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Wylfa Newydd Project

Horizon Nuclear Power Ltd

Wylfa Newydd Development Area Surface Water Baseline Report

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Wylfa Newydd Development Area Surface Water Baseline Report

Wylfa Newydd Project

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Project Manager: Rob Bromley
Author: R Armstrong
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Jacobs U.K. Limited

New City Court
20 St Thomas Street
London SE1 9RS
United Kingdom
T +44 (0)20 7939 6100
F +44 (0)20 7939 6103
www.jacobs.com

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1. Introduction

Horizon Nuclear Power Ltd is currently planning to develop a new Nuclear Power Station at Wylfa Head, Anglesey as identified in the *National Policy Statement for Nuclear Power Generation (EN-6)* (Department of Energy and Climate Change [RD1]). The Wylfa Newydd Project will require a number of applications to be made under different legislation to different regulators. As a Nationally Significant Infrastructure Project under the *Planning Act 2008*, the construction and operation must be authorised by a Development Consent Order.

Jacobs UK Ltd was commissioned by Horizon to undertake a hydrological assessment to inform the various applications, assessments and permits that will be submitted for approval to construct and operate the Power Station and Associated Development.

This report describes the current environmental baseline for surface water bodies that have the potential to be affected by works associated with the development of the Power Station within the Wylfa Newydd Development Area (figure B7/01-1-1). This report contains field data up to the end of August 2017 and represents the understanding of the baseline at the time of writing. Fieldwork to collect data is ongoing in order to increase the available baseline information.

This report includes the following:

- a desk study of available information, including that on soils, geology, land use and topography;
- observations from site walkovers; and
- results of surface water monitoring undertaken since 2012.

Some aspects of the hydrological assessment work overlaps with different technical disciplines. As such, this baseline hydrological report should be reviewed in conjunction with the following:

- appendix D8-2 (fluvial geomorphology baseline report) (Application Reference Number: 6.4.27) in relation to the physical form and function of the stream channels;
- appendix D8-3 (groundwater baseline report) (Application Reference Number: 6.4.28) in relation to groundwater flows and groundwater-surface water interactions, including groundwater baseflow into surface water features;
- appendix D8-5 (Tre'r Gof hydroecological assessment) (Application Reference Number: 6.4.30) in relation to the hydrological and hydrogeological function of the Tre'r Gof Site of Special Scientific Interest (SSSI); and
- appendix D8-6 (Cae Gwyn hydroecological assessment) (Application Reference Number: 6.4.31) in relation to the hydrological and hydrogeological function of the Cae Gwyn SSSI.

1.1 Site description and study area

The study area for this assessment encompasses the entire Wylfa Newydd Development Area as shown on figure B7/01-1-1. It also extends to cover the entire catchment of all water bodies that could realistically be hydrologically influenced by works within the Wylfa Newydd Development Area, and areas between the Wylfa Newydd Development Area and the coast that drain directly to the sea.

The study area shown on figure B7/01-1-1 consists of five small surface water catchments that drain through the study area and through and past the Wylfa Newydd Development Area and which are listed below.

- Tre'r Gof Catchment.
- Afon Cafnan Catchment.
- Cemlyn Catchment.
- Cemaes Catchment.
- Power Station Catchment.

1.2 Study aims and objectives

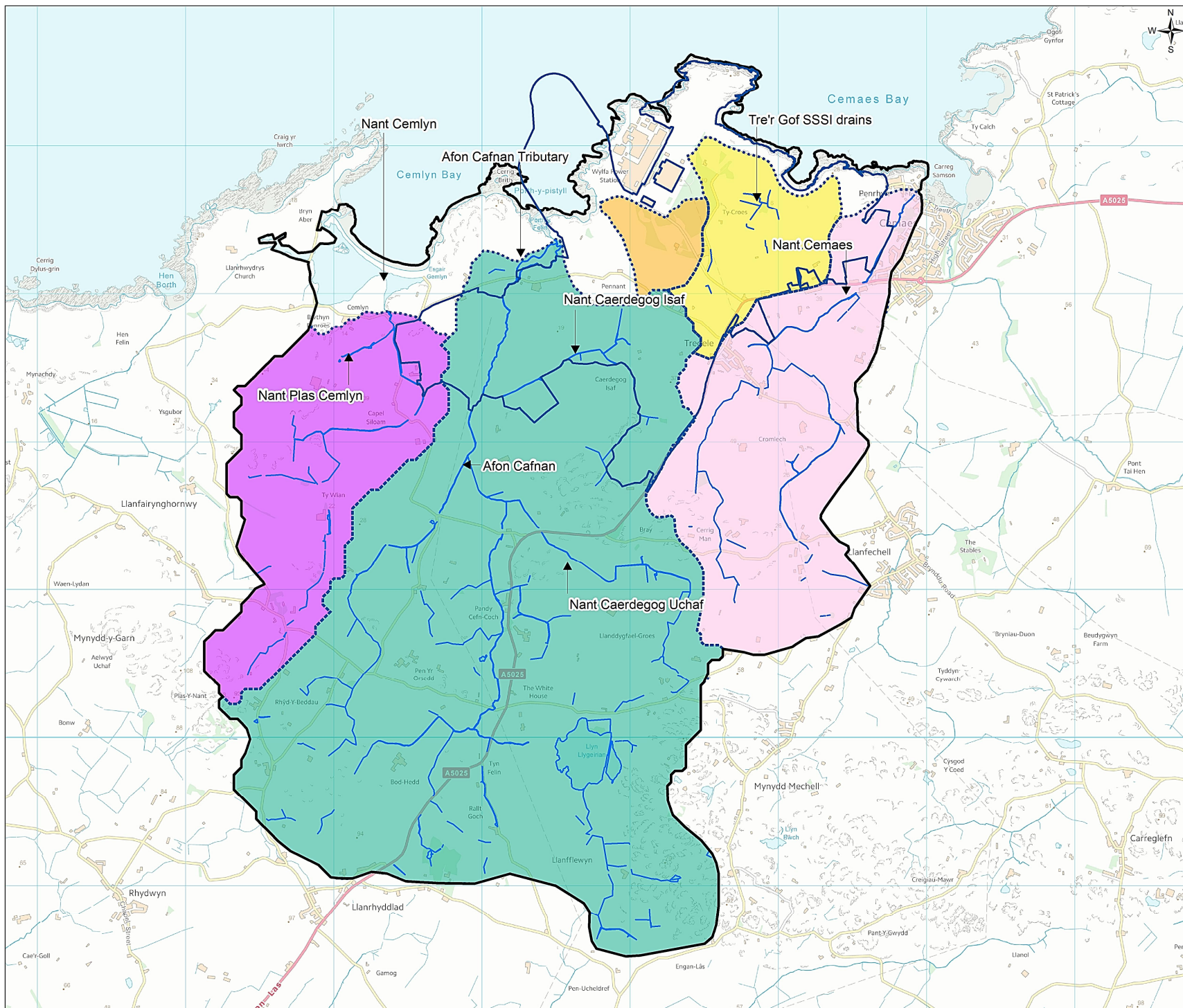
The objective of the surface water baseline report is to characterise the surface water environment and collect baseline hydrological data to inform the various applications, assessments and permits required to construct and operate the Power Station.

As part of the Environmental Impact Assessment and Habitats Regulations Assessment, there is a need for detailed temporal and spatial data relating to the surface water environment. In particular, the Environmental Statement will include a hydrological and hydrogeological impact assessment that will consider the effect on the water environment as a result of the Wylfa Newydd Project.

The specific aims of this work are to:

- provide an understanding of the baseline surface water conditions within the study area;
- provide a single report that summarises current understanding and which can be referred to throughout the Environmental Impact Assessment process for key hydrological information for the Power Station Site;
- inform the relevant Habitats Regulation Assessment;
- inform the relevant Environmental Impact Assessment scoping and Environmental Statement chapters;
and
- inform Environmental Permitting (where applicable).

FIGURE B7/01-1-1



- Legend**
- Wylfa Newydd Development Area
 - Hydrological study area boundary
 - Catchment boundary
 - Surface Water Features
 - Afon Cafnan Catchment
 - Cemaes Catchment
 - Cemlyn Catchment
 - Power Station Catchment
 - Tre'r Gof Catchment

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HYDROLOGICAL BASELINE REPORT

Drawing Title
SURFACE WATER STUDY AREA, CATCHMENTS
AND SURFACE WATER FEATURES

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2. Methodology

This baseline report is based on a combination of a desk study, which reviews the desk-based information on the study area and the water bodies, observations from walkover surveys, and the results of monitoring undertaken to date. The steps outlined below were undertaken.

- Collation and review of baseline, desk-based information on the surface water bodies in the study area, including Water Framework Directive (WFD) water bodies and catchment information.
- Walkover surveys and collection of field data.
- Collation and review of hydrological field data collected from the study area, including both water quality data and flow data.

The study area is based on stream catchments at and around the Wylfa Newydd Development Area. This area has been set, as it captures all surface water features of relevance. This is shown in figure B7/01-1-1.

Flood modelling and hydrological modelling has been undertaken around the site, however the baseline results of this modelling are considered within the modelling summary report (Application Reference Number: 6.4.29).

2.1 Desk study

The desk study comprised the analysis of available information, including maps (historical and contemporary), information on geology and soils, data available from Natural Resources Wales (NRW) and data available from the UK Meteorological Office (Met Office). Key data sources include:

- rainfall data collected from the Met Office station at RAF Valley (>50 years of data) and the NRW-operated Llyn Alaw rain gauge (>20 years of data);
- river flow data from the NRW gauging station on the Afon Cefni at Bodffordd (26 years of data);
- spot flow and spot water quality data collected by NRW;
- NRW watercourse mapping [RD2] and NRW flood mapping [RD3];
- British Geological Survey (BGS) mapping [RD4]; and
- Cranfield Soil and Agrifood Institute soils mapping [RD5].

2.2 Walkover surveys

A preliminary walkover survey of the hydrological study area for Wylfa Newydd Development Area was undertaken by two hydrologists on 17-18 September 2014. This walkover was intended to provide an overview of the hydrological function of the area and the hydrological character of the water features observed. In addition, the walkover was used to decide where detailed monitoring should be focused to provide good quality data while not compromising the health and safety of field operatives.

A subsequent detailed water feature survey was undertaken around the Tre'r Gof SSSI between 9 and 13 February 2015. This survey was intended to map all the water features present and answer specific questions relating to the function of this wetland and the interaction of groundwater and surface water in this area.

Another detailed walkover survey was undertaken for the Cae Gwyn SSSI in November 2015. The purpose of this visit was to map all water features present on the Cae Gwyn SSSI and to better understand the function of this wetland.

2.3 Surface water monitoring

Surface water monitoring has been undertaken at and around the Wylfa Newydd Development Area since 2010. More recently, this has been supplemented by additional field work which is ongoing, the scope of which was informed by the site walkovers and intended to fill gaps in the knowledge base. This report includes hydrological information up to August 2017. All monitoring locations are shown on figure B7/01-2-1 to B7/01-2-4.

Wylfa Newydd Development Area Surface Water Baseline Report

The longer-term monitoring is outlined below.

- **Rain gauging:** Magnox record hourly rainfall data at the meteorological mast located on the Existing Power Station site. Rainfall data are available for the period from May 2010 to present, although there are lengthy gaps in the record.
- **Spot water quality monitoring:** this commenced in 2012 at five locations as part of ecological water monitoring and expanded to 27 locations by 2014. This monitoring programme is continuing to inform the hydrological baseline around the Wylfa Newydd Development Area. This monitoring consists of monthly *in situ* recordings and quarterly laboratory analysis.
- **Continuous flow monitoring around Tre'r Gof SSSI:** flumes were installed at five locations around the Tre'r Gof SSSI in 2010, and water levels at the flumes were then recorded at intervals of less than hourly to allow for the development of a flow data series. Significant gaps in this early data record exist but, following maintenance of the sensors and data loggers in May 2015, these datasets have more recently captured data at a higher temporal resolution. There are gaps in flume data during the summer of 2017 due to the need to return the data loggers to the manufacturer for battery replacement.

More recent hydrological monitoring that has been undertaken is outlined below.

- **Additional meteorological monitoring:** in March 2015, Horizon installed a new meteorological station on the Wylfa Newydd Development Area that collects rainfall and other meteorological data. Data is available up to December 2016.
- **Additional spot water quality monitoring around Tre'r Gof SSSI:** a single round of monitoring undertaken in February 2015 at eight locations in the Tre'r Gof Catchment was intended to help determine the dominant sources of inflow into the SSSI. From November 2015 to May 2016 samples have been recovered from all significant inflow points on a monthly basis. Since May 2016, samples have been recovered on a quarterly basis.
- **Additional spot water quality monitoring around Cae Gwyn SSSI:** walkovers from November 2015 until May 2016 produced samples from all accessible significant hydrological features on a monthly basis. Since May 2016, samples have been recovered from significant hydrological features on a quarterly basis. Data is only available up to June 2017 due to subsequent access constraints.
- **Spot flow monitoring:** spot flow monitoring has been undertaken on the Afon Cafnan, Nant Cemlyn and Nant Caerdegog Isaf since December 2014 and is ongoing on a monthly basis. Since November 2015, this was expanded to include a location on Nant Cemaes.
- **Continuous water level and water quality monitoring:** stilling wells containing instrumentation for monitoring water quality and water levels were installed on Nant Cemlyn and Nant Caerdegog Isaf in May and July 2015 respectively. Flumes were installed at the two stilling-well locations in October 2015 to enable the water level data captured to be accurately converted into flow volume. There are data gaps from Nant Caerdegog Isaf in the summer of 2017 due to the instrumentation being returned to the manufacturer for repair and maintenance. There are also other gaps in the data record.



FIGURE B7/01-2-1

- Legend
- Wylfa Newydd Development Area
 - Surface Water Features
 - Surface water quality monitoring locations 2012-2015



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SURFACE WATER QUALITY MONITORING HYDROLOGICAL BASELINE REPORT						
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FIGURE B7/01-2-2

Legend

- Wylfa Newydd Development Area
- Surface Water Features
- Surface water quality monitoring locations 2015 - present

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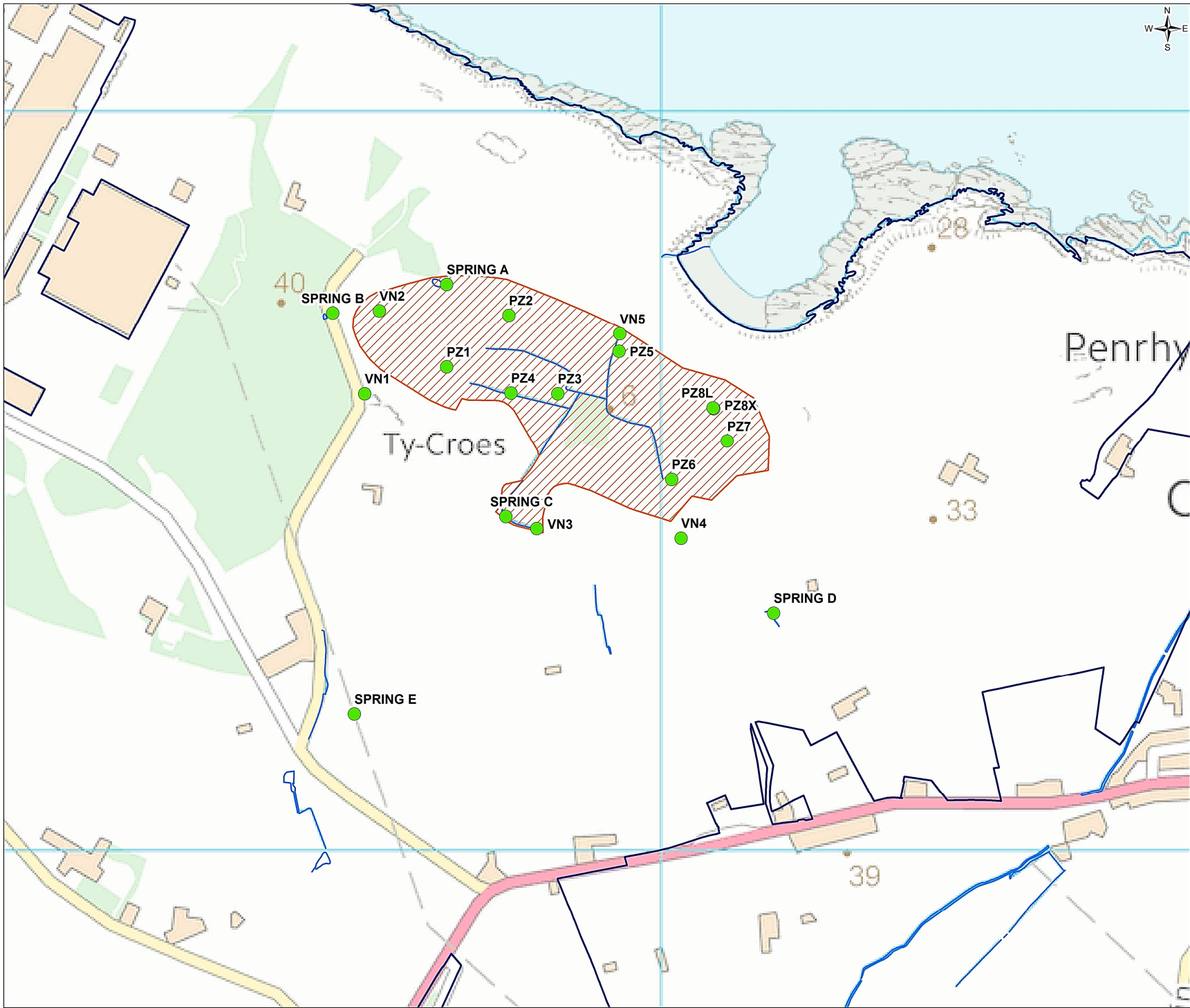


FIGURE B7/01-2-3

Legend

- Wylfa Newydd Development Area
- Tre'r Gof Site of Special Scientific Interest (SSSI)
- Surface Water Features
- Surface water quality monitoring locations around Tre'r Gof SSSI



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Project	WYLFA NEWYDD PROJECT HYDROLOGICAL BASELINE REPORT
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Drawing Title	SURFACE WATER QUALITY MONITORING LOCATIONS AROUND TRE'R GOF SSSI
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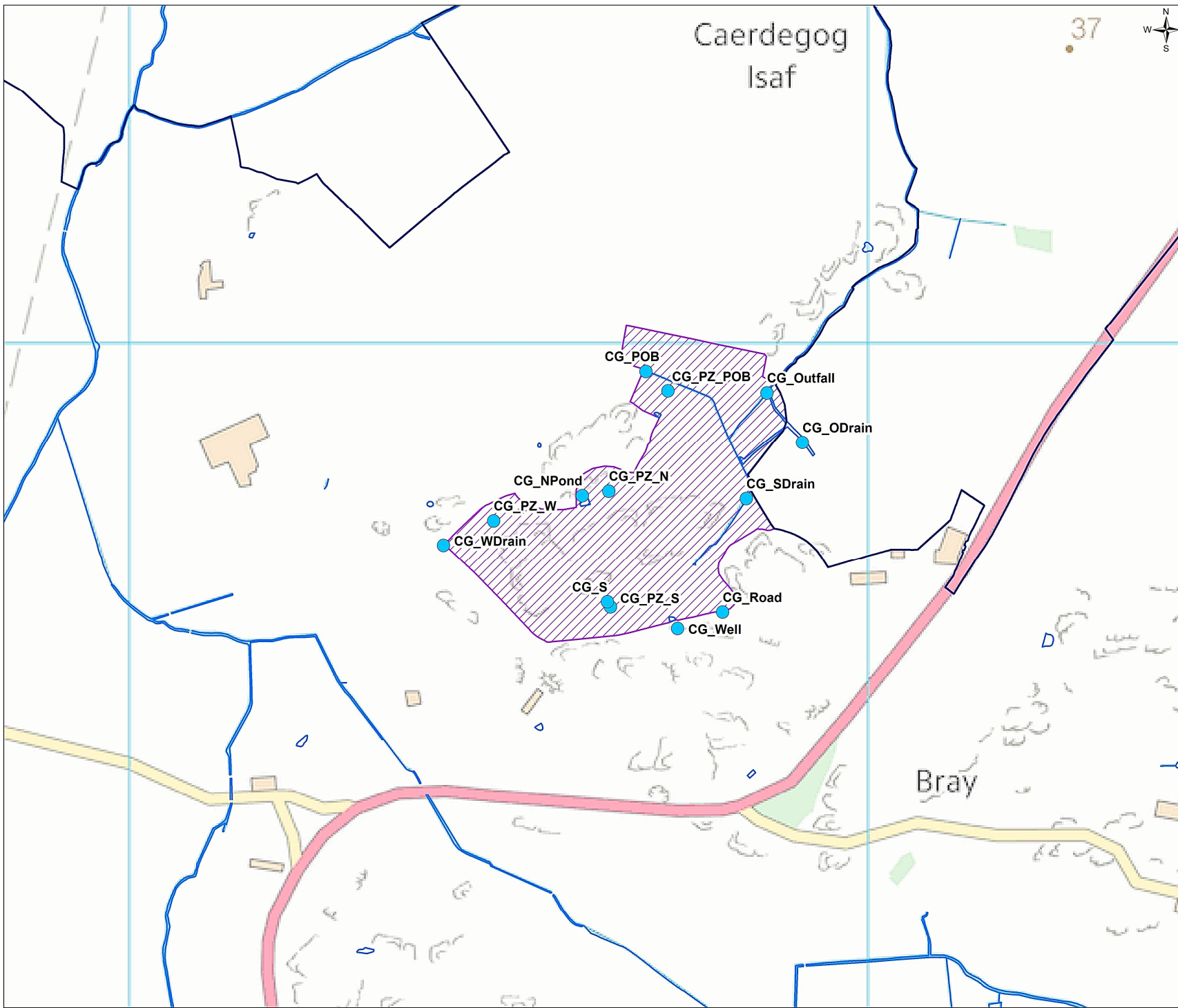


FIGURE B7/01-2-4

Legend

- Wylfa Newydd Development
- Cae Gwyn Site of Special Scientific Interest (SSSI)
- Surface Water Features
- Surface water quality monitoring locations around Cae Gwyn SSSI



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Drawing Title

MONITORING LOCATIONS AT CAE GWYN SSSI

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A summary of the monitoring for each catchment is contained in table 2.1. Further details for this monitoring are presented in sections 3 to 5. In all instances this report details information to August 2017.

Table 2.1 Summary of hydrological monitoring

Hydrological monitoring	Tre'r Gof Catchment	Afon Cefnau Catchment	Cemlyn Catchment	Cemaes Catchment	Power Station Catchment
Magnox rain gauging	May 2010 – present				
Meteorological data	March 2015 – present				
Spot water quality monitoring	May 2012 – present	May 2012 – present	May 2012 – present	May 2012 – present	May 2012 – October 2014
Continuous water quality monitoring	n/a	May 2015 – present	July 2015 – present	n/a	n/a
Spot flow monitoring	n/a	December 2014 – present	December 2014 – present	November 2015 – present	n/a
Continuous flow monitoring	2012 (partial record) and May 2015 – present	October 2015 – present	October 2015 – present	n/a	n/a

2.4 Baseline modelling

Baseline hydrological and hydraulic modelling at and around the Wylfa Newydd Development Area has been undertaken by Wood (formerly known as Amec Foster Wheeler (AmecFW)) and HR Wallingford in support of the Wylfa Newydd Project. This work is intended to help confirm and develop the conceptual hydrological understanding of the Wylfa Newydd Development Area, and to provide a quantitative basis against which effects, primarily flows, can be assessed.

The modelling developed is outlined below.

- Hydrological Modelling:** this modelling is included in appendix D8-7, (surface water and groundwater modelling results) (Application Reference Number: 6.4.32). The modelling is intended to consider the more normal behaviour of the hydrological systems, including their response over a longer duration (between weeks and months) in extreme wet or dry conditions. The model covers the entire hydrological study area, and the modelling package (4Rs) takes a long-term daily rainfall series and assesses how this would be routed through the study area, through both surface and shallow sub-surface flow pathways, and what recharge to groundwater would take place.
- Flood Modelling:** The results of this modelling are included in appendix D8-4, (flood consequence assessment) (Application Reference Number: 6.4.29). This modelling is intended to consider short-duration, extreme events for a range of storm events including up to the 1:1,000 annual probability of occurrence. It covers the entire Wylfa Newydd Development Area and adjacent areas, but does not cover the upstream parts of the catchment as these are not of direct interest. Fluvial and pluvial flooding were modelled separately utilising flow inputs from rainfall and river inflows arriving at the Wylfa Newydd Development Area; these have been assessed and then routed using 1D-2D linked Infoworks Integrated Catchment Modelling to provide an indication of likely flood flow routes, rates of flow and flood extents.
- Wave and Coastal Modelling:** this modelling is intended to address the wave modelling, analysis and results required for environmental and permitting issues, including any risk of coastal flooding to the Wylfa Newydd Development. This modelling, undertaken by HR Wallingford, includes Offshore and Nearshore scenarios for wave modelling through the use of a SWAN wave transformation model, based on a 35-year time series of offshore wave data. The outputs of these data are relevant to the Flood Consequence Assessment which is included in appendix D8-4 (Application Reference Number: 6.4.29), as well as other chapters including chapter D13 (the marine environment) (Application Reference Number: 6.4.13). The model outputs are included as an appendix to the Flood Consequence Assessment (Application Reference Number: 6.4.29).

The details of the above modelling are contained in the appendix D8-4 (Application Reference Number: 6.4.29) and appendix D8-7 (Application Reference Number: 6.4.32) and are not considered further within this report.

3. General baseline

3.1 WFD waterbodies

The study area is within the *River Basin Management Plan for the Western Wales River Basin District*, prepared under the WFD [RD6].

All of the watercourses within the study area are classified, under the second WFD cycle published in 2015 [RD2], as comprising part of coastal WFD water bodies. The Skerries (GB611010390000) is to the west of Wylfa Head and includes the Afon Cafnan Catchment, Cemlyn Catchment and Power Station Catchment. The coastal Anglesey North water body (GB641010620000) is to the east of Wylfa Head and includes the Tre'r Gof Catchment and Cemaes Catchment. Further details are provided in the WFD Compliance Assessment (Application Reference Number: 8.26).

3.2 Catchments and surface water features

The study area for this assessment encompasses the entire Wylfa Newydd Development Area and the catchments of all water bodies that could realistically be hydrologically influenced by the Wylfa Newydd Project. The study area consists of five small surface water catchments (shown on figure B7/01-1-1) that drain through the study area, as detailed below.

- Tre'r Gof Catchment.
- Afon Cafnan Catchment.
- Cemlyn Catchment.
- Cemaes Catchment.
- Power Station Catchment.

The catchment characteristics, flow patterns and further environmental qualities of each catchment are described within this section of the report. The flow data and water quality for each catchment are contained in sections 4 and 5 respectively.

Descriptions of the physical characteristics of the channels (including structures along and across the channels) for these watercourses are provided in appendix D8-2 (Application Reference Number: 6.4.27).

3.2.1 Tre'r Gof Catchment

Tre'r Gof Catchment has an area estimated at 1km²; and almost the entirety of the Tre'r Gof Catchment is located within the Wylfa Newydd Development Area. The catchment drains into the Tre'r Gof SSSI, an inland 'drainage basin' located to the north of the catchment. The Tre'r Gof SSSI has an area of 0.1km².

The Tre'r Gof SSSI is fed by a number of small watercourses and ditches, the majority of which are ephemeral; these watercourses have been named within this report as the 'Tre'r Gof drains'. The Tre'r Gof SSSI also receives flows from direct rainfall, overland flow and subsoil/shallow groundwater flow.

The Tre'r Gof Catchment discharges to the sea from the Tre'r Gof SSSI basin via a culvert and outfall at Porth Wylfa. This culvert cuts through a ridge of high land that is elevated around 3m above current ground levels within the SSSI. This strongly suggests that the culvert has historically been cut to drain the land around the existing fen for farming. Prior to draining, the Tre'r Gof SSSI would likely have been a lake.

3.2.2 Afon Cafnan Catchment

The Afon Cafnan Catchment is estimated to be 9.9km², and comprises the Afon Cafnan as well as its tributaries, including Nant Caerdegog Isaf. The majority of the catchment is situated to the south of the Wylfa Newydd Development Area; while the lower reaches of the Afon Cafnan are situated within the centre and west of the Wylfa Newydd Development Area.

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The largest watercourse within the catchment is the Afon Cafnan, a watercourse classified by NRW as a main river that flows in a northerly direction through the Wylfa Newydd Development Area. The Afon Cafnan originates to the south of the study area, approximately 3km south of the Wylfa Newydd Development Area. In the upper reaches of the Afon Cafnan is a sizable lake called Llyn Llygeirian. The lower reaches of the Afon Cafnan Catchment are situated within the Wylfa Newydd Development Area and the watercourse discharges to the sea at Porth-y-felin.

The largest tributary of the Afon Cafnan is a watercourse named within this report as 'Nant Caerdegog Isaf'. This watercourse originates at the Cae Gwyn SSSI immediately to the south of the Wylfa Newydd Development Area. Nant Caerdegog Isaf flows in a northerly then westerly direction, flowing adjacent to and then within the Wylfa Newydd Development Area, prior to flowing into the Afon Cafnan. Nant Caerdegog Isaf is classified as a main river by NRW.

The Afon Cafnan Catchment includes the Cae Gwyn SSSI which is a system of basin mires separated by dry heathland habitat. The SSSI has a small surface catchment (about 0.3km²) and discharges along Nant Caerdegog Isaf.

The Afon Cafnan comprises two other tributaries which are also classified as main rivers, however these are south of the Wylfa Newydd Development Area with no potential to be affected by the Wylfa Newydd Project. Additionally, there are some minor tributaries of the Afon Cafnan and Nant Caerdegog Isaf within the Wylfa Newydd Development Area which have the potential to be affected by the Wylfa Newydd Project; these comprise wetted ditches and field drains and have little hydrological value.

3.2.3 Cemlyn Catchment

The Cemlyn Catchment drains an area of 2.3km² that is mostly situated outside of the Wylfa Newydd Development Area; to the west and south-west. A small area within the south-western edge of the Wylfa Newydd Development Area is located in this catchment.

The main channel within this catchment has been named 'Nant Cemlyn' within this report. Nant Cemlyn originates approximately 2km south-west of the Wylfa Newydd Development Area. The watercourse flows in a northerly direction, and then flows to the west of the Wylfa Newydd Development Area prior to draining into Cemlyn Lagoon at Cemlyn Bay. Cemlyn Bay is an ecologically important area and has the designation of SSSI, Special Protection Area (SPA) and Special Area of Conservation (SAC). The watercourse also receives flows from a large field drain called the Plas Cemlyn.

3.2.4 Cemaes Catchment

The Cemaes Catchment drains an area of 3.0km² that is mostly situated to the east and south-east of the Wylfa Newydd Development Area. Small parts of the eastern Wylfa Newydd Development Area extend into this catchment.

The main channel has been named 'Nant Cemaes' within this report. Nant Cemaes is a main river and originates approximately 1.4km south-east of the Wylfa Newydd Development Area. The watercourse flows in a generally northern direction through the village of Tregle to the east of the development boundary. Nant Cemaes then flows in a north-easterly direction beneath the A5025 and through the village of Cemaes. Nant Cemaes discharges into Cemaes Bay via a culvert. Cemaes Bay contains a beach used for bathing and as such is monitored for bathing water quality.

3.2.5 Power Station Catchment

The Power Station Catchment drains a small area of approximately 0.3km² immediately to the south of the Existing Power Station. This catchment currently drains most of the area that would form the Power Station Site.

The small channel shown on Ordnance Survey mapping within this catchment, is referred to as 'Nant Porth-y-pistyll' within this report. The upper reaches of this channel are culverted, and the remainder of the channel is a large flush (wetland) across a field which drains in a westward direction and discharges to the coast at Porth-y-pistyll.

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3.2.6 The Afon Wygyr

The Afon Wygyr Catchment has not been included within the hydrological study area because no part of the Wylfa Newydd Development Area is sited within the Afon Wygyr Catchment, and there are no works proposed within the Afon Wygyr Catchment.

The Afon Wygyr is approximately 400m to the east of the Wylfa Newydd Development Area at its closest within Cemaes; however, the majority of the catchment is located at a distance of over 1km. Additionally, Nant Cemaes is located between the Wylfa Newydd Development Area and the Afon Wygyr. Therefore, any potential hydrological impacts of the works would be intercepted by Nant Cemaes, with no hydrological pathway to the Afon Wygyr. Therefore, there is no realistic hydrological impact to the Afon Wygyr from the works within the Wylfa Newydd Development Area, and it has been excluded from the study area.

3.2.7 Other areas

Areas within the study area adjacent to the coast, and not within the catchments defined above, are believed to drain informally (i.e. not in defined drainage channels or watercourses) directly to the coast. The only exceptions to this are discussed below.

- The area between the Cemlyn Catchment and Cemlyn Bay. In this area, a very small ephemeral drain along the western side of the road down to Cemlyn Bay car park collects surface runoff and directs this into the eastern end of Cemlyn Bay.
- The Existing Power Station which is drained by three surface-water drainage systems. Two of these discharge onto the foreshore, and one discharges into the main outfall from the Existing Power Station.

3.3 Water-dependent Sites of Special Scientific Interest

3.3.1 Tre'r Gof SSSI

The Countryside Council for Wales [RD7] states that the Tre'r Gof SSSI is a lime-rich wetland, dependent on a steady water supply through springs, groundwater seepages, ditches and surface runoff. It is sensitive to changes in water flow, water level and water quality.

A detailed study looking at the hydrological, hydrogeological and ecological function of the SSSI has been undertaken by Jacobs and is included as appendix D8-5 (Application Reference Number: 6.4.30). The study concluded that the SSSI should be considered a groundwater-dependent terrestrial ecosystem which is dependent upon shallow groundwater inflows during the winter months, and is characterised as a perennially wet groundwater bottom basin. Groundwater flow rates locally are low, due to the relatively low permeability of both the bedrock and till, with the majority of groundwater inputs coming from the shallow groundwater within the till.

3.3.2 Cae Gwyn SSSI

The NRW citation [RD8] classified the Cae Gwyn SSSI as two small acidic basin mires separated by rocky heathland, dependent on a steady water supply through springs, groundwater seepages and surface runoff. The Cae Gwyn SSSI is located immediately south of the Wylfa Newydd Development Area. The citation for this site indicates it to be fed in part by groundwater, and that a high groundwater table is essential for the survival of wetland plants and animals. The citation also states that it is important not to lower water levels at the Cae Gwyn SSSI so as to maintain the water supply through springs and groundwater seepage.

A hydroecological assessment of the Cae Gwyn SSSI has been undertaken by Jacobs and is included as appendix D8-6 (Application Reference Number: 6.4.31) and this identified four shallow basins rather than the two indicated in the SSSI citation. The study concluded that the SSSI is recharged from direct rainfall and groundwater inflow during winter months, but only one of the four basins is highly dependent on groundwater inflows.

3.3.3 Cemlyn Bay SSSI, SPA and SAC

Cemlyn Bay is designated as a SSSI, SPA and SAC. The bay includes a saline coastal lagoon which is separated from the sea by a shingle bank with a narrow channel at the western end [RD9]. Cemlyn Bay is located outside of the Wylfa Newydd Development Area; however, it receives flows from watercourses running along the boundary of the area.

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Nant Cemlyn is the largest catchment draining into Cemlyn Bay, however it is only one of three inflows. There is a small road drain which is outlined in section 3.2.7 and one significant inflow, with a catchment of around 0.7km², is further to the west. The total land-based catchment for Cemlyn Lagoon, including both major inflows to the lagoon, peripheral areas that drain into the lagoon and the lagoon itself, is estimated to be around 3.43km². A more detailed assessment of the lagoon is provided in the ecological assessment (chapter D9) of the Environmental Statement (Application Reference Number: 6.4.9).

3.4 Land use

The land use within the study area is predominately associated with pastoral farming with isolated farmhouses, small hamlets and the villages of Cemaes to the east and Tregele in the centre. A breakdown of land use in each catchment, based on Ordnance Survey mapping, is provided in table 3.1 below.

Table 3.1 Breakdown of land use per catchment

Catchment	Developed/ impermeable areas	Surface water body	Woodland	Farmland/other
Tre'r Gof Catchment	2.8%	0.5%	4.5%	92.2%
Afon Cefnau Catchment	1.8%	2.7%	0.7%	94.8%
Cemaes Catchment	4.1%	1.2%	0.8%	93.9%
Power Station Catchment	1.7%	0.0%	25.1%	73.2%
Cemlyn Catchment	1.7%	1.1%	0.8%	96.5%

3.5 Meteorology

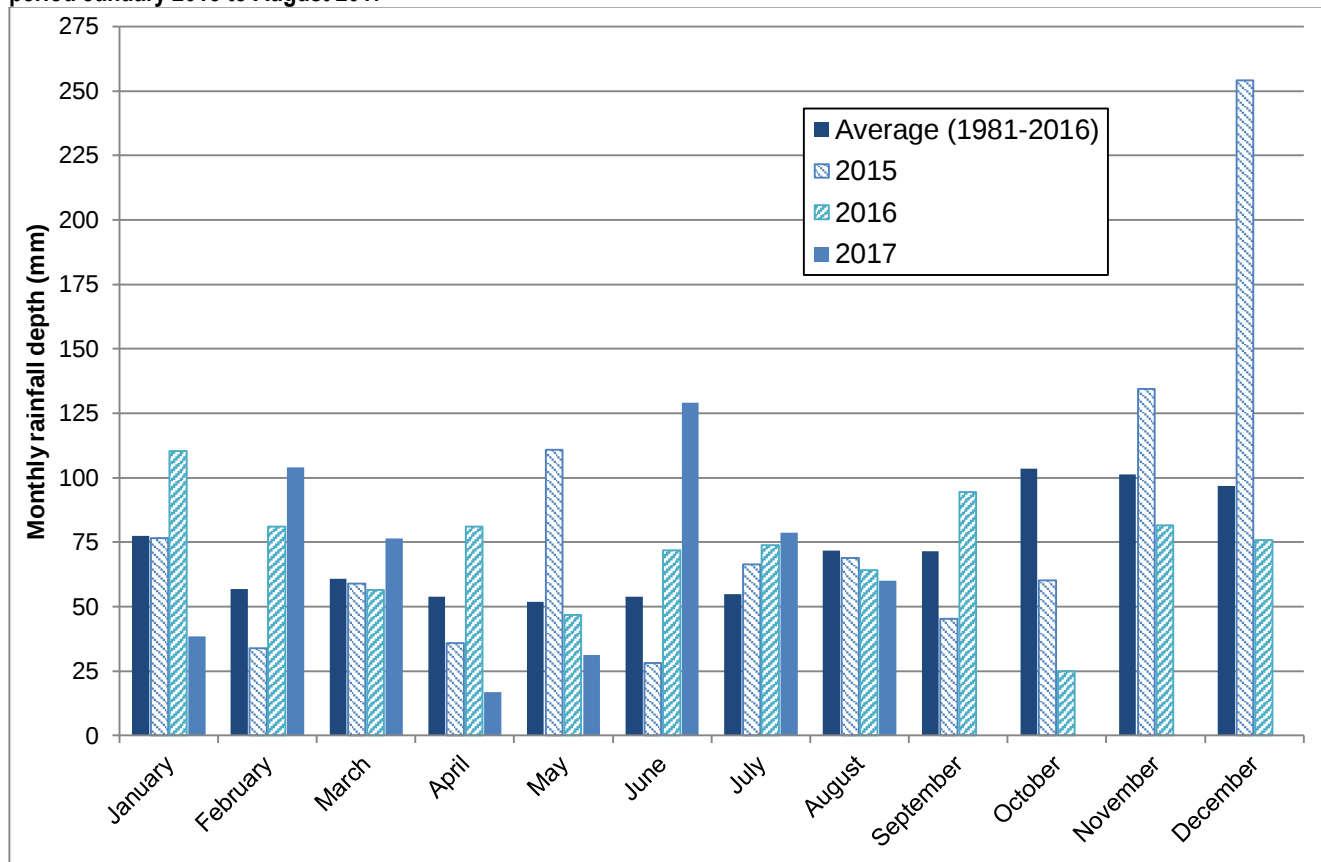
Twenty years' rainfall data are available from the nearby NRW-operated Llyn Alaw rain gauge. The RAF Valley gauge (approximately 20km to the south-west of the Wylfa Newydd Development Area) includes more than 50 years of digitised hourly data (1960–2017). Before this date, data are only available in analogue form.

The Met Office average annual rainfall data available online [RD10], for the period 1981 to 2010, show an average annual rainfall at RAF Valley of 841mm/yr. This is below the UK average of 1154mm/yr.

As can be seen in figure B7/01-3-1, the long-term data indicate that rainfall is typically higher in the late autumn/early winter and lowest in late spring/early summer.

Figure B7/01-3-1 also incorporates a comparison of the rainfall at Valley from 2015 to August 2017, to compare to the monthly averages. This indicates that the summer of 2015 was slightly drier than average, whilst December 2015 was considerably wetter than average. The provisional rainfall for much of 2016 indicates that monthly rainfall to September was broadly similar to the long term record. From October 2016 to January 2017 monthly rainfall was below average and below the respective 2015 monthly rainfall. February 2017 shows rainfall significantly higher than average. From March 2017 to August 2017 the monthly rainfall depths vary both above and below the long term average, with no discernible pattern. June 2017 is a significantly wetter month compared to the average (Figure B7/01-3-1).

Figure B7/01-3-1 Average monthly rainfall depths for each month at RAF Valley (1981–2016) compared to monthly totals in the period January 2015 to August 2017



Contains Met Office information licensed under the Open Government Licence v3.0

A meteorological station was installed by Magnox on the Existing Power Station site in May 2010. Rainfall depths, humidity, temperature and wind speed (all required for assessing potential evaporation) are all collected at this station, although technical problems do mean that significant gaps exist in this data record. In addition, it is understood that this meteorological station is located in proximity to the 400kV lines, and the presence of a physical structure close to the meteorological station may have an influence on the readings obtained.

In March 2015, Horizon installed an additional meteorological station within the Wylfa Newydd Development Area to record rainfall depths, humidity, temperature and wind speed. The data collected on the Wylfa Newydd Development Area from both the Magnox and Horizon meteorological stations are supplemented by data supplied by the Met Office.

In addition to the hourly data available from the on-site meteorological masts (2010–2016), there is a 20-year record available from Llyn Alaw, and long-term data are available from RAF Valley. These provide a robust basis for understanding and modelling long-term hydrological conditions at the Wylfa Newydd Development Area. The available meteorological data are summarised in table 3.2.

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Table 3.2 Summary of meteorological data

Provider	Location	Data type	Frequency	Record length
Horizon	Wylfa Newydd Development Area	Air temperature, relative humidity, pressure, wind speed and direction and rainfall depth	10 minutes	March 2015–December 2016
Magnox	Existing Power Station	Air temperature, relative humidity, pressure, wind speed and direction and rainfall depth	Hourly	2010–present
NRW	Llyn Alaw gauge	Rainfall depths and other parameters	Hourly	1990s–present
Met Office	On-site modelled (NWP dataset)	Wind speed, wind direction, temperature, rainfall, cloud cover, relative humidity, sensible heat flux and boundary layer depth	Hourly	Not determined
	On-site modelled (MOSES)	Potential and actual evaporation for different land cover types	Hourly	Not determined
	RAF Valley gauge	Rainfall depths and other parameters	Hourly	1960–present

3.6 Geology and groundwater

3.6.1 Soils

The soils across the study area are defined as “*freely draining, slightly acid loamy soils*” in the areas towards the coast, and “*slowly permeable, seasonally wet, acid loamy and clayey soil*” further inland [RD11]. In areas with the former type of soil, water will tend to infiltrate into groundwater as well as drain towards local watercourses, whereas for the latter more impermeable soil type, an impeded drainage is more likely to give rise to seasonal wetlands, and the proportion of infiltration to groundwater is likely to be less. This variation in soil characteristics affects the catchment as follows.

- The Power Station and Tre'r Gof catchments are wholly or almost wholly within the area of more permeable soils.
- The Afon Cafnan Catchment and the Cemlyn Catchment are approximately half within the area of the more permeable soils and half in the area of the less permeable soils.
- The Cemaes Catchment is almost wholly in the area of less permeable soils.

The change in soil characteristics is likely to have a bearing on the flow characteristics, with catchments dominated by the more impermeable soil type more likely to display rapid rates of runoff, and an associated sharp response to rainfall events. Conversely, catchments dominated by the more permeable soil types are more likely to have a more subdued response to rainfall and a high proportion of baseflow.

3.6.2 Geology and groundwater

The study area is located in a geologically complex area, which has been the subject of a number of investigations over many years. In summary, the area around the Wylfa Newydd Development Area is underlain by superficial deposits, predominantly of glacial origin (till), which overlie metamorphic bedrock of Cambrian age with some minor igneous intrusions of Palaeozoic and Tertiary age [RD4]. A more detailed description of the geology is presented in chapter D8-7 (soils and geology chapter) (Application Reference Number: 6.4.7).

Despite the complexity, all of the bedrock units underlying the study area are designated as Secondary B aquifers, meaning that the bedrock has low permeability but some layers that may store some water due to local features such as fissures, thin permeable horizons and weathering. The superficial deposits are largely defined by NRW as Secondary (undifferentiated) aquifers, although where gravels are present they can be defined as Secondary A aquifers. Secondary aquifers comprise permeable layers capable of supporting water supplies at a local, rather than strategic scale, and in some cases forming an important source of base flow to rivers.

3.7 Topography

A summary of available topographic data for the Wylfa Newydd Development Area is included in table 3.3. This includes LiDAR topographic data that is available from NRW across the Wylfa Newydd Development Area and some of the surrounding land.

Table 3.3 Summary of topographic data

Provider	Coverage	Data type	Survey date
NRW	Entire study area	LiDAR survey at 1m resolution	2011
Horizon	Wylfa Newydd Development Area	Physical survey	2015
	Main channels through Wylfa Newydd Development Area, some gaps along Nant Caerdegog Isaf	Physical survey	2015
	Tre'r Gof SSSI	Physical survey	2015
	Cae Gwyn SSSI	Physical survey	2016

LiDAR data, which are collected by aerial survey, are at a resolution of 1m and accurate to somewhere between 0.05m and 0.20m. This initial LiDAR dataset captures the elevation of the first reflective surface, which is normally the ground but can also be building roofs or treetops. This is then processed to attempt to remove such artificial surfaces and create a digital terrain model (DTM) of the bare earth surface. The accuracy of this bare earth DTM is lower than the raw data but is still normally accurate to within 0.5m. This DTM around the Wylfa Newydd Development Area is shown in figure B7/01-3-2.

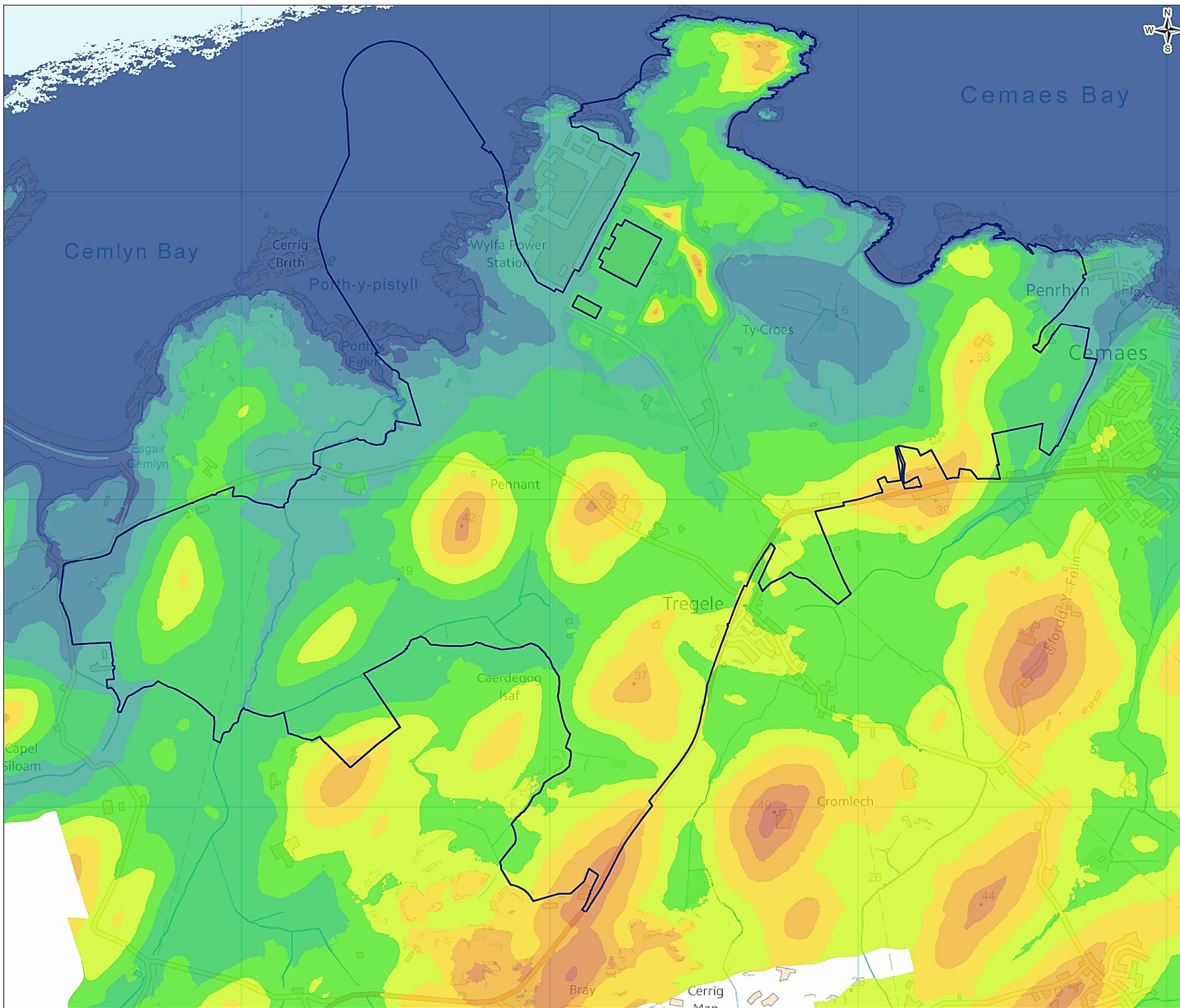


FIGURE B7/01-3-2

Legend

Wylfa Newydd Development Area

Heights

- 0-5m
- 5-10m
- 10-15m
- 15-20m
- 20-25m
- 25-30m
- 30-35m
- 35-40m
- 40-45m
- 45-50m

0	MAY 17	Initial Issue	FL	SH	SH	RB
Rev	Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd

Client

HORIZON
NUCLEAR POWER

Project

WYLFA NEWYDD PROJECT
HYDROLOGICAL BASELINE REPORT

Drawing Title

LIDAR (2.5m RESOLUTION) BASE EARTH DTM AROUND
WYLFA NEWYDD DEVELOPMENT AREA

Scale @ A3

1:12,000

DO NOT SCALE

Jacobs No.

60PO8058

Client No.

Drawing No.

60PO8058_DCO_SWG_B7_01_03_02

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A detailed topographic survey has also been undertaken across the Wylfa Newydd Development Area primarily to verify the accuracy of the LiDAR data. Based on the verified LiDAR data, the Wylfa Newydd Development Area is mostly above an elevation of approximately 12m above ordnance datum (AOD), although lower areas are present:

- in the vicinity of the Tre'r Gof SSSI (<6m AOD);
- inland of Porth-y-pistyll beach and south-west of the Existing Power Station (<10m AOD); and
- upstream of Cemlyn Bay (<10m AOD).

The drumlins in the southern parts of the Wylfa Newydd Development Area are typically between 20-25m high with crests at levels of 30-40m AOD. These drumlins extend southwards across the study area.

In addition to the general topographic data discussed above, a detailed channel survey has also been undertaken to inform flood modelling assessments and ongoing design work, the watercourses surveyed being the Afon Cafnan, Nant Caerdegog Isaf, Nant Cemaes and Nant Cemlyn.

As part of the development of the conceptual site models for the Tre'r Gof SSSI and the Cae Gwyn SSSI, key features of these wetlands were surveyed.

3.8 Surface water use and abstractions

Surface water from rivers and streams can be abstracted for a variety of uses including as a potable supply, for use in agriculture (for watering crops or for animals) or for industrial uses. However, there are no known surface water public or private water abstractions in the study area, although there is the potential that there are some abstractions which are not recorded. It is likely that some watercourses will be used for riparian purposes. In particular, it is known that the channels are used to water cattle across the study area.

4. Surface water flows and levels

A summary of all the available water flow data that form this baseline assessment is provided in table 4.1. These flow data have been summarised within this section of the report.

Table 4.1 Summary of water flow data

Provider	Data type	Water body	Catchment	Location	Dates of survey
NRW	Spot gauge readings	Afon Cafnan	Afon Cafnan Catchment	A5025 crossing	September 1993 and July 1996
		Tributary of Afon Wygyr	n/a	South-east of study area	June 1992 and July 1996
		Afon Wygyr	n/a	East of study area	1991 – 2000
	Permanent gauging station – continuous	Afon Cefni at Bodffordd	n/a	Approximately 14km south of the study area	1988 – present
Horizon	Tre'r Gof flumes – continuous	Tre'r Gof drains	Tre'r Gof Catchment	Tre'r Gof inflow and outflow drains	April 2015 – present
	Spot flow monitoring	Afon Cafnan	Afon Cafnan Catchment	Upstream of Porth-y-pistyll	December 2014 – present
		Nant Caerdegog Isaf	Afon Cafnan Catchment	Downstream of Cae Gwyn SSSI	December 2014 – present
		Nant Cemlyn	Cemlyn Catchment	Upstream of Cemlyn Bay	December 2014 – present
		Nant Cemaes	Cemaes Catchment	Upstream of Cemaes Bay	December 2015 – present
	Stilling wells and flumes – continuous	Nant Caerdegog Isaf	Afon Cafnan Catchment	Downstream of Cae Gwyn SSSI	May 2015 – present
		Nant Cemlyn	Cemlyn Catchment	Upstream of Cemlyn Bay	June 2015 – present

4.1 NRW flow data

NRW has provided a number of spot gauge flow readings for three locations, one of which is within the study area and two of which are close to the study area. These data are contained in annex A.1 and summarised in table 4.2 below.

