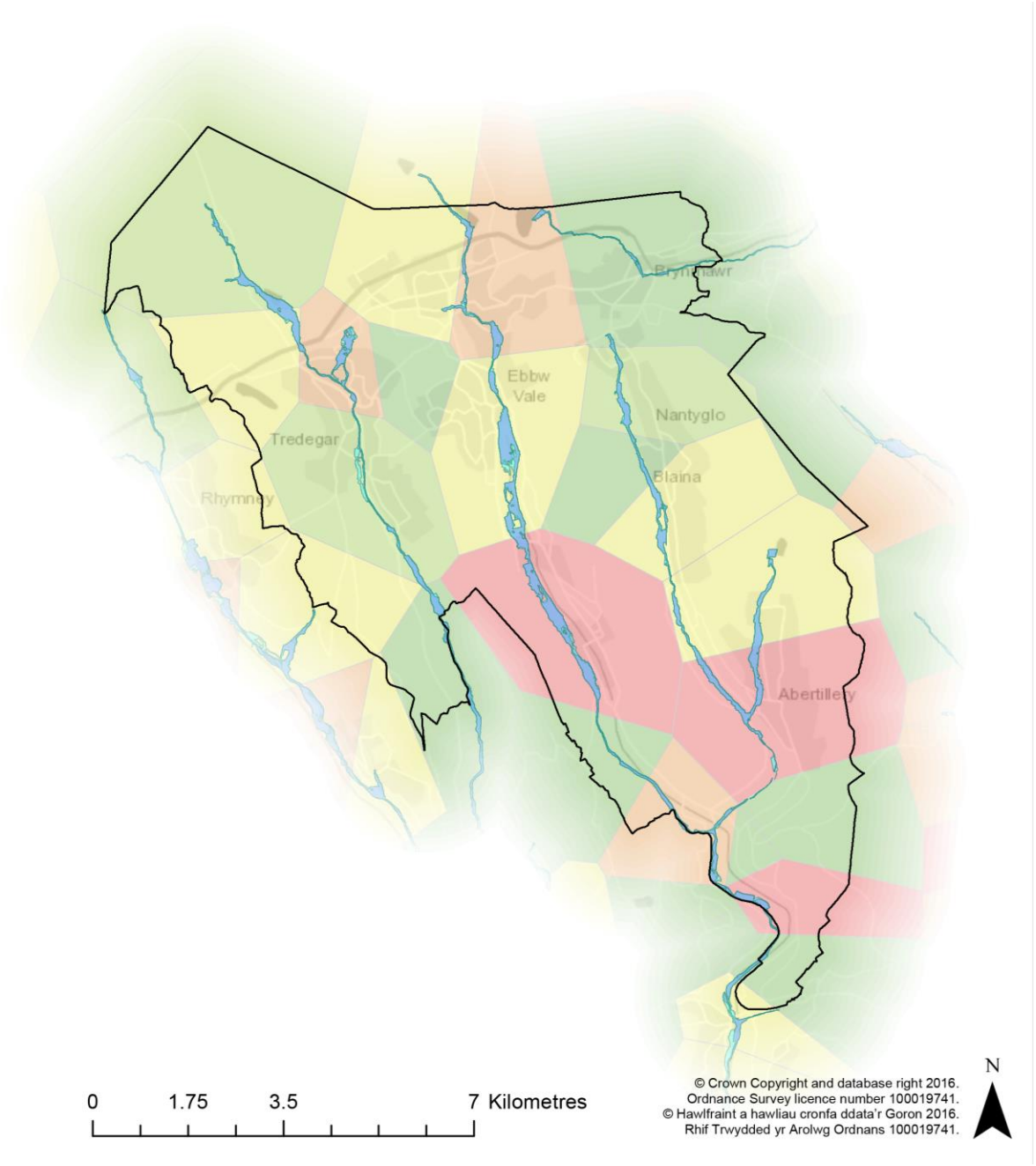
Section 7.2a
Title: Draft 1 Hydrology

1. Overview

Water is vital for people, businesses, agriculture, as well as nature. However, too much can be devastating when it leads to flooding and too little can also be an issue when it causes drought. These both scenarios can affect the well-being of communities of Blaenau Gwent.

Flooding
Flooding occurs when water arrives in a place quicker than it can drain away. This causes estuaries, rivers, ditches, drains or sewers to overflow, allowing water to flood surrounding houses, business, farmland and infrastructure. This water is often from rainfall, but can be from other sources.

Flooding is the most frequent type of “natural” disaster affecting home and businesses and can disrupts the normal functioning of whole communities. The problem costs the UK billions of pounds every year. However the consequences of flooding are not just financial. Even modest flooding events can significantly impact on the physical and mental well-being of the individuals affected for many years after the actual flooding event. From a well-being perspective, quite often the worst affected are the more vulnerable in society.



Map 1. Flood risk in Blaenau Gwent. (NRW 2016)

The coloured shading on Map 1. show the likely severity of river flooding should it occur. This is a “traffic light” method – Green is low risk and Red the worst. The severity is based on the number of properties within the community likely to be affected.

