Section 7.3a

Title: Draft 1 Air, Water & Soil Quality

1. Overview

This report will seek to describe the current situation with regard to air, water and soil within the Blaenau Gwent area and the implication and benefits for its residents.

Air Quality

Ecosystems can help purify air, water and soil. Of particular relevance to health in Wales is air quality, which has a direct impact on people's life expectancy.

In the UK, two air pollutants (particulate matter and nitrogen dioxide) contribute to the early deaths of between 40,000 and 50,000 people annually[52]. Furthermore, the costs of poor air quality in terms of health impacts add up to £20 billion a year[52]. A report by Public Health England estimates that the proportion of deaths in Wales due to long term exposure to man-made particulate air pollution (PM2.5) is 4.3%[53]. Poor air quality has not only a direct impact on health but can also discourage people from venturing outdoors, which in turn contributes to more sedentary lifestyles[54].

Local Air Quality

The UK's National Air Quality Strategy sets air quality objectives for seven key pollutants which Local Authorities are legally required to have regard to. These include Benzene, 1, 3 Butadiene, Carbon Monoxide, Lead, Nitrogen Dioxide, Particulate Matter (PM_{10}) (gravimetric) and Sulphur Dioxide. Part IV of the Environment Act 1995 requires Local Authorities to produce annual air quality reports as part of this National Strategy and these reports have been produced for Blaenau Gwent since 2004.

The reports look at local air monitoring data and sources of air pollution within the Borough to assess the likelihood of any of the National Air Quality Objectives being exceeded. Typical significant sources of air

pollution include road traffic and industrial facilities. Within Blaenau Gwent a network of passive Nitrogen Dioxide monitoring diffusion tubes are utilised to provide an indicator of local air quality. Since the establishment of this network no exceedances of the air quality objective for Nitrogen Dioxide have been detected and the levels of Nitrogen Dioxide typically recorded are less than 50% of the national air quality standard, indicating that the air quality in Blaenau Gwent is good.

Assessments of the sources of atmospheric emissions within the Borough indicate that none of the standards set out for the other pollutants in the National Air Quality Strategy are currently likely to be exceeded.

Water Quality

Our rivers, lakes, estuaries, coastline and beaches provide us with important natural benefits, many of which contribute to the well-being of local communities and the wider population.

These natural benefits include supply of clean drinking water, waterbodies for recreation, exercise and relaxation. They also provide opportunities for income generation for businesses and tourism, as well as green energy production.

In recent decades the quality of the water of the rivers in Blaenau Gwent has improved. This is most part due to the decline in heavy industry, but also through the improvements to waste water treatment.

By working to continually improve and maintain the quality of these water assets in the area we can deliver benefits for the environment, the economy, and health and quality of life of local communities.

The quality and quantity of water in our environment is currently measured against classifications of the Water Framework Directive. This directive requires the water of our rivers and lakes to be assessed by monitoring the ecology (fish, invertebrates, plants etc.) and chemicals (nutrients, pesticides, etc.).

Soil quality

Soils are an irreplaceable natural resource, helping to shape the landscape, provide the platform for built development, acting as a growing medium for our food, timber and other crops. Soils store vast quantities of water and carbon and they can buffer and transform chemicals that could otherwise cause water or air pollution and/or contaminate our food. Soils also contain an essential component of our biodiversity and support and/or influence all our ecosystems.

Contaminated Land

Part IIA of the Environmental Protection Act 1990, places a statutory duty on local authorities to “cause its area to be inspected from time to time for the purposes of identifying contaminated land”. In order to assist in discharging this duty, Blaenau Gwent CBC produced a contaminated land strategy in 2002, setting out it how it will identify and where necessary remediate contaminated land which presents

- Significant harm to people, property or protected species.
- Significant pollution of controlled waters
- Harm to people as a result of radioactivity

Blaenau Gwent has a long history of heavy industry including coal and mineral extraction and iron and steel manufacture. These industries were spread throughout the Borough and as a result there is likely to be a widespread dispersion of the contaminants associated with this sector of manufacturing sector. Through the study of historical plans the Authority has created a priority list of potential sites where by the presence of a source-pathway- receptor link, there is likely to be contaminated land as defined by the Environmental Protection Act 1990.