Table 4.2 NRW spot gauging data

Watercourse	Location	No. of gaugings	Max	Min	Avg.
			(l/s)		
Afon Cafnan	NGR SH 3420 9310 Within study area where Afon Cafnan crosses the A5025, close to the outfall into Porth-y-pistyll. Upstream catchment area approximately 9.7km ² .	2 (September 1993 and July 1996)	66	6	N/A
Tributary to Afon Wygyr at Llanfechell	NGR SH 3470 9140 – Tributary of Afon Wygyr at location with Llanfechell to south-east of study area. Upstream catchment area approximately 5.2km ² .	2 (June 1992 and July 1996)	64	3	N/A
Afon Wygyr	NGR SH 3720 9320 Afon Wygyr Catchment close to the outfall into Cemaes Bay. Upstream catchment area approximately 28km ² .	24 (from 1991 to 2000)	103	20	220

In addition to this, NRW has a permanent gauging station on Anglesey on the Afon Cefni at Bodffordd (SH 42925 76857) where flow has been continuously monitored and recorded every 15 minutes since 1988. This location is approximately 14km south of the study area (18km from the Wylfa Newydd Development Area) and drains an

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upstream catchment 21.4km². The catchment is at an elevation of between 35–100m AOD, but geology and land use in the catchment are broadly similar to those in the study area (National River Flow Archive [RD12]). These data are not directly applicable to the study area, however this dataset is of use in validating the response of the catchments within the study area, and has been used to inform and develop the hydrological and flood modelling that is detailed in appendices D8-04 and D8-07 (Application Reference Numbers: 6.4.29 and 6.4.32).

4.2 Horizon spot flow monitoring

Spot flow gauging has been undertaken on the Afon Cafnan, its tributary Nant Caerdegog Isaf and on Nant Cemlyn as part of a programme of flow monitoring. Flow monitoring was undertaken on a fortnightly basis between December 2014 and May 2015 and thereafter on a monthly basis, resulting in a total of 35 monitoring rounds to August 2017. In December 2015 a fourth spot flow monitoring location was added on Nant Cemaes. These locations are shown on figure B7/01-2-2 and described in table 4.3. The results of this programme of gauging are contained in annex B, summarised in table 4.3 and presented graphically on a logarithmic scale in figure B7/01-4-1.

Table 4.3 Spot flow monitoring summary

Monitoring ID	Location	Upstream catchment (km ²)	No. of gaugings	Discharge results (l/s)		
				Max	Min	Avg
Location A	Nant Caerdegog Isaf downstream of Cae Gwyn SSSI	0.64	35	75	0.02	10.2
Location B2	Nant Cemlyn immediately upstream of Cemlyn Bay SSSI, SAC & SPA	2.27	35	324	0.8	39.2
Location C	Afon Cafnan just before it discharges into Porth-y-Felin	9.93	34	573	6.2	141.3
Location H	Nant Cemaes within Cemaes village	2.99	17	198	1.9	50.9

The results to date demonstrate that flows at all four locations broadly reflect both the size of the drainage catchment upstream and the antecedent meteorological conditions of drier summers and wetter winters. This is illustrated in figure B7/01-4-2, which plots observed flow per catchment area.

It should be noted that during the winter months of 2015/2016, spot flow monitoring occurred on occasions during the middle of a rainfall event. As such, the variations in flow per unit area may indicate a storm peak, as occurred at Location B2 on 09/03/16, for example.

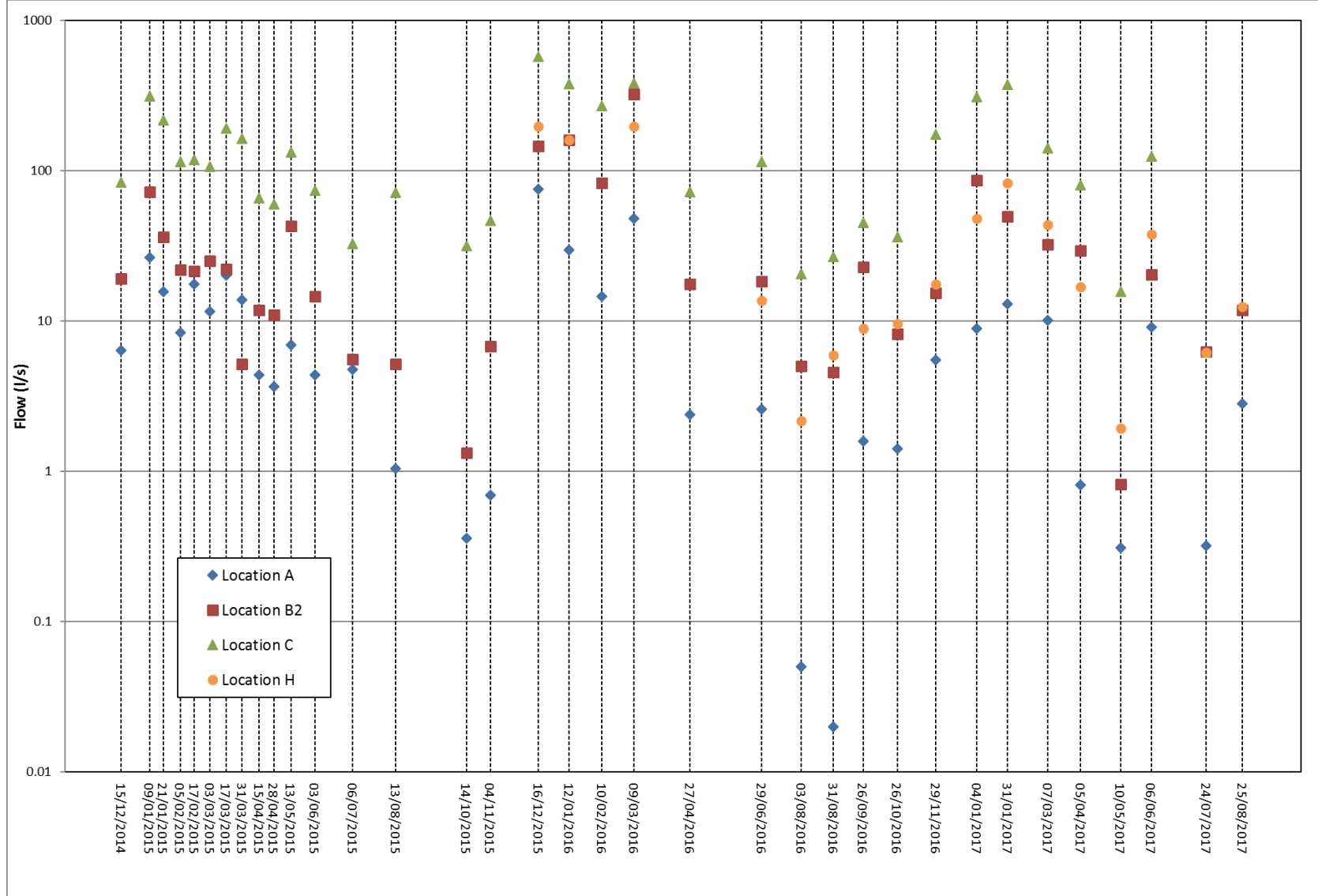
There is a strong suggestion that base flows along Nant Caerdegog Isaf (Location A) increased more significantly than for both the Afon Cafnan (Location C) and Nant Cemlyn (Location B) during the wetter winter conditions, as illustrated in figure B7/01-4-2.

Location A (Nant Caerdegog Isaf) is within the same catchment as Location C (Afon Cafnan Catchment). During the wetter winter months, Location A generally has a higher flow per unit area than Location C, however during the drier summer months, Location A has a lower flow. During the 2016 summer months, the flows at Location A (Nant Caerdegog Isaf) dropped to almost zero (0.02l/s).

Higher inflows per unit area might be expected downstream of a wetland, such as the Cae Gwyn SSSI, that is believed to have a significant groundwater dependency. The variable pattern observed suggests that the groundwater inputs only significantly increase the area contributing to flows during wetter periods when groundwater levels are elevated.

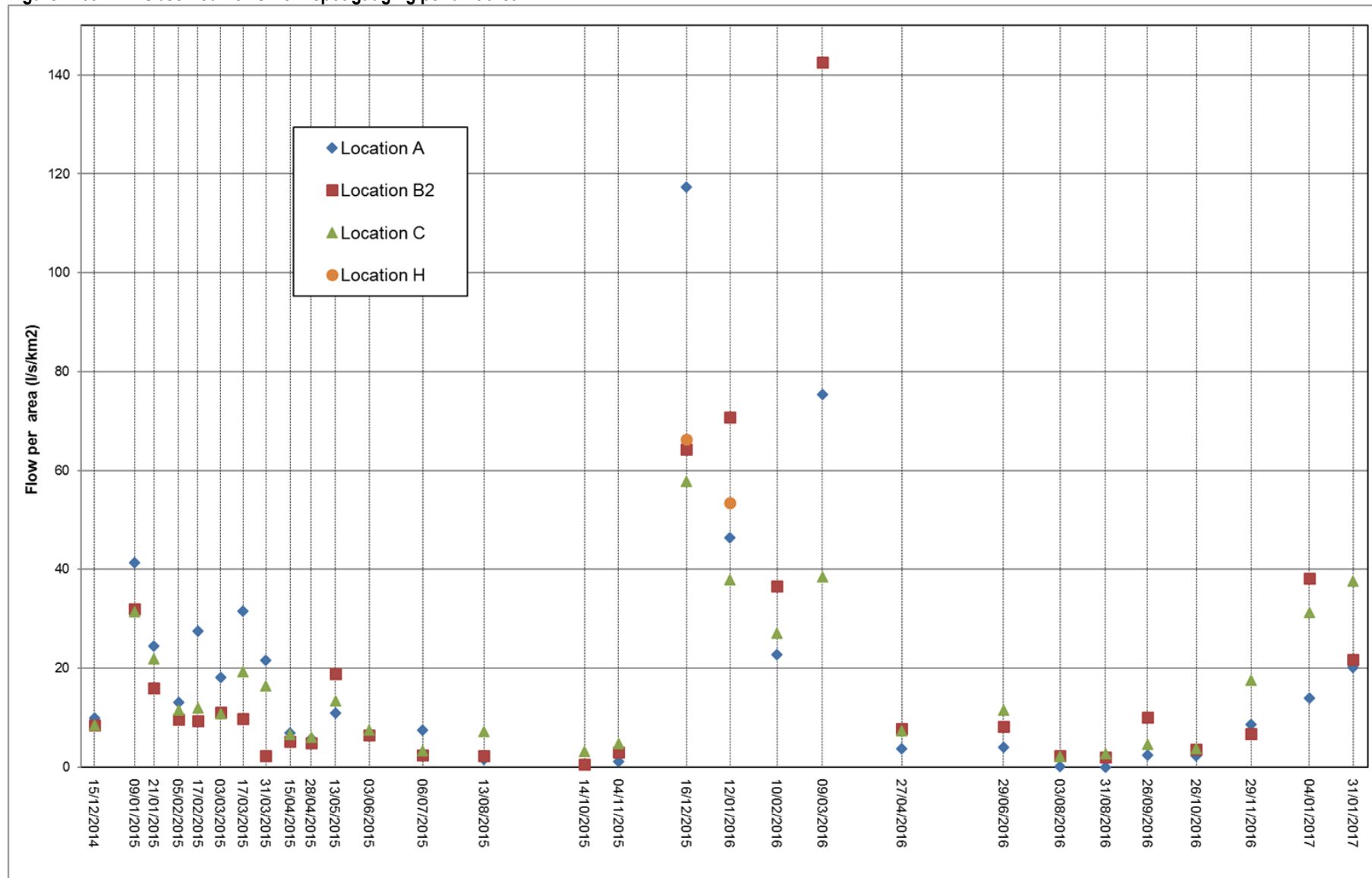
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Figure B7/01-4-1 Spot flow monitoring results



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Figure B7/01-4-2 Observed flows from spot gauging per unit area



4.3 Horizon Nant Caerdegog Isaf continuous flow monitoring

A stilling well was installed at Location A on Nant Caerdegog Isaf in May 2016 to record the water level. A flume was installed at Location A, adjacent to the stilling well in October 2016; this was to allow the water level to be converted to flow.

Figure B7/01-4-3 Flume and stage board at Location A



4.3.1 Location A (Nant Caerdegog Isaf) water levels

The plot of the water level at Location A between May 2015 and August 2017 is shown in figure B7/01-4-4; this is the depth of water in the channel from the stream bed. This includes data from the stilling well installed at Location A, as well as recorded observations of the water level at the stage board. The water level data before and after 22 October 2015 is not directly comparable due to the effect of the flume installation.

The plot shows that the stream was almost dry for long periods in the summer of 2015. In the summer of 2016, the water level remains relatively high, while the recorded flows (figure B7/01-4-5) show that the summer of 2016 was drier than 2015. This is due to the installation of the flume resulting in the creation of a ponded area upstream of the flume. Significant flood flows occurred in December 2015, January 2016 and February 2016, with flows overtopping the flume on occasions. These flows are likely to have contributed to the development of a ponded area, with erosion occurring upstream of the flume. More infrequent spikes in water flow occurred in the winter of 2016/2017.

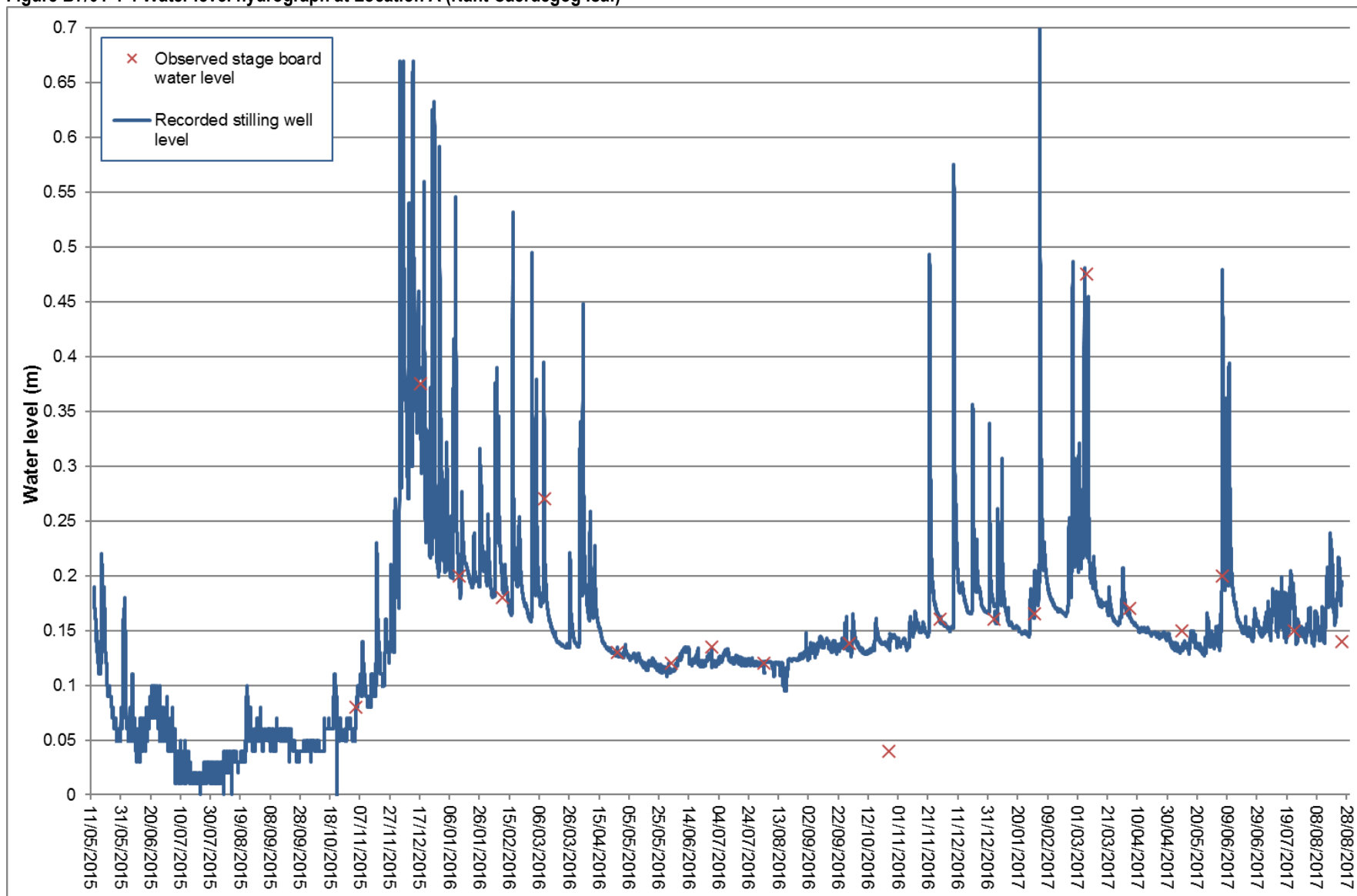
4.3.2 Location A (Nant Caerdegog Isaf) flows

The stilling well water level recorded at Location A has been converted to flow. The stilling well level was converted to the water level within the flume, based upon recorded field values. The water depth within the flume was then converted to flow using the manufacturer's flow depth conversion equation. The flow calculated at Location A between October 2015 and August 2017 is shown on figure B7/01-4-5 with all spot flow monitoring included on the same graph.

The spot flow monitoring and observations show that Nant Caerdegog Isaf was almost dry for long periods in the summer months, although this is not accurately portrayed by the recorded flume flows. This indicates that during the summer there is a very low base flow.

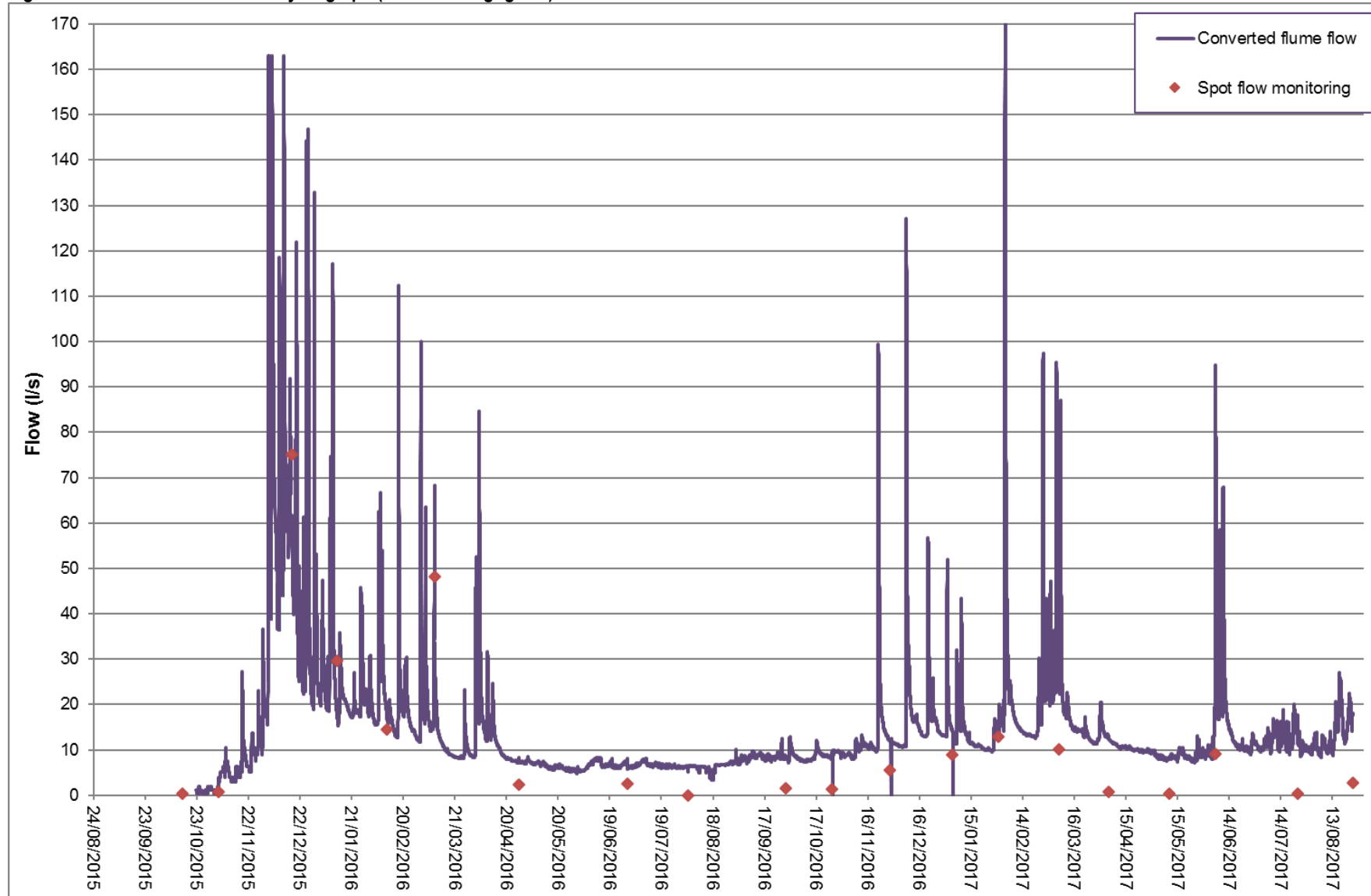
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Figure B7/01-4-4 Water level hydrograph at Location A (Nant Caerdegog Isaf)



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Figure B7/01-4-5 Location A flow hydrograph (Nant Caerdegeg Isaf)



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The maximum flow recorded within Nant Caerdegog Isaf was 174l/s in February 2017 but this is unlikely to have captured the entire flow as the flume was overtopped. Based upon a comparison of spot flow monitoring and recorded flume flows, the flume shows an accurate representation of moderate flows. For low flows, especially during summer 2016, the flume conversion shows artificially high flows. This is likely due to the high winter flows eroding a pond upstream of the flume.

The recorded flows demonstrate that the stream has a 'flashy' flow regime, with water levels rising to peak within 24 hours before falling back to close to antecedent conditions within 24 hours of peak flow. The flows show that the base flow during the summer is very low, indicating that in the summer months surface-water runoff is the key driver of flow. The base flow appears to increase between December and February, indicating that there is a larger groundwater input occurring only during the winter months. Therefore, based upon the available data, flows in the winter are dependent upon both groundwater and surface water. Furthermore, this indicates groundwater inputs from the Cae Gwyn SSSI to Nant Caerdegog Isaf during the winter months.

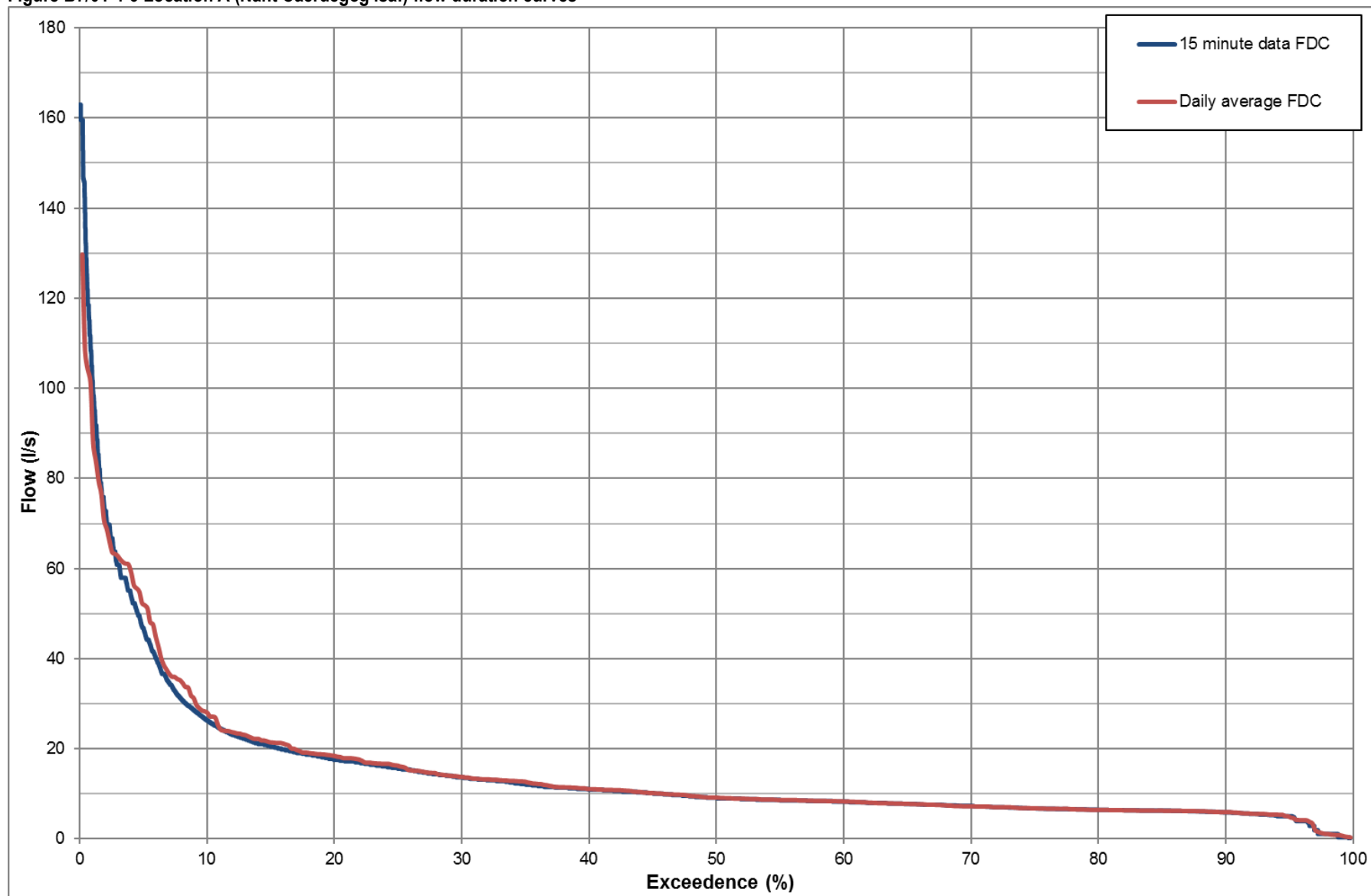
4.3.3 Location A (Nant Caerdegog Isaf) flow duration curves

The hydrograph for Nant Caerdegog Isaf at Location A (figure B7/01-4-6) has been converted into a flow duration curve (FDC). The FDC incorporates flows from the entire period during which the flume was installed, that is 22/10/2015 to 31/01/2017. The FDC has been calculated from both the 15 minute recorded data, as well as daily average flow data; the FDC is shown in figure B7/01-4-7.

The data shows that for 80% of the time flows are between 5l/s and 20l/s; however, this is likely to be skewed due to the inability of the flume to assess low flows. The FDC confirms that the catchment is flashy, given the steepness of the curve in relation to higher flows.

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Figure B7/01-4-6 Location A (Nant Caerdegog Isaf) flow duration curves



4.4 Horizon Nant Cemlyn continuous flow monitoring

A stilling well was installed on Nant Cemlyn in July 2015 at Location B to measure the water level in the stream. Location B is approximately 60m upstream of Location B2 and does not include flows from the tributary named Plas Cemlyn. The flume was not installed at Location B2 due to physical constraints. A flume (figure B7/01-4-7) was installed at Location B adjacent to the stilling well in October 2016 so as to allow the water level to be converted to flow. The water level changed following the installation of the flume (figure B7/01-4-8).

Figure B7/01-4-7 Flume and stage board at Location B



4.4.1 Location B (Nant Cemlyn) water levels

The plot of the water level at Location B between May 2015 and August 2017 is shown in figure B7/01-4-8. This is the depth of water in the channel from the stream bed and includes data from the stilling well installed at Location B, as well as recorded observations of the water level at the stage board. The water level data before and after 22 October 2015 are not directly comparable due to the effect of the flume installation.

The plot shows that stream levels rarely dropped much below 0.15m, even during dry periods in the summer, indicating that base flows from groundwater are important. The water level data also include periods of significant flooding, including when the flume was overtopped in December 2015, January 2016 and February 2016.

4.4.2 Location B (Nant Cemlyn) flows

The stilling well water level recorded at Location B has been converted to flow. The stilling well level was converted to the water level within the flume, based upon recorded field values. The water depth within the flume was then converted to flow according to the manufacturer's flow depth conversion equation. The calculated flow at Location B from October 2015 to August 2017 is shown on figure B7/01-4-9, with all spot flow monitoring included on the same graph.

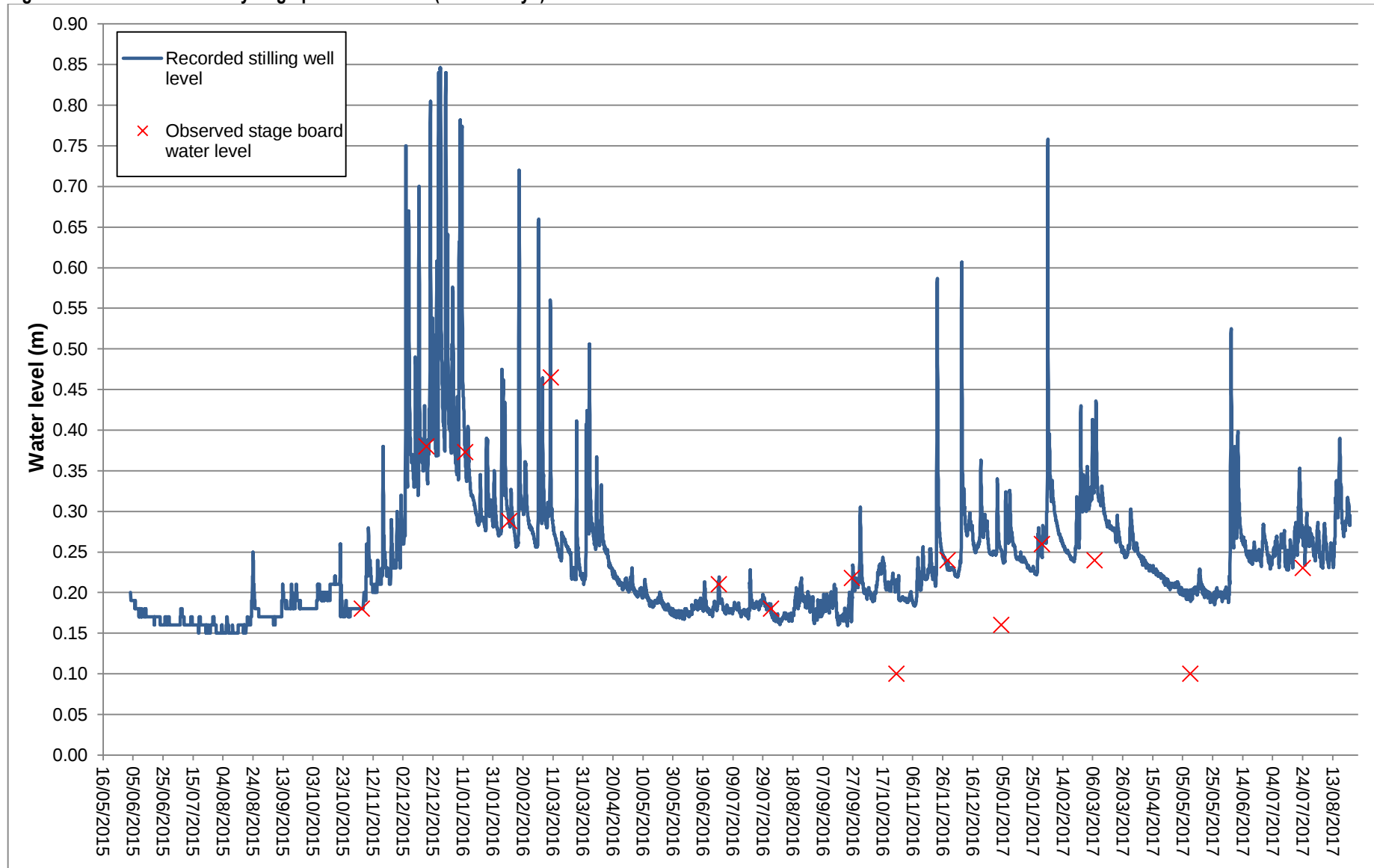
The maximum flow recorded within Nant Cemlyn was 434l/s in December 2015 but this is unlikely to have captured the entire flow as the flume was overtopped. The minimum recorded value was 0.11l/s in September 2016.

A direct comparison of the calculated flows with the spot monitoring is not possible especially during high flows, as the spot monitoring occurred downstream of the flume and includes flows from a tributary. The flume at Location B does appear to capture both high and low flows.

The recorded levels demonstrate that the stream has a flashy flow regime, with water levels rising to peak within 24 hours before falling back to close to antecedent conditions within 24 hours of peak flow. Based upon the base flow and flashy peaks, it is shown that both groundwater and surface water are drivers of flow in this catchment, although the base flow is much more significant in winter.

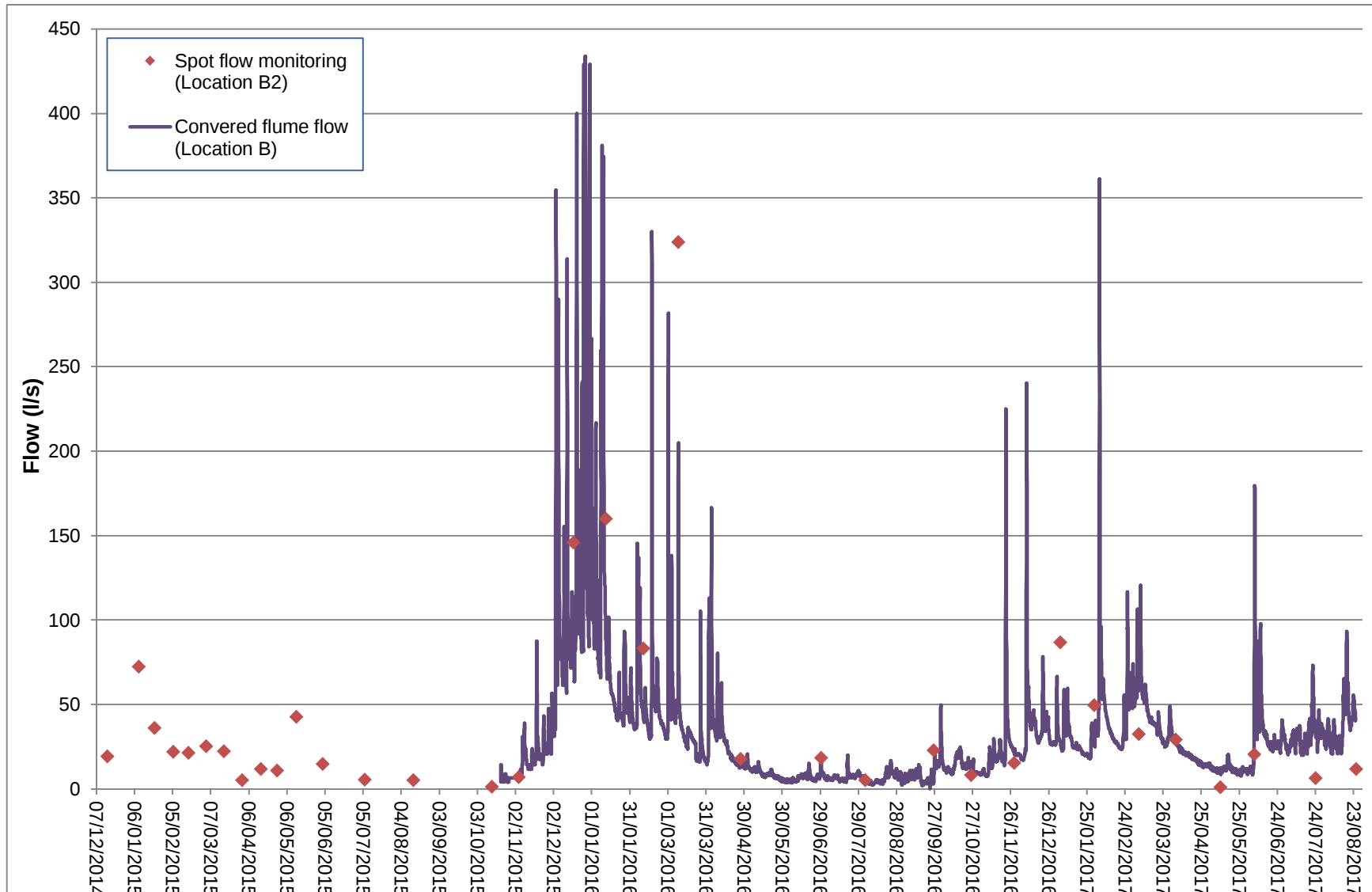
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Figure B7/01-4-8 Water level hydrograph at Location B (Nant Cemlyn)



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Figure B7/01-4-9 Location B flow hydrograph (Nant Cemlyn)



4.4.3 Location B (Nant Cemlyn) flow duration curves

The hydrograph for Nant Cemlyn at Location B (figure B7/01-4-8) has been converted into a FDC. The FDC incorporates flows from the entire period during which the flume was installed, that is 21/10/2015 to 24/08/2017. The FDC has been calculated from both the hourly recorded data, as well as daily average flow data; the FDC is shown in figure B7/01-4-10. The FDC confirms that the catchment is flashy, given the steepness of the curve in relation to higher flows.

4.5 Horizon Tre'r Gof flumes continuous flow monitoring

Surface flow data have been collected by Horizon from the inflows and outflows (figure B7/01-2-3) of the Tre'r Gof SSSI since 2010, although usable data are limited due to equipment failure. The flumes used to collect these data were reinstated by Jacobs in April 2015, and continuous monitoring has been undertaken since.

Full details of the Tre'r Gof flumes and flows can be found in appendix D8-5 (Application Reference Number: 6.4.30); this information has not been included in detail within this report.

The flume flow data are summarised in table 4.4. This shows that the outflow channel (VN5) constantly has flows throughout the year, with a very high peak flow. The inflow channels vary in flow characteristics; VN2 flows throughout the year at a regular low flow rate whilst the other three inflows are ephemeral with flashy and high peak flow rates.

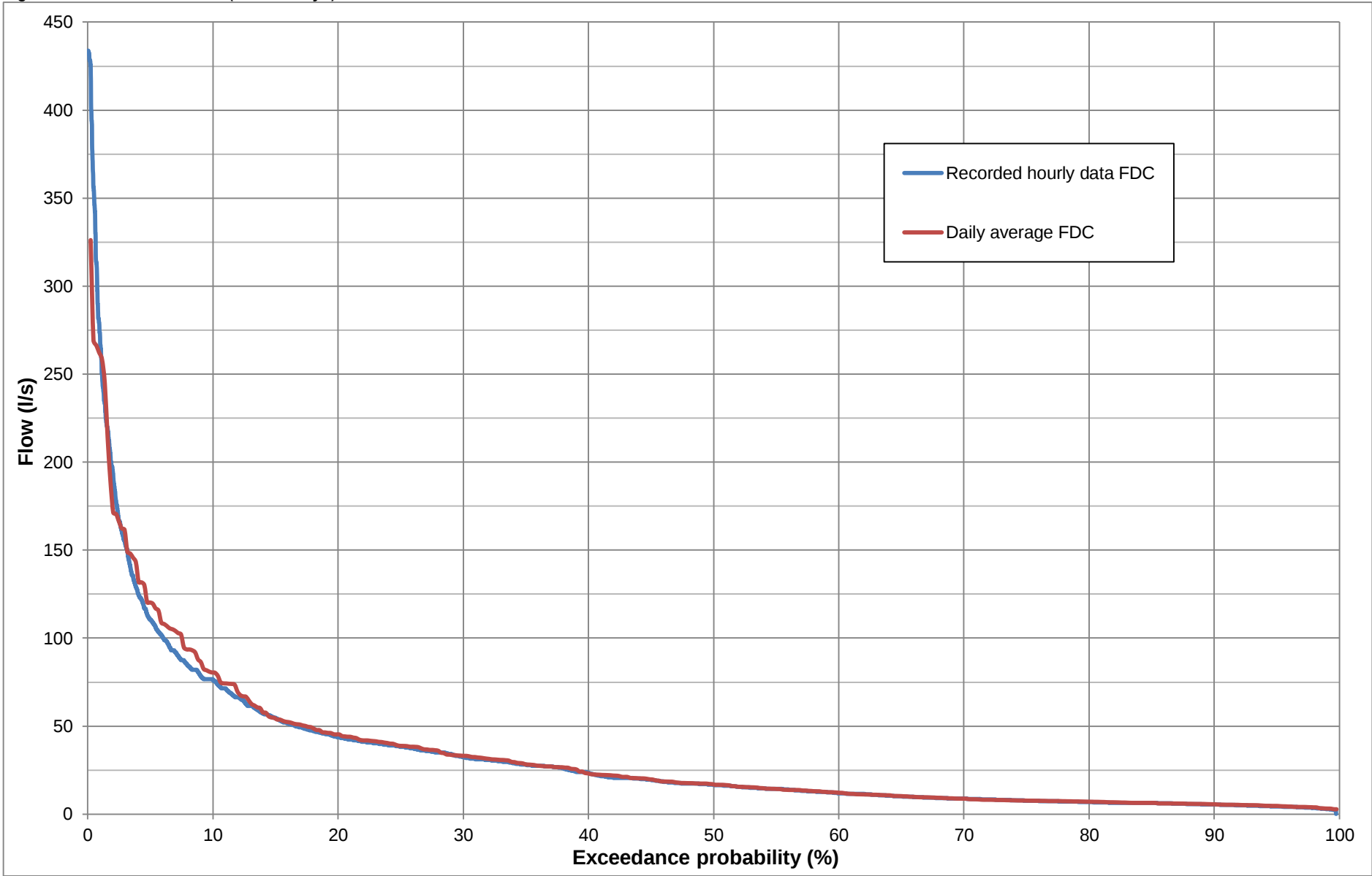
Table 4.4 Summary of Tre'r Gof Catchment flume flow data (March 2015 – January 2017)

Flume	Description	Flow record			Flow (l/s)		
		#days data	#days flowing	% time flowing	Max	Min	Avg.
VN1	Inflow	602	281	46.7%	30.3	0	0.42
VN2	Inflow	622	620	99.7%	3.5	0	0.44
VN3	Inflow	622	160	25.7%	31.0	0	1.14
VN4	Inflow	622	103	16.6%	60.1	0	0.10
VN5	Outflow	608	608	100.0%	249.0	0	6.40

Based on the flow data collected and described above, and meteorological data collected as part of the on-site salt water monitoring programme, a water balance for the Tre'r Gof SSSI has been undertaken for the period between April 2015 and January 2017. This is contained in the Tre'r Gof hydroecological report (Application Reference Number: 6.4.30) and summarises the following.

- Approximately 90% of the effective rainfall that falls within the Tre'r Gof Catchment ends up in the Tre'r Gof SSSI, via surface water runoff/overland flow, shallow groundwater flow and as shallow groundwater flow. Approximately 10% of the effective rainfall is lost as recharge to deeper groundwater in the bedrock.
- An analysis of hydrographs recorded on inflows (VN1, VN2, VN3 and VN4) and outflows (VN5) indicate a strong seasonality to the wetland; during the dry summer months (June-October) there are virtually no surface water inflows into the SSSI.
- In the height of summer, the only inflow recorded was at VN2 which is sustained by Spring G. This spring maintains a steady but small baseflow into the wetland throughout the summer.
- Outflows recorded at VN5 during the summer suggest the wetland may dry out over the summer months as water is released from storage within the peat. There is no evidence to suggest that there is another source recharge during the summer (e.g. from deep bedrock baseflow).
- Analysis of the timings and nature of peaks and lows in flow during the summer reveals that Tre'r Gof does not behave as one single, connected wetland; rather it comprises a series of hydrological compartments separated by drains. During the winter months when the wetland is fully saturated it behaves more like a single hydrological unit with rapid transport of water across the SSSI to the outflow point at VN5.

Figure B7/01-4-10 Location B (Nant Cemlyn) flow duration curves



4.6 Summary of study area flow data

The results of all Horizon flow monitoring across the study area broadly reflects the size of the drainage catchment upstream and the antecedent meteorological conditions of drier summers and wet winters. The current understanding of each catchment within the study area, based upon the flow data for each catchment, is discussed below.

4.6.1 Tre'r Gof Catchment

The conclusions regarding the analysis of the flow data for the flumes around the Tre'r Gof SSSI are summarised below.

- During the summer, there is little surface water inflow into the Tre'r Gof SSSI from the watercourses draining the catchment, with only a small spring inflow at VN2 flowing during the summer.
- Outflow via VN5 is continuous throughout the year, indicating that in the dry summer months the fen is 'drying out'.
- Water flows during winter can be very high, with the major inflows at VN3 and VN4, which are dry for the majority of the year.

4.6.2 Afon Cafnan Catchment

The spot flow monitoring at the outfall of the Afon Cafnan indicates that flows reflect the size of the catchment and the weather. No continuous monitoring has been undertaken on the Afon Cafnan.

Along Nant Caerdegog Isaf, the spot flow monitoring strongly suggests that base flows increased more significantly than for Afon Cafnan and for Nant Cemlyn during the wetter conditions of winter. These higher inflows suggest that the Cae Gwyn SSSI has a groundwater input; however, this only contributes to flows during wetter winter periods when groundwater levels are elevated. The spot monitoring and continuous monitoring show that Nant Caerdegog Isaf was almost dry for long periods in the summer, whilst in the winter the stream has an elevated base flow with significant 'flashy' flood flows. Therefore, based upon both the spot flow monitoring and the flume data, it appears that there is a groundwater input from the Cae Gwyn SSSI to Nant Caerdegog Isaf during the winter months.

4.6.3 Cemaes Catchment

Spot flow monitoring on Nant Cemaes at Location H indicates flows reflect the size of the catchment and the weather. No continuous monitoring has been undertaken on Nant Cemaes.

4.6.4 Cemlyn Catchment

The results of the spot flow monitoring on Nant Cemlyn demonstrate that flows in this location broadly reflect both the size of the drainage catchment upstream and the antecedent meteorological conditions. The recorded levels demonstrate that the stream has a flashy flow regime. The current data indicate that both groundwater and surface water are drivers of flow within this catchment, although in the summer months the flow was recorded to very low.

4.6.5 Power Station Catchment

No flow data have been recorded for the Power Station Catchment.

5. Water quality

A summary of the water quality data that form this baseline assessment is provided in table 5.1. All sampling locations are shown on figure B7/01-2-1 to figure B7/01-2-4.

Table 5.1 Summary of water quality data

Provider	Coverage	Data type	Dates of survey
NRW	Outfall of Llyn Llygeirian in upstream part of Afon Cafnan Catchment	Physio-chemical parameters and nutrients	Monthly between October 2003 and July 2007
	Location on Afon Wygyr within Cemaes and outside of study area	Chemical	Unknown
Horizon	Ongoing spot surface water quality monitoring at multiple locations	Major ions, metals and suspended solids	Feb, May, Aug 2012; Mar, Apr, May, Sept, Oct 2013; Feb, May, Oct 2014; Feb, Apr, Jun, Oct, Nov, Dec 2015; Jan, Feb, Apr, Jun, Aug, Oct 2016; Jan, May, Aug 2017.
	Tre'r Gof SSSI detailed monitoring	Major ions, metals and suspended solids	Feb, Oct, Nov, Dec 2015; Jan, Feb, Apr, Jun, Aug, Sep, Nov 2016; Jan, May, Aug 2017.
	Cae Gwyn SSSI detailed monitoring	Major ions, metals and suspended solids	Nov, Dec 2015; Jan, Feb, Mar, Apr, Aug, Nov 2016; Jan, May 2017.
	On Cemlyn watercourse upstream of Cemlyn Bay and on Nant Caerdegog Isaf downstream of Cae Gwyn	Temperature, electrical conductivity, dissolved oxygen, pH and turbidity	15-minute intervals from June 2015 onwards, but some data gaps.

5.1 NRW water quality data

NRW has provided the results of surface water quality monitoring undertaken at one location within the study area. This is at the outfall from Llyn Llygeirian in the upstream part of the Afon Cafnan Catchment at National Grid Reference (NGR) SH 34330 89950. This monitoring occurred on a monthly basis between October 2003 and June 2007; these outputs are contained in annex A.2 with summary data presented in table 5.2.

Table 5.2 Summary of NRW surface water quality data from the outfall of Llyn Llygeirian from October 2003 to June 2007

Determinand (units)	Average	Max	Min
pH	7.6	8.1	6.9
Conductivity (µS/cm)	219	394	187
Ammonia as N (mg/l)	0.09	0.616	0.03
Chloride (mg/l)	35	45	30
Silicate (mg/l)	5.1	22.5	0.5
Sulphate (mg/l)	11	28	5
Sodium (mg/l)	19	23	15
Potassium (mg/l)	2.4	3.2	1.0
Magnesium (mg/l)	5.5	7.6	4.1
Calcium (mg/l)	19	27	12
Phosphorus (mg/l)	0.09	1.00	0.02

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Determinand (units)	Average	Max	Min
Turbidity (NTU ¹)	8	71	2
Nitrogen (mg/l)	1.53	3.98	0.63
Ammonia (filtered) as N (mg/l)	0.05	0.419	0.01

The results do not suggest the presence of any significant pollution by the measured determinands in this part of the catchment or Llyn Llygeirian; however, the range of turbidity readings is worth noting given that this location is immediately downstream of a large lake that would be expected to settle out suspended solids.

The *Water Watch Wales* website [RD2] indicates the presence of another NRW surface water quality monitoring point on the Afon Wygyr within Cemaes. Under the WFD assessment, the Afon Wygyr has been assessed to have 'good status' with respect to its chemical quality. This water body is outside the study area although given its proximity, it is of use as a means of comparison when determining baseline conditions in this locality.

5.2 Horizon spot water quality monitoring

Spot surface water quality data have been collected by Horizon from around the Wylfa Newydd Development Area since 2011. This commenced at five locations as part of ecological water monitoring and expanded to 27 locations by the end of 2014. In 2015, this monitoring programme was continued to inform this hydrological baseline around the Wylfa Newydd Development area, with a total of 30 locations monitored.

Samples collected from the site have been tested for the following range of analytes:

- physico-chemical parameters including electrical conductivity, dissolved oxygen, temperature, pH, total dissolved solids, suspended solids, turbidity;
- metals/metalloids including aluminium, arsenic, cadmium, calcium, chromium, copper, lead, nickel, magnesium, mercury, potassium, sodium, selenium, zinc, iron, ferric iron, ferrous iron, manganese;
- nutrients including total nitrogen, ammoniacal nitrogen as N, phosphate;
- alkalinity, as carbonate and as bicarbonate;
- ionic balance;
- volatile organic compounds;
- total petroleum hydrocarbons;
- biological oxygen demand;
- total dissolved carbon; and
- microbiological counts, including *eschericia coli*, *faecal streptococci*, total coliforms, *intestinal enterococci*, and Total Viable Count (TVC) of microorganisms.

Where available, the water quality data have been compared to WFD or Environmental Quality Standards (EQSs) in order to identify any locations where monitored substances are elevated and to assess water quality variations across the study area. As an initial indication, all results that exceeded the relevant threshold were highlighted; however, it should be noted that many of these standards are intended to be applied to average concentrations or a given percentile. Details as to the precise screening threshold applied and their applicability are shown in annex C.

Details of the results for each catchment are summarised in the following sections, with full results included in annex C.

1 NTU – Nephelometric Turbidity Unit – a measurement of turbidity using a light beam to determine the propensity of particles suspended within the water column to scatter light using a nephelometer. This is broadly comparable with the more broadly used units of Formazin Nephelometric Units (FNU); however, FNU is measured with infrared light while NTU measures turbidity with white light.

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5.2.1 Tre'r Gof Catchment

Water quality monitoring has been undertaken at 16 surface water locations within this catchment; these samples were taken from Nant Cemlyn and the minor tributary to the west, as discussed below.

- As part of the 2012-2014 sampling, water samples were taken from six locations within Tre'r Gof Catchment: Tre'r Gof SSSI, Porth Wylfa, Power Station Pond, Power Station Junction, Wylfa Hall Pond and Tyddyn-Goronwy.
- Further monitoring commenced as part of the Tre'r Gof monitoring programme in November 2015. This included 10 surface water locations (VN1, VN2, VN3, VN4, VN5, Spring A, Spring B, Spring C, Spring D and Spring E).

Data from this monitoring are summarised in table 5.3 and presented in full in annex C.