The map shows that the communities in Blaenau Gwent most at risk from flooding are Llanhilleth, Abertillery and Cwm. The communities of Victoria, Waun Lwyd, Dukestown and Aberbeeg are also at risk.

2. Story behind the data

The blue shading on Map 1 shows the different flood risk level **if there were no flood defences**. These are:

Flood Zone 3 – High Probability of flooding. Land assessed as having a greater than 1% probability of flooding in any year. Area shown in darker blue.

Flood Zone 2 – Medium probability of flooding - 1% – 0.1%in any year. Area shown in lighter blue.

Flood Zone 1 – Low probability of flooding. In these areas there is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The majority of Blaenau Gwent falls within this area and are unlikely to be flooded by rivers & extremely unlikely to be flooded by the sea. This is the areas of the map without blue shading.

When talking about flooding risk, it is always do in terms of no defences being present. This is because defences are not 100% reliable and therefore not included.

Due to climate change, winter rainfall in Wales is projected to increase (Adapting to climate change UK Climate Projections, DEFRA (2009)). Flooding will therefore continue to be a key threat to many communities. However, increased resilience the natural environment and well planned developments can help provide resilience to flooding.

Water is supplied to the Blaenau Gwent area by Dwr Cyrmu Welsh Water (DCWW). They supply water via a large scale, multi-source, integrated network that is typical of many other water company areas. This Water Resources Zone (WRZ) is known as the South East Wales Conjunctive Use System (SEWCUS).

In total, there are over 40 resources that are used to supply the SEWCUS WRZ which include a mixture of river abstractions from the larger rivers in the east of the WRZ and relatively small upland reservoir sources with small catchment areas.

Blaenau Gwent's water supply is primarily from the three small reservoirs - Shon Sheffery and Upper & Lower Carno

As the SEWCUS WRZ is an integrated network, supplies from abstractions from the Rivers Wye and Usk can be transferred to relieve the demand on the smaller upland impounding reservoirs in Blaenau Gwent whose storage declines relatively quickly in dry weather. This preserves the storage in the smaller sources and allows them to supply their immediate demand areas through an extended drought.

Whilst making this water is available to Blaenau Gwent, to overcome any deficit, the water is abstracted and pumped from the River Usk/Wye This uses a lot of energy and is not wholly sustainable over the long-term. As a result this issue needs to be addressed.

To safeguard supply, water companies in England & Wales have a statutory duty (as set out in in Section 37A-37D of the Water Industry Act 1991) to produce a water resources management plan (WRMP) every five years. The plan must set out how a water company intends to maintain the balance between supply and demand for water over a 25 year period, while protecting the environment.

A WRMP is complemented by a water company drought plan, which sets out the short-term operational steps they will take as a drought progresses to enhance available supplies, manage customer demand and minimise environmental impacts.

The WRMP's annual average planning scenario remains in surplus throughout the current planning period until 2039.

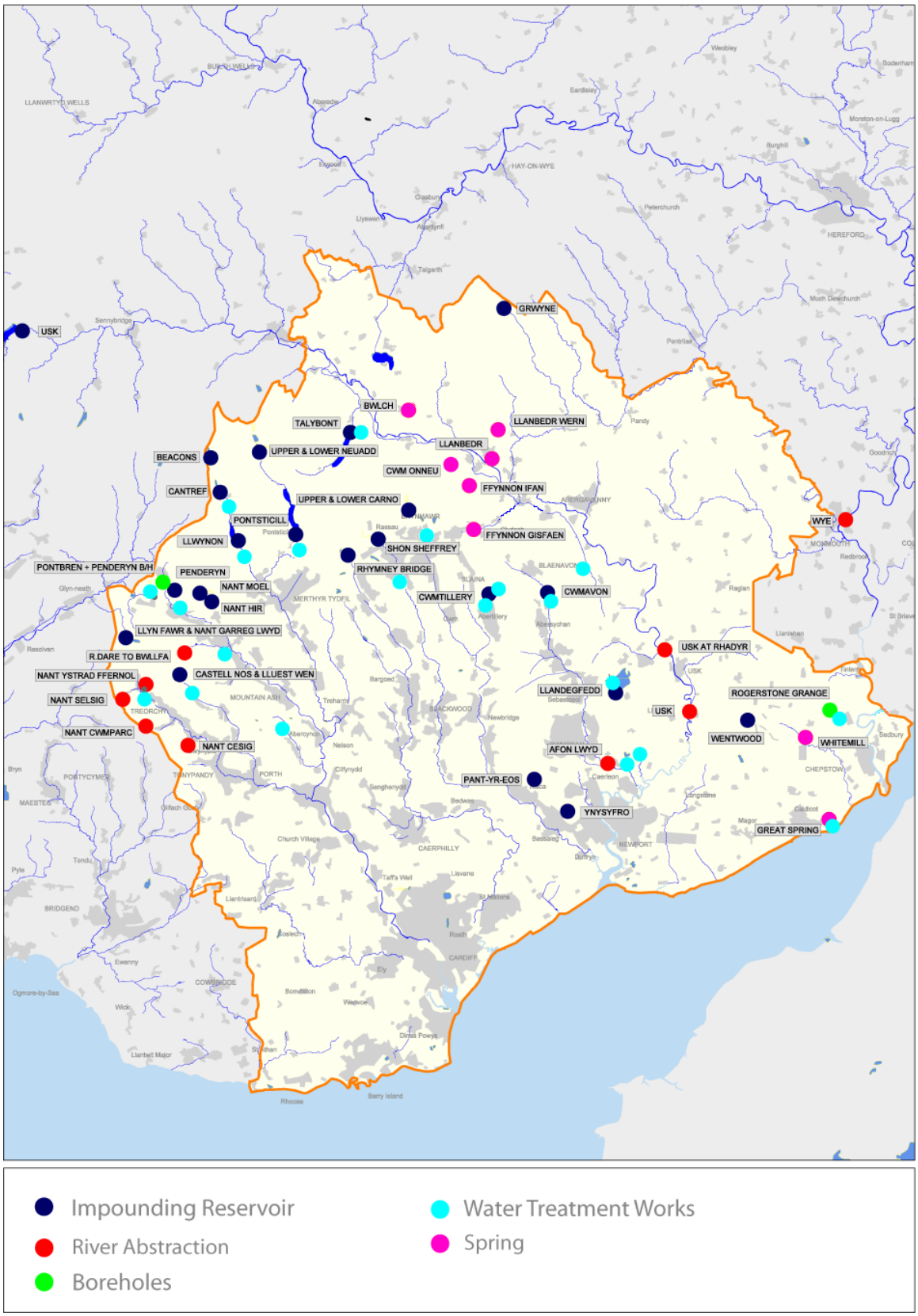
In 2018, amendement to water abstactions are expected due to implementation of the Habitats Directive. After these amendments, Graph 1. shows that there is a decreasing surplus from 7.04 million litres per day in 2018/19, with a maximum surplus of 11.36 Ml/d in 2020/21, and from this point a general decreasing trend until reaching its only deficit year of 0.51 Ml/d in 2039/40.