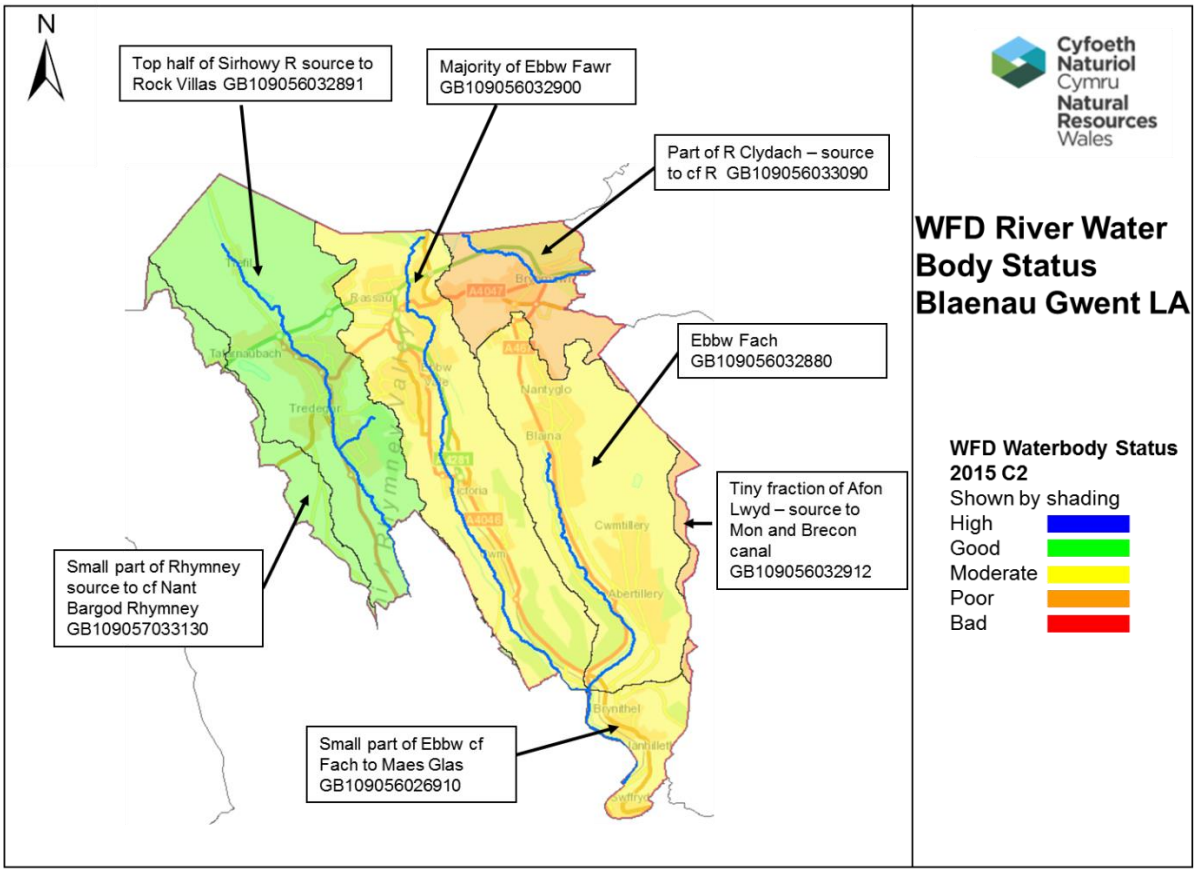
It continues to respond to complaints about potential land contamination and deals with problematic contaminated sites through the provisions of Part IIA of the Environmental Protection Act 1990 as appropriate. In addition to this the Authority also deals with potential ground contamination through the Planning system. By assessing planning applications against former historical land uses on a site specific basis,

the Authority can impose planning conditions where appropriate to ensure sites are investigated for contamination and remediated where necessary so that land is suitable for the proposed end use.

2. Story behind the data

Our waterbodies are assigned a status of health which is represented by colours on the map below. Water bodies, that are classified as ‘Bad’, ‘Poor’ or ‘Moderate’ are failing the EU Water Framework Directive standards and these waterbodies will need to improve to at least ‘Good’ ecological status by 2027.

The map shows that there are waterbodies classified as Good. However most are Moderate or Poor. None are bad.



Map 1. Water Framework Directive status of rivers in Blaenau Gwent. (NRW 2016)

Watercourse (as shown in Map 1).	**WFD Classification**	**Failing Element**
R. Sirhowy	Good	N/A

Ebbw Fawr	Moderate	-Fish (salmon) -Phosphate
R. Clydach	Poor	-Fish (eel & bullhead) -Phosphate
Ebbw Fach	Moderate	-Fish (salmon) -Invertebrates
Afon Lwyd	Poor	-Fish (salmon & bullhead) -Manganese
R. Ebbw	Moderate	-Mitigation Measures Assessment -Tributyltin -Water Resources
R. Rhymney	Good	N/A

Table 1. WFD classification with failing elements of watercourses in Blaenau Gwent (NRW 2016)

Where rivers are failing for fish this is primarily down to three causes: physical modification to the waterbody; the quality of the aquatic water habitat; and water quality.

