**WRH Supporting Documentation for**
**CRT438 Trosnant Spring**

Documents included are:

- 7.1 CRT438_Trosnant Spring Location Map
- Canal & River Trust Generic Map Key
- 8.4 CRT438_Trosnant Spring Abstraction Details
- 8.5 CRT438_Trosnant Spring Evidence of Abstraction
- 13.1 CRT438_Trosnant Spring - Other Abstractions

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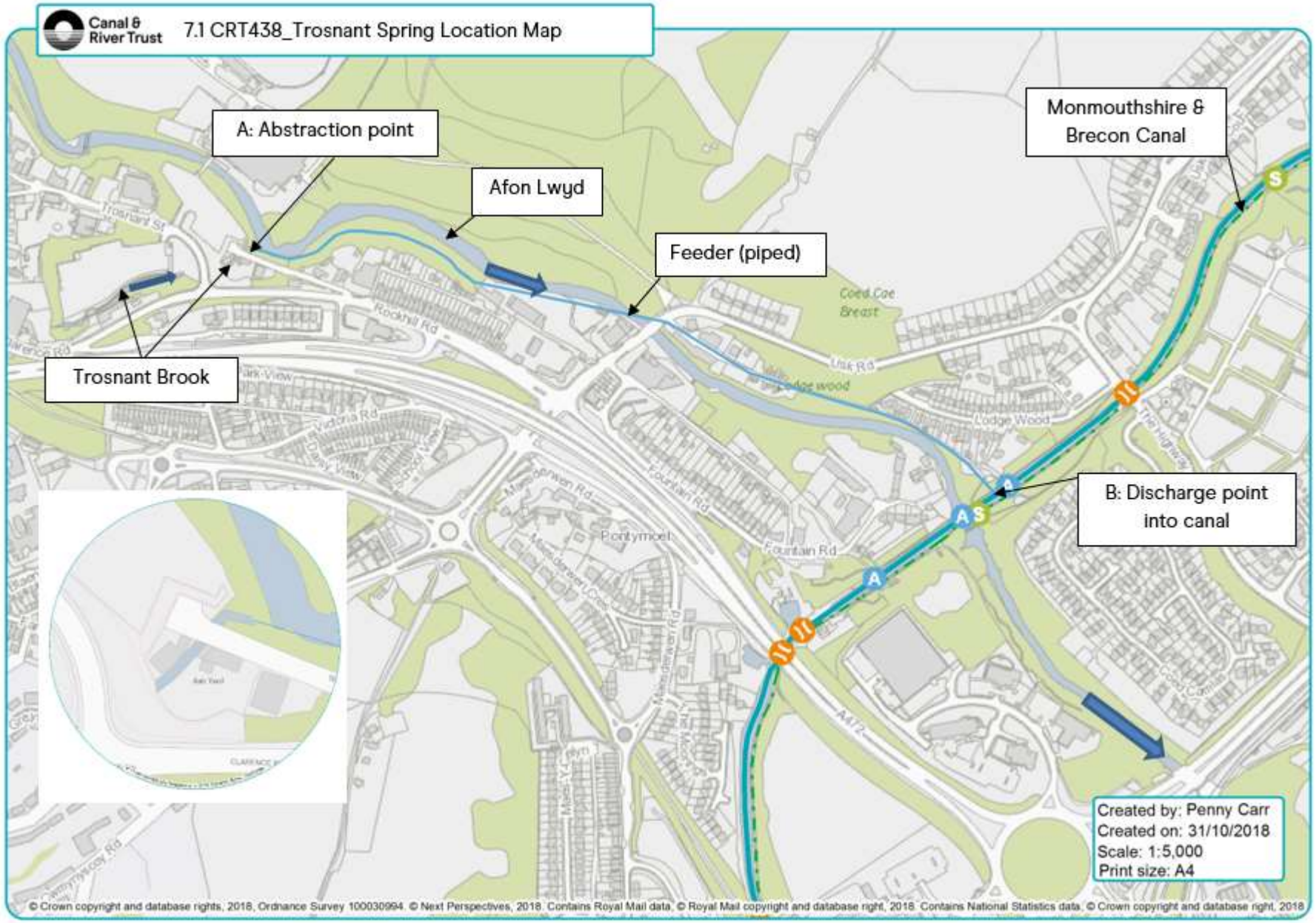
Canal & River Trust