Table 5.3 Summary of *in situ* and laboratory analysis on samples taken from the Tre'r Gof catchment

Determinand	Units	No. of samples	Mean*	Min	Max
<i>In situ</i> water monitoring (2015 – 2017)					
pH	pH	110	6.9	5.6	8.6
Electrical conductivity	µS/cm	110	487	108	861
Dissolved oxygen	%	92	66.0	0.2	132.3
Redox potential	V	109	97.8	-95.3	635.0
Turbidity	NTU	50	66	4	1,402
Laboratory analysis – Inorganics (2013 – 2017)					
pH	pH	88	7.4	4.7	8.6
Electrical conductivity	µS/cm	88	494	219	916
Alkalinity (total) as CaCO ₃	mg/l	93	138	22	300
Total Dissolved Solids	mg/l	67	341	132	651
Ammoniacal nitrogen as N	mg/l	93	0.21	<0.03	1.59
Chloride	mg/l	93	70.3	27.5	167.0
Nitrite as NO ₂	mg/l	68	0.06	<0.05	0.25
Nitrate as NO ₃	mg/l	67	13.25	<0.3	51.80
Phosphate (ortho) as P	mg/l	30	0.06	<0.02	0.82
Phosphate (ortho) as PO ₄	mg/l	38	0.17	<0.02	1.19
Sulphate	mg/l	67	30.6	<2	74.1
Total Suspended Solids	mg/l	93	513	<2	21,000
Laboratory analysis – Metals (2013 – 2017)					
Aluminium (dissolved)	µg/l	11	2.41	<2	3.46
Arsenic (dissolved)	µg/l	37	0.86	<0.12	1.81
Cadmium (dissolved)	µg/l	37	0.10	<0.08	0.11
Calcium (dissolved)	mg/l	77	44.80	<0.5	92.60
Copper (dissolved)	µg/l	37	1.55	<0.30	6.41
Chromium (dissolved)	µg/l	25	1.40	<0.5	8.77
Iron (dissolved)	mg/l	65	0.11	<0.019	2.24
Lead (dissolved)	µg/l	37	1.44	<0.02	2

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Determinand	Units	No. of samples	Mean*	Min	Max
Manganese (dissolved)	µg/l	29	469	1.18	4,240
Magnesium (dissolved)	mg/l	65	10.63	5.17	19.20
Mercury (dissolved)	µg/l	23	0.01	<0.01	0.07
Nickel (dissolved)	µg/l	37	1.01	0.33	2.32
Potassium (dissolved)	mg/l	65	4.24	<1	22.70
Selenium (dissolved)	µg/l	11	0.76	0.39	1.80
Sodium (dissolved)	mg/l	65	35.36	18.90	70.70
Zinc (dissolved)	µg/l	37	6.83	1.07	22.0
Laboratory analysis – Microbiological (2016)					
Escherichia Coli	CFU/100ml	5	862	8	2,000
Faecal Streptococci (Enterococci)	No/100ml	5	1,485	44	6,300
Total coliforms	No/100ml	5	4,762	8	20,000
Intestinal Enterococci	CFU/100ml	2	122	44	200
TVC 2 day @ 37°C	No/ml	5	11,496	480	44,000
TVC 3 day @ 22°C	No/ml	5	15,740	3,500	55,000
Pseudomonas aeruginosa	CFU/100ml	5	0	0	0

* mean value recorded, with less than detection values conservatively averaged as the level of detection.

When screened against available EQSs for the majority of inorganic and metal chemical determinands, no exceedances were noted except those described below.

- Ammoniacal nitrogen exceeded the EQS for fisheries on 26 occasions, biological oxygen demand (BOD) on 12 locations and total coliforms were exceeded on one occasion. These exceedances are due to the use of the catchment for livestock grazing.
- pH measured in the laboratory exceeded the EQS for fisheries on four occasions, with values of below pH 6 recorded in samples from the three ponds and one from Spring A. The low pH recorded at Spring A was an anomaly in comparison to all other measured pH values.
- Manganese was screened against the 2015 EQS and one significant exceedance was recorded²; however, only the monitoring undertaken from 2015 onwards were analysed against the 2015 EQS.

Suspended solids concentrations were greater than 25mg/l (25mg/l was selected to provide an indication of when sediment spikes occur in the watercourses) on 41 of 93 occasions at multiple locations; this indicates that elevated suspended solids concentrations are not unusual. However, some elevated concentrations (especially those during periods of low flow/low water depth) are likely due to the difficulty in obtaining water samples from shallow waters without disturbing silt on the stream bed.

Volatile organic compounds were typically below the level of detection. However, in the monitoring undertaken between November 2015 and August 2017, the following substances were detected at VN2:

- 1,1-Dichloroethene was detected on seven dates (09/02/16, 26/04/16, 02/08/16, 25/10/16, 01/02/17, 10/05/17 and 21/08/17). The maximum concentration recorded was 2.48µg/l; there is no relevant EQS for this chemical, but the concentrations are very low, being only just greater than the laboratory limit of detection.

² Only the monitoring undertaken since 2015 was screened against the 2015 EQS as dissolved organic carbon was not recorded for monitoring from 2012 to 2015. There is potential that other samples exceeded the EQS across the Wylfa Newydd Development Area as high manganese concentrations were recorded.

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- 1,1,1-Trichloroethane was detected on five dates (02/08/16, 25/10/16, 01/02/17, 10/05/17 and 21/08/17) at a maximum concentration of 1.84µg/l; this is significantly lower than the UK EQS annual mean concentration of 100µg/l, and is only just greater than the laboratory limit of detection.

For the monitoring undertaken between 2012 and 2017 the organic substances detected are listed below.

- Atrazine was detected at a concentration of 0.019µg/l at Porth Wylfa on 28/02/12 at a concentration lower than the relevant EQS.
- Petroleum hydrocarbons in the range >C5-C44 were detected on 12/03/13 at a concentration of 0.31mg/l. This is elevated, although there are no relevant EQSs for comparison.
- di-2-ethylhexyl phthalate was detected a total of five times on four dates (28/02/12, 14/10/14, 15/10/14 and 07/05/14), i.e. on one date it was detected at two locations. The maximum value recorded was 1.05µg/l, less than the relevant EQS.
- Phenol was detected at one location, Porth Wylfa, on 28/02/12 at a concentration of 0.133µg/l which is less than the 7.7µg/l UK 'Good' standard for rivers.

The Tre'r Gof Hydroecological Assessment (Application Reference Number: 6.4.30) contains full details and analysis of the water quality within the Tre'r Gof SSSI and the wider catchment, including details of shallow groundwater in relation to the function of the fen.

5.2.2 Afon Cafnan Catchment

Water quality monitoring has been undertaken at 14 surface water locations within the Afon Cafnan Catchment; samples have been taken from the Afon Cafnan, Nant Caerdegog Isaf and two ponds within the catchment.

As part of the 2012 to 2014 sampling, water samples were taken from the waterbodies within the Afon Cafnan Catchment.

- Water was sampled from five locations along the Afon Cafnan; that is Hafnan, Hafnan to Caerdegog Isaf, Cafnan, Felin Gafnan East and Felin Gafnan Confluence.
- Water samples were taken from three locations along Nant Caerdegog Isaf; that is Groes Fechan, Caerdegog Isaf and Caerdegog Isaf Hafnan.
- Water samples were taken from two ponds within the catchment, which are Tan-yr-allt Pond and Tregelle Pond.

In addition, monitoring from November 2015 to August 2017 included the above locations and, as shown on figure B7/01-2-2 the locations listed below.

- Location G and Location C along the Afon Cafnan.
- Location A and CG_Outfall along Nant Caerdegog Isaf.

Data from these analyses are summarised in table 5.4 and are presented in full in annex C. A detailed assessment of surface water and shallow groundwater quality within the Cae Gwyn SSSI in 2015 to 2017 is reported in appendix D8-6 (Application Reference Number: 6.4.31); these data have not been included in this section with the exception for CG_Outfall which is the source of Nant Caerdegog Isaf.

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Table 5.4 Summary of *in situ* and laboratory analysis on samples taken from the Afon Cafnan Catchment

Determinand	Units	No. of samples	Mean*	Min	Max
<i>In situ</i> water monitoring (2015 – 2017)					
pH	pH	55	7.0	4.8	8.5
Electrical conductivity	µS/cm	54	353	197	570
Dissolved oxygen	%	39	76.4	30.5	115
Redox potential	V	55	95.2	13.0	276
Turbidity	NTU	35	42	0	400
Laboratory analysis – Inorganics (2013 – 2017)					
pH	pH	78	7.3	5.4	8.6
Electrical conductivity	µS/cm	76	326	112	507
Alkalinity (total) as CaCO ₃	mg/l	85	97	34	187
Total Dissolved Solids	mg/l	36	253	160	398
Ammoniacal nitrogen as N	mg/l	85	0.25	<0.03	7.19
Chloride	mg/l	87	48.0	9.6	115.0
Nitrite as NO ₂	mg/l	35	0.08	<0.05	0.27
Nitrate as NO ₃	mg/l	35	6.98	<0.3	20.60
Phosphate (ortho) as P	mg/l	70	0.08	<0.02	1.35
Phosphate (ortho) as PO ₄	mg/l	28	0.09	<0.05	0.27
Sulphate	mg/l	35	17.2	<2	41.0
Total Suspended Solids	mg/l	85	95	3	2,580
Laboratory analysis – Metals (2013 – 2017)					
Aluminium (dissolved)	µg/l	35	34.92	<2	483
Arsenic (dissolved)	µg/l	83	1.42	<0.12	26.60
Cadmium (dissolved)	µg/l	83	0.13	<0.08	0.80
Calcium (dissolved)	mg/l	38	34.36	20.30	48.00
Copper (dissolved)	µg/l	83	2.49	0.76	33.20
Chromium (dissolved)	µg/l	83	1.27	0.48	10.70
Iron (dissolved)	mg/l	86	0.87	0.03	24.40
Lead (dissolved)	µg/l	80	1.39	<0.02	9.75

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Determinand	Units	No. of samples	Mean*	Min	Max
Manganese (dissolved)	µg/l	73	198	0.10	1,470
Magnesium (dissolved)	mg/l	38	9.20	4.23	19.9
Mercury (dissolved)	µg/l	83	0.01	<0.01	0.09
Nickel (dissolved)	µg/l	80	1.33	0.40	9.88
Potassium (dissolved)	mg/l	38	3.46	0.10	7.19
Selenium (dissolved)	µg/l	35	0.70	<0.39	1.28
Sodium (dissolved)	mg/l	38	26.99	0.70	36.20
Zinc (dissolved)	µg/l	82	6.78	0.85	52.30
Laboratory analysis – Microbiological (2015 – 2016)					
Escherichia Coli	CFU/100ml	16	15,785	0	100,000
Faecal Streptococci (Enterococci)	No/100ml	10	7,167	<1	40,000
Total coliforms	No/100ml	16	15,536	<1	60,200
Intestinal Enterococci	CFU/100ml	6	7,150	200	40,000
TVC 2 day @ 37°C	No/ml	16	33,838	0	350,000
TVC 3 day @ 22°C	No/ml	16	68,075	5	790,000
Pseudomonas aeruginosa	CFU/100ml	16	63	0	1,000

* mean value recorded, with less than detection values conservatively averaged as the level of detection.

When screened against available EQSs, the majority of inorganic and metal chemical determinands showed no exceedances except those described below.

- Ammoniacal nitrogen exceeded the EQS for fisheries on 47 occasions, BOD on eight occasions and total coliforms were exceeded on three occasions. These exceedances are likely due to agriculture and livestock grazing within the catchment.
- pH measured in the laboratory exceeded EQSs for fisheries on four occasions, with values of below pH 6 recorded in samples from two ponds within the catchment, but none in samples from flowing water. The *in situ* monitoring recorded three exceedances of the pH EQS along Nant Caerdegog Isaf during January and February 2016; these exceedances occurred during rainfall events and indicate that rainfall in this area is acidic with a pH of less than 6. However, one value recorded was pH 4.8 which is lower than natural rainfall acidity, this is potentially indicative of outflows from the acidic Cae Gwyn SSSI.
- Manganese concentrations exceeded the 2015 EQS on three occasions on Nant Caerdegog Isaf.

Suspended solids exceeded 25mg/l on 20 out of 85 occasions at multiple locations indicating that elevated suspended solids are not uncommon occur in this watercourse.

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Many of the samples have been analysed for organic compounds. For the monitoring undertaken to inform the surface water baseline, concentrations between November 2015 and August 2017 for all of these analytes were below the level of detection.

For the monitoring undertaken between 2012 and 2015 concentrations of organic compounds were generally below the level of detection with the following exceptions:

- di-2-ethylhexyl phthalate was recorded on sixteen occasions with three exceedances of EQS. The EQS of 1.3µg/l was exceeded along the Afon Cafnan at Felin Gafnan east on 07/08/12 (1.37µg/l) and at Groes-fechan and Felin Gafnan Confluence on 12/03/13 (1.77µg/l and 2.04µg/l respectively). di-2-ethylhexyl phthalate was detected a further 13 times at various locations (Felin Gafnan East, Felin Gafnan Confluence, Cafnan, Groes-fechan, Hafnan and Tan-yr-allt Pond) across seven monitoring rounds (28/02/12, 09/05/12, 07/08/12, 12/03/13, 24/04/13, 15/08/13 and 14/10/14).
- Chloroform was detected at Caerdegog Isaf on 04/03/15; the recorded concentration of 17.3µg/l is higher than the annual mean EQS. Bromodichloromethane, dibromochloromethane and bromoform were also detected but there are no relevant EQS to set the concentration of these chemicals in context.
- Petroleum hydrocarbons in the range >C5-C44 were detected on six occasions: Felin Gafnan Confluence, Felin Gafnan East and Cafnan on 09/05/12; Hafnan and Caerdegog Isaf on 30/10/13; and Tan-yr-allt Pond on 07/05/14. The maximum value was 0.25mg/l, but there is no relevant EQS to set the data in context.
- Phenol was detected on 28/02/12 at three locations (Felin Gafnan East, Felin Gafnan Confluence and Cafnan). The maximum measured concentration was 0.195µg/l, which is less than the 7.7µg/l UK 'Good' standard for rivers.

5.2.3 Cemlyn Catchment

Water quality monitoring has been undertaken at seven locations within this catchment; these samples were taken from Nant Cemlyn and the minor tributary to the west, as discussed below.

- As part of the 2012 to 2014 sampling, water samples were taken from four locations, that is Neuadd, up-stream Neuadd, Penyrsedd and Penyrsedd Pond, Tre'r-gof-isaf and Foel Fawr.
- Further monitoring commenced in November 2015 at Locations B2, D and F.

Data from these analyses are summarised in table 5.5 and is presented in full in annex C.

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Table 5.5 Summary of *in situ* and laboratory analysis on samples taken from Nant Cemlyn

Determinand	Units	No. of samples	Mean*	Min	Max
<i>In situ</i> water monitoring (2015 – 2017)					
pH	pH	55	7.2	5.6	8.0
Electrical conductivity	µS/cm	55	693	69	11,568
Dissolved oxygen	%	48	73.2	8.0	100.1
Redox potential	V	54	88	-24	243
Turbidity	NTU	36	33	3	260
Laboratory analysis – Inorganics (2013 – 2017)					
pH	pH	33	7.5	6.4	8.2
Electrical conductivity	µS/cm	34	116	240	604
Alkalinity (total) as CaCO ₃	mg/l	30	114	67	164
Total Dissolved Solids	mg/l	18	246	174	419
Ammoniacal nitrogen as N	mg/l	34	0.16	<0.03	0.52
Chloride	mg/l	34	48.0	34.5	102.0
Nitrite as NO ₂	mg/l	16	0.07	<0.05	0.13
Nitrate as NO ₃	mg/l	16	7.35	0.38	18.60
Phosphate (ortho) as PO ₄	mg/l	14	0.07	0.053	0.13
Phosphate (ortho), filtered as P	mg/l	23	0.10	<0.02	0.90
Sulphate	mg/l	16	19.1	7.1	29.8
Total Suspended Solids	mg/l	43	25	2	161
Laboratory analysis – Metals (2013 – 2017)					
Aluminium (dissolved)	µg/l	16	5.94	<2	11.10
Arsenic (dissolved)	µg/l	34	1.08	<0.12	3.23
Cadmium (dissolved)	µg/l	34	<0.10	<0.08	<0.1
Calcium (dissolved)	mg/l	15	38.64	5.60	48.70
Copper (dissolved)	µg/l	34	1.96	0.77	10.40
Chromium (dissolved)	µg/l	34	1.30	0.39	8.29
Iron (dissolved)	mg/l	34	0.13	<0.02	0.34
Lead (dissolved)	µg/l	31	1.21	<0.02	<2
Manganese (dissolved)	µg/l	26	155	1.65	486
Magnesium (dissolved)	mg/l	15	8.90	1.23	12.80
Mercury (dissolved)	µg/l	33	0.02	<0.01	0.20
Nickel (dissolved)	µg/l	31	1.07	0.44	2.88
Potassium (dissolved)	mg/l	16	3.28	<1	6.62
Selenium (dissolved)	µg/l	16	0.65	<0.39	0.81
Sodium (dissolved)	mg/l	16	25.42	4.27	53
Zinc (dissolved)	µg/l	34	4.71	0.68	41
Laboratory analysis – Microbiological (2016)					
Escherichia Coli	CFU/100ml	14	5,213	0	50,200
Faecal Streptococci (Enterococci)	No/100ml	9	2,600	100	15,000

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Determinand	Units	No. of samples	Mean*	Min	Max
Total coliforms	No/100ml	10	7,235	1,200	50,200
Intestinal Enterococci	CFU/100ml	6	467	100	700
TVC 2 day @ 37°C	No/ml	14	15,790	550	66,000
TVC 3 day @ 22°C	No/ml	14	51,121	1,600	400,000
Pseudomonas aeruginosa	CFU/100ml	14	0	0	0

* mean value recorded, with less than detection values conservatively averaged as the level of detection.

Similar to the other catchments, when screened against available EQSs no major evidence of pollution was observed. For the majority of inorganic and metal chemical determinands, no exceedances were noted except those described below.

- Ammoniacal nitrogen exceeded the EQS for fisheries on 17 occasions, BOD on three occasions and total coliforms were exceeded on one occasion. These exceedances are likely due to the use of the catchment for agriculture and livestock grazing.
- pH records *in situ* exceeded EQSs for fisheries on two occasions, with values of below pH 6 recorded in the Nant Cemlyn in January 2016 (5.7 and 5.9). These exceedances occurred during rainfall events and indicate that rainfall in this area is acidic with a pH of less than 6, however within the range of natural rainfall. No laboratory exceedances were noted.
- Manganese exceeded the 2015 EQS on one occasion on Nant Cemlyn (Location F).
- Two samples exceeded WFD EQS for mercury along Nant Cemlyn in March 2013 and October 2014, however on all other occasions mercury was below the level of detection. Elevated mercury concentrations in 2014 were due to a laboratory error and are excluded from the baseline.

Suspended solids exceeded 25mg/l on six of 43 occasions at the downstream end of Nant Cemlyn and the ponds.

Many of the samples have been analysed for organic compounds, and concentrations of these analytes were generally below the level of detection. However, for the monitoring undertaken between November 2015 and August 2017, chloromethane, chlorobenzene and 1,2-dichlorobenzene were identified at Location D on 04/11/15. The sample from this location was not scheduled for organic analysis and the laboratory completed the additional analysis by mistake, using a sample from a plastic bottle, and so these data may be erroneous.

For the monitoring undertaken between 2012 and 2015 the detected organic compounds are listed below.

- On 30/10/13 hydrocarbons in the range >C5 – C44 were detected at up-stream Neuadd and Neuadd, however the concentrations of these were very low (less than 0.0001mg/l).
- di-2-ethylhexyl phthalate was detected on 15/08/13 at up-stream Neuadd, and on 14/10/14 at Neuadd, up-stream Neuadd and Penyrorsedd Pond. The maximum recorded value was 0.504µg/l which is less than the EU EQS of 1.3µg/l.

5.2.4 Cemlyn Bay Catchment

Nant Cemlyn flows into Cemlyn Bay, a SSSI, SPA and SAC which is sensitive to sediment and faecal coliforms. There is a minor watercourse, adjacent to the Cemlyn Bay car park access road, which is within the hydrological study area. This drain, Location E on figure B7/01-2-2 has been monitored for *in situ* field parameters, and samples have been taken and analysed for suspended solids and for microbiological determinands. The results are shown in table 5.6.

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Table 5.6 Summary of *in situ* and laboratory analysis on samples taken from Nant Cemlyn (2015–2016)

Determinand	Units	No. of samples	Mean*	Min	Max
<i>In situ</i> water monitoring (2015 – 2016)					
pH	pH	18	7.0	5.0	7.8
Electrical conductivity	µS/cm	18	485	278	1,181
Dissolved oxygen	%	15	86.2	56.6	106
Redox potential	V	18	80	33	196
Turbidity	NTU	9	304	<5	1,500
Laboratory analysis (2015–2017)					
Total Suspended Solids	mg/l	6	1,053	7	2,750
Laboratory analysis – Microbiological (2016)					
Escherichia Coli	CFU/100ml	5	2,614	108	5,700
Faecal Streptococci (Enterococci)	No/100ml	3	7,467	300	20,000
Total coliforms	No/100ml	3	2,149	208	4,500
Intestinal Enterococci	CFU/100ml	2	1,200	300	2,100
TVC 2 day @ 37°C	No/ml	5	11,356	880	38,000
TVC 3 day @ 22°C	No/ml	5	113,160	3,800	520,000
Pseudomonas aeruginosa	CFU/100ml	5	0	0	0

* mean value recorded, with less than detection values conservatively averaged as the level of detection.

Exceedances of organic determinands when screened against available EQSs in this minor watercourse, are described below.

- Faecal streptococci exceeded the EQS on three occasions, although total coliforms were not exceeded. These are likely an indication of sheep grazing adjacent to the watercourse.
- pH records *in situ* exceeded the EQS for fisheries on one occasion, with a pH of less than 6 recorded in January 2016, likely indicating the high rainfall inflow to the catchment.

Suspended solids exceeded 25mg/l in samples on four out of six occasions when sampling occurred, however the elevated concentrations are likely due to disturbance of stream bed sediment due to the low water level.

5.2.5 Cemaes Catchment

Water quality monitoring has been undertaken at six locations within this catchment with all of these samples taken from Nant Cemaes, as discussed below.

- As part of the 2012-2014 sampling, water samples were taken from three locations, that is Gwyddelyn Bach, Tre'r-gof-isaf and Foel Fawr. At Foel Fawr this sampling continued until April 2016.
- Further monitoring commenced in November 2015 at Location H, and in August 2016 Location I was added as a further bacteriological sampling location.

Data from these analyses are summarised in table 5.7 and presented in full in annex C.

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Table 5.7 Summary of *in situ* and laboratory analysis on samples taken from Nant Cemaes

Determinand	Units	No. of samples	Mean*	Min	Max
<i>In situ</i> water monitoring (2015 – 2017)					
pH	pH	17	7.4	5.7	9.0
Electrical conductivity	µS/cm	12	465	228	739
Dissolved oxygen	%	10	82	31	102
Redox potential	V	12	99	27	220
Turbidity	NTU	7	21	<5	85
Laboratory analysis – Inorganics (2013 – 2017)					
pH	pH	23	7.8	6.3	8.6
Electrical conductivity	µS/cm	23	410	228	739
Alkalinity (total) as CaCO ₃	mg/l	22	138	61	285
Total Dissolved Solids	mg/l	11	396	302	508
Ammoniacal nitrogen as N	mg/l	22	0.11	<0.03	0.20
Chloride	mg/l	27	49.1	34.6	73.8
Nitrite as NO ₂	mg/l	8	0.06	<0.05	0.059
Nitrate as NO ₃	mg/l	8	9.87	2.3	14.9
Phosphate (ortho) as PO ₄	mg/l	5	0.29	0.17	0.43
Phosphate (ortho), filtered as P	mg/l	20	0.08	0.02	0.17
Sulphate	mg/l	11	35.9	22.7	45.5
Total Suspended Solids	mg/l	27	15	2	106
Laboratory analysis – Metals (2013 – 2017)					
Aluminium (dissolved)	µg/l	11	4.87	<2	22.40
Arsenic (dissolved)	µg/l	27	0.98	<0.2	<2
Cadmium (dissolved)	µg/l	27	0.1	<0.08	<0.1
Calcium (dissolved)	mg/l	11	67.43	51.20	87.80
Copper (dissolved)	µg/l	27	2.16	<0.85	6.60
Chromium (dissolved)	µg/l	27	1.21	<0.39	11.40
Iron (dissolved)	mg/l	27	0.18	<0.019	0.54
Lead (dissolved)	µg/l	26	1.27	<0.02	<2
Manganese (dissolved)	µg/l	23	202.50	8.03	1,220
Magnesium (dissolved)	mg/l	11	19.81	10.50	31.60
Mercury (dissolved)	µg/l	27	<0.01	0.01	0.01
Nickel (dissolved)	µg/l	26	1.24	0.44	1.98
Potassium (dissolved)	mg/l	11	3.56	1.01	7.58
Selenium (dissolved)	µg/l	11	0.91	0.40	2.30
Sodium (dissolved)	mg/l	11	32.24	24.10	41.60
Zinc (dissolved)	µg/l	27	5.08	0.41	22
Laboratory analysis – Microbiological (2015 – 2016)					
Escherichia Coli	CFU/100ml	11	5,883	0	25,200
Faecal Streptococci (Enterococci)	No/100ml	12	8,330	<1	35,000

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Determinand	Units	No. of samples	Mean*	Min	Max
Total coliforms	No/100ml	7	14,623	1,700	50,200
Intestinal Enterococci	CFU/100ml	4	600	300	900
TVC 2 day @ 37°C	No/ml	11	7,028	0	60,000
TVC 3 day @ 22°C	No/ml	11	33,524	6	30,000
Pseudomonas aeruginosa	CFU/100ml	12	42	0	500

* mean value recorded, with less than detection values conservatively averaged as the level of detection.

Similar to the other catchments when screened against available EQSs, no major evidence of pollution was observed. For the majority of inorganic and metal chemical determinands no exceedances were noted, except those described below.

- Ammoniacal nitrogen exceeded the EQS for fisheries on 14 occasions, BOD on two occasions and total coliforms were exceeded on three occasions. These exceedances are likely due to livestock grazing in the catchment, with very high total coliforms recorded downstream of a cattle access point to the Nant Cemaes.
- In situ* pH measurements exceeded EQS for fisheries on two occasions, with values below pH 6 recorded in Nant Cemaes in January and March 2016 during rainfall events, likely indicating that rainfall in this area has an acidity lower than pH 6.

Suspended solids exceeded 25mg/l on only three out of 27 occasions, generally within the upstream catchment of Nant Cemaes; this indicates that suspended solids within Nant Cemaes are generally lower than other watercourses in the study area.

Many of the samples have been analysed for organic compounds and concentrations of these analytes were generally below the level of detection. For the monitoring undertaken between November 2015 and October 2016, there were no recorded hydrocarbons or volatile organic compounds. For the monitoring undertaken between 2012 and 2015, the organic compounds detected are listed below.

- di-2-ethylhexyl phthalate was detected at two locations (Tre'r-gof-isaf and Gwyddelyn Bach) on 15/08/13. The maximum recorded value was 0.384µg/l; which is less than the EU EQS of 1.3µg/l.
- Hydrocarbons in the range >C5-C44 were detected twice at Tre'r-gof-isaf on the 08/05/14 and 30/10/13, with a maximum of 0.22mg/l detected. There is no EQS to allow these data to be set in context, but they are considered to be slightly elevated.

Given that this watercourse drains into Cemaes Bay, microbiological analyses have been undertaken, the results of which are summarised below.

- Enterococci exceeded the EQS on seven occasions in 2015 and 2016. This was at the downstream reaches of Nant Cemaes (Location H and Location I). The upstream reaches were below the level of detection (Foel Fawr).
- Total coliforms exceeded the EQS on three out of the seven times monitored, at the downstream reaches of Nant Cemaes.

Generally, the results show that coliforms are in high concentrations along the downstream reaches of Nant Cemaes during the summer months, potentially polluting Cemaes Bay.

5.2.6 Power Station Catchment

This minor catchment has not been subjected to an extensive sampling programme, with sampling limited to one location on the main stream running into Porth-y-pistyll (Nant Porth-y-pistyll) on nine occasions from May 2012 to October 2014; a summary of the water quality monitoring is contained in table 5.8.

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Table 5.8 Summary of laboratory analysis on samples taken from Nant Porth-y-pistyll (2012–2014)

Determinand	Units	No. of samples	Mean*	Min	Max
pH	pH	9	7.2	6.7	8.0
Electrical conductivity	µS/cm	8	413	231	526
Alkalinity (total) as CaCO ₃	mg/l	9	127	96	169
Ammoniacal nitrogen as N	mg/l	9	0.04	<0.03	0.07
Chloride	mg/l	11	81.3	49.0	101.0
Total Suspended Solids	mg/l	8	14	3	33
Arsenic (dissolved)	µg/l	11	0.91	0.51	1
Cadmium (dissolved)	µg/l	11	<0.1	<0.1	<0.1
Copper (dissolved)	µg/l	11	2.71	1.69	4.52
Chromium (dissolved)	µg/l	11	0.58	<0.5	<1
Total dissolved iron	mg/l	9	33	<30	53
Lead (dissolved)	µg/l	10	1.80	0.03	<2
Manganese (dissolved)	µg/l	7	41.17	16.50	79
Nickel (dissolved)	µg/l	11	1.08	<1	2.64
Zinc (dissolved)	µg/l	11	5.93	2.63	11.10
Mercury (dissolved)	µg/l	11	<0.01	<0.01	<0.01

*mean value recorded, with less than detection values conservatively averaged as the level of detection.

When screened against available EQS, no major exceedances were observed. For the majority of inorganic and metal chemical determinands, no exceedances were noted except related to ammoniacal nitrogen. Suspended solids concentrations exceeded 25mg/l on a number of occasions, as is the case within other catchments.

Many of the samples have been analysed for total petroleum hydrocarbons and volatile organic compounds, and the results were generally below the level of detection, with no exceedances of EQSs.

Following an oil leak from an oil-cooled cable detected in January 2016 within the Power Station Catchment, oil was observed entering Porth-y-pistyll via a spring adjacent to a former lime kiln. Analysis on the composition of oil found that this discharge closely matched that of oil recovered from the spill location, indicating that a cable was the source of the contamination. No visual evidence of oil was observed within Nant Porth-y-pistyll. Very low concentrations of aromatic and aliphatic petroleum hydrocarbons were detected in the stream, with total concentrations for these hydrocarbon compounds recorded to be 17µg/l.

5.3 Horizon continuous water quality monitoring

Monitoring commenced in May 2015 to improve the understanding of temporal variations in water quality, particularly over the course of a storm event. These variations are difficult to ascertain through spot readings so identical water-quality monitoring stations have been installed adjacent to the flow-measurement flume at Location A on Nant Caerdegog Isaf and on Nant Cemlyn at Location B. The equipment used to monitor water quality was a Hydrolab HL4 with a turbidity sensor. The parameters being recorded (along with the units) are the following:

- dissolved oxygen (DO) (percent saturation);
- electrical conductivity (µS/cm);
- pH;
- temperature (°C); and

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- turbidity (FNU³).

During the course of this monitoring, there have been some technical issues with the equipment at the water-quality monitoring station. A summary of the data collected from May 2015 is included in table 5.9. It is important to note that data used in this analysis have been selected up to a point in time prior to malfunction of the Hydrolab HL4 sensors at both locations. Data from Location A are presented up to the end of August 2017, albeit with some readings treated with caution. Data at Location B are presented up to the end of November 2016.

Table 5.9 Summary of continuous water quality monitoring data at Location A (May 2015 to August 2017) and Location B (May 2015 to November 2016) (note: suspended solids calculated from turbidity values using a site specific calibration)

Location		Temperature (°C)	pH (pH units)	Electrical conductivity (µS/cm)*	Dissolved oxygen (%)	Turbidity (FNU)	Suspended solids (mg/l)
A	Days of data	366	366	66	366	366	310
	Max	27.2	8.9	343.0	112.1	2,336	1067
	Min	-1.2	4.6	0	1.0	0	0
	Mean	11.1	6.9	37.0	99.9	9.7	22
	Standard Deviation	4.4	0.8	92.1	6.1	44.4	81
	Median	11.3	6.8	0	100.9	0.9	2
B	Days of data	394	375	146	390	359	424
	Max	30.7	8.5	440.5	112.2	1000	1226
	Min	0.0	3.5	150.0	10.0	0	0
	Mean	11.2	6.9	328.6	83.1	34.3	59
	Standard Deviation	4.17	0.5	47.1	20.9	121.4	172
	Median	10.8	6.9	338	90.0	3.5	9.7

As part of the water quality assessment, samples of stream bed material were collected from each of the installed water quality monitoring locations and sent to a laboratory. These samples were then used to prepare 'standards' with varying concentrations of suspended sediment. The turbidity of these prepared standards was then tested to estimate a relationship between suspended sediment and turbidity for the two stations where continuous monitors are installed. The purpose of this is to allow suspended sediment concentrations to be estimated from the turbidity readings.

There are considerable uncertainties involved in this estimation process, as it is impossible to ensure that the sampled sediment is truly representative of entrained sediment, which in reality will vary over time depending on the precise source of the sediment and the mechanisms of its entrainment.

5.3.1 Location A (Nant Caerdegog Isaf) continuous water quality monitoring

A summary of the continuous water quality data collected for Location A along Nant Caerdegog Isaf is contained in table 5.9 and shown on figure B7/01-5-1 to B7/01-5-5.

Location A on Nant Cemlyn regularly experienced water levels below 0.2m in depth which meant that many of the sensors were only partially submerged, or even above the water level during low flows, resulting in some gaps in the records and in some of the manual corrections. Additionally, there have been issues with the equipment, such as battery failure, which resulted in the loss of data in December 2015 and January 2016.

³ FNU - Formazin Nephelometric Units – a measurement of turbidity using a light beam to determine the propensity of particles suspended within the water column to scatter light, therefore is a proxy for suspended solids. This is broadly comparable with NTU; however FNU is measured with infrared light while NTU measures turbidity with white light.

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pH

The pH record shows the approximately monthly *in situ* manual monitoring as well as the recorded pH values from the continuous equipment. The low water levels resulted in the pH values regularly drifting due to partial submersion and as such the pH has been manually corrected based upon the monthly *in situ* values.

The pH record shows that generally pH values are between pH 6.5 and pH 7.5; however, they dipped to approximately pH 4.8 (*in situ* spot monitoring) during high flow conditions in January 2016. The low flows are generally neutral, but are variable.

High continuous pH values in January 2017 coincided with a period of high flow, which contradicts the overall findings. The data from December 2016 onwards is therefore not considered representative.

Electrical conductivity

The electrical conductivity (EC) readings are very irregular at Location A, as the conductivity probe was entirely out of the water for the majority of the recording time. The conductivity record also includes the manual monthly *in situ* monitoring to show general trends.

The continuous record, which peaks at 343µS/cm in December 2015, only exists during storm peaks in the winter, which correlates with low conductivity. During the dry, summer months, there are no continuous conductivity data available; however, the manual monthly results indicate that conductivity is higher during dry periods. The spot conductivity monitoring indicates that conductivity is generally within the range of 250 and 500µS/cm.

Zero continuous EC values from January 2017 to present do not match variable spot EC values during the same period, which indicates malfunction of the conductivity probe. The data from December 2016 onwards is therefore not considered representative.

Dissolved oxygen

The dissolved oxygen record at Location A is almost entirely complete. The record indicates that generally Nant Caerdegog Isaf is well aerated. The continuous record indicates that the watercourse at Location A is generally in the vicinity of 100% saturation of oxygen. The equipment is immediately downstream of a small waterfall, and as such is likely to have a higher dissolved oxygen saturation than the majority of Nant Caerdegog Isaf. The *in situ* results, usually taken upstream of the small waterfall, indicate that generally the saturation is approximately 80%, dropping down to 60% during the drier summer months.

The continuous records show that during a storm peak the dissolved oxygen can drop by up to 50%, as observed in December 2015, with smaller dips (c. 20%) in dissolved oxygen occurring in February 2016. This is likely due to sediment washing into the watercourses resulting in increased suspended sediment and a lowering of dissolved oxygen levels.

Turbidity

Turbidity was recorded at Location A as shown in figure B7/01-5-4, and this figure also includes the manual monthly *in situ* turbidity monitoring. A maximum turbidity of 2,336FNU is recorded in May 2017, however a review of data shows that the anomalous high values are likely due to sediment coating the equipment, or battery faults with the equipment, and as such any values over 1,000FNU were removed from the dataset.

Generally the turbidity of Nant Caerdegog Isaf is below 10FNU, with peaks in suspended sediment occurring following storm events but also independently of storm events.

A lot of data are lacking from the winter months due to equipment failure, however a turbidity peak of 347FNU occurred following a large rainfall event in December 2015, with smaller peaks (approximately 50FNU) during subsequent rainfall events. During February and March 2016, the maximum turbidity recorded was 145FNU. Generally during the winter, the peaks in turbidity follow peaks in the water level hydrograph.

During the drier summer months, when lower water levels are recorded, turbidity values are generally higher and more variable. During the summer months, the background values are higher with values of up to 50FNU regularly recorded. The turbidity peaks experienced during the summer months do not always correspond to water level peaks, and are generally higher, as less water for dilution results in higher turbidity. Some of these higher values

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may be due to the equipment becoming encased in sediment during low flows, which is then washed away during higher flows, however the peak in August 2016 was verified with an *in situ* measurement. Therefore, these peaks are likely due to activity within the catchment such as animal grazing.

Suspended sediment

Using the laboratory-derived relationship for Location A, turbidity has been converted to suspended sediment, and a plot of the data is shown in figure B7/01-5-5 alongside the stream water level at the same location.

The available data indicate that higher concentrations of suspended solids occurred during the summer months. The results indicate that 'normal' (base flow conditions) concentrations of suspended sediment are below 25mg/l during the summer months (May to September), however with regular (approximately daily) fluctuations of suspended solid concentrations of between 40 and 200mg/l. The maximum summer concentration of 1067 mg/l was recorded in June 2016, with similar concentrations recorded in August 2015, May 2016 and September 2016.

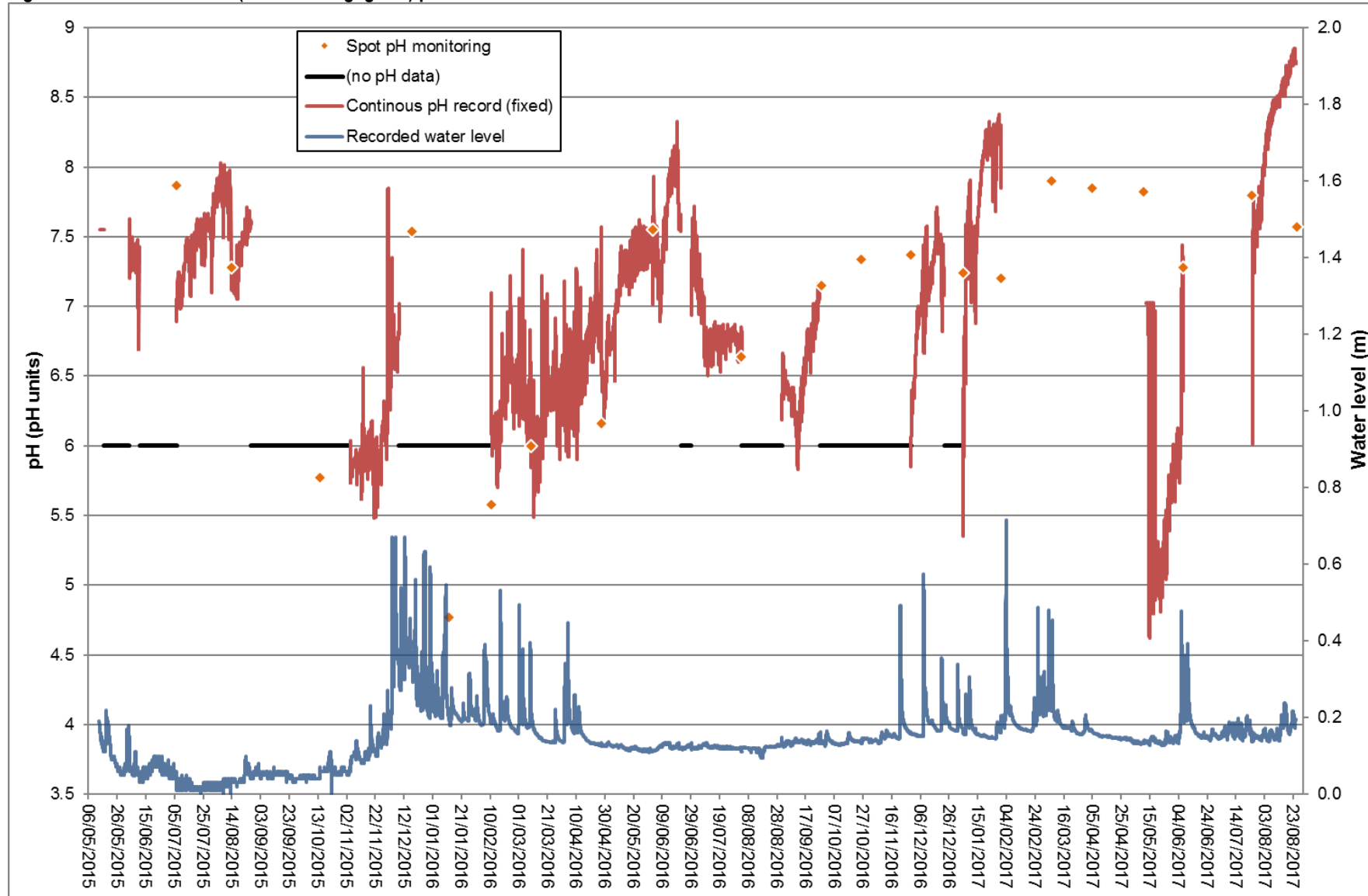
The high concentrations of suspended solids occurring within the summer months generally do not coincide with increases in water level. These concentrations are likely due to activities within the catchment, such as the presence of sheep upstream and erosion of the banks. Nant Caerdegog Isaf (Location A) is a watercourse with a low gradient and low flows running in an oversized channel. This would mean little dilution of sediments, so only a small quantity of sediment would need to be mobilised to result in a large effect, as evidenced with the summer months.

During the winter months (October to April), the normal concentrations of suspended sediment is lower and generally below 10mg/l, based upon the available information. Generally, the fluctuations in suspended solid concentrations during the winter months occur following peaks on the stream-level hydrograph, however occasionally these occur in isolation. The suspended solid concentrations following winter water level peaks vary, being generally between 20 and 200mg/l, with a maximum winter concentration of 641mg/l recorded in November 2015.

At Location A, these data indicate that suspended sediment concentrations of several hundred mg/l are not uncommon, although concentrations generally drop back down to normal levels very quickly. Significantly, the plots show that short periods of elevated suspended sediment concentrations are being recorded during the summer months despite there being no significant peaks on the stream-level hydrograph. This suggests that other activities within the catchment may be significant, such as the presence of sheep and cattle and erosion of the upstream banks.

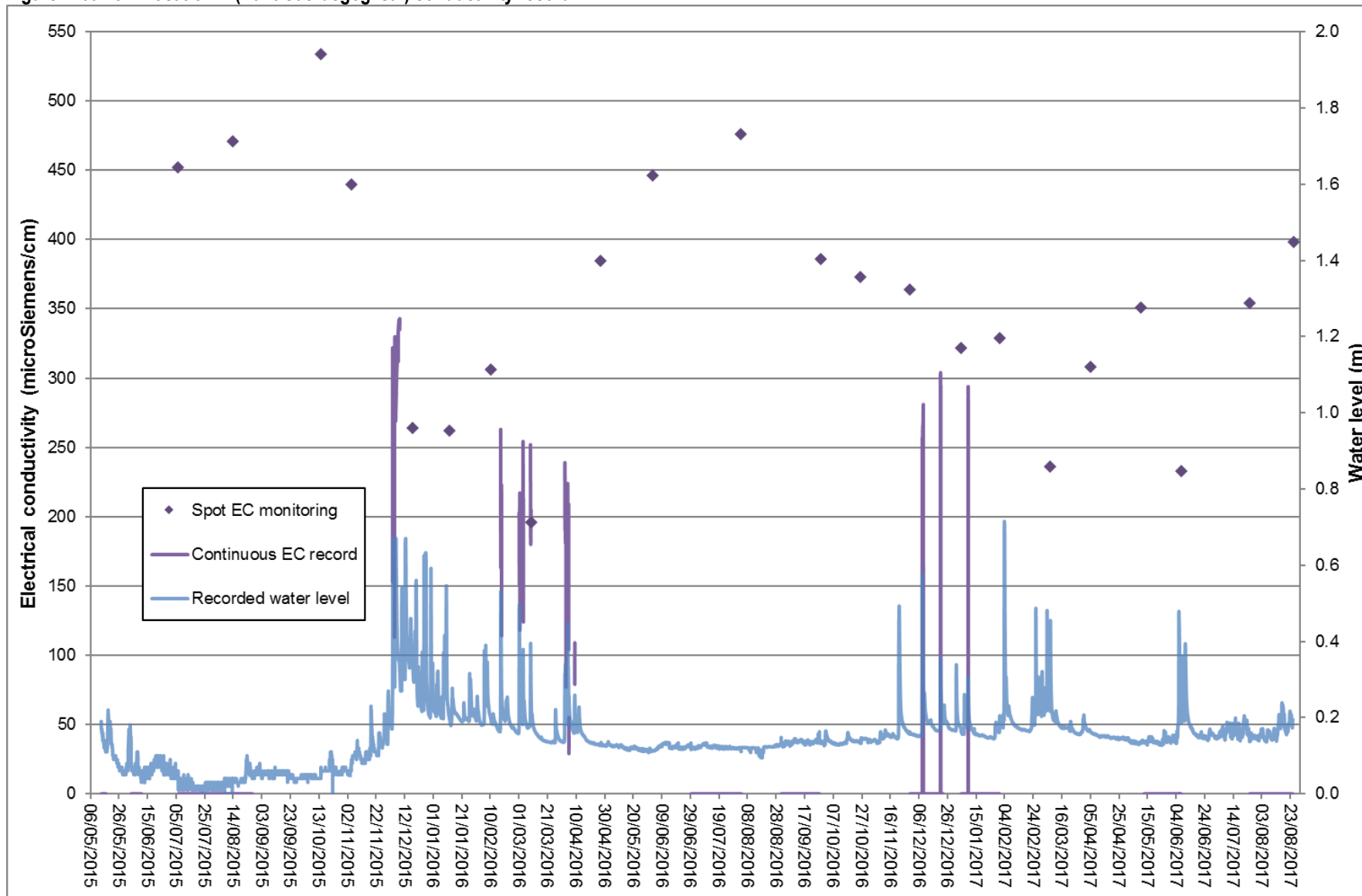
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Figure B7/01-5-1 Location A (Nant Caerdegog Isaf) pH record



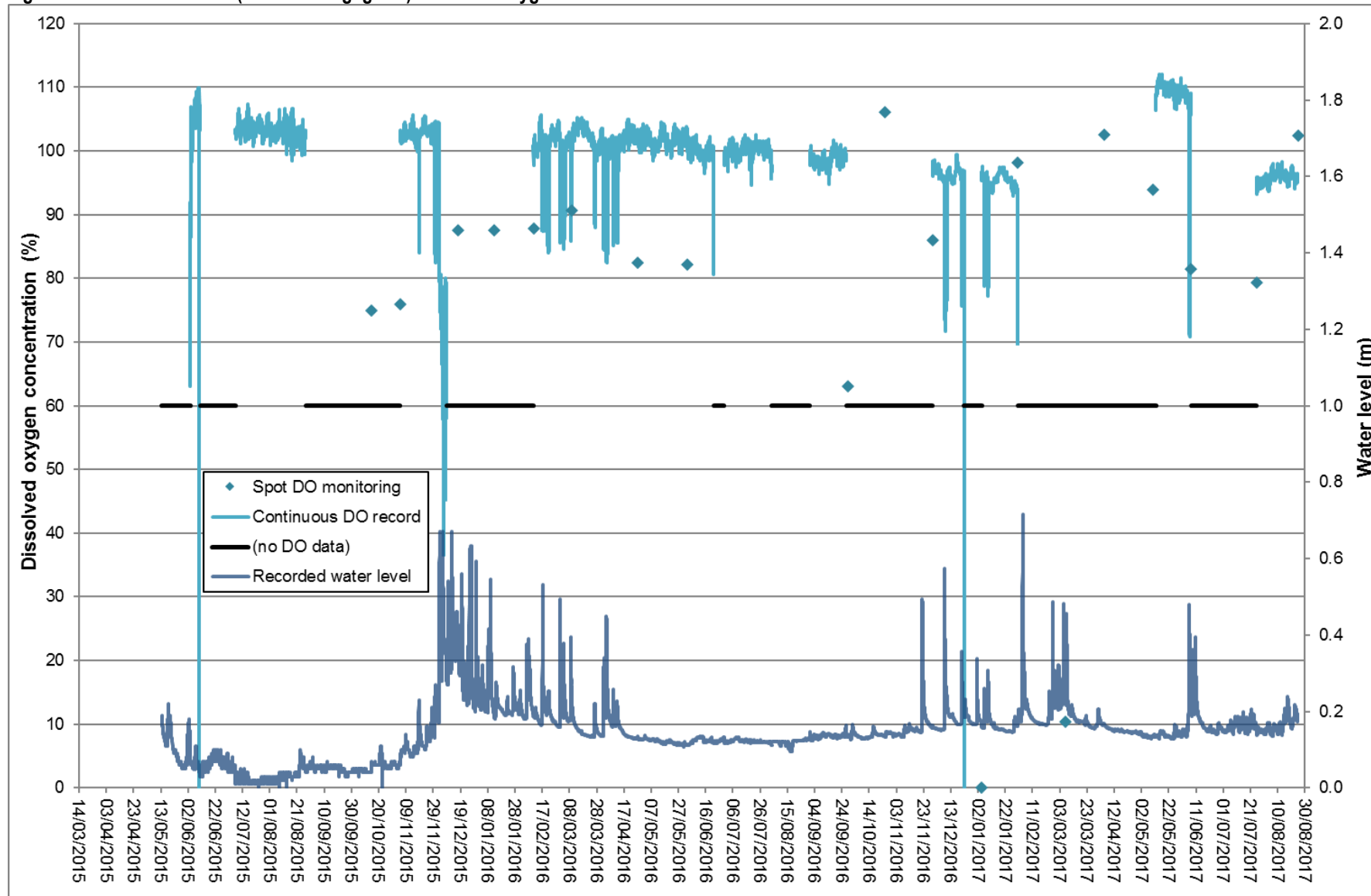
Wylfa Newydd Development Area Surface Water Baseline Report

Figure B7/01-5-2 Location A (Nant Caerdegog Isaf) conductivity record



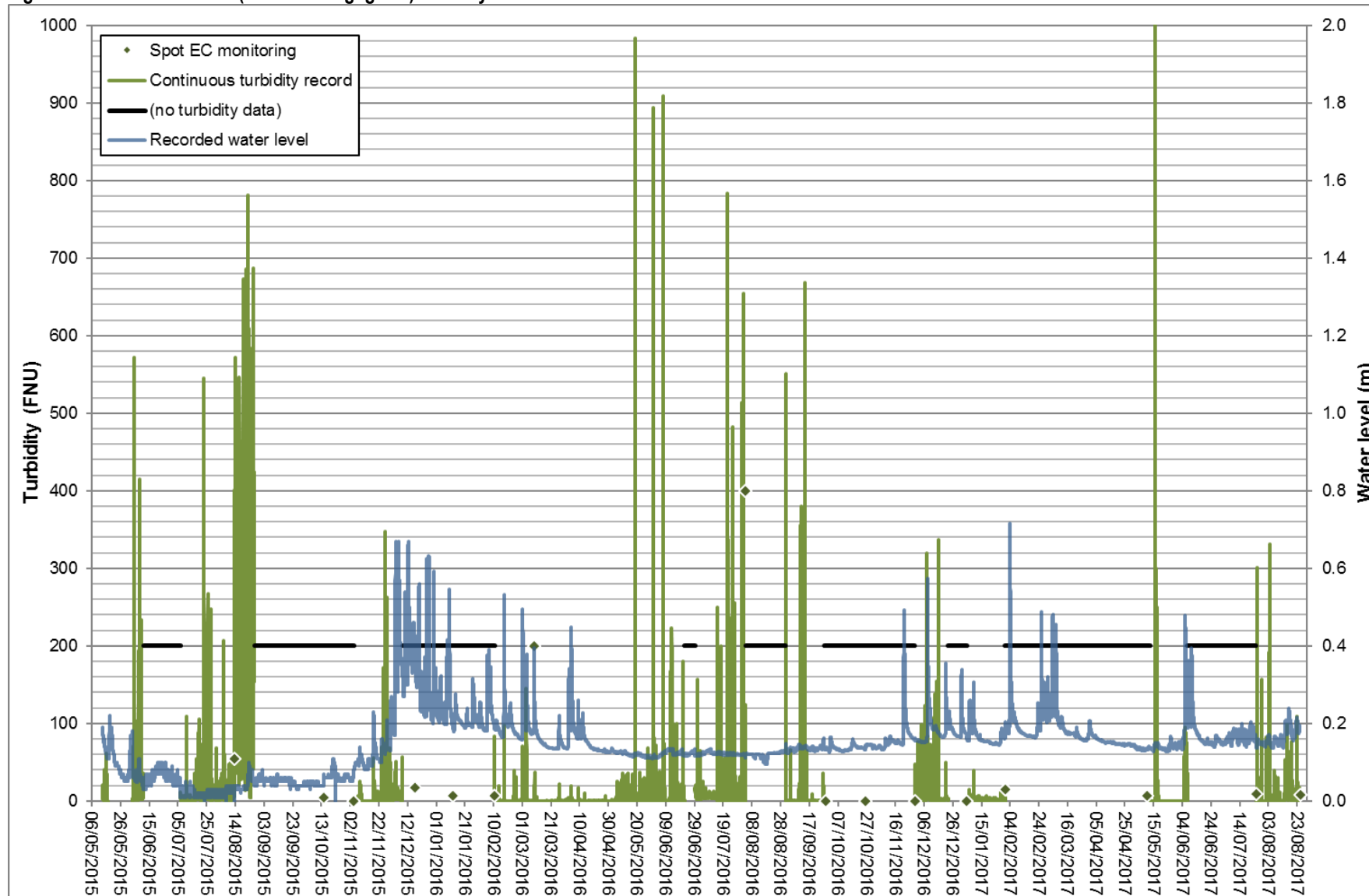
Wylfa Newydd Development Area Surface Water Baseline Report

Figure B7/01-5-3 Location A (Nant Caerdegog Isaf) dissolved oxygen concentration record



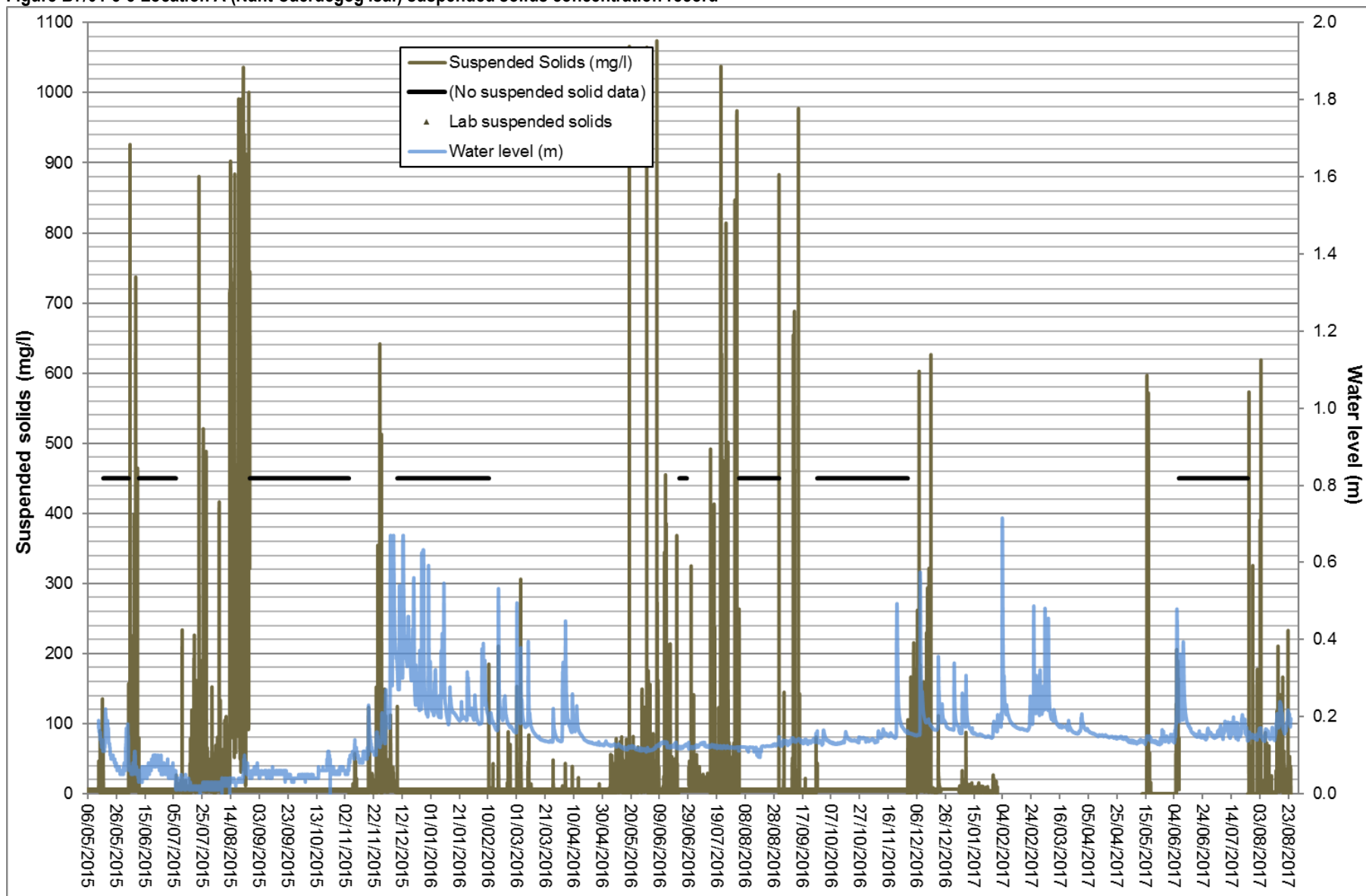
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Figure B7/01-5-4 Location A (Nant Caerdegog Isaf) turbidity record



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Figure B7/01-5-5 Location A (Nant Caerdegog Isaf) suspended solids concentration record



5.3.2 Location B (Nant Cemlyn) continuous water quality monitoring

A summary of the continuous water quality data collected for Location B along Nant Cemlyn is contained in table 5.9 and shown in figures B7/01-6-6 to B7/01-5-10.

pH

The pH record shows the recorded pH values from the continuous equipment. This record has not been altered between the dates of the 7 November 2015 and 31 March 2016 as water levels were high during this time. For other dates (March to August 2015 and April to September 2016), the pH record at Location B has been manually corrected against the monthly *in situ* monitoring due to issues to do with equipment and low water levels. Continuous data recorded onwards from 22 November 2016 has been omitted from assessment as malfunctioning equipment was considered to give incorrect readings.