Physical modifications such as man-made weirs are present due to industrialisation and urbanisation. They present barriers that prevent fish from migrating upstream to their spawning grounds. The pressure on fish and the wider ecology is increased by degraded habitat such as poor quality spawning grounds. Phosphorus from sewage discharges and misconnections of pipes from residential and industrial estates also impacts on the fish.

The Phosphorus issue on the R. Clydach is being address by a DCWW with the upgrading of the waste water treatment works at Brynmawr.

On the Afon Lywd the manganese is found because of historical mines discharging into rivers.

The source of the tributyltin in the R. Ebbw is unknown. Whilst the water resources issue is the Newport Dock feeder abstraction at Bassleg Weir, further downstream.

Map 2. WFD status of lakes in Blaenau Gwent. (NRW 2016)

Waterbody	WFD Classification	Failing Element
Shon Shefferys Reservoir	Moderate	Mitigation Measure Assessment Phosphorus Macrophytes
Carno Reservoir	Moderate	Mitigation Measure Assessment Phosphorus
Blaen y Cwm Reservoir	Moderate	Mitigation Measure Assessment Phosphorus
Cain Mound Reservoir	Moderate	Mitigation Measure Assessment Expert Judgement – At risk from Acidification, Phosphorus & Hydro morphology
St James Reservoir	Moderate	Mitigation Measure Assessment Expert Judgement – At risk from Acidification, Phosphorus & Hydro morphology
Scotch Peter Reservoir	Moderate	Mitigation Measure Assessment

Table 1. WFD classification with failing elements of lakes in Blaenau Gwent (NRW 2016)

The lakes listed are all reservoirs and are important for water supply in Blaenau Gwent. They are primarily failing because they are artificial/heavily modified waterbodies. Mitigation measures need to be implemented to achieve “Good Ecological Potential” (as opposed to Good Ecological ‘Status’). These measures include resolving water quality issues (dissolved oxygen, sediment, etc.), and barriers to migration such as dams and weirs. They also look to ensure adequate compensation flow to downstream watercourses. Natural Resources Wales is currently working with Dwr Cymru Welsh Water to implement these measures.

A range of partners are working to address the issues affecting the waterbodies including Blaenau Gwent C.B.C., Natural Resources Wales, Dwr Cymru Welsh Water, South East Wales Rivers Trust, Groundwork, and Keep Wales Tidy.

3. What we know from engagement

During the Blaenau Gwent We Want Engagement exercise, the partnership undertook and attended numerous engagement activities and events throughout the borough to gather people's views.

Residents also took part via the Blaenau Gwent We Want Facebook page and partnership websites. Links to an online questionnaire were also distributed to many residents known to the partnership, such as members of the Blaenau Gwent Citizen Panel.

Residents were encouraged via the methods above to answer a range of questions that sought to capture:

- Citizen values, aspirations and priorities;
- Citizen needs – insight into the needs they and their communities encounter within daily life and what the best solutions may be and
- Citizen assets –what people can and already contribute themselves such as self-care, citizen and community action and volunteering.

Q1. What do you think is special about BG?
Q2. What things are important to you to live well and enjoy life?
Q3. What would make BG a better place?
Q4. What can you do to help make BG a better place?

Approximately 1,000 residents were engaged with (across all groups) during the engagement phase.

During phase 1 of our engagement we have received no feedback on any air, water or soil quality related matters. For this reason we would welcome feedback from partners, businesses and communities on whether there are matters you would wish to bring to our attention.

4. What we know from existing research?

The Tawe catchment, Wrexham and Bridgend i-Tree Eco studies have measured the contribution their urban trees make to capturing particulate pollution. Every year across these towns, 257 tonnes of pollutants are removed by trees, of which 30.5 tonnes is PM10 and 20.5 tonnes is PM2.5. The United Kingdom Social Damage Cost (UKSDC) valuation of removing 30.5 tonnes of PM10, using the higher 'transport urban medium' a Health effects do not relate solely to the direct impacts of air pollution. Actions such as promoting the use of non-motorised means of transport as a means of reducing local emissions of pollutants can help people to become more active, improving their health and fitness. In turn, this may also help individuals to become more resilient to the direct ill-effects of air pollution[55].

Similarly, measures to mitigate climate change have health knock-on benefits. For example, measures to reduce greenhouse gas emissions from transport can deliver improvements in air quality[56].

