments in the vicinity, please refer to *Chapter 5: Land Use*.

8.7.6 *Summary*

Table 8.19 below, summarises the residual impacts, mitigation and monitoring commitments.

8.19 Residual Impacts, Mitigation and Monitoring Commitments

Impact Type	Key Potential Impacts (without mitigation)	Mitigation	Residual Impact	Means by which mitigation will be delivered
Air Quality	Impact from generation of dust from construction and operation	Adherence to Codes of Good Practice including:	Minor adverse residual impacts.	CoCP
	Impact from generation of dust from construction and operation	wheel washing of vehicles leaving the construction site to minimise the re-suspension of dust due to construction traffic;	Minor adverse residual impacts.	CoCP
	Impact from generation of dust from construction and operation	water suppression or dust extraction technology fitted to drilling and grinding equipment;	Minor adverse residual impacts.	CoCP
	Impact from generation of dust from construction and operation	drilling and excavation surfaces to be wetted, where appropriate;	Minor adverse residual impacts.	CoCP
	Impact from generation of dust from construction and operation	surfaces damped down prior to clearing;	Minor adverse residual impacts.	CoCP
	Impact from generation of dust from construction and operation	debris piles kept watered or sheeted as necessary so that no dust nuisance may be caused to receptors;	Minor adverse residual impacts.	CoCP
	Impact from generation of dust from construction and operation	containers to be totally enclosed or covered by tarpaulins or nets to prevent escape of dust or waste materials during loading and transfer from site; and	Minor adverse residual impacts.	CoCP
	Impact from generation of dust from construction and operation	lorries to be sheeted during transportation of construction materials and spoil export.	Minor adverse residual impacts.	CoCP
	Impact from tarmac laying and associated use of hot bitumen can produce black smoke particles	Application of the following measures suggested by the Building Research Establishment (BRE):	Minor adverse residual impacts.	CoCP
		bitumen will not be overheated;	Minor adverse residual impacts.	CoCP

Impact Type	Key Potential Impacts (without mitigation)	Mitigation	Residual Impact	Means by which mitigation will be delivered
		pots and tanks containing hot bitumen will be covered to minimise fume production;	Minor adverse residual impacts.	CoCP
		spillages will be minimised; and	Minor adverse residual impacts.	CoCP
		where possible, bitumen will not be heated with open flame burners.	Minor adverse residual impacts.	CoCP

Appendix 5

EXTRACT FROM ENVIRONMENTAL STATEMENT PROVIDED BY CAPITA SYMONDS

EBBW VALLEY RAILWAY

Llanhilleth Station

Environmental Issues

An Environmental Statement has been prepared for the railway stations associated with the Ebbw Valley Railway Scheme; a summary of the main points is included below.

Air Quality

The location of the railway station access and car park will introduce additional traffic onto Commercial Road and into the area to the rear of properties to its south side. However, it is likely that this will result in little or no change in air quality at properties fronting onto the main road.

There will be a change to the rear of the Commercial Road properties although the number of vehicles involved is low and any reduction in air quality will be very slight. The passenger trains will be an insignificant source of air pollution.

Ebbw Vale Parkway Station

Environmental Issues

Environmental information has been collated for all of the railway stations associated with the first phase of the Ebbw Valley Railway scheme. A summary of the findings pertaining to this application are:

Air Quality

The location of the car park will introduce additional traffic onto roads in the immediate area. In relation to air quality the properties on Gwent Court, close to the roundabout at The Boulevard and those that comprise numbers 13 to 17 Glan Ebbw Terrace will be most affected. In relation to the properties close to the roundabout there will be a very slight reduction in air quality. Although the additional traffic will not actually be passing the properties in Glan Ebbw Terrace vehicles will be approximately 16 metres from the closest house as they circulate around the car park. However, it is likely that this will result in only a very slight reduction in air quality.

Monitoring Data & Statistical References

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