The pH data between November 2015 and March 2016 have not been manually adjusted; therefore this record has been reviewed in detail. The pH values recorded within this time are generally between pH 6-7.5, but with occasionally lower pH values recorded, notably within January. During January there are some pH values of less than pH 6 recorded, these generally follow peaks in the water level hydrograph.

The minimum pH recorded was pH 3.5 on 10 January 2016, recorded seven hours after a storm peak, and followed by a period of fluctuation in pH. The reason for the low pH is unknown but it is potentially associated with sediment coating of the equipment.

During the summer months, the pH was occasionally recorded at values of above pH 8 however given the low water levels, these data are unlikely to be accurate. However, it can be surmised based upon the *in situ* monthly measurements that the pH is higher during the summer months.

Electrical conductivity

The electrical conductivity record includes the monthly manual *in situ* monitoring. During periods of low water (as shown on the water level hydrograph), the conductivity probe was out of the water and as such was not recording. Additionally, to account for times when the probe was partially submerged, all values below 150µS/cm were removed from the record as the manual monitoring indicated that values were always greater than 180µS/cm.

The electrical conductivity values are between 150 and 440µS/cm, with some lower values associated with the probe being out of the water. The data show that conductivity is lower when water levels are higher, indicating that increased flows lead to lower conductivity. This indicates that groundwater and standing water have a higher conductivity, whilst rainfall has a lower conductivity, resulting in low conductivity during rainfall events. The conductivity data towards the end of the data analysis period (November 2016) do not correlate with water levels and are therefore not representative.

Dissolved oxygen

The dissolved oxygen record at Location B on Nant Cemlyn includes the monthly manual *in situ* monitoring.

The dissolved oxygen monitoring at Location B on Nant Cemlyn indicates that dissolved oxygen is highly variable at this location. The results indicate that in 'normal' (base flow conditions) dissolved oxygen concentrations vary between 60% and 100%, which is within the normal range of dissolved oxygen for a small watercourse. The record does not show a distinct difference between summer and winter months.

Following water level peaks on the hydrograph, the dissolved oxygen concentrations decrease, as shown on figure B7/01-5-8. During and following water level peaks in December 2015, the dissolved oxygen concentration decreases to approximately 10% saturation, likely due to increased suspended solids within the water. Given the suspended sediment concentrations regularly experienced along Nant Cemlyn (discussed below) the variation in suspended solid is likely to be contributing to the high variation in recorded dissolved oxygen.

Turbidity

Turbidity was recorded at Location B as shown on figure B7/01-5-9 and this figure also includes monthly manual turbidity *in situ* monitoring. Throughout the recording, the fine sediment within the sediment-laden water began building up within the equipment casing and coating the turbidity probe, causing very high values to be recorded

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(up to 3,400FNU). Due to this, any values over 1,000FNU have been considered to be a result of sediment coating rather than a recording of the turbidity of the water column, and all values over 1,000FNU have been removed.

The turbidity record indicates that there are some remaining high turbidity values recorded which appear erroneous and which are potentially due to sediment accumulating around the turbidity probe. However, given that these generally follow peaks in the water level on the hydrograph, it is not possible to isolate the true high turbidity readings from the false readings.

During the following specific periods, the turbidity record shows no potentially erroneous high values: June to September 2016, January to early March 2016, July 2016 and September 2016. During these times the normal (base flow conditions) turbidity is less than 10FNU, however during the dry month of September 2016 the turbidity increases to 40FNU, likely due to less water being available for dilution resulting in higher turbidity caused by activity within the catchment, such as cattle accessing the stream immediately upstream of the flume. During periods of high stream flow the turbidity often increases. In early March 2016, a turbidity peak of 820FNU was experienced following a water level hydrograph peak.

Following initial water level peaks in December 2015, the equipment recorded turbidity values up to and beyond 1,000FNU, indicating that during storm peaks a lot of sediment can be washed into the watercourse. Further turbidity peaks occurring during the summer months do not always correspond to water level peaks on the hydrograph, and are likely due to activity (such as livestock accessing the stream) within the catchment along the banks.

Suspended sediment

Using the laboratory-derived relationship for Location B, turbidity has been converted to suspended sediment; estimated suspended solid concentrations are plotted alongside water level on figure B7/01-5-10. Only turbidity values below 1,000FNU have been converted as erroneous turbidity results have been removed from the data set.

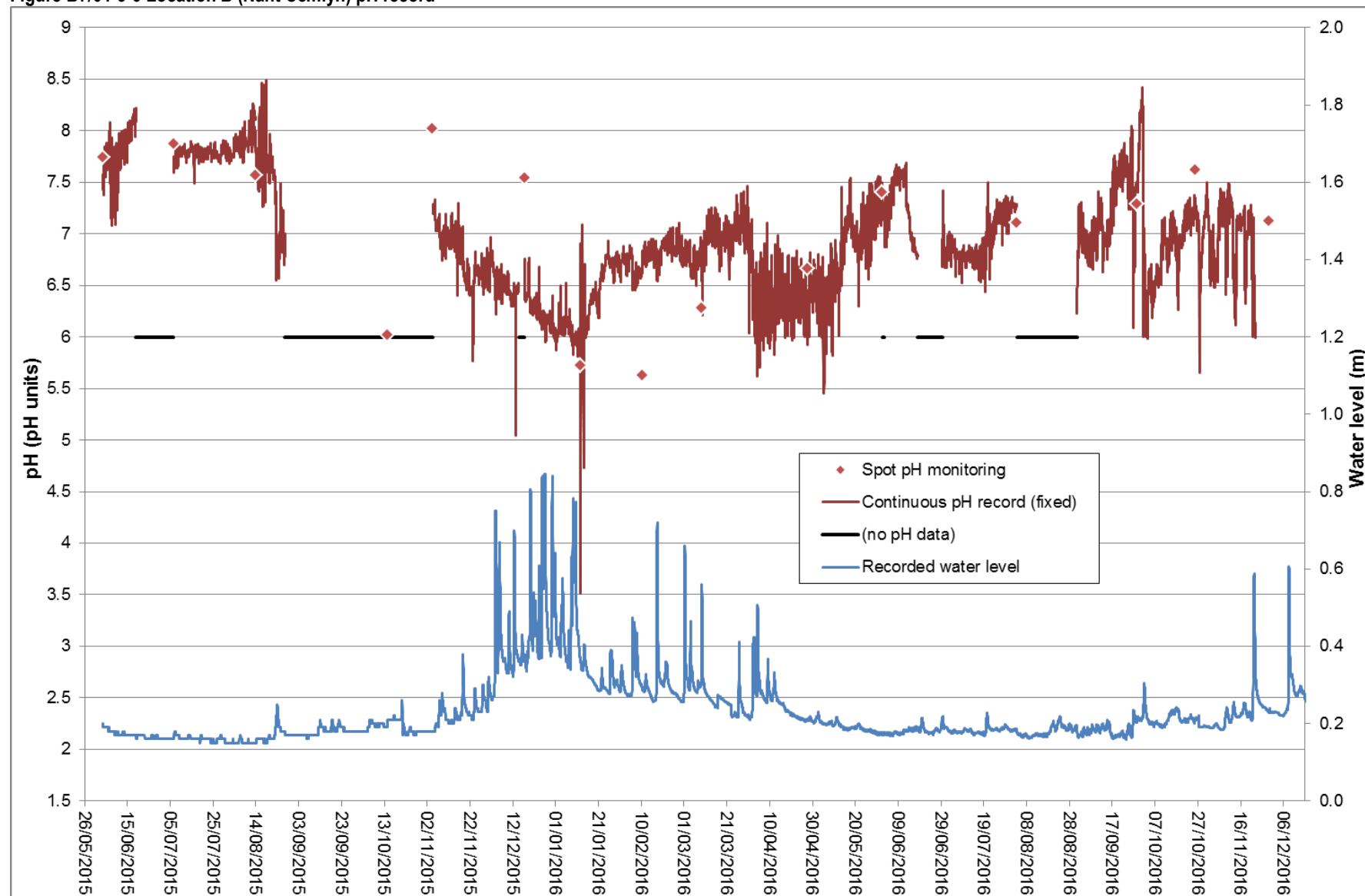
The periods where the turbidity record shows no potentially erroneous high values, as in the previous section, are June to September 2016, January to early March 2016, July 2016 and September 2016. During this time the 'normal' (base flow conditions) concentration of suspended solids is less than 25 mg/l. However, higher base flow concentrations were experienced in August 2016 during low water level conditions, with base flow concentrations up to 75mg/l.

The available data indicate that suspended sediment concentrations of several hundred mg/l are not uncommon along Nant Cemlyn, although concentrations return to normal concentrations very quickly. Suspended solid concentration peaks of between 50 and 200mg/l are experienced regularly (approximately weekly), throughout the time periods defined above, as shown on figure B7/01-5-10. A maximum suspended solid concentration of 1,226mg/l was recorded on 19 December 2015, with similarly high concentrations above 1,220mg/l recorded on 25 March 2016, 1 April 2016 and 20 August 2016. Generally, the suspended sediment peaks coincide or follow peaks on the water level hydrograph; however, they can also occur independently of changes in flow, such as in August 2016.

Further peaks occurring during the summer months do not always correspond to water peaks on the hydrograph, and are likely due to activity within the catchment along the banks. Cattle access the channel for drinking and significant poaching of channel banks (i.e. erosion resulting from livestock hooves), was observed in many locations upstream of the monitoring installation, including within 100m of the monitoring installation. Significantly, the plots show that short periods of elevated suspended sediment concentration are being recorded despite there being little or no rainfall and no significant peaks on the stream-level hydrograph. This suggests that other activities, such as the presence and movement of cattle upstream of the monitoring location, impact on suspended sediment concentrations.

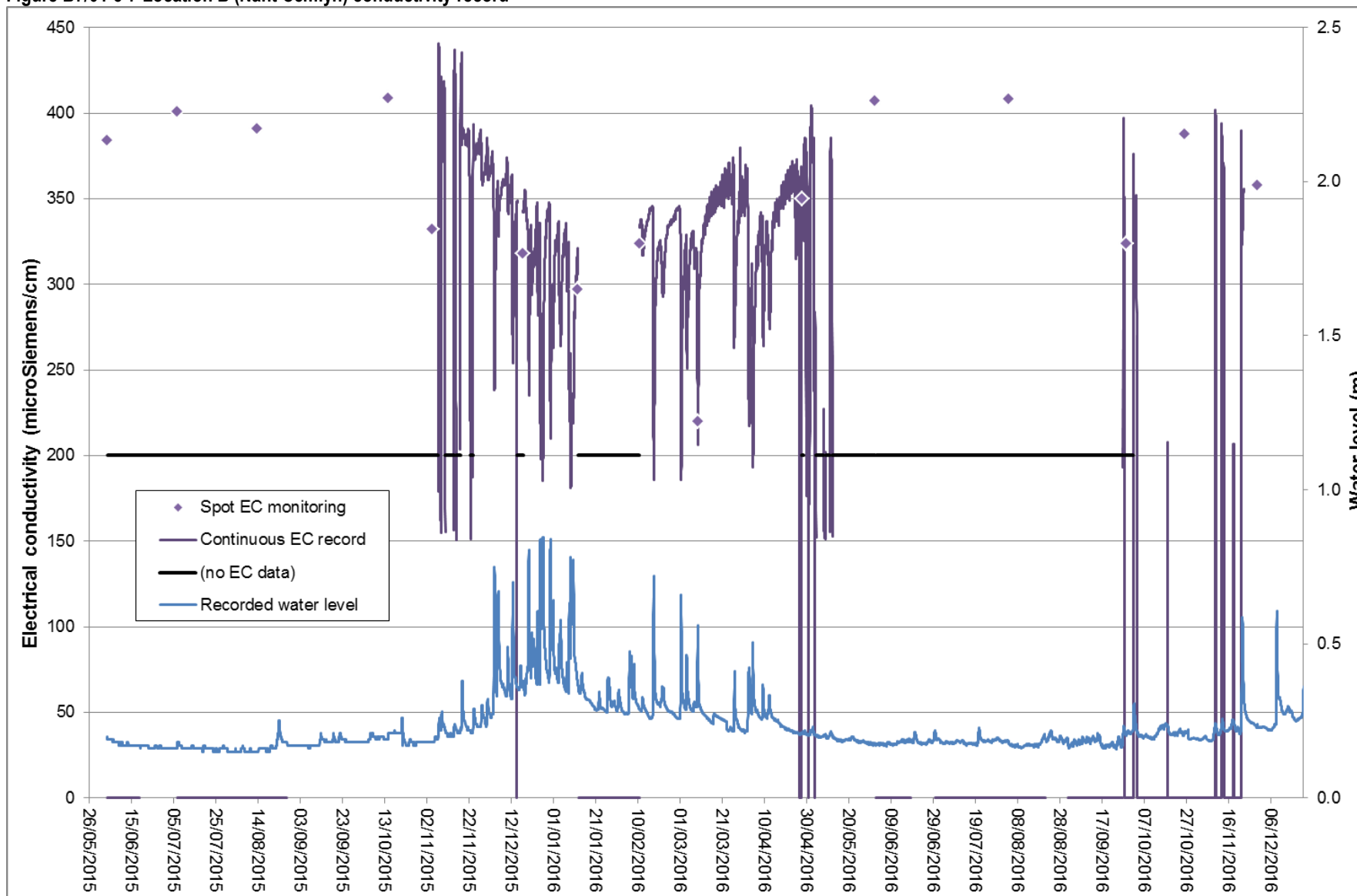
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Figure B7/01-5-6 Location B (Nant Cemlyn) pH record



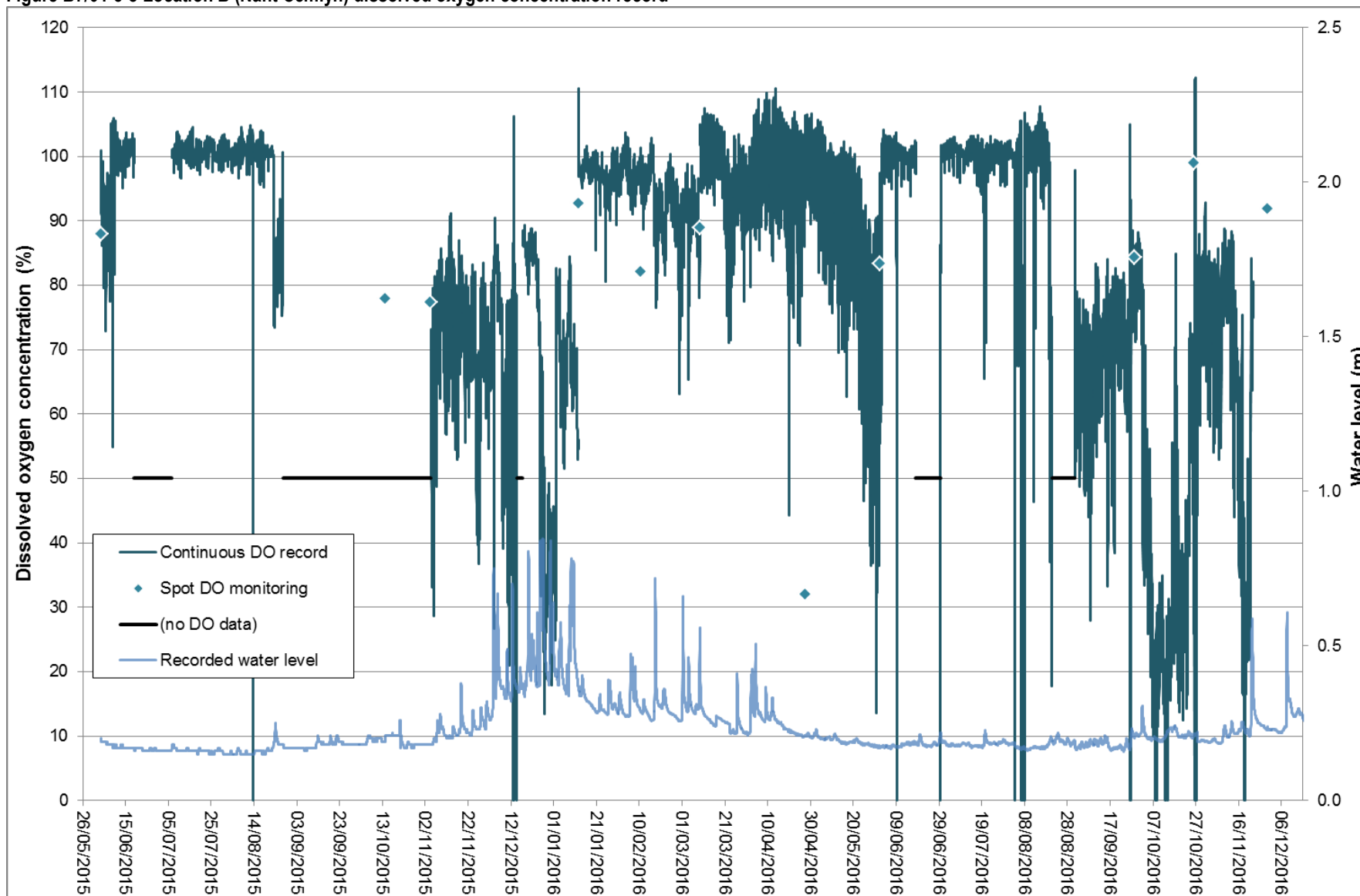
Wylfa Newydd Development Area Surface Water Baseline Report

Figure B7/01-5-7 Location B (Nant Cemlyn) conductivity record



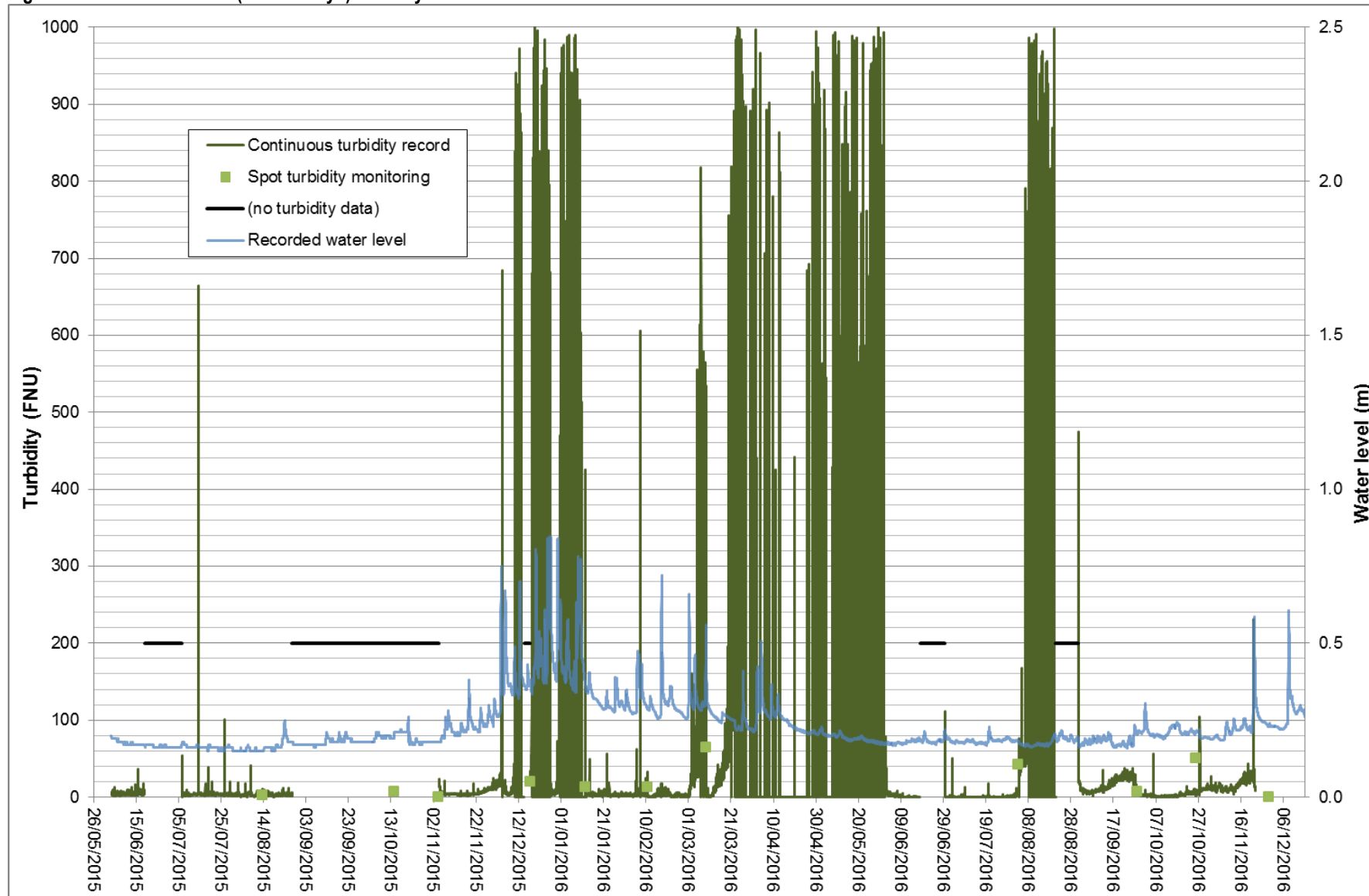
Wylfa Newydd Development Area Surface Water Baseline Report

Figure B7/01-5-8 Location B (Nant Cemlyn) dissolved oxygen concentration record



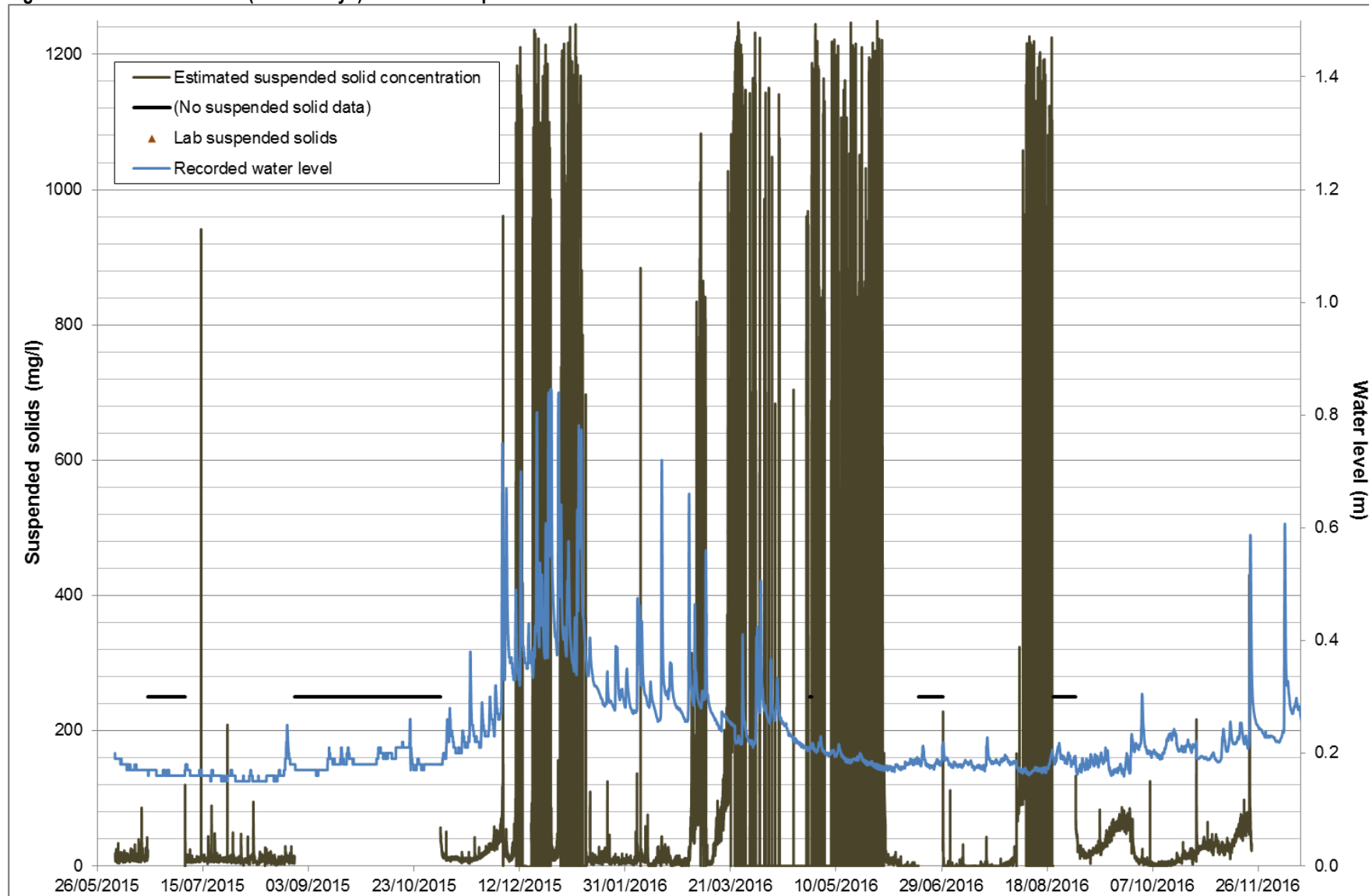
Wylfa Newydd Development Area Surface Water Baseline Report

Figure B7/01-5-9 Location B (Nant Cemlyn) turbidity record



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Figure B7/01-5-10 Location B (Nant Cemlyn) estimated suspended sediment concentrations



5.4 Summary water quality data

In summary, aside from those substances outlined below that exceed the screening thresholds, there is no significant variation in the water quality observed across the study area.

- Across the study area, ammoniacal nitrogen, BOD and total coliforms exceeded the relevant EQSs within all catchments on numerous occasions. This is due to the fact that these catchments are all used for agricultural and livestock grazing. The total coliforms do, however, indicate exceedances in bathing water concentrations on all watercourses feeding into bathing areas, including Nant Cemaes.
- Suspended solids concentrations across the entire study area are variable on a temporal basis and high concentrations are not unusual. Peaks in suspended solids concentrations are not always related to peaks in the water level hydrograph, and it may be the presence of cattle and sheep within the catchment and bank erosion that cause the high peaks of suspended sediment.

Many of the samples have been analysed for organic compounds, with the majority of these analysed below the level of detection; the detected determinands for each catchment are listed below.

- For the Tre'r Gof Catchment, there were no exceedances of EQSs. 1,1,1-trichloroethane, atrazine, di-2-ethylhexyl phthalate and phenol were detected as concentrations lower than the EQSs. 1,1-dichloroethene, and petroleum hydrocarbons in the range >C5-C44, were detected within the catchment.
- For the Afon Cafnan Catchment, there were exceedances of the EQSs for two determinands with di-2-ethylhexyl phthalate recorded sixteen times with three exceedances of the EQS in 2012 and 2013. Chloroform was detected at one location in 2015 at a concentration higher than the annual average EQS. In addition, phenol was detected at concentrations lower than the relevant EQS. Bromodichloromethane, dibromochloromethane, bromoform, and petroleum hydrocarbons in the range >C5-C44 were detected.
- For Cemlyn Catchment, petroleum hydrocarbons in the range >C5 – C44 were detected at two locations in 2013. di-2-ethylhexyl phthalate was present in four samples in 2013 and 2014 at concentrations less than the EQS. Chloromethane, chlorobenzene and 1,2-dichlorobenzene were recorded at one location in 2015 but none of these chemicals have an EQS.
- For the Cemaes Catchment, there were no exceedances of EQS. di-2-ethylhexyl phthalate was detected at two locations in 2013 at concentrations below the EQS. Petroleum hydrocarbons in the range >C5-C44 were detected at one location in 2014.

6. Evolution of the surface water baseline

This section summarises how the surface water baseline might evolve in the future if the Wylfa Newydd Power Station did not proceed. The factors assessed are those which are reasonably foreseeable and are considered likely to affect the surface water environment.

6.1 Evolution due to committed development

The following consented developments are located on or around the Isle of Anglesey and their potential impact on the groundwater baseline has been considered (see table 6.1).

Table 6.1 Committed Development to be included in assessment of the evolving baseline in the absence of the Wylfa Newydd Project

Developer	Project overview	Evolution of baseline
Lateral Power Ltd	Biomass: Planning consent granted for a biomass-fuelled power station (299MW) on the former Anglesey Aluminium site, Holyhead, Anglesey. Planning consent granted, EIA completed but ES not obtained.	Due to the distance between the Wylfa Newydd Development Area and the potential development, there would be no change to the baseline as a result of this development. Planning consent has been granted and an EIA completed but the ES has not been obtained.

6.2 Evolution due to climate change

Over the medium and long term, surface water in the study area may be affected by climate change. There are a number of models covering the UK which simulate the change in climate. The UK Climate Impact Programme [RD13], indicates that in the future winters may be generally wetter and summers substantially drier for the whole of the UK.

The direct effect of climate change on surface water depends primarily upon the change in the intensity, volume and seasonal distribution of rainfall. Drier warmer summers could lead to reduced flows in watercourses which would result in less water available for riparian use and other abstractions, and could also affect flora and fauna living in or by watercourses. Some watercourses could dry up completely in the summer months changing the hydrology completely. More intense rain storms in the summer months could give rise to more rapid runoff and result in localised flooding and affect water quality by causing much higher suspended sediment loads. Similarly, an increase in rainfall volume, particularly in winter when it falls on saturated soils, could give rise to prolonged periods of flooding over much larger areas than is currently the case and it could also increase suspended sediment loads.

6.3 Evolution due to changes in abstractions

We are not aware of any current formal surface water abstractions, although watercourses are used for livestock watering. It is possible in the future that if there were longer, drier summers that surface water abstraction could become more common and widespread, particularly for agricultural purposes in the summer months.

7. References

Table 7.1 Schedule of references

ID	Reference
RD1	Department of Energy and Climate Change. 2011. National Policy Statement for Nuclear Power Generation (EN-6). London: The Stationery Office.
RD2	Natural Resources Wales. 2016. Water Watch Wales Map Gallery. [Online] [Accessed 19/10/16] Available from: http://waterwatchwales.naturalresourceswales.gov.uk/en/
RD3	Natural Resources Wales. 2016. Flood Risk Map. [Online] [Accessed 19/10/16] Available from: https://maps.cyfoethnaturiolcymru.gov.uk/Html5Viewer/Index.html?configBase=https://maps.cyfoethnaturiolcymru.gov.uk/Geocortex/Essentials/REST/sites/Flood_Risk/viewers/Flood_Risk/virtualdirectory/Resources/Config/Default
RD4	British Geological Survey. 2016. Geology of Britain Viewer. [Online] [Accessed on 16/10/16] Available from: http://mapapps.bgs.ac.uk/geologyofbritain/home.html
RD5	Cranfield Soil and Agrifood Institute. 2016. Soils Site Reporter. [Online] [Accessed on 16/10/16] Available from: http://www.landis.org.uk/sitereporter/
RD6	Natural Resources Wales. 2015. River Basin Management Plan Cycle 2 - Western Wales River Basin Management Plan 2015 -2021 [Online] [Accessed 17/05/16] Available from: https://naturalresources.wales/media/676165/wwwrbdsummary.pdf
RD7	Countryside Council for Wales. 1988. TRE'R GOF SSSI. [Online] [Accessed 19/10/16] Available from: http://angleseynature.co.uk/webmaps/trergof.html
RD8	Countryside Council for Wales. 1982. CAE GWYN SSSI. [Online] [Accessed 19/10/16]. Available from: http://angleseynature.co.uk/webmaps/caegwyn.html
RD9	Countryside Council for Wales. 1986. CEMLYN BAY SSSI (and SAC and SPA). [Online] [Accessed 19/10/16] Available from: http://angleseynature.co.uk/webmaps/cemlynbay.html
RD10	UK Meteorological Office. 2016. Valley climate. [Online] [Accessed 19/10/16] Available from: http://www.metoffice.gov.uk/public/weather/climate/valley-isle-of-anglesey#?tab=climateComparisons
RD11	Cranfield Soil and Agrifood Institute. 2016. Soils Site Reporter. [Online] [Accessed on 16/10/16] Available from: http://www.landis.org.uk/sitereporter/
RD12	National River Flow Archive. 1988-2014. Cefni at Bodffordd. [Online] [Accessed 16/04/15] Available from: http://www.ceh.ac.uk/data/nrfa/data/station.html?102001
RD13	The UK Climate Impact Programme. 2015. [Online] [Accessed 2/07/15] Available from: http://www.ukcip.org.uk/

8. Glossary

Full Title	Definition
Baseline Conditions (or Baseline Environment)	The environment as it appears (or would appear) prior to the implementation of the Wylfa Newydd Project together with any known or foreseeable future changes that will take place before completion of the Wylfa Newydd Project.
Catchment	A drainage basin or area within which precipitation drains into a river system and eventually into the sea.
Environmental Quality Standard (EQS)	An Environmental Quality Standard is the maximum permissible concentration of a chemical in a surface water body. These are set within the context of European and National legislation.
Formazin Nephelometric Units (FNU)	A measurement of turbidity using a light beam to determine the propensity of particles suspended within the water column to scatter light using a nephelometer. FNU is measured with infrared light.
Geomorphology	The study of landforms and the processes which create them.
Hydrology	The science that deals with the processes governing the depletion and replenishment of the water resources of the land areas of the Earth.
LiDAR	A method of surveying that measures distances using a laser.
Natural Resources Wales (NRW)	NRW is a Welsh Government-funded body responsible for advising and regulating issues relating to the environment and its natural resources.
National Grid Reference (NGR)	The reference system used for mapping in the UK.
Nephelometric Turbidity Unit (NTU)	A measurement of turbidity using a light beam to determine the propensity of particles suspended within the water column to scatter light using a nephelometer. NTU measures turbidity with white light.
Ordnance Datum	The reference point for elevation used for mapping in the UK.
Runoff	Precipitation that flows as surface water from a site, catchment or region to the sea.
Site of Special Scientific Interest (SSSI)	Sites designated for their flora, fauna or geological or physiographical features under the <i>Wildlife and Countryside Act 1981</i> (as amended).
Special Area of Conservation (SAC)	Special Areas of Conservation are strictly protected sites designated under the EC Habitats Directive.
Special Protection Area (SPA)	A special protection area (SPA) is a designation under the European Union Directive on the Conservation of Wild Birds. Under the Directive, Member States of the European Union (EU) have a duty to safeguard the habitats of migratory birds and certain particularly threatened birds.
Study Area	The spatial area within which environmental effects are assessed (i.e. extending a distance from the Wylfa Newydd Project footprint in which significant environmental effects are anticipated to occur). This may vary between the topic areas.
Superficial deposits	Unconsolidated (loose) deposits overlying the bedrock.

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Full Title	Definition
UK Meteorological Office (Met Office)	A trading Fund within the Department for Business Innovation and Skills providing weather forecasting services to a variety of public and private organisations.
Water Framework Directive (WFD)	A substantial piece of EU water legislation that came into force in 2000, with the overarching objective of getting all water bodies in Europe to attain Good or High Ecological Status. River Basin Management Plans (RBMP) have been created which set out measures and potential mitigation to ensure that water bodies in England and Wales achieve 'Good Ecological Status'.

Annex A. Natural Resources Wales information

A.1 NRW flow information

A.2 NRW water quality information

Gaugings on Afon Cafnan at NGR SH 3420 9310

Date & time	Status	Stage [m]	Flow [m3/s]	Site Ref	Site Name	Team	Comment
03/09/1992 00:00	confirmed	0.28	0.066	S00572	AFON CAFNAN	IW	STAGE TAKEN AT DEEPEST POINT;
31/07/1996 00:00	confirmed	0.1	0.006	S00572	AFON CAFNAN	PP	DRY;

Gaugings on Trib of Afon Wygyr at Llanfechell STW NGR SH 3470 9140

Date & time	Status	Stage [m]	Flow [m3/s]	Site Ref	Site Name	Team	Comment
10/06/1992 00:01	confirmed	0.135	0.064	S00577	LLANFECHELL S1IHR/ITP		SUNNY;
31/07/1996 00:01	confirmed	0.03	0.003	S00577	LLANFECHELL S1PP		DRY WINDY;

Gaugings on Afon Wygyr at NGR SH 3720 9320

Date & time	Status	Stage [m]	Flow [m3/s]	Site Ref	Site Name	Team	Comment
30/01/1991 14:55	confirmed	0.35	0.306	102602a	WYGYR CEMAES IHR/JAJ		COLD CLOUDY;[Meter Id = AD3];[St. Stage = 0.350];[End Stage = 0.350];[End Time = 15:15:00];
07/02/1991 11:30	confirmed	0.29	0.148	102602a	WYGYR CEMAES IHR JAJ		FREEZING SUNNY;[Meter Id = AD3];[St. Stage = 0.290];[End Stage = 0.290];[End Time = 11:50:00];
15/02/1991 13:30	confirmed	0.4	0.433	102602a	WYGYR CEMAES IHR/JAJ		OVERCAST;[Meter Id = AD3];[St. Stage = 0.400];[End Stage = 0.400];[End Time = 13:55:00];
28/02/1991 13:50	confirmed	0.39	0.466	102602a	WYGYR CEMAES JAJ/IHR		SUNNY COLD;[Meter Id = AD3];[St. Stage = 0.390];[End Stage = 0.390];[End Time = 14:05:00];
22/03/1991 13:10	confirmed	0.52	1.029	102602a	WYGYR CEMAES JAJ		SUNNY;[Meter Id = AD3];[St. Stage = 0.520];[End Stage = 0.520];[End Time = 13:35:00];
25/06/1991 11:00	confirmed	0.22	0.056	102602a	WYGYR CEMAES IW		GLAW MAN;[Meter Id = BD1];[St. Stage = 0.220];[End Stage = 0.220];[End Time = 11:30:00];
03/09/1992 10:25	confirmed	0.375	0.231	102602a	WYGYR CEMAES IW		SYCH A CYMYLOG;[Meter Id = AE2];[St. Stage = 0.375];[End Stage = 0.375];[End Time = 10:45:00];
26/03/1993 10:40	confirmed	0.3	0.121	102602a	WYGYR CEMAES JAJ		SUNNY;[Meter Id = BE2];[St. Stage = 0.300];[End Stage = 0.300];[End Time = 11:00:00];
08/07/1993 13:05	confirmed	0.28	0.095	102602a	WYGYR CEMAES IW		Raining;[Meter Id = AE2];[St. Stage = 0.280];[End Stage = 0.280];[End Time = 13:25:00];
27/08/1993 12:15	confirmed	0.137	0.041	102602a	WYGYR CEMAES DD		BRIGHT;[Meter Id = AE2];[St. Stage = 0.137];[End Stage = 0.137];[End Time = 12:30:00];
16/02/1994 14:30	confirmed	0.475	0.557	102602a	WYGYR CEMAES IHR		CLOUDY;[Meter Id = AE2];[St. Stage = 0.475];[End Stage = 0.475];[End Time = 15:00:00];
09/05/1994 10:40	confirmed	0.33	0.222	102602a	WYGYR CEMAES IHR		SUNNY;[Meter Id = AE2];[St. Stage = 0.330];[End Stage = 0.330];[End Time = 11:10:00];
31/05/1994 14:15	confirmed	0.23	0.086	102602a	WYGYR CEMAES IHR		SUNNY/HOT;[Meter Id = AE2];[St. Stage = 0.230];[End Stage = 0.230];[End Time = 14:40:00];
07/06/1996 10:15	confirmed	0.21	0.043	102602a	WYGYR CEMAES IHR		SUNNY;[Meter Id = BF2];[St. Stage = 0.210];[End Stage = 0.210];[End Time = 11:00:00];
17/03/1998	confirmed	0.35	0.218	102602a	WYGYR CEMAES PP		WADED;
17/03/1998 11:10	confirmed	0.35	0.218	102602a	WYGYR CEMAES PP		DRY;[Meter Id = BF2];[St. Stage = 0.350];[End Stage = 0.350];[End Time = 11:30:00];
27/04/1998 08:50	confirmed	0.314	0.331	102602a	WYGYR CEMAES PP		[Meter Id = DA2];[St. Stage = 0.350];[End Stage = 0.278];[End Time = 09:20:00];
12/05/1998 09:20	confirmed	0.278	0.104	102602a	WYGYR CEMAES IHR		[Meter Id = AG2];[St. Stage = 0.278];[End Stage = 0.278];[End Time = 10:00:00];
14/05/1998 09:10	confirmed	0.27	0.142	102602a	WYGYR CEMAES PP		[Meter Id = DA2];[St. Stage = 0.270];[End Stage = 0.270];[End Time = 09:40:00];
29/05/1998 11:45	confirmed	0.218	0.064	102602a	WYGYR CEMAES IHR		[Meter Id = AG2];[St. Stage = 0.218];[End Stage = 0.218];[End Time = 12:20:00];
11/06/1998 09:15	confirmed	0.35	0.264	102602a	WYGYR CEMAES PP		[Meter Id = DA2];[St. Stage = 0.350];[End Stage = 0.350];[End Time = 09:45:00];
08/09/1998 12:00	confirmed	0.22	0.058	102602a	WYGYR CEMAES PP		[Meter Id = CE2];[St. Stage = 0.220];[End Stage = 0.220];[End Time = 12:30:00];
16/06/1999 12:38	confirmed	0.192	0.058	102602a	WYGYR CEMAES CC		[Meter Id = 2];[St. Stage = 0.192];[End Stage = 0.192];[End Time = 13:00:00];
29/06/2000 09:40	unconfirmed	0.169	0.021	102602a	WYGYR CEMAES CW		ott waded gauging 0.169 0.0213 3

WIMS Result Data Extract for Sampling Point 25477 OUTLET SLUICE LLYN LLYGEIRIAN, FILE PC/779

SH3433089950

Samples taken between 01/01/2000 and 09/10/2014 for Sampling Purpose *

Note : Statistics have not been included as results contain character-base result qualifiers . Values highlighted at (+- 3 * Standard deviation)

Spt Ref	Date Taken	Time Taken	Purpose	0031 Liq WRT OD (m)	0061 pH (PHUNITS)	0062 Cond @ 20C (uS/cm)	0072 Colour Filt (HAZEN)	0076 Temp Water (CEL)	0077 Cond @ 25C (uS/cm)	0099 C - Organic (mg/l)	0111 Ammonia(N) (mg/l)
25477	26/Oct/2003	1546	MN		7.66	250	25	8.1		10	
25477	14/Nov/2003	1540	MN		7.37	239	37	9.7		9.61	
25477	05/Dec/2003	1549	MN		7.12	232	44	7.7		9.91	
25477	20/Jan/2004	1007	MN			206	26	7.8		8.25	
25477	13/Feb/2004	1422	MN		7.8	190.9	41	8.2		6.54	
25477	13/Mar/2004	1049	MN		7.84	198	29	8.3		6.18	
25477	09/Jul/2004	1610	PN								
25477	26/Jul/2004	1315	PN								
25477	06/Aug/2004	1330	PN								
25477	12/Aug/2004	1430	PN		6.94	282	106	17.83		19.3	
25477	24/Aug/2004	1250	PN		7.9	222	45	17.1		11.8	
25477	13/Sep/2004	1330	PN		7.57	222	52	13.47		11.4	
25477	30/Sep/2004	1415	PN		7.8	226	43	15.5		11.4	
25477	12/Oct/2004	1420	PN		7.28	229	64	11.85		20.2	<.01
25477	25/Oct/2004	1255	PN		7.43	187	59	10.01		10.14	0.06
25477	09/Nov/2004	1245	PN		7.51	198	44	10		9.95	0.07
25477	22/Nov/2004	1330	PN		7.17	195	50	10.31		10	0.08
25477	03/Dec/2004	1300	PN		7.52	196	42	7.88		8.82	0.05
25477	20/Jan/2005	1230	PN		7.61	202	33	8.89		7.16	0.03
25477	18/Feb/2005	1430	PN		7.46	201	25	7.91		6.63	0.03
25477	14/Mar/2005	1230	PN		7.55	214	31	7.3		6.44	0.04
25477	07/Apr/2005	1315	PN		7.8	214	30	10.8		6.09	<.03
25477	19/May/2005	1350	PN		7.6	210	45	14.54		7.2	0.058
25477	07/Jun/2005	1550	PN		6.92	222	43	17.19		8.6	0.045
25477	12/Jul/2005	1210	PN								
25477	08/Aug/2005	1300	PN								
25477	23/Sep/2005	1200	PN								
25477	04/Oct/2005	1400	PN		7.66	255	60	12.98			0.03
25477	28/Oct/2005	1315	PN		7.58	202	67	14.28		<.03	
25477	18/Jan/2006	1055	PN		7.77	191.3	36	7.98			0.072
25477	20/Feb/2006	1310	PN		7.45	202	30	6.54		<.03	
25477	17/Mar/2006	1350	PN		7.36	189	24	4.75			0.031
25477	06/Apr/2006	1130	PN		7.73	187	28	8.5			0.041
25477	02/May/2006	1145	PN		7.44	201	39	10.39			0.09
25477	09/Jun/2006	1305	PN		7.13	199	51	20.6			0.085
25477	07/Jul/2006	1325	PN		7.32	260	81	18.7			0.616
25477	01/Aug/2006	1500	PN		7.82	224	33	19.84		<.03	
25477	29/Aug/2006	1400	PN								
25477	06/Oct/2006	1150	PN			394					
25477	02/Nov/2006	1110	PN			213					
25477	27/Nov/2006	1600	PN			199					
25477	23/Jan/2007	1110	PN			200					
25477	20/Feb/2007	1035	PN		8.09	211	27				
25477	22/Mar/2007	1145	MS		8.07	210	18				
25477	17/Apr/2007	1055	MS		7.59	229	35				
25477	21/May/2007	1310	MS		8.12	235	60				
25477	19/Jun/2007	1635	MS	7.77	7.77		42		283		
					pH	Conductivity (uS/cm2)				Ammonia (N) (mg/l)	
			average		7.56	218.90	42.92	11.45	283.00	9.79	0.09
			max		8.12	394	106	20.6	283	20.2	0.616
			min		6.92	187	18	4.75	283	6.09	0.03
					average	max	min				
			pH		7.56	8.12	6.92				
			Conductivity (uS/cm2)		218.90	394	187				
			Ammonia (N) (mg/l)		0.09	0.616	0.03				
			Chloride (mg/l)		34.73	44.7	29.7				
			Silicate SiO2 (mg/l)		5.11	22.5	0.5				
			sulphate SO4 (mg/l)		10.99	27.8	4.87				
			Sodium Na (mg/l)		18.68	23.1	14.6				
			Potassium k (mg/l)		2.38	3.18	1.01				
			Magnesium Mg (mg/l)		5.46	7.6	4.09				
			Calcium Ca (mg/l)		18.98	27	12				
			Phosphorus P (mg/l)		0.09	1	0.022				
			Turbidity (NTU)		8.06	71	1.82				
			Nitrogen N (mg/l)		1.53	3.98	0.63				
			Ammonia NH3 filt N (mg/l)		0.05	0.419	0.01				

0235 Mg Filtered (mg/l)	0237 Magnesium-Mg (mg/l)	0241 Calcium - Ca (mg/l)	0301 C - Org Filt (mg/l)	0348 Phosphorus-P (mg/l)	3075 DischargeOcc (UNITLESS)	3267 Type of Flow (Coded)	6396 TurbidityNTU (NTU)	7610 Alk-Gran (mg/l)
				0.04				1.96
				0.044				3.43
				0.038				2.49
				0.03				2.32
				0.03				5.64
				0.027				5.31
						0		
						0		
						0		
7.48		25.1	18.8	0.124				9.76
6.68		20.9	11.7	0.078				3.71
6.99		20.9	11.37	0.076				4.16
6.68		21	11.3	0.049				3.99
	6.05	18.6	15.6	0.051				5.06
	4.09	12	9.93	0.054				2.57
	5.17	16.3	9.7	0.079				6.1
	5.18	17.4	10	0.214				5
	4.85	16.4	8.77	0.107				3.66
	4.99	15.8	7.15	0.043				18
	5.07	17.1	6.24	0.073				10.1
	5.08	16.8	6.43	0.049				9.74
	5.2	18.3	6.07	0.039				4.94
	5.75	19.2	7.06	0.054				17.4
	6.23	20.5	8.53	0.07				12.3
							0	
							0	
							0	
	6.45	21.1	9.41	0.071				6.16
	4.9	16.7	11.6	0.067				4.04
			7.17	0.034				3.14
			6.61	0.026				8.78
			5.7	0.04				6.16
			7.16	0.031				1.82
			7.34	0.028				3.52
			10.1	0.082				4.79
			10.5	1				71
			10.4	0.036				2.74
							0	
				0.047				
				0.04				
				0.193				
				0.022				
	4.74	17.4	6.42	0.08				
	4.94	18	6.03	0.168				37.9
	5.68	19.3	6.82	0.0469				39.7
	6.28	21.8	8.32	0.092				60.2
	7.6	27	7.8	0.0626				66.3
								88.8
Magnesium Mg (mg/l)	Calcium Ca (mg/l)		Phosphorus P (mg/l)				Turbidity (NTU)	
6.96	5.46	18.98	9.00	0.09	0.00	0.00	8.06	58.58
7.48	7.6	27	18.8	1	0	0	71	88.8
6.68	4.09	12	5.7	0.022	0	0	1.82	37.9