Natural resources and ecosystems can play a role in reducing the impacts of poor air quality. The role of trees in contributing to cleaner and healthier air is highlighted in a study by Lancaster University[57]. This benefit can be maximised by carefully designed tree planting along transport corridors. The Lancaster study also highlights which species are best suited to particulate removal; identifying ash, alder, maple, pine and birch.

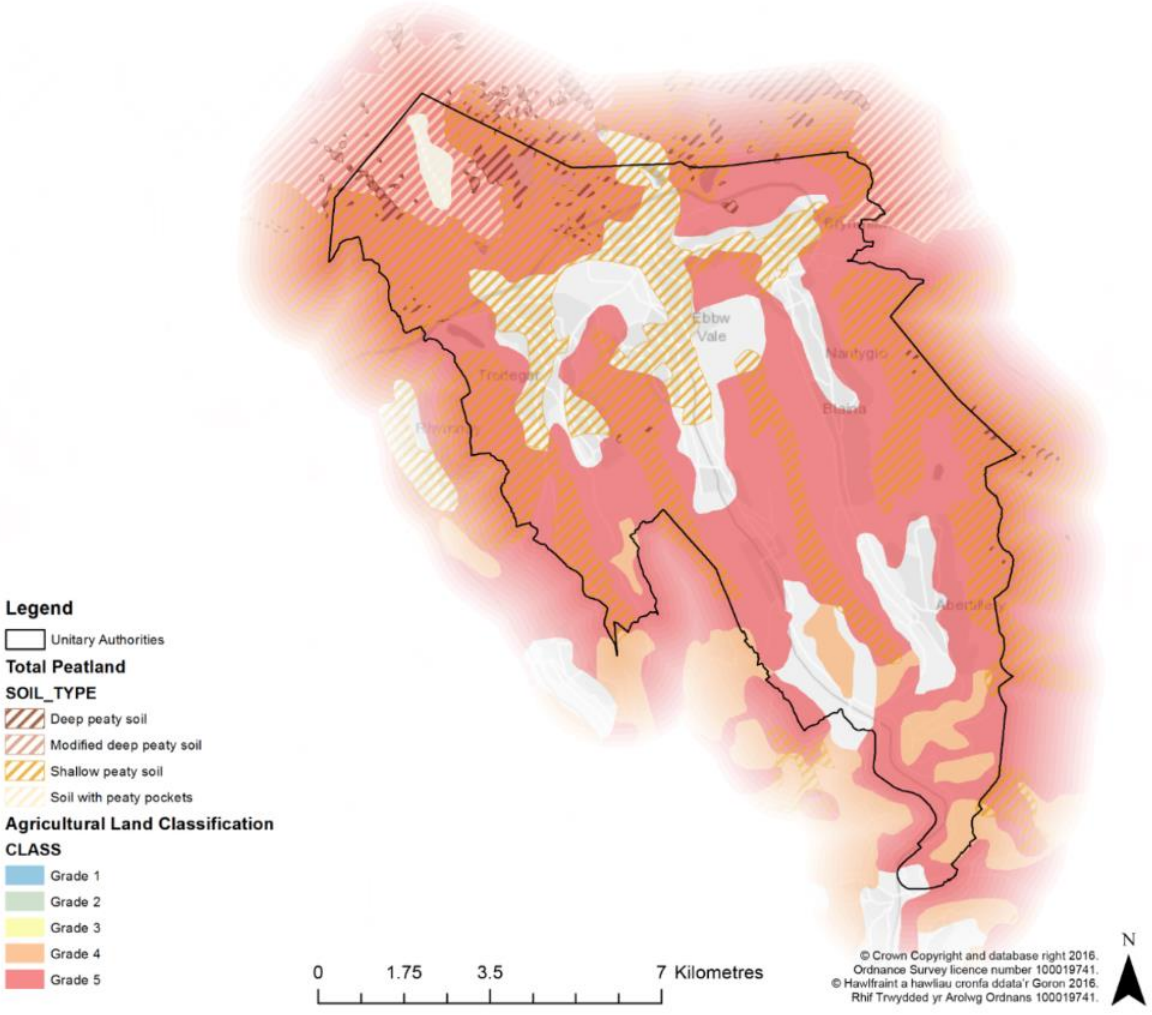
5. What this tells us about Well-being in Blaenau Gwent

A continued, sustained effort is needed to ensure that the waterbodies of Blaenau Gwent achieve Good Ecological Status. The quality of water discharged into waterbodies need to be improved, habitats for wildlife need to be enhanced and created. This will also create a pleasant environment for the enjoyment of local residents, as well as attract visitors, including people who fish.