Should an incident occur which causes a major disruption to water supply, Multi Agency arrangements are in place for water distrubution. This is led by Welsh Water, and supported by other responders.

To help responding organisations plan for the risk of flooding in the unlikely event that a reservoir failed, maps showing areas that could flood are available. Off-site plans are in place for reservoir flooding. These plans set out what responding organisations will do to warn and protect people and property if a dam or reservoir were to fail.

Graph 1.
SEWCUS Annual Average Supply Demand Balance Position 2105 - 2040. (Dwr Cymru Welsh Water, 2014).

N.B. There is a reduction in Total Water Available for Use (WAFU) in 2018 due to changes to abstraction licences brought about by the Habitats Directive.



Map 2. DCWW Water Supply Sources in the SEWCUS Water Resource Zone. (Dwr Cymru Welsh Water, 2014).

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 flooding or hydrology 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

Natural Resources Wales currently has no plan to construct any new flood defences in Blaenau Gwent. However, they are currently carrying out flood modelling in Cwm and this will determine any work required.

Whilst no new defences are planned, there is an on-going maintenance work program where defence are repaired to ensure suitability. Work of this nature has recently been carried out on the defences in Aberbeeg.

Further research will be conducted dependant on priority setting by the Public Service Board following its meeting on 23rd March 2017.

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

Water Resources

Providing a sufficient supply of water is vital to people, business and also nature. There has been a long-term steady decline in overall water demand in South Wales. This is primarily due to the decline of heavy industry and the significant reduction in leakage from the pipe networks over the past fifteen years.

Despite the general perception that Wales has an abundant supply of water, future water supply strategy in Blaenau Gwent faces a number of challenges, including the abstraction license reductions and the impacts of a predicted reduction in summer rainfall due to climate change (DEFRA, 2009).

Arrangements are in place at an operational level to respond to flooding incidents. These are complemented by Multi Agency flood response plans for larger flooding incidents, and also for associated issues such as evacuation, and warning and informing.

Too much water can have devastating effects on the wellbeing of local communities. As such we need to ensure that flooding is avoided and where it does happen communities are supported to get back on their feet as quickly as possible, ensuring lessons are identified and any necessary improvements are made.

Community resilience is about communities using local resources and knowledge to help themselves during an emergency in a way that complements the local emergency services. A Community Flood Group, instigated by Natural Resources Wales as part of their community resilience work, is active in Cwm. Historically, there are barriers to communities getting involved in community resilience projects due to a lack of interest and few major incidents (such as flooding) which would encourage self-help.

References

UNITED KINGDOM. NATURAL RESSOURCES WALES (2016) *Public Service Board – Blaenau Gwent: Environmental Information for Well-being Assessments.* Cardiff: Natural Resources Wales.

UNITED KINGDOM. DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS (2009) *UK Climate Projections 2009 (UKCP09).* London: H.M.S.O.

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Gwent Local Resilience Forum

http://www.gwentprepared.org.uk/