7887 CHLOROPHYLL (ug/l)	9686 Nitrogen - N (mg/l)	9856 OrthophsFilt (mg/l)	9943 N Oxid Filt (mg/l)	9993 NH3 filt N (mg/l)
2.19	1.36	0.02	0.4	0.08
3.97	1.5	0.034	0.34 <.01	
2.19	3.83	0.317	3.26 <.01	
4.82	3.98	0.008	2.72	0.05
8.88	3.04	0.008	2.45	0.02
35.3	2.51 <.002		1.19	0.01
8.21	1.83	0.116	0.14	0.02
4.02	1.16	0.038	0.05	0.03
2.23	1.08	0.046	0.06	0.02
1.26	1	0.018	0.05	0.04
1.38	1	0.028	0.23	0.01
3.32	1.58	0.025	0.74	0.03
6.18	1.53	0.025	0.79	0.05
4.24	1.61	0.041	0.1	0.03
2.5	2	0.105	1.27	0.06
7.41	2.49	0.017	1.52	0.04
24.6	1.18	0.016	0.79	0.03
20.2	1.15	0.021	0.36	0.05
7.54	0.96	0.023	0.17	0.02
14.1	1.38	0.013	0.26	0.09
13.8	0.95	0.032	0.08	0.067
2	0.98	0.047 <.2		0.03
3.6	1.56	0.039	0.4	0.027
3.5	1.8	0.019	1.43	0.09
13.5	1.43	0.016	0.61 <.03	
15.1	1.02	0.018	0.4 <.03	
	1.1	0.017	0.4	0.041
10.5	0.63	0.005	0.12	0.027
1.89	1.18	0.045	0.32	0.087
71	1.6	0.08 <.2		0.419
4.5	0.94	0.021 <.2		0.034
3.7				
5.83				
6.5				
8.2				
22.4	2.12	0.013	0.88 <.03	
15	1.24	0.0023	0.3 <.03	
7.9	0.68	0.0254 <.2		0.035
28.7	0.87	0.0053 <.2		0.037
8.5	0.7	0.0196 <.2		0.057
Nitrogen N (mg/l)		Ammonia NH3 filt N (mg/l)		
10.53	1.53	0.04	0.73	0.05
71	3.98	0.317	3.26	0.419
1.26	0.63	0.0023	0.05	0.01

WIMS Result Data Extract for Sampling Point 26356 LLYN LLYGEIRIAN, ANGLESEY

SH3425590000

Samples taken between 01/01/2000 and 09/10/2014 for Sampling Purpose *

Note : Statistics have not been included as results contain character-base result qualifiers . Values highlighted at (+- 3 * Standard deviation)

Spt Ref	Date Taken	Time Taken	Purpose	0061 pH (PHUNITS)	0062 Cond @ 20C (uS/cm)	0072 Colour Filt (HAZEN)	0076 Temp Water (CEL)	0111 Ammonia(N) (mg/l)	0114 N-Kjeldahl (mg/l)
26356	23/Nov/2005	1220	PN	7.49	189	50	5.69	<.03	0.84

0116 N Oxidised (mg/l)	0162 Alky pH 4_5 (mg/l)	0172 Chloride Ion (mg/l)	0182 SiO2 Rv Filt (mg/l)	0183 Sulphate SO4 (mg/l)	0207 Sodium - Na (mg/l)	0211 Potassium- K (mg/l)
0.73	39	30.6	5.44	11.9	16	2.62



0237 Magnesium-Mg (mg/l)	0241 Calcium - Ca (mg/l)	0301 C - Org Filt (mg/l)	0348 Phosphorus-P (mg/l)	6396 TurbidityNTU (NTU)	7887 CHLOROPHYLL (ug/l)	9686 Nitrogen - N (mg/l)
4.28	15.1	11.5	0.048	2.83	3.6	1.57



9856 OrthophsFilt (mg/l)	9943 N Oxid Filt (mg/l)	9993 NH3 filt N (mg/l)
0.023	0.69	<.03

Annex B. Horizon flow monitoring results

B.1 Spot flow monitoring results

Date	Total Discharge (l/s)			
	Location A	Location B	Location C	Location H
15/12/2014	6.37	19.21	83.7	
09/01/2015	26.45	72.48	311.98	
21/01/2015	15.69	36.13	216.71	
05/02/2015	8.38	22	114.8	
17/02/2015	17.63	21.37	118.22	
03/03/2015	11.57	25.23	106.47	
17/03/2015	20.21	22.22	191.78	
31/03/2015	13.85	5.2	162.92	
15/04/2015	4.39	11.84	65.8	
28/04/2015	3.67	11	59.79	
13/05/2015	6.96	42.71	133.37	
03/06/2015	4.38	14.65	73.76	
06/07/2015	4.78	5.54	32.53	
13/08/2015	1.041	5.17	71.93	
14/10/2015	0.36	1.33	31.8	
04/11/2015	0.69	6.82	46.37	
16/12/2015	75.05	145.95	573.32	198.31
12/01/2016	29.71	160.64	376.83	159.94
10/02/2016	14.54	83.03	269.46	
09/03/2016	48.22	323.7	382.41	198.44
27/04/2016	2.39	17.67	72.54	
29/06/2016	2.59	18.43	114.12	13.74
03/08/2016	0.05	5.03	20.69	2.18
31/08/2016	0.02	4.57	26.65	5.92
26/09/2016	1.59	22.8	45.25	8.9
26/10/2016	1.42	8.17	36.27	9.64
29/11/2016	5.52	15.36	175.09	17.68
04/01/2017	8.9	86.81	309.79	47.98
31/01/2017	12.94	49.49	372.96	83.02
07/03/2017	10.13	32.37	141.88	43.72
05/04/2017	0.81	29.29	80.5	16.9
10/05/2017	0.31	0.82	15.67	1.93
06/06/2017	9.07	20.47	124.21	37.72
24/07/2017	0.32	6.26	6.19	6.17
25/08/2017	2.83	11.85		12.40

Annex C. Horizon water quality results

C.1 *In situ* and laboratory spot monitoring results

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
Spring A	Tre'r Gof Spring	03/11/2015 00:00	-	-	-	-	-	-
Spring A	Tre'r Gof spring	15/12/2015 00:00	6.74	588	34.9	7.4	10.2	-
Spring A	Tre'r Gof Spring	09/02/2016 09:10	5.64	587	88	52	7.4	5
Spring A	Tre'r Gof Spring	08/03/2016 10:00	7.32	585	70	104	7.9	5
Spring A	Tre'r Gof Spring	26/04/2016 10:05	6.66	594	41.8	27	12.3	-
Spring A	Tre'r Gof Spring	02/08/2016 10:21	-	-	-	-	-	-
Spring A	Tre'r Gof Spring	28/11/2016 00:00	-	-	-	-	-	-
Spring A	Tre'r Gof Spring	03/01/2017 16:10	6.94	108	-	7	10.4	-
Spring A	Tre'r Gof Spring	01/02/2017 13:32	7.82	613.7	86.3	99	10.73	-
Spring A	Tre'r Gof Spring	07/03/2017 12:00	7.38	515.9	61.5	393	9.75	-
Spring A	Tre'r Gof Spring	05/04/2017 00:00	7.09	523.63	54.33	40.8	13.24	-
Spring A	Tre'r Gof Spring	09/05/2017 13:55	-	-	-	-	-	-
Spring A	Tre'r Gof Spring	06/06/2017 16:42	7.08	548.51	42.24	27.6	13.13	-
Spring A	Tre'r Gof Spring	24/07/2017 18:15	7.17	595.19	43.35	-95.3	17.1	-
Spring A	Tre'r Gof Spring	22/08/2017 12:06	7.35	619.28	59.38	33.6	17	15
Spring B	Tre'r Gof Spring	03/11/2015 00:00	-	-	-	-	-	-
Spring B	Tre'r Gof Spring	09/02/2016 09:50	5.95	392	81	47	5.3	5
Spring B	Tre'r Gof Spring	08/03/2016 10:23	6.07	458	95.4	99	7.6	5
Spring B	Tre'r Gof Spring	26/04/2016 10:45	6.9	562	60.4	28	11.4	-
Spring B	Tre'r Gof Spring	28/11/2016 00:00	6.18	632	49.2	89	7.8	-
Spring B	Tre'r Gof Spring	03/01/2017 16:20	7.24	415	-	10	7.6	-
Spring B	Tre'r Gof Spring	01/02/2017 10:15	7.45	443.9	52.4	29.3	8.9	5
Spring B	Tre'r Gof Spring	07/03/2017 11:35	7.51	320.3	90	382.9	7.7	-
Spring B	Tre'r Gof Spring	05/04/2017 00:00	7.34	379.13	132.34	37	14.34	-
Spring B	Tre'r Gof Spring	09/05/2017 10:30	-	-	-	-	-	-
Spring B	Tre'r Gof Spring	06/06/2017 14:40	7.12	319.4	78.7	79.5	16.11	-
Spring B	Tre'r Gof Spring	24/07/2017 14:50	-	-	-	-	-	-
Spring B	Tre'r Gof Spring	21/08/2017 17:45	-	-	-	-	-	-
Spring C	Tre'r Gof Spring	03/11/2015 00:00	-	-	-	-	-	-
Spring C	Tre'r Gof spring	15/12/2015 00:00	6.92	281	88.4	72	11.2	-
Spring C	Tre'r Gof Spring	09/02/2016 10:50	5.92	295	90	68	8.4	5
Spring C	Tre'r Gof Spring	08/03/2016 11:15	7.33	297	77	44	9.3	5
Spring C	Tre'r Gof Spring	26/04/2016 12:10	7.23	313	61.1	26	10	-
Spring C	Tre'r Gof Spring	02/08/2016 12:16	-	-	-	-	-	-
Spring C	Tre'r Gof Spring	28/11/2016 00:00	6.48	486	60.1	-2	10.2	-
Spring C	Tre'r Gof Spring	03/01/2017 14:57	6.7	347	-	25	10.6	-
Spring C	Tre'r Gof Spring	01/02/2017 12:09	7.87	308.6	76.1	100.3	10.02	5
Spring C	Tre'r Gof Spring	07/03/2017 10:05	7.08	258.2	79.2	478.5	8.84	-
Spring C	Tre'r Gof Spring	04/04/2017 00:00	7.3	263.63	85.34	43.7	10.13	-
Spring C	Tre'r Gof Spring	09/05/2017 12:10	7.03	311.75	54.84	-9.5	15.92	-
Spring C	Tre'r Gof Spring	06/06/2017 15:12	6.63	326.94	69.58	64.4	14.12	-
Spring C	Tre'r Gof Spring	24/07/2017 15:40	-	-	-	-	-	-
Spring C	Tre'r Gof Spring	21/08/2017 17:45	-	-	-	-	-	-
Spring D	Tre'r Gof Spring	03/11/2015 00:00	-	-	-	-	-	-
Spring D	Tre'r Gof spring	15/12/2015 00:00	6.92	451	34.8	79	9.6	-
Spring D	Tre'r Gof Spring	09/02/2016 12:00	5.96	438	84.3	87	6	7
Spring D	Tre'r Gof Spring	08/03/2016 11:36	6.11	451	83.7	69	7	40
Spring D	Tre'r Gof Spring	26/04/2016 14:15	7.78	562	64.9	96	11.2	-
Spring D	Tre'r Gof Spring	02/08/2016 16:57	-	-	-	-	-	-
Spring D	Tre'r Gof Spring	28/11/2016 00:00	6.96	705	62.5	45	8.7	-
Spring D	Tre'r Gof Spring	03/01/2017 16:30	7.14	585	-	51	7.5	-
Spring D	Tre'r Gof Spring	31/01/2017 14:03	7.6	493.3	67.9	119.6	7.94	38
Spring D	Tre'r Gof Spring	07/03/2017 09:30	7.13	415.1	81.6	493.7	6.81	-
Spring D	Tre'r Gof Spring	04/04/2017 00:00	7.1	498.72	81.91	78.3	9.74	-
Spring D	Tre'r Gof Spring	09/05/2017 16:00	-	-	-	-	-	-
Spring D	Tre'r Gof Spring	06/06/2017 17:07	7	735.37	80.85	37.7	14.79	-
Spring D	Tre'r Gof Spring	24/07/2017 18:30	-	-	-	-	-	-
Spring D	Tre'r Gof Spring	22/08/2017 15:05	7.36	700.13	56.3	57	20.57	5

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
Spring E	Tre'r Gof Spring	03/11/2015 00:00	-	-	-	-	-	-
Spring E	Tre'r Gof spring	16/12/2015 00:00	6.92	213	-	37	11.7	-
Spring E	Tre'r Gof Spring	09/05/2016 11:30	6.02	304	89.2	63	5.3	7
Spring E	Tre'r Gof Spring	31/01/2017 14:57	7.76	438.7	82.4	69	10.3	5
VN1	Tre'r Gof flume	02/06/2015 14:30	7.24	325	10.3	81	12.3	-
VN1	Tre'r Gof flume	06/07/2015 00:00	-	-	-	-	-	-
VN1	Tre'r Gof flume	14/08/2015 00:00	-	-	-	-	-	-
VN1	Tre'r Gof flume	17/09/2015 13:25	-	-	-	-	-	-
VN1	Tre'r Gof flume	03/11/2015 00:00	-	-	-	-	-	-
VN1	Tre'r Gof flume	15/12/2015 00:00	6.74	292	50.8	63	8.8	-
VN1	Tre'r Gof flume	13/01/2016 13:55	6.4	316	-	101	6.9	5
VN1	Tre'r Gof flume	09/02/2016 09:55	5.9	321	82.4	51	5.7	5
VN1	Tre'r Gof flume	08/03/2016 10:33	6.18	349	82.4	91	7	5
VN1	Tre'r Gof flume	26/04/2016 10:55	7.07	339	64.8	11	10.1	-
VN1	Tre'r Gof flume	31/05/2016 14:10	-	-	-	-	-	-
VN1	Tre'r Gof flume	28/06/2016 15:40	-	-	-	-	-	-
VN1	Tre'r Gof flume	02/08/2016 11:13	-	-	-	-	-	-
VN1	Tre'r Gof flume	30/08/2016 13:46	-	-	-	-	-	-
VN1	Tre'r Gof flume	28/11/2016 00:00	-	-	-	-	-	-
VN1	Tre'r Gof flume	03/01/2017 14:12	6.54	228	-	60	8.3	-
VN1	Tre'r Gof flume	01/02/2017 10:30	7.73	424	101.2	55.7	8.85	5
VN1	Tre'r Gof flume	07/03/2017 00:11	7.29	335.6	80.9	530.7	7.8	-
VN1	Tre'r Gof flume	05/04/2017 00:00	7.14	299.37	90.79	16	10.72	-
VN1	Tre'r Gof flume	09/05/2017 10:35	-	-	-	-	-	-
VN1	Tre'r Gof flume	06/06/2017 14:25	7.09	296.08	78.47	79.5	16.01	-
VN1	Tre'r Gof flume	24/07/2017 14:55	-	-	-	-	-	-
VN1	Tre'r Gof flume	21/08/2017 16:09	-	-	-	-	-	-
VN2	Tre'r Gof flume	02/06/2015 15:00	6.36	753	1	104	12.2	-
VN2	Tre'r Gof flume	06/07/2015 00:00	8.58	714	13.3	92	12.4	331
VN2	Tre'r Gof flume	14/08/2015 00:00	-	-	-	-	-	-
VN2	Tre'r Gof flume	17/09/2015 13:35	-	-	-	-	-	-
VN2	Tre'r Gof flume	03/11/2015 00:00	-	-	-	-	-	-
VN2	Tre'r Gof flume	15/12/2015 00:00	6.91	720	-	81	10.6	-
VN2	Tre'r Gof flume	13/01/2016 14:15	6.98	780	-	116	9.7	5
VN2	Tre'r Gof flume	09/02/2016 09:25	5.61	781	61.5	48	9.4	5
VN2	Tre'r Gof flume	08/03/2016 10:14	7.32	709	44.7	108	10	5
VN2	Tre'r Gof flume	26/04/2016 10:15	6.76	727	35.4	25	10.7	-
VN2	Tre'r Gof flume	31/05/2016 14:03	-	-	-	-	-	-
VN2	Tre'r Gof flume	28/06/2016 15:30	-	-	-	-	-	-
VN2	Tre'r Gof flume	02/08/2016 10:35	6.49	813	-	160	13.6	270
VN2	Tre'r Gof flume	30/08/2016 13:27	-	-	-	-	-	-
VN2	Tre'r Gof flume	25/10/2016 00:00	6.47	861	54	635	11.3	5
VN2	Tre'r Gof flume	28/11/2016 00:00	6.25	841	31.8	106	11.8	-
VN2	Tre'r Gof flume	03/01/2017 14:00	6.05	760	-	58	11.2	-
VN2	Tre'r Gof flume	01/02/2017 09:30	7.09	683	63.7	121.8	10.03	7.5
VN2	Tre'r Gof flume	07/03/2017 11:45	6.87	595.4	40.9	442.4	9.79	-
VN2	Tre'r Gof flume	05/04/2017 00:00	6.68	591.14	35.4	49.9	13.39	-
VN2	Tre'r Gof flume	09/05/2017 10:15	6.99	579.97	55.52	95.8	14.17	5.5
VN2	Tre'r Gof flume	06/06/2017 14:07	6.07	694.52	44.99	92.4	15.44	-
VN2	Tre'r Gof flume	24/07/2017 15:40	-	-	-	-	-	-
VN2	Tre'r Gof flume	21/08/2017 15:15	6.79	689.35	63.14	161.8	15.12	5
VN3	Tre'r Gof flume	02/06/2015 00:00	-	-	-	-	-	-
VN3	Tre'r Gof flume	06/07/2015 00:00	-	-	-	-	-	-
VN3	Tre'r Gof flume	14/08/2015 00:00	-	-	-	-	-	-
VN3	Tre'r Gof flume	17/09/2015 13:45	-	-	-	-	-	-
VN3	Tre'r Gof flume	03/11/2015 00:00	-	-	-	-	-	-
VN3	Tre'r Gof flume	15/12/2015 00:00	6.88	309	65.2	75	9.1	-
VN3	Tre'r Gof flume	13/01/2016 14:55	6.51	329	-	113	6	100

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
VN3	Tre'r Gof flume	09/02/2016 10:30	5.9	365	89.5	72	4.2	5
VN3	Tre'r Gof flume	08/03/2016 11:08	6.26	359	97.2	48	7.1	5
VN3	Tre'r Gof flume	26/04/2016 12:00	7.04	502	67.2	40	7.4	-
VN3	Tre'r Gof flume	31/05/2016 14:39	-	-	-	-	-	-
VN3	Tre'r Gof flume	28/06/2016 16:42	-	-	-	-	-	-
VN3	Tre'r Gof flume	02/08/2016 12:17	-	-	-	-	-	-
VN3	Tre'r Gof flume	30/08/2016 14:11	-	-	-	-	-	-
VN3	Tre'r Gof flume	28/11/2016 00:00	-	-	-	-	-	-
VN3	Tre'r Gof flume	03/01/2017 14:50	6.99	506	-	-14	7.6	-
VN3	Tre'r Gof flume	01/02/2017 11:50	7.86	402.6	99.8	99.6	9.51	150
VN3	Tre'r Gof flume	07/03/2017 10:00	7.49	296.4	94.4	491.1	6.53	-
VN3	Tre'r Gof flume	04/04/2017 00:00	-	-	-	-	-	-
VN3	Tre'r Gof flume	09/05/2017 12:00	-	-	-	-	-	-
VN3	Tre'r Gof flume	06/06/2017 15:10	-	-	-	-	-	-
VN3	Tre'r Gof flume	24/07/2017 15:40	-	-	-	-	-	-
VN3	Tre'r Gof flume	21/08/2017 17:45	-	-	-	-	-	-
VN4	Tre'r Gof flume	02/06/2015 00:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	06/07/2015 00:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	14/08/2015 00:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	17/09/2015 14:15	-	-	-	-	-	-
VN4	Tre'r Gof flume	03/11/2015 00:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	15/12/2015 00:00	6.92	411	68.8	79	9	-
VN4	Tre'r Gof flume	13/01/2016 16:00	6.98	382	-	130	5.3	8
VN4	Tre'r Gof flume	09/02/2016 12:05	6.25	411	80.2	83	5	6
VN4	Tre'r Gof flume	08/03/2016 11:45	6.55	367	96.7	42	8.3	35
VN4	Tre'r Gof flume	26/04/2016 14:29	-	-	-	-	-	-
VN4	Tre'r Gof flume	01/06/2016 16:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	28/06/2016 18:53	-	-	-	-	-	-
VN4	Tre'r Gof flume	02/08/2016 17:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	30/08/2016 15:42	-	-	-	-	-	-
VN4	Tre'r Gof flume	28/11/2016 00:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	03/01/2017 16:35	-	-	-	-	-	-
VN4	Tre'r Gof flume	31/01/2017 14:15	-	-	-	-	-	-
VN4	Tre'r Gof flume	07/03/2017 09:45	7.47	343	93.7	459.8	6.24	-
VN4	Tre'r Gof flume	04/04/2017 00:00	-	-	-	-	-	-
VN4	Tre'r Gof flume	09/05/2017 16:10	-	-	-	-	-	-
VN4	Tre'r Gof flume	06/06/2017 17:10	-	-	-	-	-	-
VN4	Tre'r Gof flume	24/07/2017 18:30	-	-	-	-	-	-
VN4	Tre'r Gof flume	23/08/2017 10:16	-	-	-	-	-	-
VN5	Tre'r Gof flume	02/06/2015 16:18	7.46	510	7	60	14.3	-
VN5	Tre'r Gof flume	06/07/2015 00:00	7.2	627	12.1	21	14.6	312
VN5	Tre'r Gof flume	14/08/2015 00:00	6.84	588	0.2	54	14.3	4
VN5	Tre'r Gof flume	17/09/2015 14:00	6.19	600	54.3	86	13.7	1402
VN5	Tre'r Gof flume	14/10/2015 14:20	6.71	615	60.3	126	10.4	4.78
VN5	Tre'r Gof flume	03/11/2015 00:00	6.56	755	-	83	8.4	30
VN5	Tre'r Gof flume	15/12/2015 00:00	7.2	407	97.3	72	7	-
VN5	Tre'r Gof flume	13/01/2016 00:00	6.56	392	-	103	5.7	5
VN5	Tre'r Gof flume	09/02/2016 08:53	6.01	413	80	58	4.6	5
VN5	Tre'r Gof flume	08/03/2016 09:45	5.85	426	82.3	122	5.9	5
VN5	Tre'r Gof flume	26/04/2016 09:20	6.53	486	62.8	77	7	-
VN5	Tre'r Gof flume	31/05/2016 15:16	-	-	-	-	-	-
VN5	Tre'r Gof flume	28/06/2016 17:56	-	-	-	-	-	-
VN5	Tre'r Gof flume	02/08/2016 13:33	7.16	690	-	86	17.1	390
VN5	Tre'r Gof flume	31/08/2016 10:42	6.1	660	44.5	84	15.9	5
VN5	Tre'r Gof flume	28/09/2016 08:15	6.67	586	54	167	14.1	5
VN5	Tre'r Gof flume	25/10/2016 00:00	7.16	668	55	-	9.6	5
VN5	Tre'r Gof flume	28/11/2016 00:00	7.21	632	69.3	7	8.3	-
VN5	Tre'r Gof flume	03/01/2017 15:44	7.19	141	-	-18	7.3	-

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
VN5	Tre'r Gof flume	01/02/2017 13:02	7.78	441.5	83.7	90.5	9.7	5
VN5	Tre'r Gof flume	07/03/2017 12:30	7.57	340.8	87.2	330.4	7.64	-
VN5	Tre'r Gof flume	05/04/2017 00:00	7.67	426.93	91.67	12.5	13.17	-
VN5	Tre'r Gof flume	09/05/2017 13:31	7.47	492.99	71.43	-27.9	16.66	5
VN5	Tre'r Gof flume	06/06/2017 16:20	7.29	262.15	57.81	-45.4	15.93	-
VN5	Tre'r Gof flume	24/07/2017 17:30	7.49	667.74	59.35	-69.8	19	-
VN5	Tre'r Gof flume	22/08/2017 11:20	7.52	618.27	65.71	32	19.16	5

NB. Numbers in *italic* are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	110	110	92	109	110	50
Mean	6.90	486.59	65.97	97.76	10.42	66.26
Min	5.61	108.00	0.20	-95.30	4.20	4.00
Max	8.58	861	132.34	635	20.57	1402

Sample ID	Catchment	Date	Carbon, Organic (diss.flit)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Turbidity	Ammoniacal Nitrogen as NH4	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.flit)	Suspended solids, Total	Alkalinity, Bicarbonate as CaCO3	Alkalinity, Bicarbonate as CaCO3 (diss.flit)	Alkalinity, Carbonate as CaCO3	BOD, unfiltered
			mg/l	mg/l	mg/l	mS/cm	% Diff	mg/l	mg/l	pH Units	mg/l	mg/l	mg/l	ntu	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		Limit of detection	<3	<0.2		<0.005		<0.05	<0.3	<1	<2	<2	<1	<0.1	<0.3	<0.05	<0.02	<10	<0.3	<0.02	<2	<2	<2	<2	<2	<2	<2.92
		EQS		0.02	0.02	2500		0.01		<6, >9	400	250			0.025								25				2.5
Porth Wylfa	Tre'r Gof	28/02/2012	-	0.03	0.02	-	-	-	12.8	7.67	-	65.8	-	-	-	-	0.02	-	-	-	-	159	-	157	159	-	1
Porth Wylfa	Tre'r Gof	09/05/2012	-	0.03	0.02	466	-	-	65.1	6.5	-	59.4	-	-	-	-	0.02	-	-	-	-	226	21.3	221	226	-	2.5
Porth Wylfa	Tre'r Gof	07/08/2012	-	0.03	0.02	497	-	-	52.7	7.13	-	49.5	-	-	-	-	0.02	-	-	-	-	191	6.18	196	191	-	1
Porth Wylfa	Tre'r Gof	12/03/2013	-	0.082	-	-	-	-	-	-	-	58.9	-	-	-	-	0.02	-	-	-	-	178	19.9	239	178	-	2.92
Porth Wylfa	Tre'r Gof	25/04/2013	-	0.039	0.02	443	-	-	65.4	6.66	-	59.3	-	-	-	-	0.02	-	-	-	-	208	29.7	211	208	-	1.54
Porth Wylfa	Tre'r Gof	29/10/2013	-	0.03	-	-	-	-	-	-	-	49.2	-	-	-	-	0.02	-	-	-	-	156	26.6	154	156	-	1.86
Porth Wylfa	Tre'r Gof	07/05/2014	-	0.063	0.02	539	-	-	8.31	7.03	-	58	-	-	-	-	0.02	-	-	-	-	202	13.4	-	207	-	1.21
Porth Wylfa	Tre'r Gof	15/10/2014	-	0.037	0.02	514	-	-	68.8	8.57	-	72.9	-	-	-	-	0.02	-	-	-	-	203	5.13	-	199	-	1
Porth Wylfa Pond	Tre'r Gof	18/02/2014	-	0.048	0.02	372	-	-	135	6.7	-	42.3	-	-	-	-	0.02	-	-	-	-	133	13.9	85	133	-	1
Porth Wylfa Pond	Tre'r Gof	07/05/2014	-	1.59	0.02	443	-	-	6.37	6.89	-	43.4	-	-	-	-	0.088	-	-	-	-	150	69.6	-	155	-	3.79
Porth Wylfa Pond	Tre'r Gof	15/10/2014	-	0.112	0.02	501	-	-	97.7	8.57	-	53.4	-	-	-	-	0.093	-	-	-	-	154	15.1	-	148	-	3.42
Power Station Junction	Tre'r Gof	12/03/2013	-	0.03	-	-	-	-	-	-	-	67.5	-	-	-	-	0.02	-	-	-	-	92.6	3	91	92.6	-	2.92
Power Station Junction	Tre'r Gof	25/04/2013	-	0.03	0.02	336	-	-	80.5	6.26	-	72	-	-	-	-	0.02	-	-	-	-	97.5	4.85	99	97.5	-	1
Power Station Junction	Tre'r Gof	14/10/2014	-	0.509	0.02	266	-	-	45.6	6.09	-	52.6	-	-	-	-	0.822	-	-	-	-	77.3	27.2	-	71	-	5.55
Power Station Pond	Tre'r Gof	12/03/2013	-	0.082	-	-	-	-	-	-	-	67.3	-	-	-	-	0.02	-	-	-	-	94.6	3.03	98	94.6	-	2.92
Power Station Pond	Tre'r Gof	25/04/2013	-	0.051	0.02	361	-	-	20	6.07	-	59.3	-	-	-	-	0.034	-	-	-	-	98.1	6.75	99	98.1	-	1.45
Power Station Pond	Tre'r Gof	29/10/2013	-	0.03	-	-	-	-	-	-	-	27.5	-	-	-	-	0.036	-	-	-	-	22	173	10	22	-	6.79
Power Station Pond	Tre'r Gof	07/05/2014	-	0.385	0.02	319	-	-	7.33	5.97	-	54.6	-	-	-	-	0.036	-	-	-	-	95.5	81.8	-	93	-	7.91
Power Station Pond	Tre'r Gof	14/10/2014	-	0.081	0.02	272	-	-	53	5.87	-	49.3	-	-	-	-	0.046	-	-	-	-	41.2	46.9	-	43	-	4.9
Spring A	Tre'r Gof	11/02/2015	-	0.2	-	595	-4.33	0.05	-	7.81	39.8	87.8	4.25	-	-	-	-	397	18.7	-	-	165	23.4	-	165	<2	-
Spring A	Tre'r Gof	15/12/2015	-	0.2	-	686	-9.64	0.05	-	8.34	41.7	107	2.96	3.84	-	-	-	445	11.9	-	-	190	121	-	190	<2	-
Spring A	Tre'r Gof	13/01/2016	-	0.2	-	655	-9.67	0.05	-	7.83	44	117	3.5	22.1	-	-	-	400	14.4	-	-	145	81.5	-	145	<2	-
Spring A	Tre'r Gof	09/02/2016	-	0.2	-	626	-4.94	0.05	-	8.01	41.3	107	2.98	31.6	-	0.129	-	405	12.4	-	-	140	203	-	140	<2	-
Spring A	Tre'r Gof	26/04/2016	-	0.2	-	616	1.59	0.05	-	7.17	42.3	96.4	2.34	385	-	0.052	-	380	8.28	-	-	150	3550	-	150	<2	-
Spring A	Tre'r Gof	01/02/2017	-	0.2	-	627	-0.447	0.05	-	4.66	44	97.8	2.41	10.4	-	0.107	-	477	11	-	-	175	33.7	-	175	<2	-
Spring A	Tre'r Gof	22/08/2017	-	0.834	-	626	-5.86	0.236	-	7.55	31.3	98.4	2.99	20.7	-	1.19	-	445	4.1	-	-	-	26.7	-	190	<2	-
Spring B	Tre'r Gof	15/12/2015	-	0.2	-	383	-5.87	0.05	-	7.46	23.9	65.7	2.18	4.83	-	-	-	236	7.25	-	-	65	41.5	-	65	<2	-
Spring B	Tre'r Gof	13/01/2016	-	0.2	-	614	-9.97	0.05	-	7.7	44.5	115	7.88	1.96	-	-	-	391	31.7	-	-	85	2	-	85	<2	-
Spring B	Tre'r Gof	09/02/2016	-	0.2	-	441	-4.04	0.05	-	7.78	28.2	72	2.96	2.65	-	0.072	-	298	12.1	-	-	95	7	-	95	<2	-
Spring B	Tre'r Gof	26/04/2016	-	0.2	-	579	-8.8	0.05	-	7.26	32.4	84.1	1	17.6	-	0.05	-	383	0.3	-	-	175	125	-	175	<2	-
Spring B	Tre'r Gof	01/02/2017	-	0.2	-	517	-1.18	0.05	-	7.12	27.2	87.7	1.61	11.8	-	0.624	-	360	3.41	-	-	150	37.4	-	150	<2	-
Spring C	Tre'r Gof	15/12/2015	-	0.2	-	351	-8.19	0.05	-	7.75	25.1	49.4	7.99	1.02	-	-	-	255	30.8	-	-	55	2	-	55	<2	-
Spring C	Tre'r Gof	13/01/2016	-	0.2	-	334	-10.3	0.05	-	7.44	23.1	50.6	6.59	3.36	-	-	-	211	26.9	-	-	50	2.5	-	50	<2	-
Spring C	Tre'r Gof	09/02/2016	-	0.2	-	313	-3.53	0.05	-	7.42	18.7	46.3	6.71	0.937	-	0.05	-	242	27.7	-	-	55	2	-	55	<2	-
Spring C	Tre'r Gof	26/04/2016	-	0.2	-	326	-8.56	0.05	-	6.93	21.4	42.8	7.02	2.81	-	0.071	-	225	28.1	-	-	65	6	-	65	<2	-
Spring C	Tre'r Gof	01/02/2017	-	0.2	-	332	0.879	0.05	-	6.9	23.9	41.2	6.06	17.2	-	0.056	-	230	30.1	-	-	75	115	-	75	<2	-
Spring C	Tre'r Gof	09/05/2017	-	0.254	-	387	-18.6	0.129	-	7.11	25	46	6.45	78.7	-	0.095	-	264	28	-	-	150	170	-	150	<2	-
Spring D	Tre'r Gof	11/02/2015	-	0.2	-	606	-2.32	0.05	-	7.22	46.6	63.4	2.38	-	-	-	-	330	7.25	-	-	215	21.9	-	215	<2	-
Spring D	Tre'r Gof	15/12/2015	-	0.2	-	546	-6.9	0.05	-	7.33	35.4	65.6	5.27	2.2	-	-	-	364	21.5	-	-	150	16	-	150	<2	-
Spring D	Tre'r Gof	13/01/2016	-	0.2	-	439	-8.01	0.05	-	7.59	28.4	54.2	3	20.4	-	-	-	275	10.8	-	-	130	115	-	130	<2	-
Spring D	Tre'r Gof	09/02/2016	-	0.2	-	473	-3.98	0.05	-	7.56	27.4	50.5	3.63	91.7	-	0.469	-	312	14.4	-	-	155	320	-	155	<2	-
Spring D	Tre'r Gof	26/04/2016	-	0.543	-	611	-8.83	0.05	-	6.83	40.2	56.1	1.39	27300	-	0.184	-	409	0.656	-	-	220	21000	-	220	<2	-
Spring D	Tre'r Gof	01/02/2017	-	0.242	-	558	-2.27	0.111	-	7.41	36	63.2	6.84	22.5	-	0.997	-	430	30	-	-	185	37.3	-	185	<2	-
Spring D	Tre'r Gof	22/08/2017	-	0.2	-	615	-1.64	0.05	-	7.77	30.9	64.1	1.73	1.78	-	0.387	-	415	1.16	-	-	245	2.4	-	245	<2	-
Spring E	Tre'r Gof	11/02/2015	-	0.219	-	301	-2.66	0.25	-	6.78	12.2	46.6	2.35	-	-	-	-	132	7.56	-	-	60	2670	-	60	<2	-

Sample ID	Catchment	Date	Carbon, Organic (diss.flit)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Turbidity	Ammoniacal Nitrogen as NH4	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.flit)	Suspended solids, Total	Alkalinity, Bicarbonate as CaCO3	Alkalinity, Bicarbonate as CaCO3 (diss.flit)	Alkalinity, Carbonate as CaCO3	BOD, unfiltered
Spring E	Tre'r Gof	16/12/2015	-	0.268	-	246	-8.66	0.05	-	7.62	22.1	46	1.88	5.54	-	-	-	189	4.33	-	-	50	7	-	50	<2	-
Spring E	Tre'r Gof	13/01/2016	-	0.2	-	236	-4.92	0.05	-	7.3	7	45.9	1.43	62	-	-	-	144	1.94	-	-	35	124	-	35	<2	-
Spring E	Tre'r Gof	09/02/2016	-	0.2	-	291	-4.47	0.05	-	7.46	15.8	51	2.13	115	-	0.05	-	205	7.54	-	-	55	582	-	55	<2	-
Spring E	Tre'r Gof	26/04/2016	-	0.2	-	347	-3.05	0.05	-	7.03	24.6	53.7	1	92.1	-	0.05	-	213	1.4	-	-	75	429	-	75	<2	-
Spring E	Tre'r Gof	01/02/2017	-	0.2	-	510	-7.87	0.05	-	7.45	27.6	136	1.52	88.4	-	0.054	-	354	6.08	-	-	65	17.7	-	65	<2	-
Tre'r Gof SSSI	Tre'r Gof	18/02/2014	-	0.03	0.02	356	-	-	73.5	6.38	-	46	-	-	-	-	0.02	-	-	-	-	108	121	114	108	-	2.68
Tre'r Gof SSSI	Tre'r Gof	07/05/2014	-	0.037	0.02	582	-	-	6.47	6.39	-	93	-	-	-	-	0.02	-	-	-	-	169	81.2	-	166	-	4.64
Tre'r Gof SSSI	Tre'r Gof	15/10/2014	-	0.03	0.02	640	-	-	55.8	8.46	-	119	-	-	-	-	0.02	-	-	-	-	188	6.93	-	183	-	1
Tyddyn-Goronwy	Tre'r Gof	15/10/2014	-	0.209	-	495	-	-	52.6	-	-	82.4	-	-	-	-	0.049	-	-	-	-	166	307	-	152	-	12.2
VN1	Tre'r Gof	11/02/2015	-	0.2	-	341	-3.82	0.05	-	7.53	15.9	58.8	1.77	-	-	-	-	207	6.13	-	-	80	4	-	80	<2	-
VN1	Tre'r Gof	15/12/2015	-	0.2	-	323	-10.2	0.05	-	7.35	23.6	61.9	2.76	1.42	-	-	-	231	9.62	-	-	55	2	-	55	<2	-
VN1	Tre'r Gof	13/01/2016	-	0.2	-	302	-10.5	0.05	-	7.81	21.5	53.3	2.41	1.62	-	-	-	178	8.97	-	-	65	2	-	65	<2	-
VN1	Tre'r Gof	09/02/2016	-	0.2	-	340	-6.85	0.051	-	7.91	21.9	60.1	2.83	1.96	-	0.066	-	214	11.2	-	-	70	2	-	70	<2	-
VN1	Tre'r Gof	26/04/2016	-	0.2	-	334	-5.17	0.05	-	7.64	23.6	55	1	7.5	-	0.055	-	217	0.778	-	-	80	16	-	80	<2	-
VN1	Tre'r Gof	01/02/2017	-	0.2	-	487	-1.7	0.131	-	7.47	29.6	107	2.05	6.5	-	0.081	-	336	5.65	-	-	75	9.95	-	75	<2	-
VN2	Tre'r Gof	11/02/2015	-	0.2	-	725	-4.57	0.05	-	7.11	57	125	8.45	-	-	-	-	480	35.4	-	-	155	20	-	155	<2	-
VN2	Tre'r Gof	15/12/2015	-	0.2	-	880	-6.07	0.05	-	7.44	62.3	152	10.2	11.3	-	-	-	622	39	-	-	165	12.5	-	165	<2	-
VN2	Tre'r Gof	13/01/2016	-	0.2	-	916	-7.69	0.05	-	7.35	74.1	167	13.3	4.99	-	-	-	612	51.8	-	-	130	16	-	130	<2	-
VN2	Tre'r Gof	09/02/2016	3.53	0.2	-	841	-6.8	0.05	9.61	7.38	65.3	161	11.8	-	-	0.05	-	651	47.5	0.2	-	135	360	-	135	<2	-
VN2	Tre'r Gof	26/04/2016	5.2	0.2	-	496	-3.73	0.05	-	7.79	22.8	49.7	1	-	-	0.05	-	321	1.24	0.2	-	190	10	-	190	<2	-
VN2	Tre'r Gof	02/08/2016	3.06	0.249	-	769	-2.3	0.05	-	7.02	53.7	134	8.97	-	-	0.05	-	568	33.4	0.2	-	150	176	-	150	<2	-
VN2	Tre'r Gof	25/10/2016	3	0.2	-	761	-6.63	0.05	-	7.54	56.3	139	8.52	-	-	0.05	-	548	36	0.2	-	150	3	-	150	<2	-
VN2	Tre'r Gof	01/02/2017	3	0.2	-	736	-1.88	0.05	-	7.22	53.9	119	5.61	-	-	0.05	-	485	28.8	0.2	-	165	115	-	165	<2	-
VN2	Tre'r Gof	10/05/2017	3	0.2	-	703	-3.48	0.05	-	7.21	52.5	120	5.89	-	-	0.05	0.02	482	27.5	-	-	160	55.8	-	160	<2	-
VN2	Tre'r Gof	22/08/2017	3	0.2	-	711	-5.09	0.05	-	7.02	-	-	6.28	-	-	0.14	0.046	477	-	-	-	170	2	-	170	<2	-
VN3	Tre'r Gof	11/02/2015	-	0.2	-	337	-1.42	0.05	-	7.05	19.1	44	8.22	-	-	-	-	202	33.8	-	-	65	39	-	65	<2	-
VN3	Tre'r Gof	15/12/2015	-	0.2	-	373	-8.64	0.05	-	7.33	20.9	53.8	2.84	2.19	-	-	-	264	10.3	-	-	95	2	-	95	<2	-
VN3	Tre'r Gof	13/01/2016	-	0.2	-	339	-9.45	0.05	-	7.9	15.3	48.5	2.83	5.87	-	-	-	213	11	-	-	80	9.5	-	80	<2	-
VN3	Tre'r Gof	09/02/2016	-	0.2	-	378	-3.51	0.06	-	8.07	15.8	48	1.94	79.7	-	0.072	-	258	7.41	-	-	120	497	-	120	<2	-
VN3	Tre'r Gof	26/04/2016	-	0.2	-	566	-2.9	0.05	-	7.23	2	50.6	1.13	3120	-	0.15	-	361	0.3	-	-	245	11800	-	245	<2	-
VN3	Tre'r Gof	01/02/2017	-	0.2	-	455	0.976	0.05	-	7.8	29.2	52.5	2.37	34.8	-	0.244	-	302	10.3	-	-	150	75.7	-	150	<2	-
VN4	Tre'r Gof	11/02/2015	-	1.34	-	482	-2.68	0.05	-	7.23	13.1	44.3	4.06	-	-	-	-	312	0.438	-	-	215	2780	-	215	<2	-
VN4	Tre'r Gof	15/12/2015	-	0.226	-	495	-5.73	0.05	-	7.91	32.7	58	2.93	7.97	-	-	-	306	10.7	-	-	145	15	-	145	<2	-
VN4	Tre'r Gof	13/01/2016	-	0.2	-	399	-4.02	0.05	-	8.07	27	45.7	1.33	0.775	-	-	-	266	4.59	-	-	140	15.5	-	140	<2	-
VN4	Tre'r Gof	09/02/2016	-	0.2	-	433	-1.17	0.054	-	8.04	24	46.6	2	111	-	0.265	-	271	6.99	-	-	160	327	-	160	<2	-
VN5	Tre'r Gof	11/02/2015	-	0.2	-	525	-2.12	0.05	-	7.88	23.7	55	1.3	-	-	-	-	299	4.1	-	-	195	5	-	195	<2	-
VN5	Tre'r Gof	14/10/2015	-	-	-	669	-	0.05	-	7.66	26	55.7	1	5.3	0.3	-	-	-	0.3	-	-	300	10.5	300	-	-	-
VN5	Tre'r Gof	03/11/2015	8.24	0.2	-	637	-0.0477	0.05	8.68	8.32	30.2	83.4	1	4.41	-	-	-	450	1.5	0.2	-	250	9	-	250	<2	-
VN5	Tre'r Gof	15/12/2015	-	0.2	-	478	-8.31	0.05	-	7.85	25.6	54	1.69	1.02	-	-	-	318	5.67	-	-	155	2	-	155	<2	-
VN5	Tre'r Gof	13/01/2016	-	0.2	-	415	-5.21	0.05	-	8.04	23.3	45.7	1.65	0.906	-	-	-	248	5.01	-	-	145	2	-	145	<2	-
VN5	Tre'r Gof	09/02/2016	6.51	0.2	-	429	-6.21	0.05	9.34	8.11	20.2	44.4	1	-	-	0.05	-	277	3.13	0.2	-	160	2	-	160	<2	-
VN5	Tre'r Gof	02/08/2016	6.53	0.248	-	713	-4.62	0.05	-	7.25	25.8	116	1	-	-	0.05	-	528	0.3	0.2	-	215	259	-	215	<2	-
VN5	Tre'r Gof	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	25/10/2016	-	0.2	-	641	-6.29	0.05	-	7.86	32.1	75.1	1	-	-	0.05	-	445	1.7	-	-	250	26.5	-	250	<2	-
VN5	Tre'r Gof	01/02/2017	-	0.2	-	498	-4.43	0.05	-	7.85	26.1	54.8	1	-	-	0.02	-	304	2.38	-	-	185	7.25	-	185	<2	-
VN5	Tre'r Gof	09/05/2017	4.6	0.2	-	590	-0.835	0.05	-	7.82	32.5	64.3	1	-	-	0.05	0.02	392	2.38	-	-	230	4.9	-	230	<2	-
VN5	Tre'r Gof	22/08/2017	9.21	0.2	-	563	-3.25	0.05	-	7.81	20.4	68.3	1.35	-	-	0.05	0.02	373	0.433	-	-	235	2.3	-	235	<2	-
Wylfa Hall Pond	Tre'r Gof	18/02/2014	-	0.03	0.02	632	-	-	53.5	5.58	-	67.1	-	-	-	-	0.021	-	-	-	-	71.1	5.85	71	71.1	-	1

Sample ID	Catchment	Date	Carbon, Organic (diss.flit)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Turbidity	Ammoniacal Nitrogen as NH4	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.flit)	Suspended solids, Total	Alkalinity, Bicarbonate as CaCO3	Alkalinity, Bicarbonate as CaCO3 (diss.flit)	Alkalinity, Carbonate as CaCO3	BOD, unfiltered
Wylfa Hall Pond	Tre'r Gof	07/05/2014	-	0.117	0.02	347	-	-	11	6.85	-	59.8	-	-	-	-	0.035	-	-	-	-	87.5	22.4	-	87	-	3.22
Wylfa Hall Pond	Tre'r Gof	15/10/2014	-	0.218	0.02	219	-	-	37.8	8.15	-	30.2	-	-	-	-	0.196	-	-	-	-	58.4	7.93	-	59	-	18.8

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	12	93	20	88	67	68	24	88	67	93	68	47	1	38	30	67	67	8	0	93	93	15	93	0	26
Mean	4.91	0.21	0.02	493.94	-5.13	0.06	43.20	7.36	30.61	70.32	3.65	677.18	0.30	0.17	0.06	340.81	13.25	0.20	#DIV/0!	137.44	513.00	143.00	135.95	#DIV/0!	3.78
Min	3.00	0.03	0.02	219.00	-18.60	0.05	6.37	4.66	2.00	27.50	1.00	0.78	0.30	0.02	0.02	132.00	0.30	0.20	0.00	22.00	2.00	10.00	22.00	0.00	1.00
Max	9.21	1.59	0.02	916.00	1.59	0.25	135.00	8.57	74.10	167.00	13.30	27300.00	0.30	1.19	0.82	651.00	51.80	0.20	0.00	300.00	21000.00	300.00	250.00	0.00	18.80

Sample ID	Catchment	Date	Iron, Ferric	Aluminium (diss.fit)	Mercury (diss.fit)	Calcium (diss.fit)	Arsenic (diss.fit)	Sodium (diss.fit)	Magnesium (diss.fit)	Potassium (diss.fit)	Iron (diss.fit)	Iron, Ferrous	Cadmium (diss.fit)	Chromium (diss.fit)	Copper (diss.fit)	Bioavailable Copper Concentration (µg l ⁻¹)	Lead (diss.fit)	Available Pb (µg l ⁻¹)	Manganese (diss.fit)	Bioavailable Manganese Concentration (µg l ⁻¹)	Nickel (diss.fit)	Bioavailable Nickel Concentration (µg l ⁻¹)	Selenium (diss.fit)	Zinc (diss.fit)	zinc (diss.fit) + background concentration	Bioavailable Zinc Concentration (µg l ⁻¹)	Mercury (tot.unfit)
Spring E	Tre'r Gof	11/02/2015	-	-	-	21.3	-	23.2	7.91	1.32	0.266	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	16/12/2015	-	-	-	18.2	-	21.6	6.19	1	0.361	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	13/01/2016	-	-	-	14.4	-	18.9	5.17	1	0.157	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	09/02/2016	-	-	-	22.6	-	25	6.33	2.11	0.061	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	26/04/2016	-	-	-	29.8	-	27.3	8.06	1	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	01/02/2017	-	-	-	25.6	-	69.5	7.13	2.69	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	18/02/2014	-	-	-	-	1	-	-	-	-	-	0.1	0.5	1.34	-	2	-	108	-	1	-	-	5	6.4	-	<0.01
Tre'r Gof SSSI	Tre'r Gof	07/05/2014	-	-	0.01	0.5	1	-	-	-	-	-	0.1	-	1	-	2	-	4240	-	1	-	-	5	6.4	-	-
Tre'r Gof SSSI	Tre'r Gof	15/10/2014	-	-	0.01	0.5	1	-	-	-	-	-	0.1	-	1	-	2	-	-	-	1	-	-	5	6.4	-	-
Tyddyn-Goronwy	Tre'r Gof	15/10/2014	-	-	0.01	0.5	1	-	-	-	-	-	0.1	-	1.03	-	2	-	-	-	1	-	-	5	6.4	-	-
VN1	Tre'r Gof	11/02/2015	-	-	-	27.1	-	31.8	7.31	3.13	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	15/12/2015	-	-	-	21.9	-	27.1	5.94	3.38	0.0606	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	13/01/2016	-	-	-	22.1	-	24.5	6.09	3.11	0.0206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	09/02/2016	-	-	-	26.9	-	29.1	7.03	2.75	0.146	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	26/04/2016	-	-	-	29.9	-	27.1	7.63	1	0.0241	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	01/02/2017	-	-	-	33.5	-	59.1	8.26	5.52	0.0453	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	11/02/2015	-	-	-	73.2	-	54.4	18.5	3.88	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	15/12/2015	-	-	-	88.6	-	54	19.2	2.57	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	13/01/2016	-	-	-	82.1	-	58.5	19.1	3.04	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	09/02/2016	0.05	2.9	0.01	81.5	0.428	58.7	18	2.81	0.019	0.1	0.1	8.77	0.85	0.06	0.039	0.01	1.18	0.2	1.56	0.4	1.8	20.6	22	10.55	0.0567
VN2	Tre'r Gof	26/04/2016	0.05	2.9	0.01	63.1	0.12	27.1	11.7	1	0.0999	1.05	0.1	1.22	0.85	0.04	0.02	0	3.75	2.55	0.332	0.1	0.39	3.16	4.56	1.73	<0.02
VN2	Tre'r Gof	02/08/2016	0.05	2	0.01	79.4	0.51	58.2	17.6	4.24	0.0466	0.1	0.08	1.2	0.85	0.07	0.1	0.03	26.7	2.24	0.44	0.09	0.81	17.6	19	9.82	0.0276
VN2	Tre'r Gof	25/10/2016	0.05	2	0.01	75	0.51	52.4	18.1	3.71	0.019	0.1	0.08	1.2	0.85	-	0.1	-	1.71	-	0.44		0.81	1.3	2.7	-	-
VN2	Tre'r Gof	01/02/2017	0.5	2	0.01	79.4	0.51	59.5	16.8	1	0.019	0.5	0.08	1.2	0.85	-	0.1	-	6.5	-	0.44		0.81	1.74	3.14	-	-
VN2	Tre'r Gof	21/08/2017	0.5	2	0.074	74.6	0.5	52.6	17.6	3.51	0.019	0.1	0.08	1	0.661		0.2	-	6.01	-	0.406	-	0.5	1.07	2.47	-	<0.02
VN3	Tre'r Gof	11/02/2015	-	-	-	35.7	-	23.1	7.26	1	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	15/12/2015	-	-	-	33.4	-	23.6	7.58	2.38	0.0441	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	01/02/2017	0.5	-	-	55.4	-	33	12.7	4.53	0.0323	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	13/01/2016	-	-	-	28.5	-	20.9	6.51	2.18	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	09/02/2016	-	-	-	41.7	-	23.4	9.16	2.46	0.0312	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	26/04/2016	-	-	-	72.3	-	29	13.4	2.2	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN4	Tre'r Gof	11/02/2015	-	-	-	68.9	-	24	10.6	2.93	0.332	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN4	Tre'r Gof	15/12/2015	-	-	-	57.5	-	22.7	8.78	8.26	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN4	Tre'r Gof	13/01/2016	-	-	-	51.4	-	22.7	8.19	5.27	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN4	Tre'r Gof	09/02/2016	-	-	-	61.6	-	23.6	9.2	5.79	0.019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	11/02/2015	-	-	-	68.1	-	30.3	12.7	1.84	0.0434	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	14/10/2015	-	-	-	89.3	-	31.5	17.1	1.43	0.146	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	03/11/2015	0.05	2.9	0.01	89.4	0.409	45.1	17.9	3.85	0.1	0.123	0.1	3.98	0.85	0.05	0.049	0.01	49.1	49.1	1.12	0.45	0.69	1.28	2.68	0.71	<0.02
VN5	Tre'r Gof	15/12/2015	-	-	-	49.6	-	25	9.76	2.94	0.0634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	13/01/2016	-	-	-	50.9	-	22.8	9.13	2.04	0.0501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	09/02/2016	0.0583	3.46	0.01	50.8	0.263	23.1	9.83	1.72	0.0583	0.1	0.1	6.16	0.85	0.05	0.097	0.01	70.1	70.1	0.93	0.38	0.39	2.66	4.06	1.28	<0.02
VN5	Tre'r Gof	02/08/2016	0.055	2	0.01	92.6	0.595	33.8	15.6	1.35	0.188	0.133	0.08	1.2	0.85	0.03	0.1	0.02	1100	144.28	0.44	0.08	0.81	1.3	2.7	1	0.0373
VN5	Tre'r Gof	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	25/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	01/02/2017	0.05	2.38	0.01	67.8	0.51	35	5.22	1.01	0.102	0.5	0.08	1.2	0.85	-	0.1	-	81.3	-	0.44	-	0.81	1.3	-	-	<0.02
VN5	Tre'r Gof	22/08/2017	0.05	2	0.01	79.6	0.764	33.8	14.3	1.77	0.136	0.156	0.08	1	0.3	-	0.2	-	375	-	0.4	-	0.5	1.46	2.86	-	<0.02
Wylfa Hall Pond	Tre'r Gof	18/02/2014	-	-	-	-	1	-	-	-	-	-	0.1	0.5	2.09	-	2	-	105	-	1	-	-	6.07	7.47	-	<0.01