There are opportunities for communities to become involved in improving their local watercourse by taking part in litter picks, habitat

creation and enhancement, as well as reporting pollution incidents. These opportunities to volunteer can be informal, organised events, or formal on-going opportunities, possibly with formal qualifications.

Peatland habitats help regulate our climate and the water cycle, both of which are fundamental to wellbeing. Deep peat soils are important for mitigating climate change as they take up and store atmospheric carbon. Peatland habitats can play an important role in water management, slowing down flood waters and naturally reducing flood-risk downstream. By slowly releasing water during dry periods, peatland helps to reduce the impact of droughts on water supplies and on river and stream flows. Peat in good condition supports clean, well-functioning river systems underpinning good environmental quality. They also provide wild, but accessible space for recreation.



Almost all of the peat resource of Blaenau Gwent occurs in the uplands and north of the A465, with small pockets between the Rhymney & Sirhowy Valleys. Small areas of peatland are in the Mynydd Llangynidr SSSI.

Development is likely to have resulted in loss of peat in the past, and a significant area of peat will be affected if the Circuit of Wales development goes ahead. Wet peat soils are unlikely to have been recognised or valued in the area, leading to inappropriate management for at least some of the sites. The occurrence of peat within large unenclosed upland blocks hampers focussed management.

Restoring peat can bring benefits to people, the environment, and contribute to climate change resilience, by storing and regulating the flow of water, improving water quality, and storing carbon.

Semi-natural peatland vegetation in good condition delivers the widest range of ecosystem services. Restoring all areas of peatland in Wales with semi-natural vegetation is a Welsh Government priority and so these are a priority for joint action wherever they occur.

Deep peat soils (peat soils over 50cm deep) occur throughout Wales and are one of our critical natural assets. Peat supports the largest amount of soil carbon per unit area of any soils and when in good condition in mires (wetlands) play a very important role in climate change by locking up carbon from the atmosphere.

The characteristic habitats, plant and animal species associated with peatlands are a key feature of Wales's biodiversity and all public bodies have a duty to enhance and maintain them. Peatlands in good condition help sustain rivers and streams during dry periods; help retain or slow-down runoff and in doing so form part of our range of natural flood risk management assets. Peatlands contribute to the character and landscape quality of Wales, providing wild, but accessible places for people and nature.

Agriculture

There are approximately 300 farming businesses within Blaenau Gwent of which the predominant type is hill farming. Sheep are mainly grazed

on the uplands on commons and, if grazed, cattle usually comprise of less than one third of the livestock units. These are raised for beef.

Smaller commons tend to have a mix of farm types with more part time operations, while the larger commons tend to support larger full time farms. A variety of land management tasks are carried out on the commons, with widespread participation in Glastir Commons. This is a Welsh Government scheme which plays a key role in the management of habitats and the landscape by offering financial support to farmers and land managers.

Appendix A

Mitigation Measure CODE	Mitigation Measure TITLE	Mitigation Measure DESCRIPTION
MM.03	Re-engineer river	Re-engineering of the river where the flow regime cannot be modified.
MM.16	Fish passes	Structures or other mechanisms in place and managed to enable fish to access waters upstream and downstream of the impounding works.
MM.17	Fish passage flow releases	Where structures or other mechanisms are in place to enable fish to access waters upstream of the impounding works, the volume and timing of flow releases is sufficient to enable and, where relevant, trigger fish migration.
MM.18	Reduce fish entrainment	Management of the risk of fish entrainment in intakes for hydropower turbines or water resource purposes (or pumping stations) where there is downstream fish migration.
MM.29	Sediment management regime	Maintain sediment management regime to avoid degradation of the natural habitat characteristics of the downstream river.
MM.30	Manage artificial drawdown	Ensure the rate and range of any artificial drawdown is appropriately managed to maintain aquatic plant and animal communities in the shore zones of impoundments with gently shelving shore zones.
MM.31	Manage seasonal water levels	Ensure the seasonal pattern of water levels during each year is managed so as to enable the establishment and retention of aquatic plant and animal communities in the shore zone of the impoundment.
MM.42	Access to feeder-streams	Enable access to relevant feeder-streams draining into the reservoir at appropriate times for spawning and migration.
MM.43	Downstream flow regime	Ensure there is an appropriate baseline flow regime downstream of the impoundment.
MM.44	Flows to move sediment	Provide flows to move sediment downstream.
MM.45	Good downstream DO levels	Ensure that good status of dissolved oxygen levels is being achieved downstream of the impounding works
MM.46	Good downstream temperature	Ensure that the thermal regime in waters downstream of the impounding works is consistent with good status conditions.