Sample ID	Catchment	Date	Iron, Ferric	Aluminium (diss.fit)	Mercury (diss.fit)	Calcium (diss.fit)	Arsenic (diss.fit)	Sodium (diss.fit)	Magnesium (diss.fit)	Potassium (diss.fit)	Iron (diss.fit)	Iron, Ferrous	Cadmium (diss.fit)	Chromium (diss.fit)	Copper (diss.fit)	Bioavailable Copper Concentration (µg l ⁻¹)	Lead (diss.fit)	Available Pb (µg l ⁻¹)	Manganese (diss.fit)	Bioavailable Manganese Concentration (µg l ⁻¹)	Nickel (diss.fit)	Bioavailable Nickel Concentration (µg l ⁻¹)	Selenium (diss.fit)	Zinc (diss.fit)	zinc (diss.fit) + background concentration	Bioavailable Zinc Concentration (µg l ⁻¹)	Mercury (tot.unfit)
Wylfa Hall Pond	Tre'r Gof	07/05/2014	-	-	0.01	0.5	1	-	-	-	-	-	0.1	-	2.19	-	2	-	58	-	1.17	-	-	5	6.4	-	-
Wylfa Hall Pond	Tre'r Gof	15/10/2014	-	-	0.01	0.5	1.02	-	-	-	-	-	0.1	-	6.41	-	2	-	-	-	1.56	-	-	17.4	18.8	-	-

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	12	11	23	77	37	65	65	65	65	12	37	25	37	6	37	6	29	6	37	6	11	37	36	6	6
Mean	0.16	2.41	0.01	44.80	0.86	35.36	10.63	4.24	0.11	0.29	0.10	1.41	1.55	0.05	1.44	0.01	468.89	44.75	1.01	0.25	0.76	6.83	8.38	4.18	0.07
Min	0.05	2.00	0.01	0.50	0.12	18.90	5.17	1.00	0.02	0.10	0.08	0.50	0.30	0.03	0.02	0.00	1.18	0.20	0.33	0.08	0.39	1.07	2.47	0.71	0.01
Max	0.50	3.46	0.07	92.60	1.81	70.70	19.20	22.70	2.24	1.05	0.11	8.77	6.41	0.07	2.00	0.03	4240.00	144.28	2.32	0.45	1.80	22.00	23.40	10.55	0.27

Sample ID	Catchment	Date	Aluminium (tot.unfit)	Calcium (tot.unfit)	Arsenic (tot.unfit)	Sodium (tot.unfit)	Magnesium (tot.unfit)	Potassium (tot.unfit)	Iron (tot.unfit)	Cadmium (tot.unfit)	Chromium (tot.unfit)	Copper (tot.unfit)	Manganese (tot.unfit)	Nickel (tot.unfit)	Phosphorus (tot.unfit)	Lead (tot.unfit)	Selenium (tot.unfit)	Zinc (tot.unfit)
			µg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	Level of detection		<50	<0.057	<2	<0.047	<0.05	<2	<0.024	<0.5	<3	<4	<0.5	<0.5	<20	<0.5	<1	<3
		EQS																
Porth Wylfa	Tre'r Gof	28/02/2012	-	-	-	-	-	-	0.0805	-	-	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	09/05/2012	-	-	-	-	-	-	0.0979	-	<0.5	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	07/08/2012	-	-	-	-	-	-	0.0954	-	<0.5	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	12/03/2013	-	-	-	-	-	-	0.0872	-	<0.5	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	25/04/2013	-	-	-	-	-	-	0.17	-	<0.5	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	29/10/2013	-	-	-	-	-	-	0.154	-	<0.5	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	07/05/2014	-	-	-	-	-	0.143	-	-	-	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	15/10/2014	-	-	-	-	-	0.13	-	-	-	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	18/02/2014	-	-	-	-	-	-	0.0333	-	<0.5	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	0.637	-	-	-	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	15/10/2014	-	-	-	-	-	0.337	-	-	-	-	-	-	-	-	-	-
Power Station Junction	Tre'r Gof	12/03/2013	-	-	-	-	-	-	0.0451	-	<0.5	-	-	-	-	-	-	-
Power Station Junction	Tre'r Gof	25/04/2013	-	-	-	-	-	-	0.144	-	<0.5	-	-	-	-	-	-	-
Power Station Junction	Tre'r Gof	14/10/2014	-	-	-	-	-	7.47	-	-	-	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	12/03/2013	-	-	-	-	-	-	0.0851	-	<0.5	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	25/04/2013	-	-	-	-	-	-	0.33	-	<0.5	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	29/10/2013	-	-	-	-	-	-	0.787	-	1.48	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	1.84	-	-	-	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	14/10/2014	-	-	-	-	-	0.373	-	-	-	-	-	-	-	-	-	-
Spring A	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring A	Tre'r Gof	15/12/2015	-	67.4	-	59.1	16	8.43	1.46	-	-	-	-	-	-	-	-	-
Spring A	Tre'r Gof	13/01/2016	-	48	-	61.9	12.2	6.83	0.835	-	-	-	-	-	-	-	-	-
Spring A	Tre'r Gof	09/02/2016	-	54.2	-	64.1	13.2	8.62	3.66	-	-	-	-	-	810	-	-	-
Spring A	Tre'r Gof	26/04/2016	-	135	-	73.1	25.3	17.7	73.9	-	-	-	-	-	10800	-	-	-
Spring A	Tre'r Gof	01/02/2017	-	73.6	-	66.8	17.4	8.35	0.968	-	-	-	-	-	204	-	-	-
Spring A	Tre'r Gof	22/08/2017	-	50.9	-	52.3	12.4	8.24	1.53	-	-	-	-	-	1010	-	-	-
Spring B	Tre'r Gof	15/12/2015	-	32.5	-	30.2	6.81	4	1.51	-	-	-	-	-	-	-	-	-
Spring B	Tre'r Gof	13/01/2016	-	49.7	-	46.8	10.8	3.39	0.379	-	-	-	-	-	-	-	-	-
Spring B	Tre'r Gof	09/02/2016	-	42.2	-	35.9	8.45	2.79	0.556	-	-	-	-	-	89.1	-	-	-
Spring B	Tre'r Gof	26/04/2016	-	79.3	-	49.7	13.6	<2	5.33	-	-	-	-	-	324	-	-	-
Spring B	Tre'r Gof	01/02/2017	-	48.9	-	33.1	8.5	3.76	2.31	-	-	-	-	-	556	-	-	-
Spring C	Tre'r Gof	15/12/2015	-	32.3	-	22.2	6.56	<2	0.036	-	-	-	-	-	-	-	-	-
Spring C	Tre'r Gof	13/01/2016	-	30	-	22.1	6.07	<2	0.0397	-	-	-	-	-	-	-	-	-
Spring C	Tre'r Gof	09/02/2016	-	31.9	-	22.2	6.11	<2	<0.024	-	-	-	-	-	<20	-	-	-
Spring C	Tre'r Gof	26/04/2016	-	36.6	-	24.8	7.56	<2	0.134	-	-	-	-	-	23.6	-	-	-
Spring C	Tre'r Gof	01/02/2017	-	41.3	-	26.4	8.31	<2	1.57	-	-	-	-	-	115	-	-	-
Spring C	Tre'r Gof	09/05/2017	-	45.4	-	26.8	9.39	3.72	2.99	-	-	-	-	-	386	-	-	-
Spring D	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring D	Tre'r Gof	15/12/2015	-	66.6	-	25.2	9.41	13.1	0.315	-	-	-	-	-	-	-	-	-
Spring D	Tre'r Gof	13/01/2016	-	51.9	-	22.9	7.46	8.48	0.646	-	-	-	-	-	-	-	-	-
Spring D	Tre'r Gof	09/02/2016	-	67.7	-	26.5	9.33	9.07	5.34	-	-	-	-	-	663	-	-	-
Spring D	Tre'r Gof	26/04/2016	-	216	-	31.6	46.3	34	326	-	-	-	-	-	30500	-	-	-
Spring D	Tre'r Gof	01/02/2017	-	80.4	-	25.5	9.62	19.6	0.765	-	-	-	-	-	661	-	-	-
Spring D	Tre'r Gof	22/08/2017	-	80.7	-	30.7	10.5	22	0.123	-	-	-	-	-	224	-	-	-

Sample ID	Catchment	Date	Aluminium (tot.unfit)	Calcium (tot.unfit)	Arsenic (tot.unfit)	Sodium (tot.unfit)	Magnesium (tot.unfit)	Potassium (tot.unfit)	Iron (tot.unfit)	Cadmium (tot.unfit)	Chromium (tot.unfit)	Copper (tot.unfit)	Manganese (tot.unfit)	Nickel (tot.unfit)	Phosphorus (tot.unfit)	Lead (tot.unfit)	Selenium (tot.unfit)	Zinc (tot.unfit)
Spring E	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	16/12/2015	-	21.3	-	22.6	7.11	<2	0.976	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	13/01/2016	-	17	-	20.8	5.43	<2	14.7	-	-	-	-	-	-	-	-	-
Spring E	Tre'r Gof	09/02/2016	-	32	-	26.7	4.11	2.59	42.6	-	-	-	-	-	1650	-	-	-
Spring E	Tre'r Gof	26/04/2016	-	36.3	-	32.4	10.2	3.76	1.96	-	-	-	-	-	1010	-	-	-
Spring E	Tre'r Gof	01/02/2017	-	27.1	-	68	7.17	2.29	0.574	-	-	-	-	-	124	-	-	-
Tre'r Gof SSSI	Tre'r Gof	18/02/2014	-	-	-	-	-	-	<0.03	-	<0.5	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	07/05/2014	-	-	-	-	-	0.0684	-	-	-	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	15/10/2014	-	-	-	-	-	0.0859	-	-	-	-	-	-	-	-	-	-
Tyddyn-Goronwy	Tre'r Gof	15/10/2014	-	-	-	-	-	0.0453	-	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	15/12/2015	-	24.9	-	29.9	6.59	3.44	0.103	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	13/01/2016	-	24.9	-	26.7	6.59	3.25	0.105	-	-	-	-	-	-	-	-	-
VN1	Tre'r Gof	09/02/2016	-	31.1	-	31.2	7.97	3.19	0.154	-	-	-	-	-	60.8	-	-	-
VN1	Tre'r Gof	26/04/2016	-	35.4	-	32.4	9.41	<2	0.812	-	-	-	-	-	82.6	-	-	-
VN1	Tre'r Gof	01/02/2017	-	26	-	44.1	6.34	2.7	0.56	-	-	-	-	-	129	-	-	-
VN2	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	15/12/2015	-	89.6	-	55.9	19.4	3.04	1.3	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	13/01/2016	-	93.6	-	64.8	21.2	3.32	0.295	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	09/02/2016	1860	76.3	4.42	49.3	17.1	2.95	-	<0.5	<3	12.4	228	6.7	314	11.5	8.96	47.4
VN2	Tre'r Gof	26/04/2016	<50	74.9	<2	32.1	14	<2	-	<0.5	<3	<4	460	1.16	39.1	<0.5	<1	3.57
VN2	Tre'r Gof	02/08/2016	2430	85.9	4.58	62.2	21.7	4.89	-	<0.5	4.57	18.7	314	8.48	526	21.8	2.36	107
VN2	Tre'r Gof	25/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	01/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	21/08/2017	<50	72.9	<2	53.6	17.6	3.56	-	<0.5	<3	<4	6.02	0.996	<20	0.606	1.95	7.13
VN3	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	15/12/2015	-	36.2	-	26.2	8.01	2.97	0.105	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	01/02/2017	-	61.47	-	32.7	12.7	5.29	1.45	-	-	-	-	-	262	-	-	-
VN3	Tre'r Gof	13/01/2016	-	33.4	-	23.6	7.44	2.43	0.206	-	-	-	-	-	-	-	-	-
VN3	Tre'r Gof	09/02/2016	-	50	-	25.9	10.3	3.04	6.23	-	-	-	-	-	308	-	-	-
VN3	Tre'r Gof	26/04/2016	-	245	-	30.2	42.5	<20	187	-	-	-	-	-	14700	-	-	-
VN4	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN4	Tre'r Gof	15/12/2015	-	66.4	-	26.6	9.89	9.5	0.48	-	-	-	-	-	-	-	-	-
VN4	Tre'r Gof	13/01/2016	-	53.5	-	23	8.63	5.98	0.316	-	-	-	-	-	-	-	-	-
VN4	Tre'r Gof	09/02/2016	-	66.1	-	26.5	10.5	6.56	6.15	-	-	-	-	-	803	-	-	-
VN5	Tre'r Gof	11/02/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	14/10/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	03/11/2015	<50	-	<2	40.4	16.9	3.51	0.27	<0.5	<3	<4	453	1.22	-	<0.5	2.45	<3
VN5	Tre'r Gof	15/12/2015	-	55.6	-	28.2	10.4	3.17	0.148	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	13/01/2016	-	50.5	-	24.2	9.23	2.07	0.114	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	09/02/2016	<50	55.1	<2	25.1	10.1	<2	-	<0.5	<3	<4	76.5	<0.5	<20	<0.5	2.35	<3
VN5	Tre'r Gof	02/08/2016	435	114	2.64	37.7	16.1	<2	-	<0.5	<3	5.77	8850	3.21	305	6.98	1.5	40.6
VN5	Tre'r Gof	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	25/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	01/02/2017	<50	74	74.5	36.4	13.2	3.08	-	<0.5	<3	<4	231	1.07	43.9	<0.5	1.23	-
VN5	Tre'r Gof	22/08/2017	<50	68.5	<2	31.9	12.8	<2	-	<0.5	<3	<4	481	0.982	<20	<0.5	2.1	<3
Wylfa Hall Pond	Tre'r Gof	18/02/2014	-	-	-	-	-	-	<0.03	-	1.07	-	-	-	-	-	-	-

Sample ID	Catchment	Date	Aluminium (tot.unfit)	Calcium (tot.unfit)	Arsenic (tot.unfit)	Sodium (tot.unfit)	Magnesium (tot.unfit)	Potassium (tot.unfit)	Iron (tot.unfit)	Cadmium (tot.unfit)	Chromium (tot.unfit)	Copper (tot.unfit)	Manganese (tot.unfit)	Nickel (tot.unfit)	Phosphorus (tot.unfit)	Lead (tot.unfit)	Selenium (tot.unfit)	Zinc (tot.unfit)
Wylfa Hall Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	0.332	-	-	-	-	-	-	-	-	-	-
Wylfa Hall Pond	Tre'r Gof	15/10/2014	-	-	-	-	-	0.197	-	-	-	-	-	-	-	-	-	-

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	3	53	4	54	54	52	57	0	3	3	9	8	29	4	8	5
Mean	1575.00	61.54	21.54	36.50	12.26	5.39	12.27	#DIV/0!	2.37	12.29	1233.28	2.98	2300.80	10.22	2.86	41.14
Min	435.00	17.00	2.64	20.80	4.11	0.05	0.03	0.00	1.07	5.77	6.02	0.98	23.60	0.61	1.23	3.57
Max	2430.00	245.00	74.50	73.10	46.30	34.00	326.00	0.00	4.57	18.70	8850.00	8.48	30500.00	21.80	8.96	107.00

[illegible]

Sample ID	Catchment	Date	1,2,4-Trichlorobenzene	Hexachlorobutadiene	tert-Amyl methyl ether (TAME)	Naphthalene	1,2,3-Trichlorobenzene	1,3,5-Trichlorobenzene	1,2-Dichloroethane2	2,2,3,4,4-Pentabromodiphenyl ether :- {PBDE 85}	2,2,3,4,4,5-Hexabromodiphenyl ether :- {PBDE 138}	2,2,3,4,4,5,6-Heptabromodiphenyl ether :- {PBDE 183}	2,2,4,4-Tetrabromodiphenyl ether :- {PBDE 47}	2,2,4,4,5-Pentabromodiphenyl ether :- {PBDE 99}	2,2,4,4,5,5-Hexabromodiphenyl ether :- {PBDE 153}	2,2,4,4,5,6-Hexabromodiphenyl ether :- {PBDE 154}	2,2,4,4,6-Pentabromodiphenyl ether :- {PBDE 100}	2,3,4,4-Tetrabromodiphenyl ether :- {PBDE 66}	2,4-D :- {2,4-Dichlorophenoxyacetic acid}	2,4-Dichlorophenol (aq)	2,4,4-Tribromodiphenyl ether :- {PBDE 28}	4-Nonylphenol Branched	Alachlor	
			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	µg/l	ug/l	ug/l	ug/l	
	Level of detection		<2.3	<2.5	<1	<3.5	<3.1	<10																
		EQS		0.1 (AA)			0.4 (AA)		10 (AA)										40 or 1 (AA)	20 (AA)				
Porth Wylfa	Tre'r Gof	28/02/2012	-	-	-	<0.01	-	-	<0.1	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.00012	<0.005	<0.02	<0.00012	<0.250	<0.0400
Porth Wylfa	Tre'r Gof	09/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	07/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Porth Wylfa	Tre'r Gof	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Porth Wylfa	Tre'r Gof	25/04/2013	-	-	-	-	-	-	-	-	<0.200	-	-	-	-	-	-	-	-	-	-	-	<0.2	-
Porth Wylfa	Tre'r Gof	29/10/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Porth Wylfa	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	18/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Porth Wylfa Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Station Junction	Tre'r Gof	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Power Station Junction	Tre'r Gof	25/04/2013	-	-	-	-	-	-	-	-	<0.200	-	-	-	-	-	-	-	-	-	-	-	<0.2	-
Power Station Junction	Tre'r Gof	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Power Station Pond	Tre'r Gof	25/04/2013	-	-	-	-	-	-	-	-	<0.200	-	-	-	-	-	-	-	-	-	-	-	<0.2	-
Power Station Pond	Tre'r Gof	29/10/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-
Power Station Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	18/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-
Tre'r Gof SSSI	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tyddyn-Goronwy	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	09/02/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	26/04/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	02/08/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	25/10/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	01/02/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	10/05/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	21/08/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	03/11/2015	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	09/02/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	02/08/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	25/10/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	09/05/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	22/08/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wylfa Hall Pond	Tre'r Gof	18/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
Wylfa Hall Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wylfa Hall Pond	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sample ID	Catchment	Date	Aldrin	Anthracene	Atrazine	Azobenzene (aq)	Benzene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Carbontetrachloride3	Chlorfenvinphos	Chlorpyrifos-ethyl	Cypermethrin	DDT -op	DDT -pp	DDT : Sum of components	Di-2-ethylhexyl phthalate :- {DEHP}	Diazinon	Dichloromethane4	Dieldrin	Dimethoate	Diuron	Endosulfan A	Endosulfan B
			ug/l	ug/l	ug/l	µg/l	µg/l	ug/l	ug/l	ug/l	ug/l	µg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	µg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
	Level of detection																									
		EQS	0.03 (AA)	0.1 (AA)	2	30 (AA)		0.3 (AA)	0.002 (AA)	0.3 (AA)			0.03 (AA)		0.0002 (AA)		0.01 (AA)	0.025 (AA)	1.3				1 (AA)	20	0.005 (AA)	0.005 (AA)
Porth Wylfa	Tre'r Gof	28/02/2012	<0.001	<0.01	0.019	-	<0.1	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.002	<0.002	<0.003	<0.002	<0.00500	1.05	<0.002	<0.5	<0.002	<0.007	<0.01	<0.003	<0.004
Porth Wylfa	Tre'r Gof	09/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.233	<0.1
Porth Wylfa	Tre'r Gof	07/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	25/04/2013	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-
Porth Wylfa	Tre'r Gof	29/10/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.242	-	-	-	-	-	-	-
Porth Wylfa	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	18/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Porth Wylfa Pond	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.321	-	-	-	-	-	-	-
Power Station Junction	Tre'r Gof	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Station Junction	Tre'r Gof	25/04/2013	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-
Power Station Junction	Tre'r Gof	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.213	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	25/04/2013	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-
Power Station Pond	Tre'r Gof	29/10/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Power Station Pond	Tre'r Gof	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.322	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	18/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Tre'r Gof SSSI	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Tyddyn-Goronwy	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
VN2	Tre'r Gof	09/02/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	26/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	02/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	25/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	01/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	10/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN2	Tre'r Gof	21/08/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	03/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	09/02/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	02/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	25/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	09/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VN5	Tre'r Gof	22/08/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wylfa Hall Pond	Tre'r Gof	18/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wylfa Hall Pond	Tre'r Gof	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Wylfa Hall Pond	Tre'r Gof	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-

Sample ID	Catchment	Date	Toluene :- {Methylbenzene}2	Trichloroethylene :- {Trichloroethene}
			ug/l	ug/l
	Level of detection			
		EQS		
Porth Wylfa	Tre'r Gof	28/02/2012		
Porth Wylfa	Tre'r Gof	09/05/2012	-	-
Porth Wylfa	Tre'r Gof	07/08/2012	-	-
Porth Wylfa	Tre'r Gof	12/03/2013	-	-
Porth Wylfa	Tre'r Gof	25/04/2013	-	-
Porth Wylfa	Tre'r Gof	29/10/2013	-	-
Porth Wylfa	Tre'r Gof	07/05/2014	<0.1	<0.1
Porth Wylfa	Tre'r Gof	15/10/2014	<0.1	<0.1
Porth Wylfa Pond	Tre'r Gof	18/02/2014	-	-
Porth Wylfa Pond	Tre'r Gof	07/05/2014	<0.1	<0.1
Porth Wylfa Pond	Tre'r Gof	15/10/2014	<0.1	<0.1
Power Station Junction	Tre'r Gof	12/03/2013	-	-
Power Station Junction	Tre'r Gof	25/04/2013	-	-
Power Station Junction	Tre'r Gof	14/10/2014	<0.1	<0.1
Power Station Pond	Tre'r Gof	12/03/2013	-	-
Power Station Pond	Tre'r Gof	25/04/2013	-	-
Power Station Pond	Tre'r Gof	29/10/2013	-	-
Power Station Pond	Tre'r Gof	07/05/2014	<0.1	<0.1
Power Station Pond	Tre'r Gof	14/10/2014	<0.1	<0.1
Tre'r Gof SSSI	Tre'r Gof	18/02/2014	-	-
Tre'r Gof SSSI	Tre'r Gof	07/05/2014	<0.1	<0.1
Tre'r Gof SSSI	Tre'r Gof	15/10/2014	<0.1	<0.1
Tyddyn-Goronwy	Tre'r Gof	15/10/2014	<0.1	<0.1
VN2	Tre'r Gof	09/02/2016	-	-
VN2	Tre'r Gof	26/04/2016	-	-
VN2	Tre'r Gof	02/08/2016	-	-
VN2	Tre'r Gof	25/10/2016	-	-
VN2	Tre'r Gof	01/02/2017	-	-
VN2	Tre'r Gof	10/05/2017	-	-
VN2	Tre'r Gof	21/08/2017	-	-
VN5	Tre'r Gof	03/11/2015	-	-
VN5	Tre'r Gof	09/02/2016	-	-
VN5	Tre'r Gof	02/08/2016	-	-
VN5	Tre'r Gof	25/10/2016	-	-
VN5	Tre'r Gof	09/05/2017	-	-
VN5	Tre'r Gof	22/08/2017	-	-
Wylfa Hall Pond	Tre'r Gof	18/02/2014	-	-
Wylfa Hall Pond	Tre'r Gof	07/05/2014	<0.1	<0.1
Wylfa Hall Pond	Tre'r Gof	15/10/2014	<0.1	<0.1

Sample ID	Column1	Date	Eschericia coli*	Streptococci, Faecal (Enterococci)*	Streptococci, Faecal (Enterococci)*27	Total coliforms*	Total coliforms*28	Intestinal Enterococci*	TVC 2 day @ 37 deg.C*	TVC 3 day @ 22 deg.C*	Pseudomonas aeruginosa
			CFU/100ml	No/100ml	CFU/100ml	No/100ml	CFU/100ml	CFU/100ml	No/ml	No/ml	CFU/100ml
	Level of detection			<1	<1	<1	<1				
		EQS		100	100	10000	10000				
VN5	Tre'r Gof	31/08/2016	800	200	-	1300	-	200	44000	55000	0
VN5	Tre'r Gof	01/06/2016	8	82	82	8	8	-	480	6600	0
VN5	Tre'r Gof	29/06/2016	2000	6300	-	20000	-	-	9000	5400	0
VN5	Tre'r Gof	02/08/2016	100	800	800	1100	-	-	3300	8200	0
VN5	Tre'r Gof	28/09/2016	1400	44	-	1400	-	44	700	3500	0

Count	5	5	2	5	1	2	5	5	5
Mean	861.6	1485.2	441	4761.6	8	122	11496	15740	0
Min	8	44	82	8	8	44	480	3500	0
Max	2000	6300	800	20000	8	200	44000	55000	0

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	03/11/2015	7.25	570	57	52	10.7	-
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	16/12/2015	6.92	269	-	41	10.6	-
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	10/02/2016	6.08	325	70.5	65	7.6	5
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	08/03/2016	6.14	269	92.2	37	8.5	5
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	26/04/2016	7.78	397	49	85	11.2	-
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	29/06/2016	-	-	-	-	-	-
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	01/08/2016	6.61	539	31.4	46	15.2	-
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	14/01/2016	5.91	289	-	107	4.9	20
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	27/10/2016	6.82	352	38.6	73	13.6	25
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	30/11/2016	6.25	346	60.4	59	9.6	-
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	04/01/2017	7.04	334	-	58	9.5	-
CG_Outfall	Caerdegog Isaf DS of Cae Gwyn	02/02/2017	7.25	326.9	84.2	57.2	11.06	5
Location A	Nant Caerdegog Isaf	03/06/2015	7.53	348	-	88	13.2	-
Location A	Nant Caerdegog Isaf	06/07/2015	7.87	452	-	97	15.5	-
Location A	Nant Caerdegog Isaf	13/08/2015	7.28	471	-	28	18	54
Location A	Nant Caerdegog Isaf	14/10/2015	5.77	534	74.9	85	8.2	4.31
Location A	Nant Caerdegog Isaf	04/11/2015	8.46	440	76	97	11.5	30
Location A	Nant Caerdegog Isaf	17/12/2015	7.54	264	87.5	44	-	17
Location A	Nant Caerdegog Isaf	12/01/2016	4.77	262	87.5	99	6.2	7
Location A	Nant Caerdegog Isaf	10/02/2016	5.58	306	87.8	80	6.8	7
Location A	Nant Caerdegog Isaf	09/03/2016	6	197	90.7	99	6.5	200
Location A	Nant Caerdegog Isaf	27/04/2016	6.16	385	33.4	116	7.5	-
Location A	Nant Caerdegog Isaf	02/06/2016	-	-	-	-	-	-
Location A	Nant Caerdegog Isaf	29/06/2016	-	-	-	-	-	-
Location A	Nant Caerdegog Isaf	03/08/2016	6.64	476	-	161	16.5	400
Location A	Nant Caerdegog Isaf	31/08/2016	6.07	457	59.4	97	16	25
Location A	Nant Caerdegog Isaf	28/09/2016	7.15	386	63	172	14.4	25
Location A	Nant Caerdegog Isaf	26/10/2016	7.34	373	106.1	135	10.8	5
Location A	Nant Caerdegog Isaf	29/11/2016	7.37	364	86	67	6.9	-
Location A	Nant Caerdegog Isaf	04/01/2017	7.24	322	-	72	9.6	-
Location A	Nant Caerdegog Isaf	31/01/2017	7.2	328.6	98.2	110.2	9.94	15
Location C	Afon Cafnan DS	03/06/2015	7.87	311	-	102	12.1	-
Location C	Afon Cafnan DS	06/07/2015	7.93	437	-	113	14.4	221
Location C	Afon Cafnan DS	13/08/2015	7.99	383	-	13	17.2	4.17
Location C	Afon Cafnan DS	15/10/2015	6.16	398	-	103	8	0
Location C	Afon Cafnan DS	04/11/2015	8.3	290	89.4	98	10.9	30
Location C	Afon Cafnan DS	16/12/2015	7.08	253	36.7	42	10.7	-
Location C	Afon Cafnan DS	13/01/2016	6.72	-	-	143	5.2	27
Location C	Afon Cafnan DS	09/02/2016	7.08	259	97.5	56	5.5	17
Location C	Afon Cafnan DS	09/03/2016	6.23	222	94.2	86	7.8	37
Location C	Afon Cafnan DS	27/04/2016	6.52	337	93.9	122	5.4	-
Location C	Afon Cafnan DS	01/06/2016	7.55	446	82.1	75	13.2	-
Location C	Afon Cafnan DS	29/06/2016	-	-	-	-	-	-
Location C	Afon Cafnan DS	03/08/2016	7.77	390	-	240	17.4	5
Location C	Afon Cafnan DS	31/08/2016	6.73	390	87.5	60	17.9	5
Location C	Afon Cafnan DS	28/09/2016	7.21	299	73.2	185	14.1	5
Location C	Afon Cafnan DS	26/10/2016	7.62	296	115	115	11.2	-
Location C	Afon Cafnan DS	29/11/2016	7.54	290	93.3	65	5	-
Location C	Afon Cafnan DS	04/01/2017	6.71	280	-	76	8.8	-
Location C	Afon Cafnan DS	31/01/2017	7.9	321.9	97.7	84.3	9.7	38
Location G	Afon Cafnan US	04/11/2015	6.72	358	58.9	138	10.3	30
Location G	Afon Cafnan US	09/02/2016	6.82	295	95.1	81	5.3	12
Location G	Afon Cafnan US	26/04/2016	7.5	290	66.1	72	13.1	-
Location G	Afon Cafnan US	01/06/2016	7.23	383	67.4	85	12.9	-
Location G	Afon Cafnan US	03/08/2016	7.13	366	-	276	17.3	22
Location G	Afon Cafnan US	31/08/2016	5.74	545	30.5	122	15.7	40
Location G	Afon Cafnan US	28/09/2016	7.18	283	73.5	131	14.5	120
Location G	Afon Cafnan US	26/10/2016	7.45	288	90.3	111	11.6	10
Location G	Afon Cafnan US	30/01/2017	7.24	251.5	102.5	112.7	8.19	5

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
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NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	55	54	39	55	54	35
Mean	6.98	352.68	76.37	95.17	10.99	42.21
Min	4.77	197	30.5	13	4.9	0
Max	8.46	570	115	276	18	400

Sample ID	Catchment	Date	Carbon, Organic (diss.filt)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Turbidity	Ammoniacal Nitrogen as NH4	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Orthophosphate, reactive as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.filt)	Suspended solids, Total	Alkalinity, Bicarbonate as CaCO3	Alkalinity, Bicarbonate as CaCO3 (diss.filt)	Alkalinity, Carbonate as CaCO3	BOD, unfiltered	Cyanide, Total	
			mg/l	mg/l	mg/l	mS/cm	% Diff	mg/l	mg/l	pH Units	mg/l	mg/l	mg/l	ntu	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		Level of detection	<3	<0.2		<0.005		<0.05	<0.3	<1	<2	<2	<1	<0.1	<0.3	<0.05			<10	<0.3	<0.02	<2	<2	<2	<2	<2	<2			
		EQS		0.02		2500		0.01		<6, >9	400	250			0.025									25					2.5	5
Caerdegog Isaf	Cafnan	24/04/2013	-	0.3	<0.0000144	286	-	-	77.4	6.41	-	49.3	-	-	-	-	0.02	0.02	-	-	-	-	126	11.2	-	-	-	-	1.22	-
Caerdegog Isaf	Cafnan	15/08/2013	-	0.066	0.00134	487	-	-	80.4	7.82	-	48	-	-	-	-	0.107	0.12	-	-	-	-	127	7.52	-	127	-	1.54	-	
Caerdegog Isaf	Cafnan	30/10/2013	-	0.042	-	293	-	-	69.5	6.68	-	39.4	-	-	-	-	0.031	0.038	-	-	-	-	111	4.68	-	111	-	2.92	-	
Caerdegog Isaf	Cafnan	07/05/2014	-	0.03	<0.000109	325	-	-	11.5	7.25	-	47.9	-	-	-	-	0.02	0.02	-	-	-	-	118	3	-	117	-	1	-	
Caerdegog Isaf	Cafnan	04/03/2015	-	-	-	221	-	0.05	-	6.96	10.1	47.1	-	-	<0.3	-	-	-	178	4.43	-	31	-	6	31	-	<2	-	-	
Caerdegog Isaf – Hafnan	Cafnan	19/02/2014	-	0.3	<0.0000129	134	-	-	86.1	6.43	-	40.6	-	-	-	-	0.02	0.024	-	-	-	-	109	7.55	-	108	-	1	-	
Caerdegog Isaf – Hafnan	Cafnan	07/05/2014	-	0.177	0.000562	365	-	-	10.2	7.15	-	37.4	-	-	-	-	0.02	0.02	-	-	-	-	148	12	-	147	-	6.45	-	
Caerdegog Isaf – Hafnan	Cafnan	24/04/2013	-	0.045	0.0000729	353	-	-	89.7	6.85	-	40.9	-	-	-	-	0.021	0.2	-	-	-	-	155	7.6	-	153	-	1.05	-	
Caerdegog Isaf – Hafnan	Cafnan	15/08/2013	-	0.311	0.00427	422	-	-	71.3	7.58	-	53.3	-	-	-	-	0.077	0.118	-	-	-	-	112	536	-	116	-	4.43	-	
Caerdegog Isaf – Hafnan	Cafnan	30/10/2013	-	0.03	-	268	-	-	82	6.98	-	45.4	-	-	-	-	0.037	0.037	-	-	-	-	78.8	8.18	-	81	-	2.92	-	
Cafnan	Cafnan	28/02/2012	-	0.049	0.000411	-	-	-	14	7.7	-	45.2	-	-	-	-	0.025	-	-	-	-	-	76	-	-	-	-	1		
Cafnan	Cafnan	09/05/2012	-	0.083	0.000359	281	-	-	10.4	7.33	-	43.1	-	-	-	-	0.027	-	-	-	-	-	86.8	19.6	-	85	-	1.5	-	
Cafnan	Cafnan	07/08/2012	-	0.036	0.00011	286	-	-	62.4	7.09	-	40.8	-	-	-	-	0.061	-	-	-	-	-	95.2	8.83	-	99	-	1.3	-	
Cafnan	Cafnan	12/03/2013	-	0.111	-	-	-	-	-	-	-	42.1	-	-	-	-	0.02	0.02	-	-	-	-	88.8	21.3	-	92	-	2.92	-	
Cafnan	Cafnan	24/04/2013	-	0.053	0.0000159	252	-	-	98.7	6.23	-	37.5	-	-	-	-	0.024	0.03	-	-	-	-	83.7	36.6	-	85	-	1.26	-	
Cafnan	Cafnan	15/08/2013	-	0.032	0.000374	429	-	-	81.4	7.45	-	67.7	-	-	-	-	0.041	0.046	-	-	-	-	160	17.2	-	159	-	1.89	-	
Cafnan	Cafnan	29/10/2013	-	0.048	-	-	-	-	-	-	-	35.2	-	-	-	-	0.06	0.065	-	-	-	-	59.6	11.4	-	60	-	1.2	-	
Cafnan	Cafnan	19/02/2014	-	0.085	0.0000434	217	-	-	95.6	6.52	-	41.1	-	-	-	-	0.049	0.054	-	-	-	-	59.2	11	-	61	-	1.01	-	
Cafnan	Cafnan	07/05/2014	-	0.3	<0.0000323	294	-	-	11.8	6.75	-	40.6	-	-	-	-	0.028	0.03	-	-	-	-	89.1	73.1	-	87	-	2.57	-	
CG_Outfall	Cafnan	03/11/2015	10.3	7.19	-	447	-3.02	0.05	5.46	7.18	41	71.7	2.47	522	-	-	-	-	334	13.3	0.0512	-	120	2580	-	120	<2	-	-	
CG_Outfall	Cafnan	08/03/2016	-	-	-	308	-	0.05	-	7.7	9.8	65.3	-	8.33	<0.3	0.05	-	-	225	1.46	-	-	-	10	-	-	<2	-	-	
CG_Outfall	Cafnan	10/02/2016	10.6	0.2	-	349	-7.49	0.05	9.16	7.6	17.2	53.2	1.49	-	-	0.05	-	-	238	3.82	0.0228	-	105	6	-	105	<2	-	-	
CG_Outfall	Cafnan	14/01/2016	-	0.2	-	305	-1.52	0.05	-	7.91	2	43.8	1.64	3.93	-	-	-	-	182	3.14	-	-	70	3	-	70	<2	-	-	
CG_Outfall	Cafnan	16/12/2015	-	0.202	-	277	-0.171	0.05	-	6.98	9.6	46.2	1.6	5.66	-	-	-	-	214	2.46	-	-	60	7	-	60	<2	-	-	
CG_Outfall	Cafnan	26/04/2016	7.39	0.2	-	405	-9.98	0.05	-	7.17	23.2	67.9	1.1	-	-	0.05	-	-	278	1.9	<0.02	-	100	456	-	100	<2	-	-	
CG_Outfall	Cafnan	01/08/2016	9.95	0.2	-	507	-8.77	0.05	-	6.66	21.5	78.7	1.44	-	-	0.26	0.0848	-	358	0.3	-	-	160	2110	-	160	<2	-	-	
CG_Outfall	Cafnan	27/10/2016	-	0.2	-	338	-0.873	0.05	-	7.27	2	59.6	1.13	-	-	0.06	0.02	-	225	1.35	-	-	95	106	-	95	<2	-	-	
CG_Outfall	Cafnan	02/02/2017	-	0.2	-	374	13	0.05	-	7.24	19.6	59.1	1.85	-	-	0.05	0.02	-	242	7.11	-	-	95	19	-	95	<2	-	-	
CG_Outfall	Cafnan	08/05/2017	<3	0.2	-	490	-5.43	0.05	-	7.41	24.4	65.2	1.01	-	-	0.05	0.02	-	301	3.42	-	-	155	125	-	155	<2	-	-	
CG_Outfall	Cafnan	23/08/2017	14.7	0.2	-	460	0.478	0.05	-	7.32	2	52.3	1.58	-	-	0.05	0.02	-	288	1.65	-	-	120	16.9	-	120	<2	-	-	
Felin Gafnan Confluence	Cafnan	28/02/2012	-	0.038	<0.000365	-	-	-	12.1	7.83	-	45.5	-	-	-	-	0.028	0.032	-	-	-	-	75.1	-	-	-	-	1	<0.005	
Felin Gafnan Confluence	Cafnan	09/05/2012	-	0.072	0.000264	273	-	-	104	7.28	-	45	-	-	-	-	0.026	0.031	-	-	-	-	88.2	10.4	-	-	-	1.2	-	
Felin Gafnan Confluence	Cafnan	07/08/2012	-	0.037	0.000331	303	-	-	93.9	7.48	-	40.3	-	-	-	-	0.076	0.09	-	-	-	-	96.6	6.38	-	97	-	1.4	-	
Felin Gafnan Confluence	Cafnan	12/03/2013	-	0.081	-	-	-	-	-	-	-	42.9	-	-	-	-	0.021	-	-	-	-	-	87.8	21.5	-	88	-	2.92	-	
Felin Gafnan Confluence	Cafnan	24/04/2013	-	0.055	0.000199	271	-	-	96.5	7.22	-	39.1	-	-	-	-	0.032	0.028	-	-	-	-	84.5	23.1	-	-	-	1.48	-	
Felin Gafnan Confluence	Cafnan	15/08/2013	-	0.03	<0.00314	411	-	-	93	8.55	-	48.2	-	-	-	-	0.1	0.108	-	-	-	-	133	7.07	-	135	-	1.12	-	
Felin Gafnan Confluence	Cafnan	29/10/2013	-	0.064	-	-	-	-	-	-	-	34.9	-	-																

Sample ID	Catchment	Date	Carbon, Organic (diss.flit)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Turbidity	Ammoniacal Nitrogen as NH4	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Orthophosphate, reactive as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.flit)	Suspended solids, Total	Alkalinity, Bicarbonate as CaCO3	Alkalinity, Bicarbonate as CaCO3 (diss.flit)	Alkalinity, Carbonate as CaCO3	BOD, unfiltered	Cyanide, Total
Felin Gafnan East	Cafnan	29/10/2013	-	0.069	-	-	-	-	-	-	-	34.3	-	-	-	-	0.07	0.073	-	-	-	-	59.6	18.8	-	60	-	1.78	-
Groes-fechan	Cafnan	12/03/2013	-	0.057	-	-	-	-	-	-	-	51.1	-	-	-	-	0.02	0.02	-	-	-	-	113	3	-	156	-	2.92	-
Groes-fechan	Cafnan	24/04/2013	-	0.033	0.0000208	283	-	-	76.8	6.5	-	49.2	-	-	-	-	0.02	0.02	-	-	-	-	98.1	13.1	-	98	-	1	-
Groes-fechan	Cafnan	15/08/2013	-	0.03	<0.000266	445	-	-	77.2	7.45	-	53.4	-	-	-	-	0.027	0.043	-	-	-	-	147	10.1	-	158	-	1	-
Groes-fechan	Cafnan	29/10/2013	-	0.03	-	-	-	-	-	-	-	40.3	-	-	-	-	0.02	-	-	-	-	-	63.1	4.32	-	64	-	1.16	-
Groes-fechan	Cafnan	19/02/2014	-	0.043	0.000084	153	-	-	79.2	7.16	-	47.4	-	-	-	-	0.02	0.02	-	-	-	-	69.2	3.05	-	68	-	1	-
Groes-fechan	Cafnan	08/05/2014	-	0.034	0.0000182	337	-	-	12.6	6.44	-	51.7	-	-	-	-	0.02	0.02	-	-	-	-	117	3	-	112	-	1	-
Hafnan	Cafnan	24/04/2013	-	0.077	0.000127	251	-	-	96.5	6.89	-	38	-	-	-	-	0.035	0.043	-	-	-	-	73.2	18.7	-	74	-	1.35	-
Hafnan	Cafnan	15/08/2013	-	0.05	0.000577	400	-	-	72.9	7.54	-	53.8	-	-	-	-	0.107	0.152	-	-	-	-	187	35.2	-	191	-	1.84	-
Hafnan	Cafnan	30/10/2013	-	0.065	-	223	-	-	87.1	6.16	-	35.2	-	-	-	-	0.103	0.091	-	-	-	-	53.3	7.95	-	57	-	2.92	-
Hafnan	Cafnan	07/05/2014	-	0.068	0.000244	300	-	-	11.1	7.2	-	42.1	-	-	-	-	0.037	0.042	-	-	-	-	74.3	12.6	-	74	-	1.11	-
Hafnan to Caerdegog Isaf	Cafnan	24/04/2013	-	0.045	0.0000729	353	-	-	89.7	6.85	-	40.6	-	-	-	-	0.021	-	-	-	-	153	155	7.6	-	-	-	1.05	-
Hafnan to Caerdegog Isaf	Cafnan	19/02/2014	-	0.03	<0.0000129	134	-	-	86.1	6.43	-	41.9	-	-	-	-	0.02	-	-	-	-	108	109	7.55	-	-	-	1	-
LOCATION A	Cafnan	04/11/2015	11.8	0.2	-	468	-6.29	0.05	7.81	8.07	28.7	64.4	3.38	-	-	-	-	-	348	1.05	0.0255	-	150	675	-	150	<2	-	-
LOCATION A	Cafnan	10/02/2016	12.5	0.2	-	283	-7.42	0.051	9.54	7.89	15.6	46.7	2.26	-	-	0.05	-	-	197	6.46	0.0261	-	75	3	-	75	<2	-	-
LOCATION A	Cafnan	10/02/2016	-	0.2	-	287	-0.471	0.05	-	7.85	7	47.2	2.2	3.82	-	0.05	-	-	200	7.45	-	-	70	2.5	-	70	<2	-	-
LOCATION A	Cafnan	12/01/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	17/12/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-
LOCATION A	Cafnan	27/04/2016	9.17	0.2	-	344	1.13	0.05	-	7.83	14.3	50.3	1.55	-	-	0.061	-	-	243	3.82	<0.02	-	100	23	-	100	<2	-	-
LOCATION A	Cafnan	01/06/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	29/06/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	03/08/2016	10.16	0.388	-	468	1.8	0.182	-	7.73	2	63.8	2.03	-	-	0.057	0.02	-	321	2.69	-	-	155	71	-	155	<2	-	-
LOCATION A	Cafnan	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	26/10/2016	11.7	0.2	-	413	-4.18	0.05	-	7.61	23.6	61.7	1.32	-	-	0.057	0.02	-	299	2.44	-	-	120	69.5	-	120	<2	-	-
LOCATION A	Cafnan	01/02/2017	12.3	0.2	-	351	-2.76	0.05	-	7.66	18.9	9.57	2.21	-	-	0.05	0.02	-	252	9.57	-	-	90	19.3	-	90	<2	-	-
LOCATION A	Cafnan	10/05/2017	7.14	0.2	-	392	-3.02	0.089	-	7.91	22.9	56.6	1.21	-	-	0.05	0.02	-	398	1.6	-	-	150	9.95	-	150	<2	-	-
LOCATION A	Cafnan	24/08/2017	15.3	0.2	-	386	-0.958	0.055	-	7.7	12.9	58.4	1.8	-	-	0.131	0.0427	-	289	1.67	-	-	130	14.4	-	130	<2	-	-
LOCATION C	Cafnan	04/11/2015	8.4	0.2	-	340	-0.907	0.072	9.3	8.05	22.3	46.8	2.3	-	-	-	-	-	244	7.52	0.078	-	101	7	-	101	<2	-	-
LOCATION C	Cafnan	09/02/2016	6.96	0.2	-	284	-6.83	0.063	9.46	7.84	15.8	45.7	3.63	-	-	0.11	-	-	196	12.8	0.0359	-	60	16.5	-	60	<2	-	-
LOCATION C	Cafnan	27/04/2016	4.91	0.2	-	302	0.0619	0.063	-	7.75	18	41.6	3.76	-	-	0.065	-	-	208	13.5	0.0212	-	75	8.5	-	75	<2	-	-
LOCATION C	Cafnan	01/06/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	29/06/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	03/08/2016	6.67	0.2	-	364	0.168	0.05	-	7.98	19	47.6	2.4	-	-	0.268	0.0875	-	268	6.84	-	-	105	4	-	105	<2	-	-
LOCATION C	Cafnan	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	26/10/2016	8.74	0.2	-	333	-5.05	0.13	-	7.9	19.4	49.8	2.76	-	-	0.193	0.063	-	243	8.98	-	-	80	9	-	80	<2	-	-
LOCATION C	Cafnan	01/02/2017	10.9	0.2	-	339	-5.8	0.162	-	7.65	19.9	65.3	3.33	-	-	0.169	0.0551	-	275	14.3	-	-	70	30.8	-	70	<2	-	-
LOCATION C	Cafnan	10/05/2017	6.01	0.2	-	372	-1.45	0.119	-	7.8	21.6	46.8	4.07	-	-	0.062	0.0202	-	224	16.7	-	-	95	3.9	-	95	<2	-	-
LOCATION G	Cafnan	04/11/2015	10.1	0.637	-	336	-5.17	0.157	6.76	7.7	23.1	47.7	2.89	-	-	-	-	-	246	7.21	0.111	-	92.7	8	-	92.7	<2	-	-
LOCATION G	Cafnan	09/02/2016	7.26	0.2	-	257	-5.62	0.063	10.2	8.04	14.8	41.5	3.69	-	-	0.069	-	-	168	15.1	0.0225	-	50	23	-	50	<2	-	-
LOCATION G	Cafnan	26/04/2016	4.83	0.2	-	294	-6.08	0.064	-	7.73	23.5	42.7	4.22	-	-	0.05	-	-	190	14.8	<0.02	-	60	15	-	60	<2	-	-
LOCATION G	Cafnan	01/06/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	29/06/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	03/08/2016	6.39	0.276	-	347	-1.17	0.271	-	7.49	20.8	46.7	2.86	-	-	0.246	0.0803	-	233	8.16	-	-	100	14.5	-	100	<2	-	-
LOCATION G	Cafnan	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	26/10/2016	8.68	0.2	-	310	-6.53	0.082	-	7.42	18.8	45.5	2.17	-	-	0.121	0.0935	-	240	6.55	-	-	75	143	-	75	<2	-	-

Sample ID	Catchment	Date	Carbon, Organic (diss.filt)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Turbidity	Ammoniacal Nitrogen as NH4	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Orthophosphate, reactive as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.filt)	Suspended solids, Total	Alkalinity, Bicarbonate as CaCO3	Alkalinity, Bicarbonate as CaCO3 (diss.filt)	Alkalinity, Carbonate as CaCO3	BOD, unfiltered	Cyanide, Total
LOCATION G	Cafnan	11/05/2017	5.55	0.2	-	341	-3.04	0.154	-	7.57	22.2	47.3	4.83	-	-	0.091	0.0297	-	369	20.6	-	-	85	2.9	-	85	<2	-	-
LOCATION G	Cafnan	22/08/2017	8.57	0.2	-	274	-2.16	0.061	-	7.66	14	40.6	2.99	-	-	0.084	0.0274	-	225	10.1	-	-	70	2.95	-	70	<2	-	-
Rhwng Dau Fynydd	Cafnan	15/10/2014	-	1.79	-	366	-	-	29.1		-	60.6	-	-	-	-	1.06	1.08	-	-	-	-	68.5	26.9	-	72	-	18.7	-
Tan-yr-allt Pond	Cafnan	18/02/2014	-	0.053	0.00000178	242	-	-	45.9	5.37	-	55.9	-	-	-	-	0.02	0.031	-	-	-	-	43.1	63.4	-	45	-	2.92	-
Tan-yr-allt Pond	Cafnan	07/05/2014	-	0.08	<0.00000302	112	-	-	6.31	5.69	-	28.3	-	-	-	-	0.16	0.189	-	-	-	-	66.2	88	-	64	-	8.19	-
Tan-yr-allt Pond	Cafnan	14/10/2014	-	1.2	0.000101	450	-	-	53.2	5.59	-	45	-	-	-	-	1.35	1.12	-	-	-	-	33.9	60.4	-	47	-	17.3	-
Tregele Pond	Cafnan	18/02/2014	-	0.3	<0.00000247	380	-	-	32.3	5.74	-	115	-	-	-	-	0.099	0.126	-	-	-	-	91.4	52	-	94	-	3.2	-
Tregele Pond	Cafnan	14/10/2014	-	0.092	<0.00000795	266	-	-	45.6	6.09	-	40.5	-	-	-	-	0.407	0.382	-	-	-	-	141	16.7	-	113	-	6.74	-

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	27	85	26	76	33	35	52	78	35	87	33	5	0	28	70	44	36	35	9	3	85	85	1	78	0	52	0
Mean	9.15	0.25	0.00	326.41	-2.89	0.08	53.75	7.26	17.19	48.01	2.40	108.75	#DIV/0!	0.09	0.08	0.11	252.75	6.98	0.04	97.33	96.80	94.73	31.00	97.09	#DIV/0!	2.61	#DIV/0!
Min	4.83	0.03	0.00	112.00	-9.98	0.05	5.46	5.37	2.00	9.57	1.01	3.82	0.00	0.05	0.02	0.02	160.00	0.30	0.02	31.00	33.90	2.50	31.00	45.00	0.00	1.00	0.00
Max	15.30	7.19	0.00	507.00	13.00	0.27	104.00	8.55	41.00	115.00	4.83	522.00	0.00	0.27	1.35	1.12	398.00	20.60	0.11	153.00	187.00	2580.00	31.00	191.00	0.00	18.70	0.00

Sample ID	Catchment	Date	Iron, Ferric	Chromium, Hexavalent	Aluminium (diss.fit)	Mercury (diss.fit)	Antimony (diss.fit)	Calcium (diss.fit)	Arsenic (diss.fit)	Sodium (diss.fit)	Magnesium (diss.fit)	Potassium (diss.fit)	Iron (diss.fit)	Iron, Ferrous	Cadmium (diss.fit)	Chromium (diss.fit)	Cobalt (diss.fit)	Copper (diss.fit)	Bioavailable Copper Concentration (µg l ⁻³)	Lead (diss.fit)	Available Pb (µg l ⁻³)	Manganese (diss.fit)	Bioavailable Manganese Concentration (µg l ⁻³)	Nickel (diss.fit)	Bioavailable Nickel Concentration (µg l ⁻³)	Selenium (diss.fit)	Zinc (diss.fit)	zinc (diss.fit) + background concentration
			mg/l	mg/l	µg/l	µg/l	µg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l		µg/l		µg/l		µg/l		µg/l	µg/l	µg/l
	Level of detection		<0.05	<0.03	<2.9	<0.01	<0.16	<0.012	<0.12	<0.076	<0.036	<2.335	<0.019	<0.1	<0.1	<0.22	<0.06	<0.85		<0.02		<0.04		<0.15		<0.39	<0.41	
		EQS				0.05			50				1		5	10		28	1	7.2		300	123	20	4		125	126.4
Caerdegog Isaf	Cafnan	24/04/2013	-	-	-	0.01	-	-	1	-	-	-	0.193	-	0.1	0.5	-	2.6		2		66.5	-	1.2	-	-	5	6.4
Caerdegog Isaf	Cafnan	15/08/2013	-	-	-	0.01	-	-	1.1	-	-	-	0.189	-	0.1	0.5	-	2.2		2		169	-	1.19	-	-	5	6.4
Caerdegog Isaf	Cafnan	30/10/2013	-	-	-	0.01	-	-	1	-	-	-	0.315	-	0.1	0.581	-	5.4		2		155	-	1.46	-	-	5.63	7.03
Caerdegog Isaf	Cafnan	07/05/2014	-	-	-	0.01	-	-	1	-	-	-	0.0801	-	0.1	0.5	-	1.64		2		24.8	-	1	-	-	5	6.4
Caerdegog Isaf	Cafnan	04/03/2015	-	-	9.35	0.01	0.233	20.3	0.536	14.9	4.23	3.52	0.037	-	0.1	0.657	0.06	12.4	-	0.284	-	0.439	-	0.627	-	1.18	33.1	34.5
Cafnan	Cafnan	28/02/2012	-	<0.03	-	0.01	-	-	1	-	-	-	0.124	-	0.1	0.5	-	1.62		2		-	-	1.2	-	-	5	6.4
Cafnan	Cafnan	09/05/2012	-	-	-	0.01	-	-	1	-	-	-	0.0916	-	0.1	0.5	-	1.46		2		235	-	1.03	-	-	5	6.4
Cafnan	Cafnan	07/08/2012	-	-	-	0.01	-	-	1	-	-	-	0.269	-	0.1	0.5	-	1.49		2		258	-	1.4	-	-	5	6.4
Cafnan	Cafnan	12/03/2013	-	-	-	0.019	-	-	1	-	-	-	0.106	-	0.1	0.5	-	1.26		2		150	-	1.17	-	-	5	6.4
Cafnan	Cafnan	24/04/2013	-	-	-	0.01	-	-	1	-	-	-	0.144	-	0.1	0.5	-	1.58		2		156	-	1.18	-	-	5	6.4
Cafnan	Cafnan	15/08/2013	-	-	-	0.01	-	-	1	-	-	-	0.135	-	0.1	0.5	-	1.43		2		688	-	1	-	-	5.28	6.68
Cafnan	Cafnan	29/10/2013	-	-	-	0.028	-	-	1	-	-	-	0.212	-	0.1	0.5	-	2.53		2		94.5	-	1.44	-	-	5	6.4
Cafnan	Cafnan	19/02/2014	-	-	-	0.01	-	-	1	-	-	-	0.113	-	0.1	0.5	-	1.71		2		97.9	-	1.28	-	-	5	6.4
Cafnan	Cafnan	07/05/2014	-	-	-	0.01	-	-	1	-	-	-	0.0778	-	0.1	0.5	-	1.5		2		131	-	1	-	-	24.5	25.9
CG_Outfall	Cafnan	01/08/2016	1.91	-	9.76	0.01	-	44.6	1.01	36	12.5	4.03	3.27	1.36	0.08	1.2	-	0.85	0.03	0.1	0.01	496	34.08	0.485	0.08	0.81	1.49	2.89
CG_Outfall	Cafnan	03/11/2015	0.05	-	9.34	0.01	-	43.5	0.392	35	10.4	4.1	0.102	0.123	0.1	2.45	-	1.08	0.02	0.072	0.01	606	119.41	0.98	0.18	0.604	2.41	3.81
CG_Outfall	Cafnan	08/03/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG_Outfall	Cafnan	10/02/2016	0.187	-	42.2	0.01	-	32.9	0.684	24.8	8.21	2.45	0.293	0.106	0.1	6.64	-	1.76	0.04	0.122	0.01	111	51.35	1.4	0.31	1.28	3.65	5.05
CG_Outfall	Cafnan	14/01/2016	-	-	-	-	-	24	-	20.5	5.47	2.54	0.312	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG_Outfall	Cafnan	16/12/2015	-	-	-	-	-	25.4	-	21.3	5.45	2.94	0.306	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG_Outfall	Cafnan	26/04/2016	0.05	-	37	0.01	-	33.9	0.12	28	8.72	1.57	0.399	1.49	0.1	1.18	-	0.85	0.03	0.02	0	3.27	0.63	0.739	0.17	0.39	4	5.4
CG_Outfall	Cafnan	01/08/2016	1.91	-	9.76	0.01	-	44.6	1.01	36	12.5	4.03	3.27	1.36	0.8	1.2	-	0.85	-	0.1	-	496	-	0.485	-	0.81	1.49	2.89
CG_Outfall	Cafnan	27/10/2016	0.617	-	38.2	0.01	-	30.8	0.931	32.1	8.76	1.96	1.11	0.493	0.8	1.2	-	0.85	-	0.1	-	235	-	0.998	-	0.81	2.94	4.34
CG_Outfall	Cafnan	02/02/2017	0.5	-	32.8	0.01	-	41.3	0.51	34.8	19.9	3.72	0.252	0.5	0.8	1.2	-	0.85	-	0.1	-	422	-	0.922	-	0.81	6.33	7.73
CG_Outfall	Cafnan	08/05/2017	0.05	-	2	0.01	-	47.2	0.51	35.1	12.8	2.02	0.0289	0.1	0.08	1.2	-	0.85	-	0.1	-	67.1	-	0.4	-	0.81	1.91	3.31
CG_Outfall	Cafnan	23/08/2017	0.126	-	25.5	0.01	-	37.8	0.596	29.7	9.23	1.87	0.511	0.385	0.165	1	-	0.762	-	0.2	-	194	-	0.951	-	0.5	2.79	4.19
Felin Gafnan Confluence	Cafnan	28/02/2012	-	<0.03	-	0.01	-	-	1	-	-	-	0.124	-	0.1	0.5	-	1.84	-	2	-	-	-	1.13	-	-	5	6.4
Felin Gafnan Confluence	Cafnan	09/05/2012	-	-	-	0.01	-	-	1	-	-	-	0.0732	-	0.1	0.5	-	1.69	-	2	-	74.2	-	1.1	-	-	5	6.4
Felin Gafnan Confluence	Cafnan	07/08/2012	-	-	-	0.01	-	-	1	-	-	-	0.321	-	0.1	0.5	-	1.66	-	2	-	140	-	1.44	-	-	5	6.4
Felin Gafnan Confluence	Cafnan	12/03/2013	-	-	-	0.01	-	-	1	-	-	-	0.0979	-	0.1	0.5	-	1.31	-	2	-	136	-	1.11	-	-	5	6.4
Felin Gafnan Confluence	Cafnan	24/04/2013	-	-	-	0.01	-	-	1	-	-	-	0.129	-	0.1	0.5	-	1.55	-	2	-	144	-	1.09	-	-	5	6.4
Felin Gafnan Confluence	Cafnan	15/08/2013	-	-	-	0.01	-	-	1	-	-	-	0.153	-	0.1	0.5	-	1.66	-	2	-	138	-	1.12	-	-	5	6.4
Felin Gafnan Confluence	Cafnan	29/10/2013	-	-	-	0.01	-	-	1	-	-	-	0.216	-	0.1	0.519	-	3.04	-	2	-	61.8	-	1.77	-	-	5	6.4
Felin Gafnan confluence	Cafnan	07/05/2014	-	-	-	0.01	-	-	1	-	-	-	0.0674	-	0.1	0.5	-	1.66	-	2	-	53.6	-	1	-	-	5	6.4
Felin Gafnan confluence	Cafnan	15/10/2014	-	-	-	0.01	-	-	1	-	-	-	0.142	-	0.1	0.5	-	2.1	-	2	-	-	-	1.33	-	-	5	6.4
Felin Gafnan East	Cafnan	28/02/2012	-	<0.03	-	0.01	-	-	1	-	-	-	0.128	-	0.1	0.5	-	1.73	-	2	-	-	-	1.05	-	-	5	6.4
Felin Gafnan East	Cafnan	09/05/2012	-	-	-	0.01	-	-	1	-	-	-	0.0822	-	0.1	0.5	-	1.46	-	2	-	83.7	-	1.25	-	-	5	6.4
Felin Gafnan East	Cafnan	07/08/2012	-	-	-	0.01	-	-	1	-	-	-	0.322	-	0.1	0.5	-	1.66	-	2	-	92.6	-	1.39	-	-	5	6.4
Felin Gafnan East	Cafnan	12/03/2013	-	-	-	0.01	-	-	1	-	-	-	0.0964	-	0.1	0.5	-	1.23	-	2	-	142	-	1.09	-	-	5	6.4
Felin Gafnan East	Cafnan	24/04/2013	-	-	-	0.01	-	-	1	-	-	-	0.123	-	0.1	0.5	-	1.65	-	2	-	152	-	1.1	-	-	5	6.4
Felin Gafnan East	Cafnan	15/08/2013	-	-	-	0.01	-	-	1	-	-	-	0.188	-	0.1	0.5	-	1.56	-	2	-	189	-	1.13	-	-	5	6.4
Felin Gafnan East	Cafnan	29/10/2013	-	-	-	0.01	-	-	1	-	-	-	0.217	-	0.1	0.528	-	3.12	-	2	-	64.6	-	1.76	-	-	5	6.4

Sample ID	Catchment	Date	Iron, Ferric	Chromium, Hexavalent	Aluminium (diss.flt)	Mercury (diss.flt)	Antimony (diss.flt)	Calcium (diss.flt)	Arsenic (diss.flt)	Sodium (diss.flt)	Magnesium (diss.flt)	Potassium (diss.flt)	Iron (diss.flt)	Iron, Ferrous	Cadmium (diss.flt)	Chromium (diss.flt)	Cobalt (diss.flt)	Copper (diss.flt)	Bioavailable Copper Concentration (µg l ⁻³)	Lead (diss.flt)	Available Pb (µg l ⁻³)	Manganese (diss.flt)	Bioavailable Manganese Concentration (µg l ⁻³)	Nickel (diss.flt)	Bioavailable Nickel Concentration (µg l ⁻³)	Selenium (diss.flt)	Zinc (diss.flt)	zinc (diss.flt) + background concentration
LOCATION G	Cafnan	03/08/2016	0.162	-	11	0.01	-	34.5	1.28	26.8	9.56	3.97	0.162	0.1	0.08	1.2	-	2.9	-	0.1	-	161	-	1.54	-	0.81	5.16	6.56
LOCATION G	Cafnan	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	26/10/2016	0.152	-	11.2	0.01	-	24.1	1.04	21.8	7.33	0.1	0.152	0.1	0.08	1.2	-	1.19	-	0.128	-	112	-	1.76	-	0.81	1.3	-
LOCATION G	Cafnan	11/05/2017	0.05	-	7.69	0.01	-	33.4	1	0.698	9.07	3.51	0.0332	0.1	0.08	1.2	-	1.24	-	1.24	-	0.1	-	1.01	-	0.81	8.63	10.03
LOCATION G	Cafnan	22/08/2017	0.0867	-	15.9	0.01	-	25.4	1	21.1	7.33	3.32	0.0867	0.1	0.08	1	-	1.67	-	0.2	-	63.3	-	1.48	-	0.5	48.9	50.3
Rhwng Dau Fynydd	Cafnan	15/10/2014	-	-	-	0.088	-	-	8.18	-	-	-	24.4	-	0.389	2.19	-	33.2		9.75				9.88		-	31.7	33.1
Tan-yr-allt Pond	Cafnan	18/02/2014	-	-	-	0.01	-	-	1	-	-	-	0.348	-	0.1	0.5	-	2.15		2		109		1		-	11.7	13.1
Tan-yr-allt Pond	Cafnan	07/05/2014	-	-	-	0.01	-	-	1	-	-	-	2.68	-	0.1	7.79	-	1		2		1470		1.3		-	5.9	7.3
Tan-yr-allt Pond	Cafnan	14/10/2014	-	-	-	0.022	-	-	2.04	-	-	-	23.9	-	0.1	1.72	-	5.85		2.42				5.72		-	21.4	22.8
Tregele Pond	Cafnan	18/02/2014	-	-	-	0.01	-	-	1	-	-	-	0.706	-	0.1	0.5	-	1.79		2		231		1.05		-	5.52	6.92
Tregele Pond	Cafnan	14/10/2014	-	-	-	0.01	-	-	2.73	-	-	-	0.37	-	0.125	0.5	-	8.46		2				2.14		-	15.1	16.5

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	34	0	35	83	1	38	83	38	38	38	86	34	83	83	1	83	16	80	16	73	13	80	13	35	82	78
Mean	0.26	#DIV/O!	34.92	0.01	0.23	34.36	1.42	26.99	9.20	3.46	0.87	0.25	0.13	1.27	0.06	2.49	0.06	1.39	0.01	197.85	66.14	1.33	0.33	0.70	6.78	8.45
Min	0.05	0.00	2.00	0.01	0.23	20.30	0.12	0.70	4.23	0.10	0.03	0.10	0.08	0.48	0.06	0.76	0.02	0.02	0.00	0.10	0.63	0.40	0.08	0.39	0.85	2.25
Max	1.91	0.00	483.00	0.09	0.23	48.00	26.60	36.20	19.90	7.19	24.40	1.49	0.80	10.70	0.06	33.20	0.10	9.75	0.02	1470.00	331.95	9.88	0.75	1.28	52.30	53.70

Sample ID	Catchment	Date	Bioavailable Zinc Concentration (µg l ⁻¹)	Mercury (tot.unfit)	Aluminium (tot.unfit)	Calcium (tot.unfit)	Arsenic (tot.unfit)	Sodium (tot.unfit)	Magnesium (tot.unfit)	Potassium (tot.unfit)	Iron (tot.unfit)	Cadmium (tot.unfit)	Chromium (tot.unfit)	Copper (tot.unfit)	Manganese (tot.unfit)	Nickel (tot.unfit)	Phosphorus (tot.unfit)	Lead (tot.unfit)	Selenium (tot.unfit)	Zinc (tot.unfit)
				µg/l	µg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	Level of detection			<0.02	<50	<0.057	<2	<0.047	<0.05	<2	<0.024	<0.5	<3	<4	<0.5	<0.5	<20	<0.5	<1	<3
		EQS	10.9																	
Caerdegog Isaf	Cafnan	24/04/2013	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Caerdegog Isaf	Cafnan	15/08/2013	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Caerdegog Isaf	Cafnan	30/10/2013	-	-	-	-	-	-	-	-	-	-	0.757	-	-	-	-	-	-	-
Caerdegog Isaf	Cafnan	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caerdegog Isaf	Cafnan	04/03/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cafnan	Cafnan	28/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cafnan	Cafnan	09/05/2012	-	-	-	-	-	-	-	-	-	-	1.52	-	-	-	-	-	-	-
Cafnan	Cafnan	07/08/2012	-	-	-	-	-	-	-	-	-	-	1.42	-	-	-	-	-	-	-
Cafnan	Cafnan	12/03/2013	-	-	-	-	-	-	-	-	-	-	1.23	-	-	-	-	-	-	-
Cafnan	Cafnan	24/04/2013	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	-	-	-	-
Cafnan	Cafnan	15/08/2013	-	-	-	-	-	-	-	-	-	-	0.708	-	-	-	-	-	-	-
Cafnan	Cafnan	29/10/2013	-	-	-	-	-	-	-	-	-	-	1.47	-	-	-	-	-	-	-
Cafnan	Cafnan	19/02/2014	-	-	-	-	-	-	-	-	-	-	0.863	-	-	-	-	-	-	-
Cafnan	Cafnan	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CG_Outfall	Cafnan	01/08/2016	1	0.102	42400	142	37.3	46.2	31.7	13.9	-	4.96	56.3	213	10100	92.2	11300	176	14	992
CG_Outfall	Cafnan	03/11/2015	1.06	0.0444	14400	-	27.6	39.6	9.55	4.02	45.8	2.75	27.9	96.7	16200	42.5	-	86.3	41.1	468
CG_Outfall	Cafnan	08/03/2016	-	-	-	28	-	33.1	6.14	<2	-	-	-	-	-	-	51.1	-	-	-
CG_Outfall	Cafnan	10/02/2016	1.19	<0.02	110	39.6	<2	28.7	8.88	2.96	-	<0.5	<3	<4	171	1.6	36.2	<0.5	<1	4.74
CG_Outfall	Cafnan	14/01/2016	-	-	-	27.4	-	22.6	5.99	2.66	0.488	-	-	-	-	-	-	-	-	-
CG_Outfall	Cafnan	16/12/2015	-	-	-	30.8	-	23.4	6.47	3.21	0.678	-	-	-	-	-	-	-	-	-
CG_Outfall	Cafnan	26/04/2016	1.88	0.0284	2810	51.4	3.33	37	12.8	2.18	-	0.631	7.03	22.9	954	8.22	922	17.5	1.8	103
CG_Outfall	Cafnan	01/08/2016	-	0.102	42400	142	37.3	46.2	31.7	13.9	-	4.96	56.3	213	10100	92.2	11300	176	14	992
CG_Outfall	Cafnan	27/10/2016	-	<0.02	640	37.2	3.61	35.4	9.33	2.13	-	<0.5	<3	5.09	529	2.73	483	2.62	<1	24.8
CG_Outfall	Cafnan	02/02/2017	-	<0.02	183	44.9	<2	36.9	9.66	3.89	-	<0.5	<3	<4	138	2.12	89.6	<5	1.69	<3
CG_Outfall	Cafnan	08/05/2017	-	<0.02	739	51.2	3.07	36	13	2.2	-	<0.5	<3	5.04	1580	2.7	340	3.64	1.32	24.7
CG_Outfall	Cafnan	23/08/2017	-	<0.02	122	39.9	<2	31.7	9.35	2.35	-	<0.5	<3	<4	947	1.7	185	<0.5	1.09	10.5
Felin Gafnan Confluence	Cafnan	28/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Felin Gafnan Confluence	Cafnan	09/05/2012	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Felin Gafnan Confluence	Cafnan	07/08/2012	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Felin Gafnan Confluence	Cafnan	12/03/2013	-	-	-	-	-	-	-	-	-	-	1.33	-	-	-	-	-	-	-
Felin Gafnan Confluence	Cafnan	24/04/2013	-	-	-	-	-	-	-	-	-	-	1.35	-	-	-	-	-	-	-
Felin Gafnan Confluence	Cafnan	15/08/2013	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Felin Gafnan Confluence	Cafnan	29/10/2013	-	-	-	-	-	-	-	-	-	-	0.863	-	-	-	-	-	-	-
Felin Gafnan confluence	Cafnan	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Felin Gafnan confluence	Cafnan	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Felin Gafnan East	Cafnan	28/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Felin Gafnan East	Cafnan	09/05/2012	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Felin Gafnan East	Cafnan	07/08/2012	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Felin Gafnan East	Cafnan	12/03/2013	-	-	-	-	-	-	-	-	-	-	1.15	-	-	-	-	-	-	-
Felin Gafnan East	Cafnan	24/04/2013	-	-	-	-	-	-	-	-	-	-	1.34	-	-	-	-	-	-	-
Felin Gafnan East	Cafnan	15/08/2013	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Felin Gafnan East	Cafnan	29/10/2013	-	-	-	-	-	-	-	-	-	-	0.895	-	-	-	-	-	-	-

Sample ID	Catchment	Date	Bioavailable Zinc Concentration (µg l ⁻¹)	Mercury (tot.unfit)	Aluminium (tot.unfit)	Calcium (tot.unfit)	Arsenic (tot.unfit)	Sodium (tot.unfit)	Magnesium (tot.unfit)	Potassium (tot.unfit)	Iron (tot.unfit)	Cadmium (tot.unfit)	Chromium (tot.unfit)	Copper (tot.unfit)	Manganese (tot.unfit)	Nickel (tot.unfit)	Phosphorus (tot.unfit)	Lead (tot.unfit)	Selenium (tot.unfit)	Zinc (tot.unfit)
LOCATION G	Cafnan	03/08/2016	-	<0.02	155	35.9	<2	28.2	9.9	3.93	-	<0.5	<3	<4	150	2.17	181	0.617	1.51	5.55
LOCATION G	Cafnan	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	26/10/2016	-	<0.02	1410	25.5	5.71	23.1	7.91	4.89	-	<0.5	<3	6.42	387	4.79	472	7.22	<1	22.8
LOCATION G	Cafnan	11/05/2017	-	<0.02	77.7	36.8	<2	25.8	10.2	3.74	-	<0.5	<3	<4	32.6	1.7	85.6	<5	<1	13.2
LOCATION G	Cafnan	22/08/2017	-	<0.02	74	24	<2	21.6	7.08	3.22	-	<0.5	<3	<4	73.5	1.66	95	<0.5	1.18	14
Rhwng Dau Fynydd	Cafnan	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan-yr-allt Pond	Cafnan	18/02/2014	-	-	-	-	-	-	-	-	-	-	0.619	-	-	-	-	-	-	-
Tan-yr-allt Pond	Cafnan	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan-yr-allt Pond	Cafnan	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tregele Pond	Cafnan	18/02/2014	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Tregele Pond	Cafnan	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NB. Numbers in *italic* are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	16	4	31	33	11	35	35	32	4	4	28	9	34	34	32	17	18	26
Mean	1.99	0.07	3782.41	42.58	11.85	30.35	10.42	4.26	11.84	3.33	7.24	65.29	1374.63	10.29	865.55	29.22	6.06	108.79
Min	0.44	0.03	52.50	23.80	2.40	20.50	5.99	2.13	0.41	0.63	0.57	5.04	32.60	1.47	29.40	0.60	1.04	3.00
Max	15.49	0.10	42400.00	142.00	37.30	46.20	31.70	13.90	45.80	4.96	56.30	213.00	16200.00	92.20	11300.00	176.00	41.10	992.00

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Sample ID	Catchment	Date	HCH : Total Isomers (Alpha, Beta, Gamma, Delta, Epsilon)	Hexachlorobenzene	Hexachlorobutadiene15	Indeno(1,2,3-cd)pyrene	Isodrin	Isoproturon	Linuron	Mecoprop	Naphthalene16	p-tert-Octylphenol	Pentachlorobenzene	Pentachlorophenol (aq)17	cis-Permethrin	Phenol (aq)18	Toluene :- {Methylbenzene}	trans-Permethrin	Trichloroethene19	Trichloroethylene :- {Trichloroethene}
Groes-fechan	Cafnan	19/02/2014	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Groes-fechan	Cafnan	08/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1
Hafnan	Cafnan	24/04/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnan	Cafnan	15/08/2013	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnan	Cafnan	15/08/2013	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnan	Cafnan	30/10/2013	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnan	Cafnan	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1
Hafnan to Caerdegog Isaf	Cafnan	24/04/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnan to Caerdegog Isaf	Cafnan	19/02/2014	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	04/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	10/02/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	27/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	03/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	26/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	02/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION A	Cafnan	08/05/2017																		
LOCATION A	Cafnan	24/08/2017																		
LOCATION C	Cafnan	04/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	09/02/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	27/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	03/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	26/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	02/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION C	Cafnan	10/05/2017																		
LOCATION G	Cafnan	04/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	09/02/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	26/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	03/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	26/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	11/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION G	Cafnan	22/08/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhwng Dau Fynydd	Cafnan	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1
Tan-yr-allt Pond	Cafnan	18/02/2014	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan-yr-allt Pond	Cafnan	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	-	-	<0.1
Tan-yr-allt Pond	Cafnan	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1
Tregele Pond	Cafnan	18/02/2014	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tregele Pond	Cafnan	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1

Sample ID	Column1	Date	Eschericia coli*	Streptococci, Faecal (Enterococci)*	Streptococci, Faecal (Enterococci)*27	Total coliforms*	Total coliforms*28	Intestinal Enterococci*	TVC 2 day @ 37 deg.C*	TVC 3 day @ 22 deg.C*	Pseudomonas aeruginosa
			CFU/100ml	No/100ml	CFU/100ml	No/100ml	CFU/100ml	CFU/100ml	No/ml	No/ml	CFU/100ml
	Level of detection			<1	<1	<1	<1				
		EQS		100	100	10000	10000				
Caerdegog Isaf	Caerdegog Isaf	04/03/2015	0	<1	-	<1	-	-	0	5	0
LOCATION A	Caerdegog Isaf	01/06/2016	712	-	78	-	712	-	530	4400	0
LOCATION A	Caerdegog Isaf	29/06/2016	50600	12000	-	50600	-	-	27000	8900	0
LOCATION A	Caerdegog Isaf	03/08/2016	100000	-	30000	-	100000	-	44000	35000	0
LOCATION A	Caerdegog Isaf	31/08/2016	5220	700	-	10200	-	700	60000	66000	0
LOCATION A	Caerdegog Isaf	28/09/2016	2100	1200	-	2100	-	1200	1000	6200	0
LOCATION C	Cafnan	01/06/2016	10100	-	500	-	10100	-	1300	21000	0
LOCATION C	Cafnan	29/06/2016	2000	5700	-	2000	-	-	25000	4900	0
LOCATION C	Cafnan	03/08/2016	3200	-	100	-	3200	-	420	7100	0
LOCATION C	Cafnan	31/08/2016	2400	500	-	8400	-	500	13000	55000	1
LOCATION C	Cafnan	28/09/2016	1800	200	-	1800	-	200	500	2200	0
LOCATION G	Cafnan	01/06/2016	500	-	500	-	32300	-	2000	20000	0
LOCATION G	Cafnan	29/06/2016	3620	3900	-	3620	-	-	10000	30000	0
LOCATION G	Cafnan	03/08/2016	9200	-	1000	-	9200	-	6000	30000	0
LOCATION G	Cafnan	31/08/2016	60200	40000	-	60200	-	40000	350000	790000	1000
LOCATION G	Cafnan	28/09/2016	900	300	-	900	-	300	660	8500	0

Count	16	9	6	9	6	6	16	16	16
Average	15785	7167	5363	15536	25919	7150	33838	68075	63
Min	0	200	78	900	712	200	0	5	0
Max	100000	40000	30000	60200	100000	40000	350000	790000	1000

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
Location B2	Nant Cemlyn DS	03/06/2015	7.74	384	12.3	88	11.1	-
Location B2	Nant Cemlyn DS	06/07/2015	7.87	401	8	113	15.8	-
Location B2	Nant Cemlyn DS	06/07/2015	7.39	409	8.2		15.6	-
Location B2	Nant Cemlyn DS	13/08/2015	7.57	391	11.1	-13	18.9	2.79
Location B2	Nant Cemlyn DS	14/10/2015 12:00	6.02	409	77.9	116	10.9	7.06
Location B2	Nant Cemlyn DS	04/11/2015 10:30	8.02	332	77.3	-24	10.8	30
Location B2	Nant Cemlyn DS	04/11/2015 14:15	-	-	-	-	-	-
Location B2	Nant Cemlyn DS	17/12/2015	7.54	318	-	37	11.3	20
Location B2	Nant Cemlyn DS	12/01/2016 11:06	5.72	297	92.7	103	6.1	13
Location B2	Nant Cemlyn DS	12/01/2016 11:13						
Location B2	Nant Cemlyn DS	10/02/2016 15:45	5.63	324	82.1	87	6.8	13
Location B2	Nant Cemlyn DS	10/02/2016 16:10	-	-	-	-	-	-
Location B2	Nant Cemlyn DS	09/03/2016 09:10	6.28	220	88.9	74	6	65
Location B2	Nant Cemlyn DS	09/03/2016 11:20	-	-	-	-	-	-
Location B2	Nant Cemlyn DS	27/04/2016 12:20	6.66	350	32	118	10.9	-
Location B2	Nant Cemlyn DS	01/06/2016 08:55	7.4	407	83.4	92	13.4	-
Location B2	Nant Cemlyn DS	29/06/2016 11:15						
Location B2	Nant Cemlyn DS	03/08/2016 10:23	7.11	408	-	243	16.9	42
Location B2	Nant Cemlyn DS	31/08/2016 09:07	6.95	409	70.5	83	15.7	5
Location B2	Nant Cemlyn DS	28/09/2016 09:08	7.29	324	84.3	120	14.7	7
Location B2	Nant Cemlyn DS	26/10/2016 00:00	7.62	388	99	129	11.6	50
Location B2	Nant Cemlyn DS	29/11/2016 08:55	7.12	358	91.9	57	3.8	-
Location B2	Nant Cemlyn DS	04/01/2017 11:28	7.21	304	-	70	9.4	-
Location B2	Nant Cemlyn DS	31/01/2017 10:53	7.44	331.7	93.8	101.9	10.27	11
Location B2	Nant Cemlyn DS	07/03/2017 12:00	7.87	254.5	97.3	46	8	-
Location B2	Nant Cemlyn DS	05/04/2017 00:00	7.82	295.07	98.42	35.8	11.76	-
Location B2	Nant Cemlyn DS	10/05/2017 10:35	7.81	307.02	100.1	64.4	13.03	5
Location B2	Nant Cemlyn DS	07/06/2017 13:53	7.56	326.4		59.6	15.98	
Location B2	Nant Cemlyn DS	25/07/2017 11:57	7.69	484.49	87.86	53	18.26	14.5
Location B2	Nant Cemlyn DS	23/08/2017 09:20	7.64	384.59	84.66	91.6	17.16	5
Location D	Nant Cemlyn lagoon Inflow	06/07/2015	7.74	441	9.6	125	15.8	220
Location D	Nant Cemlyn lagoon Inflow	13/08/2015	7.68	977	14.4	40	20.4	4.68
Location D	Nant Cemlyn lagoon Inflow	14/10/2015 12:40	6.3	1121	90.5	138	11.6	31.79
Location D	Nant Cemlyn lagoon Inflow	04/11/2015 11:25	-	-	-	-	-	-
Location D	Nant Cemlyn lagoon Inflow	16/12/2015	6.85	287	36	27	11.2	-
Location D	Nant Cemlyn lagoon Inflow	12/01/2016 10:30	5.92	325	87.8	100	6.1	9
Location D	Nant Cemlyn lagoon Inflow	09/02/2016 14:50	6.43	1537	95.1	62	5.2	43
Location D	Nant Cemlyn lagoon Inflow	08/03/2016 16:40	6.34	295	94.2	50	8.6	5
Location D	Nant Cemlyn lagoon Inflow	26/04/2016 16:40	7.78	344	76.5	75	11.7	-
Location D	Nant Cemlyn lagoon Inflow	01/06/2016 08:45	7.03	434	84.3	1.01	13.7	-
Location D	Nant Cemlyn lagoon Inflow	03/08/2016 13:42	7.29	415	-	222	17.7	260
Location D	Nant Cemlyn lagoon Inflow	31/08/2016 08:50	6.72	3145	59	130	16	50
Location D	Nant Cemlyn lagoon Inflow	28/09/2016 09:10	7.18	345	76.7	135	14.8	30
Location D	Nant Cemlyn lagoon Inflow	26/10/2016 00:00	7.47	406	85	114	11.7	26
Location D	Nant Cemlyn lagoon Inflow	29/11/2016 08:50	7.05	1077	91.2	63	3.7	-
Location D	Nant Cemlyn lagoon Inflow	04/01/2017 11:27	7.21	69	-	66	9.2	-
Location D	Nant Cemlyn lagoon Inflow	30/01/2017 16:43	7.51	1120.5	95.4	99.1	7.65	14
Location D	Nant Cemlyn lagoon Inflow	30/01/2017 16:43	7.51	1120.5	95.4	99.1	7.65	14
Location D	Nant Cemlyn lagoon Inflow	05/04/2017 00:00	-	-	-	-	-	-
Location D	Nant Cemlyn lagoon Inflow	10/05/2017 00:00	-	-	-	-	-	-
Location D	Nant Cemlyn lagoon Inflow	07/06/2017 13:48	7.55	330.61	88.72	55.9	16.25	
Location D	Nant Cemlyn lagoon Inflow	25/07/2017 00:00	-	-	-	-	-	-
Location D	Nant Cemlyn lagoon Inflow	25/08/2017 10:00	7.23	11568	87.73	110.4	17.7	-
Location F	Nant Cemlyn US	04/11/2015 10:00	7.23	537	71.3	104	9.6	30
Location F	Nant Cemlyn US	09/02/2016 14:25	6.63	284	93.8	58	4.9	20
Location F	Nant Cemlyn US	26/04/2016 16:20	7.77	219	92.2	76	13.7	-
Location F	Nant Cemlyn US	01/06/2016 09:05	7.18	405	58.3	73	14.3	-
Location F	Nant Cemlyn US	03/08/2016 12:40	7.27	401	-	232	18.2	25

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
Location F	Nant Cemlyn US	31/08/2016 09:15	6.97	412	56.4	75	15.9	5
Location F	Nant Cemlyn US	28/09/2016 09:20	7.13	328	63.3	86	14.5	90
Location F	Nant Cemlyn US	26/10/2016 00:00	7.31	338	80.4	114	11.6	5
Location F	Nant Cemlyn US	30/01/2017 16:18	7.42	289.5	94.2	94.3	7.75	8
Location F	Nant Cemlyn US	10/05/2017 11:05	7.76	314.14	90.98	74.5	16.02	7
Location F	Nant Cemlyn US	22/08/2017 16:13	7.39	386.22	64.9	80.2	19.65	5

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	55	55	48	54	55	36
Average	7.20	692.51	73.23	87.50	12.31	33.13
Min	5.63	69.00	8.00	-24.00	3.70	2.79
Max	8.02	11568.00	100.10	243.00	20.40	260.00

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
Location E	Cemlyn Bay ditch	04/11/2015 11:35	-	-	-	-	-	-
Location E	Cemlyn Bay ditch	16/12/2015 00:00	6.92	390		43	11.3	-
Location E	Cemlyn Bay ditch	12/01/2016 10:10	5.67	567	90.4	95	7	45
Location E	Cemlyn Bay ditch	09/02/2016 15:00	7.32	384	95.1	49	6.2	5
Location E	Cemlyn Bay ditch	08/03/2016 16:25	6.2	353	95.6	61	8.7	5
Location E	Cemlyn Bay ditch	26/04/2016 16:52	7.82	381	82.3	85	10.9	-
Location E	Cemlyn Bay ditch	01/06/2016 08:30	6.63	584	94.4	118	12.6	-
Location E	Cemlyn Bay ditch	03/08/2016 13:30	7.24	469	-	196	19.4	1500
Location E	Cemlyn Bay ditch	31/08/2016 08:35	5.04	509	56.6	108	16.3	500
Location E	Cemlyn Bay ditch	28/09/2016 09:00	7	675	67.5	92	14.8	500
Location E	Cemlyn Bay ditch	26/10/2016 00:00	7.7	1181	106	51	12.9	-
Location E	Cemlyn Bay ditch	29/11/2016 08:30	6.85	507	85.1	59	5.1	-
Location E	Cemlyn Bay ditch	04/01/2017 08:40	6.26	408	-	83	9.9	-
Location E	Cemlyn Bay ditch	30/01/2017 17:09	7.55	371	93.2	131.9	8.16	18
Location E	Cemlyn Bay ditch	05/04/2017 00:00	7.75	277.88	100.79	34.5	11.97	-
Location E	Cemlyn Bay ditch	10/05/2017 10:15	7.82	345.85	96.1	88.2	15.23	50
Location E	Cemlyn Bay ditch	07/06/2017 13:37	7.19	388.62	85.96	68.4	16.2	
Location E	Cemlyn Bay ditch	25/07/2017 11:45	7.45	434.16	80.45	37.1	18.97	-
Location E	Cemlyn Bay ditch	22/08/2017 17:42	7.31	496.96	62.84	33.3	21.48	110

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	18	18	15	18	18	9
Average	6.98	484.58	86.16	79.63	12.62	303.67
Min	5.04	277.88	56.60	33.30	5.10	5.00
Max	7.82	1181.00	106.00	196.00	21.48	1500.00

Sample ID	Catchment	Date	Carbon, Organic (diss.flit)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Orthophosphate, reactive as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3 (diss.flit)	Suspended solids, Total	Alkalinity, Carbonate as CaCO3	BOD, unfiltered	
			mg/l	mg/l	mg/l	mS/cm	% Diff	mg/l	mg/l	pH Units	mg/l	mg/l	mg/l	mg/l	mg/l		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
	Limit of detection		<3	<0.2		<0.005		<0.05	<0.3	<1	<2	<2	<1	<0.05	<0.02		<10	<0.3	<0.02	<2	<2	<2		
		EQS		0.02	0.02	2500		0.01		<6, >9	400	250									25		2.5	
LOCATION B2	Cemlyn	04/11/2015	9.1	0.253	-	415	-0.872	0.1	8.84	8.2	24.5	49.2	2.18	-	-	-	294	7.03	0.046	141	18	<2	-	
LOCATION B2	Cemlyn	17/12/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	
LOCATION B2	Cemlyn	12/01/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	-	-	-	-	-	-	
LOCATION B2	Cemlyn	10/02/2016	6.1	0.2	-	329	-5.91	0.079	9.59	7.93	17.2	48.4	4.68	0.126	-	-	202	18.6	0.0392	80	18	<2	-	
LOCATION B2	Cemlyn	27/04/2016	4.92	0.2	-	330	-73.1	0.05	-	7.99	17.6	40.6	2.47	0.053	-	-	216	7.96	0.02	100	9.5	<2	-	
LOCATION B2	Cemlyn	03/08/2016	6.66	0.2	-	376	-3.73	0.102	-	7.77	15	43.1	3.05	0.119	-	-	249	10	0.0388	140	111	<2	-	
LOCATION B2	Cemlyn	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOCATION B2	Cemlyn	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOCATION B2	Cemlyn	26/10/2016	5.54	0.2	-	384	-3.64	0.061	-	7.94	22.3	47.2	1.88	0.102	0.0333	-	268	6.1	-	120	161	<2	-	
LOCATION B2	Cemlyn	01/02/2017	7.07	0.2	-	362	-5.4	0.134	-	7.66	22	49.5	3.88	0.092	0.03	-	253	18.6	-	100	11.2	<2	-	
LOCATION B2	Cemlyn	10/05/2017	4.78	0.2	-	0.392	-3.02	0.05	-	7.81	21.6	44.8	3.26	0.05	0.02	-	220	13.6	-	120	5.55	<2	-	
LOCATION B2	Cemlyn	24/08/2017	6.43	0.2	-	0.378	-5.16	0.082	-	7.79	15.1	45.1	2.38	0.1	0.0326	-	271	7.1	-	135	10.7	<2	-	
LOCATION D	Cemlyn	04/11/2015	8.74	0.401	-	604	-4.69	0.094	8.8	8.18	29.8	102	2.2	-	-	-	419	7.32	0.0454	143	10	<2	-	
LOCATION D	Cemlyn	16/12/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	-	-	
LOCATION D	Cemlyn	12/01/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	-	-	-	-	-	-	
LOCATION D	Cemlyn	09/02/2016	-	-	-	-	-	-	-	-	-	-	-	0.073	-	-	-	-	-	-	28	-	-	
LOCATION D	Cemlyn	08/03/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	-	
LOCATION D	Cemlyn	26/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	
LOCATION D	Cemlyn	01/06/2016																			-			
LOCATION D	Cemlyn	03/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	109	-	-	
LOCATION D	Cemlyn	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOCATION D	Cemlyn	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOCATION D	Cemlyn	26/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39	-	-	
LOCATION D	Cemlyn	01/02/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOCATION D	Cemlyn	24/08/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6	-	-	
LOCATION F	Cemlyn	04/11/2015	9.81	0.2	-	402	-0.631	0.05	8.72	8.07	22.7	47.1	1.05	-	-	-	292	2.08	0.0271	148	15.5	<2	-	
LOCATION F	Cemlyn	09/02/2016	6.38	0.2	-	297	-5.17	0.063	9.38	7.81	15.1	42.9	2.93	0.08	-	-	209	10.5	0.0261	80	17	<2	-	
LOCATION F	Cemlyn	26/04/2016	5.43	0.2	-	333	-6.37	0.069	-	8.04	22.1	42.7	1.74	0.05	-	-	214	5.38	0.02	100	5	<2	-	
LOCATION F	Cemlyn	01/06/2016	5.21	0.2	-	0.377	-4.79	0.05	-	7.73	19.4	39.3	1.15	0.05	-	-	174	1.31	0.02	140	18	<2	-	
LOCATION F	Cemlyn	29/06/2016	7.38	0.2	-	0.356	-0.281	0.05	-	7.63	13.3	41.7	1.43	0.05	-	-	216	0.382	0.02	120	2.25	<2	-	
LOCATION F	Cemlyn	03/08/2016	7.19	0.2	-	384	-0.333	0.05	-	7.69	7.1	39.2	1.93	0.05	-	-	247	0.77	0.02	155	19.5	<2	-	
LOCATION F	Cemlyn	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOCATION F	Cemlyn	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LOCATION F	Cemlyn	26/10/2016	5.87	0.2	-	379	-3.06	0.05	-	8.16	20.4	44.7	1	0.05	0.02	-	258	0.927	-	120	66	-	-	
LOCATION F	Cemlyn	10/05/2017																			18			
LOCATION F	Cemlyn	24/08/2017																			2.25			
Neuadd	Cemlyn	28/02/2012	-	0.03	<0.000332	-	-	-	14.7	7.77	-	44.7	-	-	0.02	-	-	-	-	-	96.4	-	96	1
Neuadd	Cemlyn	12/03/2013	-	0.072	-	-	-	-	-	-	-	37.2	-	-	0.02	-	-	-	-	-	121	21.2	164	2.92
Neuadd	Cemlyn	24/04/2013	-	0.072	0.000336	310	-	-	100	7.54	-	36.9	-	-	0.02	-	-	-	-	-	123	11.4	112	1.15
Neuadd	Cemlyn	15/08/2013	-	0.072	0.00156	433	-	-	71	8.02	-	40.1	-	-	0.097	0.098	-	-	-	-	157	22	162	2
Neuadd	Cemlyn	30/10/2013	-	0.072	-	244	-	-	89.8	7.1	-	34.6	-	-	0.026		-	-	-	-	77.2	3.28	78	2.92
Neuadd	Cemlyn	07/05/2014	-	0.03	<0.000343	308	-	-	11.3	7.74	-	34.5	-	-	0.022	0.027	-	-	-	-	120	9.05	119	1
Neuadd	Cemlyn	14/10/2014	-	0.067	0.0000923	302	-	-	80	7.05	-	42.3	-	-	0.056	0.052	-	-	-	-	97.3	6.2	107	1.4
Penyrrsedd	Cemlyn	18/02/2014	-	0.072	0.0000351	326	-	-	90.8	6.48	-	53.7	-	-	0.128	0.146	-	-	-	-	90.1	18.6	90	1

Sample ID	Catchment	Date	Carbon, Organic (diss.filt)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Orthophosphate, reactive as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3 (diss.filt)	Suspended solids, Total	Alkalinity, Carbonate as CaCO3	BOD, unfiltered
Penyrsedd	Cemlyn	07/05/2014	-	0.313	0.000191	382	-	-	9.51	6.48	-	48.2	-	-	0.041	0.077	-	-	-	124	20	125	1.46
Penyrsedd	Cemlyn	14/10/2014	-	0.518	0.000302	452	-	-	57.7	6.41	-	69.2	-	-	0.03	0.076	-	-	-	134	72.7	136	2.93
Penyrsedd Pond	Cemlyn	18/02/2014	-	0.072	0.0000297	358	-	-	92.6	6.74	-	54.3	-	-	0.273	0.247	-	-	-	67	5.15	58	1
Penyrsedd Pond	Cemlyn	14/10/2014	-	0.276	0.002	486	-	-	94.9	7.48	-	80.1	-	-	0.312	0.337	-	-	-	97.8	18.4	110	4.63
Penyrsedd Pond	Cemlyn	15/07/2014	-	0.18	0.000355	513	-	-	13.1	7.6	-	95.2	-	-	0.903	0.824	-	-	-	151	91.1	151	18.1
US Neuadd	Cemlyn	15/08/2013	-	0.072	<0.000480	407	-	-	65.3	7.69	-	38.6	-	-	0.024	0.038	-	-	-	164	6.77	164	1
US Neuadd	Cemlyn	30/10/2013	-	0.072	-	246	-	-	74.8	6.91	-	34.9	-	-	0.021	0.023	-	-	-	78.8	3.53	79	2.92
US Neuadd	Cemlyn	18/02/2014	-	0.03	<0.0000249	240	-	-	101	6.68	-	40.5	-	-	0.02	0.02	-	-	-	74.1	4.05	74	1
US Neuadd	Cemlyn	07/05/2014	-	0.048	0.000123	320	-	-	10.7	7.07	-	35	-	-	0.02	0.029	-	-	-	115	8.3	116	1
US Neuadd	Cemlyn	14/10/2014	-	0.052	0.000054	304	-	-	68.1	6.78	-	43	-	-	0.025	0.031	-	-	-	99.3	11.3	108	1.05
LOCATION E	Wider Cemlyn	16/12/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-
LOCATION E	Wider Cemlyn	12/01/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	-
LOCATION E	Wider Cemlyn	09/02/2016	-	-	-	-	-	-	-	-	-	-	-	0.055	-	-	-	-	-	-	7	-	-
LOCATION E	Wider Cemlyn	08/03/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	112	-	-
LOCATION E	Wider Cemlyn	26/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2750	-	-
LOCATION E	Wider Cemlyn	01/06/2016																			-		
LOCATION E	Wider Cemlyn	29/06/2016																			-		
LOCATION E	Wider Cemlyn	03/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1860	-	-
LOCATION E	Cemlyn	31/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION E	Cemlyn	28/09/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION E	Cemlyn	26/10/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1570	-	-
LOCATION E	Cemlyn	10/05/2017																			43.6		
LOCATION E	Cemlyn	24/08/2017																			266		

Exc Location E	Count	16	34	11	32	16	16	22	33	16	34	16	14	23	14	18	16	11	34	43	18	18
	Average	6.66	0.16	0.00	319.61	-7.88	0.07	49.57	7.51	19.08	47.96	2.33	0.07	0.10	0.14	245.67	7.35	0.03	115.56	24.89	113.83	2.69
	Min	4.78	0.03	0.00	0.36	-73.10	0.05	8.72	6.41	7.10	34.50	1.00	0.05	0.02	0.02	174.00	0.38	0.02	67.00	2.25	58.00	1.00
	Max	9.81	0.52	0.00	604.00	-0.28	0.13	101.00	8.20	29.80	102.00	4.68	0.13	0.90	0.82	419.00	18.60	0.05	164.00	161.00	164.00	18.10
Location E only	Count	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-
	Average	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1053.33	-	-
	Min	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-
	Max	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2750	-	-

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Sample ID	Catchment	Date	Iron, Ferric	Aluminium (diss.filt)	Mercury (diss.filt)	Calcium (diss.filt)	Arsenic (diss.filt)	Sodium (diss.filt)	Magnesium (diss.filt)	Potassium (diss.filt)	Iron (diss.filt)	Iron, Ferrous	Cadmium (diss.filt)	Chromium (diss.filt)	Copper (diss.filt)	Bioavailable Copper Concentration (µg l ⁻¹)	Lead (diss.filt)	Available Pb (µg l ⁻¹)	Manganese (diss.filt)	Bioavailable Manganese Concentration (µg l ⁻¹)	Nickel (diss.filt)	Bioavailable Nickel Concentration (µg l ⁻¹)	Selenium (diss.filt)	Zinc (diss.filt)	Bioavailable Zinc Concentration (µg l ⁻¹)	Zinc (diss.filt) + background concentration	Mercury (tot.unfilt)	Aluminium (tot.unfilt)	Calcium (tot.unfilt)	Arsenic (tot.unfilt)	Sodium (tot.unfilt)		
			mg/l	µg/l	µg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l		µg/l		µg/l		µg/l		µg/l	µg/l		µg/l	µg/l	µg/l	mg/l	µg/l	mg/l	µg/l	mg/l
	Limit of detection		<0.05	<2.9	<0.01	<0.012	<0.12	<0.076	<0.036	<2.335	<0.019	<0.1	<0.1	<0.22	<0.85		<0.02		<0.04		<0.15		<0.39	<0.41			<0.02	<50	<0.057	<2	<0.047		
		EQS			0.05		50				1		5	10	28	1	7.2		300	123	20	4		125		10.9							
LOCATION B2	Cemlyn	04/11/2015	0.152	2.9	0.01	48.2	1.2	29.2	10.9	6.13	0.152	0.1	0.1	2.13	1.24	0.06	-	0	-	-	-	-	0.57	1.05	0.6	2.45	0.02	70.4	-	2.58	-		
LOCATION B2	Cemlyn	10/02/2016	0.109	8.73	0.01	30.9	0.538	22.5	7.42	3.44	0.109	0.1	0.1	8.29	2.05	0.1	0.063	0.01	62.2	56.26	1.07	0.43	0.515	1.46	0.96	2.86	0.02	330	33.5	<2	25		
LOCATION B2	Cemlyn	27/04/2016	0.05	5.97	0.01	5.6	0.12	4.27	1.23	1	0.019	0.1	0.1	0.392	1.44	0.09	0.02	0	25.7	25.7	0.768	0.29	0.39	0.723	0.87	2.123	0.02	196	39.6	<2	26		
LOCATION B2	Cemlyn	03/08/2016	0.0846	5.62	0.01	44.7	1.28	25.6	10	2.04	0.0846	0.1	0.08	1.2	0.982	0.04	0.1	0.02	90.7	59.27	0.758	0.24	0.81	1.3	0.88	2.7	0.02	1020	48.3	3.16	28.5		
LOCATION B2	Cemlyn	26/10/2016	0.0703	9.53	0.01	39.9	0.839	25.7	9.2	4.97	0.0703	0.1	0.1	1.2	0.85	-	0.1	-	64.7	-	0.44	-	0.81	1.3	-	-	0.02	2150	49.9	5.74	31.4		
LOCATION B2	Cemlyn	01/02/2017	0.109	11.1	-	-	0.923	24.4	-	4.67	0.109	0.1	0.08	1.2	1.27	-	0.1	-	28	-	0.889	-	0.81	2.64	-	4.04	0.02	222	41.8	<2	25.2		
LOCATION B2	Cemlyn	10/05/2017	0.051	6.47	0.01	43.1	0.867	25.4	9.98	1.09	0.051	0.1	0.08	1.2	0.85	-	0.1	-	27.3	-	0.529	-	0.81	1.3	-	2.7	0.02	92.9	45.7	<2	25.2		
LOCATION B2	Cemlyn	23/08/2017	0.05	4.7	0.01	40.3	1.61	25.3	9.27	3.64	0.148	0.12	0.08	1	2.51	-	0.319	-	51.3	-	1.13	-	0.5	4.61	-	6.01	0.02	63.6	39.1	<2	25.7		
LOCATION D	Cemlyn	04/11/2015	0.127	3.81	0.01	46.6	1.29	53	12.8	6.62	0.127	0.1	0.1	2.01	1.17	0.05	-	0	-	-	-	-	0.791	1.71	0.78	3.11	0.02	66.9	-	<2	-		
LOCATION F	Cemlyn	04/11/2015	0.11	2.9	0.01	48.7	1.29	28.9	11	5.44	0.227	0.117	0.1	4.63	1.27	0.05	-	0	-	-	-	-	0.507	0.723	0.48	2.123	0.02	130	-	<2	-		
LOCATION F	Cemlyn	09/02/2016	0.163	9.5	0.01	28.6	0.629	22.1	6.22	2.73	0.163	0.1	0.1	6.63	1.87	0.08	0.299	0.05	121	85.76	1.11	0.4	0.6	2.51	1.3	3.91	0.02	176	33.7	<2	24.8		
LOCATION F	Cemlyn	26/04/2016	0.147	8.11	0.01	34.4	0.12	21.9	7.68	1.89	0.147	0.1	0.1	0.834	0.85	0.05	0.02	0	1.65	1.65	0.467	0.22	0.39	0.677	0.75	2.077	0.02	<50	38.4	<2	25.2		
LOCATION F	Cemlyn	03/08/2016	0.203	5.39	0.01	47	1.58	25.6	10.7	1	0.336	0.133	0.08	1.2	0.85	0.03	0.1	0.01	238	132.19	0.896	0.25	0.81	1.83	1.01	3.23	0.02	252	50.9	2.4	27.6		
LOCATION F	Cemlyn	26/10/2016	0.132	4.64	0.01	38.7	0.821	25	8.92	4.12	0.132	0.1	0.08	1.2	0.85	-	0.1	-	82	-	0.485	-	0.81	1.3	-	-	0.02	576	37.4	3.55	25.4		
LOCATION F	Cemlyn	10/05/2017	0.05	3.67	0.01	42.9	1.14	23.4	9.47	1	0.142	0.107	0.08	1.2	0.85	-	0.1	-	486	-	0.767	-	0.81	2.83	-	4.23	0.02	<50	47.7	2.53	24.7		
LOCATION F	Cemlyn	22/08/2017	0.0619	2	0.01	40	1.51	24.4	8.66	2.71	0.261	0.199	0.08	1	0.774	-	0.02	-	429	-	1.1	-	0.5	40.5	-	41.9	0.02	<50	36.1	<2	24.1		
Neuadd	Cemlyn	28/02/2012	-	-	0.01	-	1	-	-	-	0.11	-	0.1	0.5	1.93	-	2	-	-	-	1	-	-	5	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	12/03/2013	-	-	0.195	-	1	-	-	-	0.118	-	0.1	0.5	1.24	-	2	-	188	-	1	-	-	5	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	24/04/2013	-	-	0.01	-	1	-	-	-	0.186	-	0.1	0.5	1.71	-	2	-	101	-	1	-	-	5	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	15/08/2013	-	-	0.01	-	1.23	-	-	-	0.0408	-	0.1	0.5	1.21	-	2	-	333	-	1	-	-	5	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	30/10/2013	-	-	0.01	-	1	-	-	-	0.104	-	0.1	0.5	3.27	-	2	-	17.4	-	1.16	-	-	8.77	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	07/05/2014	-	-	0.01	-	1	-	-	-	0.127	-	0.1	0.5	1.14	-	2	-	137	-	1	-	-	5	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	14/10/2014	-	-	0.01	-	1	-	-	-	0.0782	-	0.1	0.5	2.07	-	2	-	-	-	1.02	-	-	5	-	-	-	-	-	-	-	-	
Penyrsedd	Cemlyn	18/02/2014	-	-	0.01	-	1	-	-	-	0.0758	-	0.1	0.5	3.3	-	2	-	128	-	1.35	-	-	5	-	-	-	-	-	-	-	-	
Penyrsedd	Cemlyn	07/05/2014	-	-	0.01	-	1	-	-	-	0.0621	-	0.1	0.5	1.28	-	2	-	175	-	1	-	-	5	-	-	-	-	-	-	-	-	
Penyrsedd	Cemlyn	14/10/2014	-	-	0.01	-	1	-	-	-	0.157	-	0.1	0.5	1.79	-	2	-	-	-	1.26	-	-	5	-	-	-	-	-	-	-	-	
Penyrsedd Pond	Cemlyn	18/02/2014	-	-	0.01	-	1	-	-	-	0.03	-	0.1	0.5	5.21	-	2	-	14.2	-	1.38	-	-	5	-	-	-	-	-	-	-	-	
Penyrsedd Pond	Cemlyn	14/10/2014	-	-	0.01	-	1.31	-	-	-	0.0717	-	0.1	0.5	10.4	-	2	-	-	-	2.43	-	-	5	-	-	-	-	-	-	-	-	
Penyrsedd Pond	Cemlyn	07/15/2014	-	-	0.01	-	3.23	-	-	-	0.273	-	0.1	0.5	3.56	-	2	-	438	-	2.88	-	-	5	-	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	15/08/2013	-	-	0.01	-	1.09	-	-	-	0.188	-	0.1	0.5	1	-	2	-	357	-	1	-	-	5	-	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	30/10/2013	-	-	0.01	-	1	-	-	-	0.154	-	0.1	0.529	2.78	-	2	-	58.3	-	1.2	-	-	5	-	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	18/02/2014	-	-	0.01	-	1	-	-	-	0.141	-	0.1	0.5	1.82	-	2	-	77.2	-	1	-	-	5	-	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	07/05/2014	-	-	0.01	-	1	-	-	-	0.174	-	0.1	0.5	1.09	-	2	-	305	-	1	-	-	5	-	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	14/10/2014	-	-	0.0633	-	1	-	-	-	0.12	-	0.1	0.5	2.05	-	2	-	-	-	1.07	-	-	5	-	-	-	-	-	-	-	-	

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	16	16	33	15	34	16	15	16	34	16	34	34	34	9	31	9	26	6	31	6	16	34	9	14	16	13	13	6	13
Average	0.10	5.94	0.02	38.64	1.08	25.42	8.90	3.28	0.13	0.11	0.10	1.30	1.96	0.06	1.21	0.01	155.26	60.14	1.07	0.31	0.65	4.71	0.85	5.96	0.02	411.22	41.70	3.33	26.06
Min	0.05	2.00	0.01	5.60	0.12	4.27	1.23	1.00	0.02	0.10	0.08	0.39	0.77	0.03	0.02	0.00	1.65	1.65	0.44	0.22	0.39	0.68	0.48	2.08	0.02	63.60	33.50	2.40	24.10
Max	0.20	11.10	0.20	48.70	3.23	53.00	12.80	6.62	0.34	0.20	0.10	8.29	10.40	0.10	2.00	0.05	486.00	132.19	2.88	0.43	0.81	40.50	1.30	41.90	0.02	2150.00	50.90	5.74	31.40

Sample ID	Catchment	Date	Magnesium (tot.unfiit)	Potassium (tot.unfiit)	Cadmium (tot.unfiit)	Chromium (tot.unfiit)	Copper (tot.unfiit)	Manganese (tot.unfiit)	Nickel (tot.unfiit)	Phosphorus (tot.unfiit)	Lead (tot.unfiit)	Selenium (tot.unfiit)	Zinc (tot.unfiit)	Column1
			mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	
	Limit of detection		<0.05	<2	<0.5	<3	<4	<0.5	<0.5	<20	<0.5	<1	<3	
		EQS												
LOCATION B2	Cemlyn	04/11/2015	-	-	<0.5	<3	<4	73.2	1.75	-	<0.5	2.01	<3	
LOCATION B2	Cemlyn	10/02/2016	7.33	4.07	<0.5	<3	<4	143	1.41	97.9	0.77	<1	3.58	
LOCATION B2	Cemlyn	27/04/2016	9.32	<2	<0.5	<3	<4	117	1.23	50.5	<0.5	<1	<3	
LOCATION B2	Cemlyn	03/08/2016	11.1	2.44	<0.5	<3	6.19	676	3.21	264	4.28	3.66	14.8	
LOCATION B2	Cemlyn	26/10/2016	11.6	5.82	<0.5	<3	8.34	1450	5.76	582	5.26	<1	27.8	
LOCATION B2	Cemlyn	01/02/2017	8.81	5	<0.5	<3	<4	99.9	1.93	112	<5	1.22	<3	
LOCATION B2	Cemlyn	10/05/2017	10.8	<2	<0.5	<3	<4	46.1	1.39	52.7	<0.5	<1	<3	
LOCATION B2	Cemlyn	23/08/2017	9.12	3.63	<0.5	<3	<4	65.9	1.48	92.8	<0.5	<1	<3	
LOCATION D	Cemlyn	04/11/2015	-	-	<0.5	<3	<4	173	1.64	-	<0.5	1.64	<3	
LOCATION F	Cemlyn	04/11/2015	-	-	<0.5	4.64	<4	213	2.01	-	<0.5	2.58	<3	
LOCATION F	Cemlyn	09/02/2016	7.19	3.22	<0.5	<3	<4	142	1.11	40.8	<0.5	<1	3.7	
LOCATION F	Cemlyn	26/04/2016	8.78	<2	<0.5	<3	<4	132	1.2	36.6	<0.5	<1	<3	
LOCATION F	Cemlyn	03/08/2016	11.2	<2	<0.5	<3	<4	233	1.96	86.9	0.58	<1	<3	
LOCATION F	Cemlyn	26/10/2016	8.92	3.9	<0.5	<3	<4	112	2.29	111	1.23	<1	5.35	
LOCATION F	Cemlyn	10/05/2017	10.8	<2	<0.5	<3	<4	497	2.85	80.2	0.744	<1	10.3	
LOCATION F	Cemlyn	22/08/2017	8.09	2.46	<0.5	<3	<4	452	1.39	54	<0.5	1.3	10.6	
Neuadd	Cemlyn	28/02/2012	-	-	-	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	12/03/2013	-	-	-	0.803	-	-	-	-	-	-	-	
Neuadd	Cemlyn	24/04/2013	-	-	-	0.513	-	-	-	-	-	-	-	
Neuadd	Cemlyn	15/08/2013	-	-	-	0.5	-	-	-	-	-	-	-	
Neuadd	Cemlyn	30/10/2013	-	-	-	0.5	-	-	-	-	-	-	-	
Neuadd	Cemlyn	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	
Neuadd	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	
Penyrsedd	Cemlyn	18/02/2014	-	-	-	0.776	-	-	-	-	-	-	-	
Penyrsedd	Cemlyn	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	
Penyrsedd	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	
Penyrsedd Pond	Cemlyn	18/02/2014	-	-	-	0.5	-	-	-	-	-	-	-	
Penyrsedd Pond	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	
Penyrsedd Pond	Cemlyn	07/15/2014	-	-	-	-	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	15/08/2013	-	-	-	0.5	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	30/10/2013	-	-	-	0.5	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	18/02/2014	-	-	-	0.5	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	
US Neuadd	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	13	8	0	10	2	16	16	13	6	6	7
Average	9.47	3.82	#DIV/0!	0.97	7.27	289.07	2.04	127.80	2.14	2.07	10.88
Min	7.19	2.44	0.00	0.50	6.19	46.10	1.11	36.60	0.58	1.22	3.58
Max	11.60	5.82	0.00	4.64	8.34	1450.00	5.76	582.00	5.26	3.66	27.80

[illegible]

[illegible]

Sample ID	Catchment	Date	1,2,4-Trichlorobenzene	Hexachlorobutadiene	tert-Amyl methyl ether (TAME)	Naphthalene	1,2,3-Trichlorobenzene	1,3,5-Trichlorobenzene	2,2,3,4,4,5-Hexabromodiphenyl ether :- {PBDE 138}	4-Nonylphenol Branched	Alachlor	Aldrin	Carbontetrachloride2	DDT : Sum of components	Dichloromethane3	HCH : Total Isomers (Alpha, Beta, Gamma, Delta, Epsilon)	p-tert-Octylphenol	Hydrocarbons Screen >C5 - C44	Toluene :- {Methylbenzene}	Trichloroethylene :- {Trichloroethene}	Di-2-ethylhexyl phthalate :- {DEHP}	Cyanide as CN	Chromium Hexavalent
			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	ug/l	ug/l	ug/l	ug/l	µg/l	ug/l	µg/l	ug/l	ug/l				ug/l		
		Limit of detection	<2.3	<2.5	<1	<3.5	<3.1	<10						<0.005									
		EQS		0.1 (AA)			0.4 (AA)					0.3 (AA)		0.025 (AA)							1.3	5	
LOCATION B2	Cemlyn	04/11/2015	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION B2	Cemlyn	10/02/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION B2	Cemlyn	27/04/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION B2	Cemlyn	03/08/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION B2	Cemlyn	26/10/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION B2	Cemlyn	01/02/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION B2	Cemlyn	10/05/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION B2	Cemlyn	23/08/2017	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION D	Cemlyn	04/11/2015	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION F	Cemlyn	04/11/2015	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION F	Cemlyn	09/02/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION F	Cemlyn	26/04/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION F	Cemlyn	03/08/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION F	Cemlyn	26/10/2016	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION F	Cemlyn	10/05/2017	<1	<1	<1	<1	<1	<1															
LOCATION F	Cemlyn	23/08/2017	<1	<1	<1	<1	<1	<1															
Neuadd	Cemlyn	28/02/2012	-	-	-	-	-	-	<0.0000900	<0.250	<0.0400	<0.001	<0.1	<0.00500	<0.5	<0.0130	<0.100	-	-	-	-	<0.00500	<30
Neuadd	Cemlyn	12/03/2013	-	-	-	-	-	-	-	<0.1	-	-	-	<0.2	-	<0.1	-	<0.2	<0.1	<0.1	<0.200	-	-
Neuadd	Cemlyn	24/04/2013	-	-	-	-	-	-	<0.200	<0.2	-	-	<0.1	-	<0.1	-	-	<0.2	-	-	-	-	-
Neuadd	Cemlyn	15/08/2013	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	<0.1	-	<0.2	<0.1	<0.1	-	-	-
Neuadd	Cemlyn	30/10/2013	-	-	-	-	-	-	-	<0.1	-	<0.2	-	-	-	<0.2	-	0.000101	<0.2	<0.1	<0.1	-	-
Neuadd	Cemlyn	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.2	-	-
Neuadd	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	0.247	-	-
Penyrsedd	Cemlyn	18/02/2014	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	<0.1	-	<0.2	<0.1	<0.1	<0.200		
Penyrsedd	Cemlyn	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.2	-	-
Penyrsedd	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.2	-	-
Penyrsedd Pond	Cemlyn	18/02/2014	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	<0.1	-	<0.2	<0.1	<0.1	<0.200		
Penyrsedd Pond	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	0.504	-	-
Penyrsedd Pond	Cemlyn	07/15/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.2	-	-
US Neuadd	Cemlyn	15/08/2013	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	<0.1	-	<0.2	<0.1	<0.1	0.222	-	-
US Neuadd	Cemlyn	30/10/2013	-	-	-	-	-	-	-	<0.1	-	<0.2	-	-	-	<0.2	-	6.64E-05	<0.2	<0.1	<0.1	-	-
US Neuadd	Cemlyn	18/02/2014	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	<0.1	-	<0.2	<0.1	<0.1	<0.200	-	-
US Neuadd	Cemlyn	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.2	-	-
US Neuadd	Cemlyn	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	0.221	-	-

Sample ID	Catchment	Date	Eschericia coli*	Streptococci, Faecal (Enterococci)*	Streptococci, Faecal (Enterococci)*27	Total coliforms*	Total coliforms*28	Intestinal Enterococci*	TVC 2 day @ 37 deg.C*	TVC 3 day @ 22 deg.C*	Pseudomonas aeruginosa
		ESQ		100	100	10000	10000				
	Limit of detection			<1	<1	<1	<1				
			CFU/100ml	No/100ml	CFU/100ml	No/100ml	CFU/100ml	CFU/100ml	No/ml	No/ml	CFU/100ml
LOCATION B	Cemlyn	01/06/2016	1420	400	-	1420	-	-	680	6500	0
LOCATION B	Cemlyn	29/06/2016	50200	5200	-	50200	-	-	2500	7400	0
LOCATION B	Cemlyn	03/08/2016	2000	-	100	2000	-	-	930	11000	0
LOCATION B	Cemlyn	31/08/2016	560	400	-	5060	-	400	49000	130000	0
LOCATION B	Cemlyn	28/09/2016	2800	600	-	2800	-	600	550	1600	0
LOCATION D	Cemlyn	01/06/2016	1710	-	400	-	1710	-	1100	8800	0
LOCATION D	Cemlyn	03/08/2016	6800	-	1300	-	6800	-	20000	25000	0
LOCATION D	Cemlyn	31/08/2016	120	700	-	4120	-	700	66000	400000	0
LOCATION D	Cemlyn	28/09/2016	3000	100	-	3000	-	100	2400	4300	0
LOCATION F	Cemlyn	01/06/2016	1220	-	1000	-	1220	-	1400	15000	0
LOCATION F	Cemlyn	29/06/2016	741	15000	-	1340	-	-	64000	5900	0
LOCATION F	Cemlyn	03/08/2016	0	-	600	-	600	-	3800	30000	0
LOCATION F	Cemlyn	31/08/2016	1210	500	-	1210	-	500	7700	66000	0
LOCATION F	Cemlyn	28/09/2016	1200	500	-	1200	-	500	1000	4200	0
LOCATION E	Wider Cemlyn	01/06/2016	1020	-	30	-	1020	-	880	11000	0
LOCATION E	Wider Cemlyn	29/06/2016	1740	20000	-	1740	-	-	9900	20000	0
LOCATION E	Wider Cemlyn	03/08/2016	5700	-	1900	-	6100	-	1300	3800	0
LOCATION E	Wider Cemlyn	31/08/2016	108	2100	-	208	-	2100	38000	520000	0
LOCATION E	Wider Cemlyn	28/09/2016	4500	300	-	4500	-	300	6700	11000	0

Exc Location E	Count	14	9	5	10	4	6	14	14	14
	Average	5212.93	2600.00	680.00	7235.00	2582.50	466.67	15790.00	51121.43	0.00
	Min	0	100	100	1200	600	100	550	1600	0
	Max	50200	15000	1300	50200	6800	700	66000	400000	0

Location E only	Count	5	3	2	3	2	2	5	5	5
	Average	2613.60	7466.67	965.00	2149.33	3560.00	1200.00	11356.00	113160.00	0.00
	Min	108	300	30	208	1020	300	880	3800	0
	Max	5700	20000	1900	4500	6100	2100	38000	520000	0

Location	Type	Date & time	pH	EC (mS)	DO (%)	Redox	Temp *C	Turb (NTU)
Location H	Cemaes	04/11/2015 15:44	8.97	641	75.7	109	11.4	30
Location H	Cemaes	16/12/2015	6.9	307	31	30	10.7	-
Location H	Cemaes	12/01/2016 09:15	5.71	322	101.7	125	6.3	13
Location H	Cemaes	09/03/2016 15:15	5.91	271	94.8	79	7.5	85
Location H	Cemaes	01/06/2016 10:10	7.98	491	94.7	64	13.2	-
Location H	Cemaes	29/06/2016 16:35	-	-	-	-	-	-
Location H	Cemaes	03/08/2016 14:00	7.89	503	-	220	16.4	5
Location H	Cemaes	31/08/2016 10:15	6.4	351	68.4	82	15.9	5
Location H	Cemaes	28/09/2016 09:55	7.39	374	92.1	134	14.3	5
Location I	Cemaes	28/09/2016 09:45	7.19	384	76.9	142	14.3	5
Location H	Cemaes	26/10/2016 00:00	7.71	457	97	88	11.7	-
Location H	Cemaes	29/11/2016 10:30	7.32	414	92.3	27	6.1	-
Location H	Cemaes	04/01/2017 09:30	7.18	288	-	88	9.6	-
Location H	Cemaes	05/04/2017 00:00	8.06	299.49	100.68	35	10.95	-
Location H	Cemaes	09/05/2017 18:00	8.03	388.16	95.48	60.8	14.84	5
Location H	Cemaes	07/06/2017 17:35	7.65	207.43	92.38	20.5	14.67	5
Location H	Cemaes	24/07/2017 19:00	7.75	419.99	92.63	10.6	18.79	-
Location H	Cemaes	22/08/2017 14:05	7.95	444.29	98.95	79.4	19.17	5

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc.

Count	17	12	10	12	12	7
Mean	7.41	400.25	82.46	99.00	11.45	21.14
Min	5.71	271	31	27	6.1	5
Max	8.97	641	101.7	220	16.4	85

Sample ID	Catchment	Date	Carbon, Organic (diss.fit)	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Ionic balance	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Nitrogen, Total	Ammoniacal Nitrogen as NH4	Phosphate (ortho) as PO4	Phosphate (ortho) as P	Dissolved solids, Total (gravimetric)	Nitrate as NO3	Phosphate (ortho) as P2	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.fit)	Suspended solids, Total	Alkalinity, Bicarbonate as CaCO3	Alkalinity, Bicarbonate as CaCO3 (diss.fit)	Alkalinity, Carbonate as CaCO3	BOD, unfiltered
			mg/l	mg/l	mg/l	mS/cm	% Diff	mg/l	mg/l	pH Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
	Limit of detection		<3	<0.2		<0.005		<0.05	<0.3	<1	<2	<2	<1	<0.3	<0.05	<0.02	<10	<0.3	<0.02	<2	<2	<2	<2	<2	<2	<2.92
		EQS		0.02	0.02	2500		0.01		<6, >9	400	250		0.025								25				2.5
Foel Fawr	Cemaes	29/10/2013	-	0.056	-	-	-	-	-	-	-	36.5	-	-	-	0.095	-	-	0.1	62	61.3	7.42	-	-	-	1.26
Foel Fawr	Cemaes	18/02/2014	-	0.04	0.0000124	228	-	-	86.2	6.27	-	39.7	-	-	-	0.049	-	-	-	66	67.7	5.95	-	-	-	1
Foel Fawr	Cemaes	07/05/2014	-	0.03	<0.0000426	271	-	-	9.69	6.83	-	34.6	-	-	-	0.022	-	-	0.032	92	92.9	9.17	-	-	-	1
Foel Fawr	Cemaes	15/10/2014	-	0.043	<0.000632	268	-	-	58.6	8	-	40.4	-	-	-	0.058	-	-	0.048	72	70.9	102	-	-	-	3.22
Foel Fawr	Cemaes	22/04/2015	-	-	-	737	-	0.05	-	7.93	41.2	69.6	-	0.3	-	-	454	14.1	-	280	-	6	280	-	2	-
Foel Fawr	Cemaes	09/06/2015	-	-	-	738	-	0.05	-	8.25	42.6	69.4	-	0.3	-	-	507	14.4	-	295	-	2	295	-	2	-
Foel Fawr	Cemaes	15/12/2015	-	-	-	624	-	0.05	-	8.28	42.8	73.8	-	0.3	-	-	418	14.9	-	295	-	4	295	-	2	-
Foel Fawr	Cemaes	28/04/2016	3	-	-	713	-	0.05	-	7.7	44.3	69.7	-	0.3	-	-	508	12.5	-	290	-	2	290	-	2	-
Foel Fawr	Cemaes	04/08/2016	3	-	-	739	-	0.05	-	8.25	45.5	72	-	0.3	-	-	501	14.3	-	285	-	2	285	-	2	-
Gwyddelyn Bach	Cemaes	12/03/2013	-	0.175	-	-	-	-	-	-	-	40.6	-	-	-	0.049	-	-	-	191	156	13.7	-	-	-	2.92
Gwyddelyn Bach	Cemaes	24/04/2013	-	0.056	0.000119	311	-	-	81.7	6.99	-	37.1	-	-	-	0.074	-	-	-	149	155	28.1	-	-	-	1.04
Gwyddelyn Bach	Cemaes	15/08/2013	-	0.038	0.000152	637	-	-	49.4	7.14	-	58.5	-	-	-	0.02	-	-	-	286	285	-	-	-	-	1.46
Gwyddelyn Bach	Cemaes	15/08/2013	-	0.113	0.00105	498	-	-	53.1	7.47	-	51.6	-	-	-	0.126	-	-	-	115	113	13.7	-	-	-	1.51
Gwyddelyn Bach	Cemaes	29/10/2013	-	0.086	-	-	-	-	-	-	-	38.1	-	-	-	0.165	-	-	-	87	86	9.02	-	-	-	1.42
Gwyddelyn Bach	Cemaes	15/10/2014	-	0.079	0.00119	340	-	-	71.2	8.04	-	44.9	-	-	-	0.094	-	-	-	-	111	5.98	-	-	-	1
LOCATION H	Cemaes	04/11/2015	9.69	0.2	-	475	-3.53	0.059	8.97	8.32	35.7	50.4	2.94	-	-	-	346	2.28	0.111	-	170	7	-	170	2	-
LOCATION H	Cemaes	16/12/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
LOCATION H	Cemaes	03/08/2016	6.97	0.2	-	495	-0.573	0.05	-	8.08	28.8	50.3	1.48	-	0.428	-	352	3.6	0.14	-	180	2.5	-	180	2	-
LOCATION H	Cemaes	26/10/2016	6.95	0.2	-	463	-2.98	0.05	-	8.26	33.7	49.3	1.2	-	0.292	0.0953	327	2.91	-	-	160	2	-	160	2	-
LOCATION H	Cemaes	01/02/2017	12.6	0.2	-	422	-4.92	0.177	-	7.91	29	57.3	3.57	-	0.26	0.0848	302	14.7	-	-	125	2	-	125	2	-
LOCATION H	Cemaes	10/05/2017	4.69	0.2	-	449	6.01	0.152	-	8.15	28.4	46	1.58	-	0.172	0.0561	303	5.83	-	-	130	25.7	-	130	2	-
LOCATION H	Cemaes	22/08/2017	11.5	0.2	-	401	-3.13	0.05	-	8	22.7	46.5	2.26	-	0.283	0.0923	337	5.22	-	-	155	2.5	-	155	2	-
Tre'r-gof-isaf	Cemaes	12/03/2013	-	0.103	-	-	-	-	-	-	-	42.4	-	-	-	0.029	-	-	-	208	169	7.5	-	-	-	2.92
Tre'r-gof-isaf	Cemaes	24/04/2013	-	0.03	<0.000155	363	-	-	96.3	7.42	-	39.3	-	-	-	0.055	-	-	-	168	170	13.6	-	-	-	1
Tre'r-gof-isaf	Cemaes	15/08/2013	-	0.03	<0.00319	516	-	-	78.7	8.59	-	48	-	-	-	0.119	-	-	0.124	205	205	4.47	-	-	-	1
Tre'r-gof-isaf	Cemaes	30/10/2013	-	0.036	-	319	-	-	87.3	7.32	-	41.3	-	-	-	0.103	-	-	0.107	113	117	7.33	-	-	-	2.92
Tre'r-gof-isaf	Cemaes	08/05/2014	-	0.142	0.000454	393	-	-	11.9	7.22	-	40.2	-	-	-	0.121	-	-	0.134	163	168	106	-	-	-	4.12
Tre'r-gof-isaf	Cemaes	15/10/2014	-	0.163	0.00867	305	-	-	78.5	8.5	-	37.1	-	-	-	0.094	-	-		96	96.7	17.9	-	-	-	2.26

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc

Count	8	22	7	23	6	11	13	23	11	27	6	5	5	20	11	11	8	20	22	27	5	6	11	16
Mean	7.30	0.11	0.00	465.43	-1.52	0.07	59.35	7.78	35.88	49.06	2.17	0.30	0.29	0.08	395.91	9.52	0.10	175.90	138.39	15.46	289.00	153.33	2.00	1.88
Min	3.00	0.03	0.00	228.00	-4.92	0.05	8.97	6.27	22.70	34.60	1.20	0.30	0.17	0.02	302.00	2.28	0.03	62.00	61.30	2.00	280.00	125.00	2.00	1.00
Max	12.60	0.20	0.01	739.00	6.01	0.18	96.30	8.59	45.50	73.80	3.57	0.30	0.43	0.17	508.00	14.90	0.14	295.00	285.00	106.00	295.00	180.00	2.00	4.12

Sample ID	Catchment	Date	Iron, Ferric	Aluminium (diss.flt)	Mercury (diss.flt)	Antimony (diss.flt)	Calcium (diss.flt)	Arsenic (diss.flt)	Sodium (diss.flt)	Magnesium (diss.flt)	Potassium (diss.flt)	Iron (diss.flt)	Iron, Ferrous	Cadmium (diss.flt)	Chromium (diss.flt)	Cobalt (diss.flt)	Copper (diss.flt)	Bioavailable Copper Concentration (µg l ⁻¹)	Lead (diss.flt)	Available Pb (µg l ⁻¹)	Manganese (diss.flt)	Bioavailable Manganese Concentration (µg l ⁻¹)	Molybdenum (diss.flt)	Nickel (diss.flt)	Bioavailable Nickel Concentration (µg l ⁻¹)	Selenium (diss.flt)	Zinc (diss.flt)	zinc (diss.flt) + background concentration	Bioavailable Zinc Concentration (µg l ⁻¹)	Mercury (tot.unflt)
			mg/l	µg/l	µg/l	µg/l	mg/l	µg/l	mg/l	mg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l		µg/l		µg/l		µg/l	µg/l		µg/l	µg/l	µg/l		µg/l
	Limit of detection		<0.05	<2.9	<0.01	<0.16	<0.012	<0.12	<0.076	<0.036	<2.335	<0.019	<0.1	<0.1	<0.22	<0.06	<0.85		<0.02		<0.04		<0.24	<0.15		<0.39	<0.41			<0.02
		EQS			0.05			50				1		5	10		1		7.2		300			20			125		10.9	
Foel Fawr	Cemaes	29/10/2013	-	-	0.0134	-	-	1	-	-	-	0.368	-	0.1	0.5	-	5.13	-	2	-	52.1	-	-	1.61	-	-	6.38	7.78	-	-
Foel Fawr	Cemaes	18/02/2014	-	-	0.01	-	-	1	-	-	-	0.252	-	0.1	0.5	-	2.66	-	2	-	122	-	-	1.18	-	-	5	6.4	-	-
Foel Fawr	Cemaes	07/05/2014	-	-	0.01	-	-	1	-	-	-	0.163	-	0.1	0.5	-	1.8	-	2	-	109	-	-	1	-	-	5	6.4	-	-
Foel Fawr	Cemaes	15/10/2014	-	-	0.01	-	-	1	-	-	-	0.206	-	0.1	0.5	-	4.2	-	2	-	-	-	-	1.19	-	-	5	6.4	-	-
Foel Fawr	Cemaes	22/04/2015	-	2.9	0.01	0.183	79.5	0.427	38.7	27.2	1.2	0.019	-	0.1	11.4	0.175	1.32	-	0.032	-	268	-	1.43	1.56	-	0.937	12.4	13.8	-	-
Foel Fawr	Cemaes	22/04/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	09/06/2015	-	2.9	0.01	0.16	77.3	0.254	35.8	26.4	1.01	0.019	-	0.1	0.393	0.133	0.85	-	0.02	-	181	-	0.565	1.17	-	0.839	1.34	2.74	-	-
Foel Fawr	Cemaes	15/12/2015	-	2.9	0.01	0.16	77.7	0.196	35.3	27.3	1.25	0.019	-	0.1	0.95	0.239	0.916	-	0.02	-	137	-	0.77	1.06	-	0.397	0.41	1.81	-	-
Foel Fawr	Cemaes	28/04/2016	-	2.9	0.01	2.19	87.2	0.766	41.5	31.5	1.31	0.019	-	0.1	1.19	0.114	0.85	0.08	0.06	0.02	8.03	2.52	4.01	1.55	0.55	2.3	1.55	2.95	1.47	-
Foel Fawr	Cemaes	04/08/2016	-	2	0.01	0.16	87.8	0.51	41.6	31.6	1.47	0.019	-	0.08	1.2	0.15	0.85	0.16	0.1	0.03	114	103.62	1.18	0.44	0.29	0.81	1.35	2.75	1.35	-
Gwyddelyn Bach	Cemaes	12/03/2013	-	-	0.01	-	-	1	-	-	-	0.424	-	0.1	0.5	-	1.5	-	2	-	261	-	-	1.46	-	-	5	6.4	-	-
Gwyddelyn Bach	Cemaes	24/04/2013	-	-	0.01	-	-	1	-	-	-	0.483	-	0.1	0.5	-	1.69	-	2	-	223	-	-	1.32	-	-	5	6.4	-	-
Gwyddelyn Bach	Cemaes	15/08/2013	-	-	0.01	-	-	1	-	-	-	0.542	-	0.1	0.5	-	1	-	2	-	1220	-	-	1.02	-	-	7.85	9.25	-	-
Gwyddelyn Bach	Cemaes	15/08/2013	-	-	0.01	-	-	1	-	-	-	0.193	-	0.1	0.5	-	1.96	-	2	-	230	-	-	1.48	-	-	5	6.4	-	-
Gwyddelyn Bach	Cemaes	29/10/2013	-	-	0.01	-	-	1	-	-	-	0.369	-	0.1	0.735	-	6.6	-	2	-	75.7	-	-	1.98	-	-	7.65	9.05	-	-
Gwyddelyn Bach	Cemaes	15/10/2014	-	-	0.01	-	-	1	-	-	-	0.185	-	0.1	0.579	-	3.7	-	2	-	-	-	-	1.57	-	-	5	6.4	-	-
LOCATION H	Cemaes	04/11/2015	0.0811	4.53	0.01	-	55.5	1.39	27.7	12.7	7.58	0.0811	0.1	0.1	3.03	-	1.94	0.1	-	-	-	-	-	-	-	0.888	1.36	2.76	0.64	<0.02
LOCATION H	Cemaes	03/08/2016	0.0657	2.92	0.01	-	60.8	1.41	29.3	13.5	7.43	0.0657	0.1	0.08	1.2	-	0.885	0.04	0.1	0.01	49.4	49.4	-	0.783	0.27	0.81	1.3	2.7	0.81	<0.02
LOCATION H	Cemaes	26/10/2016	0.05	4.97	0.01	-	54.9	0.825	26.9	12.1	4.94	0.0421	0.1	0.08	1.2	-	0.923	-	0.1	-	26.2	-	-	0.688	-	0.81	1.52	2.92	-	<0.02
LOCATION H	Cemaes	01/02/2017	0.196	22.4	0.01	-	51.2	1.22	28.1	10.5	5.95	0.196	0.1	0.08	1.2	-	1.74	-	0.168	-	48.9	-	-	1.32	-	0.81	3.11	4.51	-	<0.02
LOCATION H	Cemaes	10/05/2017	0.05	2	0.01	-	58.5	2	25.6	13.8	1.85	0.048	0.1	0.08	1.2	-	1.28	-	0.1	-	18	-	-	1.05	-	0.81	22	23.4	-	<0.02
LOCATION H	Cemaes	22/08/2017	0.05	3.2	0.01	-	51.3	1.34	24.1	11.3	5.17	0.126	0.126	0.08	1	-	1.72	-	0.2	-	42.3	-	-	1.34	-	0.603	3.78	5.18	-	<0.02
Tre'r-gof-isaf	Cemaes	12/03/2013	-	-	0.01	-	-	1	-	-	-	0.161	-	0.1	0.5	-	1.32	-	2	-	176	-	-	1.27	-	-	5	6.4	-	-
Tre'r-gof-isaf	Cemaes	24/04/2013	-	-	0.01	-	-	1	-	-	-	0.27	-	0.1	0.5	-	1.63	-	2	-	92.8	-	-	1.05	-	-	5	6.4	-	-
Tre'r-gof-isaf	Cemaes	15/08/2013	-	-	0.01	-	-	1	-	-	-	0.0733	-	0.1	0.5	-	2.08	-	2	-	124	-	-	1	-	-	5	6.4	-	-
Tre'r-gof-isaf	Cemaes	30/10/2013	-	-	0.01	-	-	1	-	-	-	0.262	-	0.1	0.884	-	4.47	-	2	-	93	-	-	1.95	-	-	5.27	6.67	-	-
Tre'r-gof-isaf	Cemaes	08/05/2014	-	-	0.01	-	-	1	-	-	-	0.137	-	0.1	0.5	-	2.09	-	2	-	986	-	-	1	-	-	5	6.4	-	-
Tre'r-gof-isaf	Cemaes	15/10/2014	-	-	0.01	-	-	1	-	-	-	0.109	-	0.1	0.529	-	3.24	-	2	-	-	-	-	1.23	-	-	5	6.4	-	-

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc

Count	6	11	27	5	11	27	11	11	11	27	6	27	27	5	27	4	26	3	23	3	5	26	3	11	27	27	4	0
Mean	0.08	4.87	0.01	0.57	67.43	0.98	32.24	19.81	3.56	0.18	0.10	0.10	1.21	0.16	2.16	0.10	1.27	0.02	202.50	51.85	1.59	1.24	0.37	0.91	5.08	6.48	1.07	#####
Min	0.05	2.00	0.01	0.16	51.20	0.20	24.10	10.50	1.01	0.02	0.10	0.08	0.39	0.11	0.85	0.04	0.02	0.01	8.03	2.52	0.57	0.44	0.27	0.40	0.41	1.81	0.64	0.00
Max	0.20	22.40	0.01	2.19	87.80	2.00	41.60	31.60	7.58	0.54	0.13	0.10	11.40	0.24	6.60	0.16	2.00	0.03	1220.00	103.62	4.01	1.98	0.55	2.30	22.00	23.40	1.47	0.00

Sample ID	Catchment	Date	Aluminium (tot.unfit)	Calcium (tot.unfit)	Arsenic (tot.unfit)	Sodium (tot.unfit)	Magnesium (tot.unfit)	Potassium (tot.unfit)	Cadmium (tot.unfit)	Chromium (tot.unfit)	Copper (tot.unfit)	Manganese (tot.unfit)	Nickel (tot.unfit)	Phosphorus (tot.unfit)	Lead (tot.unfit)	Selenium (tot.unfit)	Zinc (tot.unfit)
			µg/l	mg/l	µg/l	mg/l	mg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l
	Limit of detection		<50	<0.057	<2	<0.047	<0.05	<2	<0.5	<3	<4	<0.5	<0.5	<20	<0.5	<1	<3
		EQS															
Foel Fawr	Cemaes	29/10/2013	-	-	-	-	-	-	-	0.632	-	-	-	-	-	-	-
Foel Fawr	Cemaes	18/02/2014	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Foel Fawr	Cemaes	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	22/04/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	22/04/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	09/06/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	15/12/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	28/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	04/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gwyddelyn Bach	Cemaes	12/03/2013	-	-	-	-	-	-	-	0.912	-	-	-	-	-	-	-
Gwyddelyn Bach	Cemaes	24/04/2013	-	-	-	-	-	-	-	0.871	-	-	-	-	-	-	-
Gwyddelyn Bach	Cemaes	15/08/2013	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Gwyddelyn Bach	Cemaes	15/08/2013	-	-	-	-	-	-	-	0.597	-	-	-	-	-	-	-
Gwyddelyn Bach	Cemaes	29/10/2013	-	-	-	-	-	-	-	0.969	-	-	-	-	-	-	-
Gwyddelyn Bach	Cemaes	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOCATION H	Cemaes	04/11/2015	113	-	2.22	-	-	-	<0.5	<3	<4	158	1.95	-	0.675	<1	4.12
LOCATION H	Cemaes	03/08/2016	<50	66.1	<2	32.5	14.5	8.05	<0.5	<3	<4	61.2	1.46	201	<0.5	1.36	<3
LOCATION H	Cemaes	26/10/2016	<50	55.6	<2	28.2	12.2	4.91	<0.5	<3	<4	26.9	1.93	155	<0.5	<1	<3
LOCATION H	Cemaes	01/02/2017	327	51.2	<2	28.8	11.2	5.93	<0.5	<3	<4	148	2.74	234	<0.5	<1	<3
LOCATION H	Cemaes	10/05/2017	<50	63.2	<2	26.8	14.3	<2	<0.5	<3	<4	75.2	1.19	110	<0.5	<1	<3
LOCATION H	Cemaes	22/08/2017	120	49.3	<2	25	11.2	5.13	<0.5	<3	<4	153	2.48	218	0.549	1.5	9.72
Tre'r-gof-isaf	Cemaes	12/03/2013	-	-	-	-	-	-	-	0.591	-	-	-	-	-	-	-
Tre'r-gof-isaf	Cemaes	24/04/2013	-	-	-	-	-	-	-	0.604	-	-	-	-	-	-	-
Tre'r-gof-isaf	Cemaes	15/08/2013	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-
Tre'r-gof-isaf	Cemaes	30/10/2013	-	-	-	-	-	-	-	0.995	-	-	-	-	-	-	-
Tre'r-gof-isaf	Cemaes	08/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tre'r-gof-isaf	Cemaes	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NB. Numbers in italic are <LOD (at time) but are shown as absolute values for the purpose of the count, mean etc

Count	3	5	1	5	5	4	0	8	0	6	6	5	2	2	2
Mean	186.67	57.08	2.22	28.26	12.68	6.01	#DIV/0!	0.77	#DIV/0!	103.72	1.96	183.60	0.61	1.43	6.92
Min	113.00	49.30	2.22	25.00	11.20	4.91	0.00	0.59	0.00	26.90	1.19	110.00	0.55	1.36	4.12
Max	327.00	66.10	2.22	32.50	14.50	8.05	0.00	1.00	0.00	158.00	2.74	234.00	0.68	1.50	9.72

Sample ID	Catchment	Date	1,3-Dichlorobenzene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane	1,2,4-Trichlorobenzene	Hexachlorobutadiene	tert-Amyl methyl ether (TAME)	Naphthalene	1,2,3-Trichlorobenzene	1,3,5-Trichlorobenzene	Aldrin	Hydrocarbons Screen >C5 - C44	2,2,3,4,4,5-Hexabromodiphenyl ether :- {PBDE 138}	4-Nonylphenol Branched	HCH : Total Isomers (Alpha, Beta, Gamma, Delta, Epsilon)	Toluene :- {Methylbenzene}	Trichloroethylene :- {Trichloroethene}	Di-2-ethylhexyl phthalate :- {DEHP}
			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	ug/l	mg/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
	Limit of detection		<2.2	<2.7	<2	<3.7	<9.8	<2.3	<2.5	<1	<3.5	<3.1	<10	<0.2	<0.2	<0.200	<0.2	<0.2			<0.2
		EQS							0.1 (AA)			0.4 (AA)		0.3 (AA)							
Foel Fawr	Cemaes	29/10/2013	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	<0.1	<0.1	-	-	<0.2
Foel Fawr	Cemaes	18/02/2014	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	<0.1	<0.1	-	-	<0.200
Foel Fawr	Cemaes	22/04/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	09/06/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	15/12/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	28/04/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	04/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fowl Fawr	Cemaes	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	<0.1	<0.1	<0.2
Fowl Fawr	Cemaes	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	<0.1	<0.1	<0.200
Gwyddelyn Bach	Cemaes	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	<0.1	<0.1	-	-	<0.200
Gwyddelyn Bach	Cemaes	24/04/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.200	<0.2	-	-	-	-
Gwyddelyn Bach	Cemaes	15/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	<0.1	<0.1	-	-	<0.2
Gwyddelyn Bach	Cemaes	15/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	<0.1	<0.1	-	-	0.384
Gwyddelyn Bach	Cemaes	29/10/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	<0.2
Gwyddelyn Bach	Cemaes	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	<0.1	<0.1	<0.200
LOCATION H	Cemaes	04/11/2015	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-
LOCATION H	Cemaes	03/08/2016	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-
LOCATION H	Cemaes	26/10/2016	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-
LOCATION H	Cemaes	01/02/2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-
LOCATION H	Cemaes	10/05/2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-
LOCATION H	Cemaes	22/08/2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-
Tre'r-gof-isaf	Cemaes	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	<0.1	<0.1	-	-	<0.200
Tre'r-gof-isaf	Cemaes	24/04/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.200	<0.2	-	-	-	-
Tre'r-gof-isaf	Cemaes	15/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	<0.1	<0.1	-	-	0.337
Tre'r-gof-isaf	Cemaes	30/10/2013	-	-	-	-	-	-	-	-	-	-	-	<0.2	0.00015	-	<0.1	<0.2	-	-	<0.1
Tre'r-gof-isaf	Cemaes	08/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-	-	-	<0.1	<0.1	<0.2
Tre'r-gof-isaf	Cemaes	15/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	<0.1	<0.1	<0.200

Sample ID	Column1	Date	Eschericia coli*	Streptococci, Faecal (Enterococci)*	Streptococci, Faecal (Enterococci)*27	Total coliforms*	Total coliforms*28	Intestinal Enterococci*	TVC 2 day @ 37 deg.C*	TVC 2 day @ 37 deg.C*29	TVC 3 day @ 22 deg.C*	TVC 3 day @ 22 deg.C*30	Pseudomonas aeruginosa
			CFU/100ml	No/100ml	CFU/100ml	No/100ml	CFU/100ml	CFU/100ml	No/ml	CFU/100ml	No/ml	CFU/100ml	CFU/100ml
				<1	<1	<1	<1						
				100	100	10000	10000						
Foel Fawr	Cemaes	04/08/2016	0	<1	-	-	-	-	380	-	1000	-	0
Foel Fawr	Cemaes	22/04/2015	-	-	-	-	-	-	-	-	-	-	-
Foel Fawr	Cemaes	22/04/2015	0	<1	-	-	-	-	31	-	9	-	0
Foel Fawr	Cemaes	09/06/2015	0	-	<1	-	-	-	3	-	48	-	0
Foel Fawr	Cemaes	15/12/2015	0	<1	-	-	-	-	-	5	-	8	0
Foel Fawr	Cemaes	28/04/2016	-	<1	-	-	-	-	0	-	6	-	0
LOCATION H	Cemaes	01/06/2016	2710	-	800	-	2710	-	490	-	3300	-	500
LOCATION H	Cemaes	29/06/2016	25200	35000	-	50200	-	-	5200	-	5400	-	0
LOCATION H	Cemaes	03/08/2016	8300	-	900	-	8300	-	1500	-	8800	-	1
LOCATION H	Cemaes	31/08/2016	3000	900	-	23000	-	900	7600	-	45000	-	0
LOCATION H	Cemaes	28/09/2016	1700	300	-	1700	-	300	400	-	2600	-	0
LOCATION I	Cemaes	31/08/2016	20100	900	-	40100	-	900	60000	-	300000	-	0
LOCATION I	Cemaes	28/09/2016	3700	300	-	3700	-	300	1700	-	2600	-	0

EQS

Count	11	5	2	5	2	4	11	1	11	1	12
Average	5882.7273	7480	850	23740	5505	600	7027.6	5	33523.9	8	41.75
Min	0	300	800	1700	2710	300	0	5	6	8	0
Max	25200	35000	900	50200	8300	900	60000	5	300000	8	500

Sample ID	Catchment	Date	Ammoniacal Nitrogen as N	Ammonia un-ionised as N	Conductivity @ 20 deg.C	Nitrite as NO2	Oxygen, dissolved	pH	Sulphate	Chloride	Cyanide, Total	Cyanide, Free	Nitrate as NO3	Phosphate (ortho) as P	Alkalinity, Total as CaCO3	Alkalinity, Total as CaCO3 (diss.filt)	Suspended solids, Total	BOD ₁ unfiltered
			mg/l	mg/l	mS/cm	mg/l	mg/l	pH Units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
	Limit of detection		<0.2		<0.005	<0.05	<0.3	<1	<2	<2	<0.05	<0.05	<0.3	<0.02	<2	<2	<2	
		EQS	0.02		2500	0.01		<6, >9	400	250							25	2.5
LIME KILN		12/01/2016	0.2	-	310	0.05	-	7.1	36.1	49	0.05	0.05	8.81	-	-	-	-	-
Porth-y-pistyll	Power Station	12/01/2016	0.2	-	482	-	-	7.97	33.3	80.8	0.05	0.05	12.4	-	-	-	-	-
Porth-y-pistyll	Power Station	14/10/2014	0.062	0.000218	425	-	87.7	7.14	-	68.1	-	-	-	0.021	127	125	22.6	2.04
Porth-y-pistyll	Power Station	07/05/2014	0.044	<0.0000426	412	-	13.2	6.86	-	71.2	-	-	-	0.02	98.5	96	7.85	2.74
Porth-y-pistyll	Power Station	29/10/2013	0.03	-	-	-	-	-	-	67.9	-	-	-	0.02	117	113	3.32	1
Porth-y-pistyll	Power Station	15/08/2013	0.03	0.0000754	526	-	89.4	6.93	-	97.7	-	-	-	0.02	124	122	17.3	1
Porth-y-pistyll	Power Station	12/03/2013	0.03		-	-	-	-	-	101	-	-	-	0.02	135	169	3.33	2.92
Porth-y-pistyll	Power Station	25/04/2012	0.03	<0.0000258	451	-	105	6.69	-	97.8	-	-	-	0.02	130	130	32.6	1
Porth-y-pistyll	Power Station	07/08/2012	0.03	<0.0000718	466	-	81.1	7.01	-	82.2	-	-	-	0.02	134	140	5.18	1.1
Porth-y-pistyll	Power Station	28/02/2012	0.03	<0.000181		-	12.7	7.51	-	95.4	-	-	-	0.02	123	121		1
Porth-y-pistyll	Power Station	09/05/2012	0.03	<0.000220	231	-	95.5	7.57	-	83.4	-	-	-	0.02	128	124	22	1

Count	11	2	8	1	7	9	2	11	2	2	2	9	9	9	8	9
Mean	0.07	0.00	412.88	0.05	69.23	7.20	34.70	81.32	0.05	0.05	10.61	0.02	124.06	126.67	14.27	1.53
Max	0.20	0.00	526.00	0.05	105.00	7.97	36.10	101.00	0.05	0.05	12.40	0.02	135.00	169.00	32.60	2.92
Min	0.03	0.00	231.00	0.05	12.70	6.69	33.30	49.00	0.05	0.05	8.81	0.02	98.50	96.00	3.32	1.00

Sample ID	Catchment	Date	Sulphur Dissolved	Chromium, Hexavalent	Mercury (diss.filt)	Calcium (diss.filt)	Arsenic (diss.filt)	Sodium (diss.filt)	Barium (diss.filt)	Magnesium (diss.filt)	Beryllium (diss.filt)	Potassium (diss.filt)	Boron (diss.filt)	Hardness, Total as CaCO3	Cadmium (diss.filt)	Chromium (diss.filt)	Copper (diss.filt)	Lead (diss.filt)	Manganese (diss.filt)	Nickel (diss.filt)	Selenium (diss.filt)	Vanadium (diss.filt)	Zinc (diss.filt)	Iron (tot.unfilt)
			mg/l	mg/l	µg/l	mg/l	µg/l	mg/l	µg/l	mg/l	µg/l	mg/l	µg/l	mg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l
	Limit of detection				0.05		50								5	10			300					
		EQS	<1	<0.03	<0.01	<0.012	<0.12	<0.076	<0.03	<0.036	<0.07	<2.335	<9.4	<1	<0.1	<0.22	<0.85	<0.02	<0.04	<0.15	<0.39	<0.24	<0.41	<0.024
LIME KILN	Power Station	12/01/2016	7.03	0.03	0.01	24.9	0.509	27	21.9	4.91	<0.07	4.51	23.5	82.5	0.1	0.896	2.73	<0.02	-	0.598	<0.39	0.487	2.63	-
Porth-y-Pistyll	Power Station	12/01/2016	9.27	0.03	0.01	42.4	0.516	39	22.7	6.79	<0.07	2.84	26.5	134	0.1	0.997	3.66	0.031	-	0.609	<0.39	0.56	5.27	-
Porth-y-pistyll	Power Station	14/10/2014	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	4.52	2	-	1	-	-	6.43	30
Porth-y-pistyll	Power Station	07/05/2014	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	2.52	2	16.5	1	-	-	8.55	30
Porth-y-pistyll	Power Station	29/10/2013	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	3.35	2	28.4	1	-	-	5	30
Porth-y-pistyll	Power Station	15/08/2013	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	1.77	2	61.3	2.64	-	-	11.1	30
Porth Y Pistyll	Power Station	12/03/2013	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	2.03	2	40.9	1	-	-	5	30.4
Porth-y-pistyll	Power Station	25/04/2012	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	2.11	2	79	1	-	-	5	52.5
Porth Y Pistyll	Power Station	07/08/2012	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	3.12	2	17.7	1	-	-	6.26	30
Porth Y Pistyll Cond C	Power Station	28/02/2012	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	2.33	2		1	-	-	5	30
Porthy Pystyll	Power Station	09/05/2012	-	-	0.01	-	1	-	-	-	-	-	-	-	0.1	0.5	1.69	2	44.4	1	-	-	5	30

Count	2	2	11	2	11	2	2	2	0	2	2	2	11	11	11	10	7	11	0	2	11	9
Mean	8.15	0.03	0.01	33.65	0.91	33.00	22.30	5.85	#DIV/0!	3.68	25.00	108.25	0.10	0.58	2.71	1.80	41.17	1.08	#DIV/0!	0.52	5.93	32.54
Max	9.27	0.03	0.01	42.40	1.00	39.00	22.70	6.79	0.00	4.51	26.50	134.00	0.10	1.00	4.52	2.00	79.00	2.64	0.00	0.56	11.10	52.50
Min	7.03	0.03	0.01	24.90	0.51	27.00	21.90	4.91	0.00	2.84	23.50	82.50	0.10	0.50	1.69	0.03	16.50	0.60	0.00	0.49	2.63	30.00

[illegible]

[illegible]

[illegible]

Sample ID	Catchment	Date	Bromobenzene	Propylbenzene	2-Chlorotoluene	1,3,5-Trimethylbenzene	4-Chlorotoluene	tert-Butylbenzene	1,2,4-Trimethylbenzene	sec-Butylbenzene	4-iso-Propyltoluene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	n-Butylbenzene	1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane	1,2,4-Trichlorobenzene	Hexachlorobutadiene	tert-Amyl methyl ether (TAME)	Naphthalene	1,2,3-Trichlorobenzene	1,3,5-Trichlorobenzene	Hydrocarbons Screen >C5 - C44	Toluene :- {Methylbenzene}2	Trichloroethylene :- {Trichloroethene}	Di-2-ethylhexyl phthalate :- {DEHP}3	Cyanide as CN	Chromium Hexavalent
			µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	mg/l	ug/l	ug/l	ug/l	mg/l	ug/l
	Limit of detection																											
		EQS	<2	<2.6	<1.9	<1.8	<1.9	<2	<1.7	<1.7	<2.6	<2.2	<2.7	<2	<3.7	<9.8	<2.3	<2.5	<1	<3.5	<3.1	<10						
LIME KILN		12/01/2016	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-
Porth-y-pistyll	Power Station	12/01/2016	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-
Porth-y-pistyll	Power Station	14/10/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	0.18	0.247	-	-
Porth-y-pistyll	Power Station	07/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	0.57	<0.2	-	-
Porth-y-pistyll	Power Station	29/10/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	0.94	<0.2	-	-
Porth-y-pistyll	Power Station	15/08/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	3.33	<0.2	-	-
Porth-y-pistyll	Power Station	12/03/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	1.44	<0.200	-	-
Porth-y-pistyll	Power Station	25/04/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-
Porth-y-pistyll	Power Station	07/08/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	1.45	1.71	-	-
Porth-y-pistyll	Power Station	28/02/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00500	<30
Porth-y-pistyll	Power Station	09/05/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.271	0.11	2.02	<0.200	-	-

Environmental Quality standards

Chemical	Standard	Type
Carbon, Organic (diss.filt)	N/A	-
Ammoniacal Nitrogen as N	0.02056107	UK Standard, fisheries
Ammonia un-ionised as N	0.02056107	UK Standard, fisheries
Conductivity @ 20 deg.C	2500	UK Standard, drinking water
Ionic balance	N/A	-
Nitrite as NO2	0.01	UK Standard, fisheries (salmon)
Oxygen, dissolved	<9	-
pH	6-9 OK	Uk Standard, fisheries
Sulphate	400	UK non-statutory EQS
Chloride	250	UK non-statutory EQS
Nitrogen, Total	N/A	-
Turbidity	N/A	-
Ammoniacal Nitrogen as NH4	0.025	UK Standard, fisheries
Phosphate (ortho) as PO4	N/A	-
Phosphate (ortho) as P	N/A	-
Dissolved solids, Total (gravimetric)	N/A	-
Nitrate as NO3	N/A	-
Phosphate (ortho) as P2	N/A	-
Alkalinity, Total as CaCO3	N/A	-
Alkalinity, Total as CaCO3 (diss.filt)	N/A	-
Suspended solids, Total	25	EU Standard, fisheries
Alkalinity, Bicarbonate as CaCO3	N/A	-
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	N/A	-
Alkalinity, Carbonate as CaCO3	N/A	-
BOD, unfiltered	2.5	UK Standard (varies)

Chemical	Standard	Type
Iron, Ferric	N/A	-
Chromium, Hexavalent	N/A	-
Aluminium (diss.filt)	N/A	-
Mercury (diss.filt)	0.05	WFD
Calcium (diss.filt)	N/A	-
Arsenic (diss.filt)	50	Annual average limit for good WFD classification
Sodium (diss.filt)	N/A	-
Barium (diss.filt)	N/A	-
Magnesium (diss.filt)	N/A	-
Potassium (diss.filt)	N/A	-
Iron (diss.filt)	1	Annual average limit for good WFD classification
Boron (diss.filt)	1000	UK Statutory guidance
Iron, Ferrous	N/A	-
Cadmium (diss.filt)	5	Annual average limit for good WFD classification
Chromium (diss.filt)	10	UK Statutory guidance (50-100CaCO3)
Copper (diss.filt)	28	CaCO3>250
Copper (Bioavailable)	1	-
Lead (diss.filt)	7.2	WFD
Manganese (diss.filt)	30	UK non-statutory EQS
Manganese (Bioavailable)	123	-
Nickel (diss.filt)	20	-
Nickel (Bioavailable)	4	-
Selenium (diss.filt)	-	-
Zinc (diss.filt)	125	CaCO3>250
Zinc (Bioavailable)	10.9	-
Mercury (tot.unfilt)	-	-
Aluminium (tot.unfilt)	-	-
Calcium (tot.unfilt)	-	-
Arsenic (tot.unfilt)	-	-
Sodium (tot.unfilt)	-	-
Magnesium (tot.unfilt)	-	-
Potassium (tot.unfilt)	-	-
Iron (tot.unfilt)	-	-
Cadmium (tot.unfilt)	-	-
Chromium (tot.unfilt)	-	-
Copper (tot.unfilt)	-	-
Manganese (tot.unfilt)	-	-
Nickel (tot.unfilt)	-	-
Phosphorus (tot.unfilt)	-	-
Lead (tot.unfilt)	-	-
Selenium (tot.unfilt)	-	-
Zinc (tot.unfilt)	-	-

Chemical	Standard	Type
Eschericia coli*	-	-
Streptococci, Faecal (Enterococci)*	100	EU Standard, bathing water
Streptococci, Faecal (Enterococci)*27	-	-
Total coliforms*	10,000	UK Standard, bathing water
Total coliforms*28	-	-
Intestinal Enterococci*	-	-
TVC 2 day @ 37 deg.C*	-	-
TVC 3 day @ 22 deg.C*	-	-
Pseudomonas aeruginosa	-	-