7.1 CRT438_Trosnant Spring Location Map
A: Abstraction point
Afon Lwyd
Feeder (piped)
Trosnant Brook
Monmouthshire & Brecon Canal
B: Discharge point into canal
Pontymoel
Fountain Rd
Rockhill Rd
Victoria Rd
Lodge Wood
Coed Cae Breast
A472
Created by: Penny Carr
Created on: 31/10/2018
Scale: 1:5,000
Print size: A4
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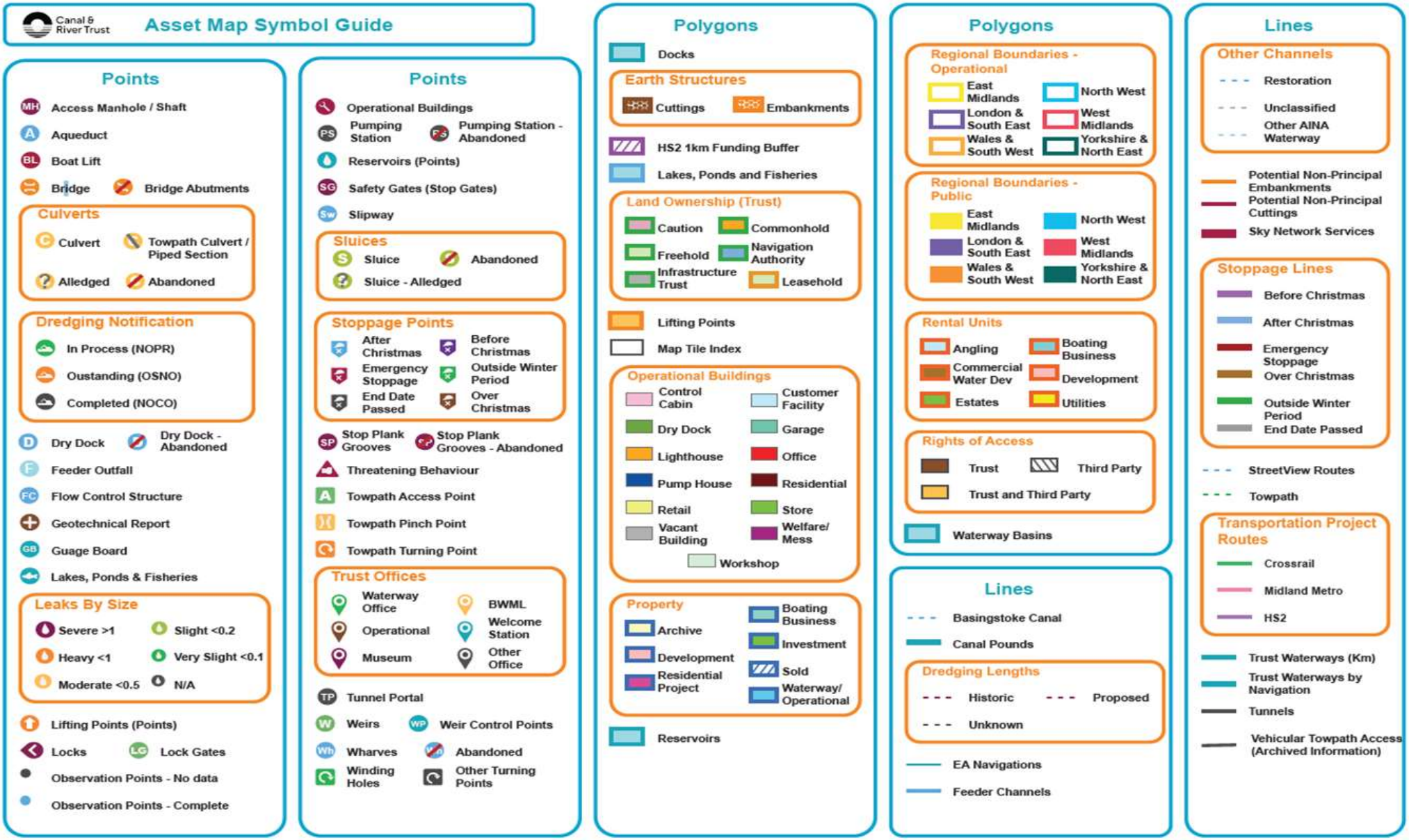
Canal & River Trust Generic Map Key:

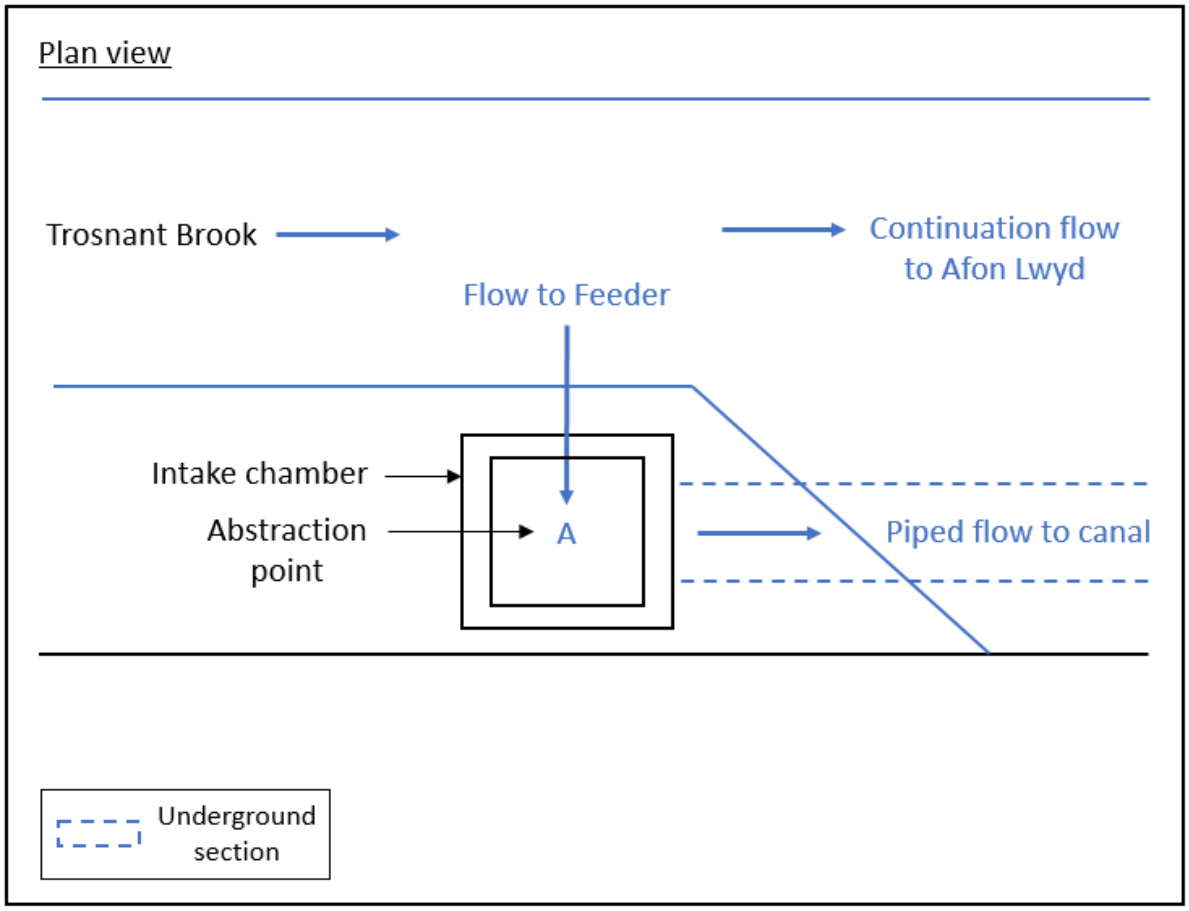


8.4 CRT438_Trosnant Spring Abstraction Details

**General Description**:

Trosnant Spring is a Scenario 1b feeder (as detailed in Navigation Scenario Workbook), with a fixed abstraction structure. The abstraction is from the Trosnant Brook, a tributary of the Afon Lwyd, near Pontymoel. Flow is diverted into the feeder via an intake chamber. The flow is then piped to the M&B Canal. Discharge to the canal is controlled by a valve adjacent to the canal. A flow meter is installed in the pipeline to monitor the abstraction. Please see schematic of abstraction arrangement.

**Schematic of Abstraction Arrangement:**




**Details of the Structures:**

Flow in the Trosnant Brook is diverted by gravity into the feeder via an intake chamber, located on the bed of the brook. The flow is then piped, through a 6" cast iron pipeline, for approx. 0.9km to the M&B Canal. Discharge to the canal is a gravity driven head feed, controlled by a valve adjacent to the canal. A flow meter is installed in the pipeline, downstream of the control valve, to monitor the abstraction. Please refer to photographic record in section 8.5 CRT438_Trosnant Spring Evidence of Abstraction below for photographs of the abstraction arrangement.

**Means of Measurement/Assessment of Abstraction Quantities Method:**

The abstraction is monitored via the Trust's telemetry/SCADA (Supervisory Control and Data Acquisition) system approximately 0.9km downstream of the abstraction. A Kent Flow Meter is installed within the pipeline, downstream of the control valve to the canal.

Please see section 8.5 CRT438_Trosnant Spring Evidence of Abstraction below for further details.

**General principles of maintaining a level on Canal & River Trust Navigations:**

The purpose of water control at the Canal & River Trust (the Trust) is to keep the water level within a Normal Operating Zone (NOZ) to minimise business risks. The business risks associated with high water levels include overtopping, which could lead to canal infrastructure damage ranging from towpath surfacing to catastrophic embankment failure or breach. Low levels can lead to damage to canal lining and in cases of rapid drawdown collapse of canal bank, in addition to insufficient navigable depth which can lead to disruption and inconvenience to our customers, damage to reputation, loss of income and/or environmental/ ecological damage such as algal blooms, fish distress, kills etc. and/or impact on water sales (hands off flows, commercial agreements, intake structures exposed).

Generally, canals operate within the NOZ (Figure 8.41 below), which is a zone of tolerance around a Normal Water Level (NWL); NWL is usually determined by refining a given level based on unobstructed passage for navigation and efficient use of available resources (water and manpower).

Across the Trust's canal network, NWL may or may not be the same as 'level', 'pound datum' or 'zero' and slight variations between NWL and 'level' exist across the network i.e. in some areas NWL is equivalent to 'level', whereas in other areas 'level' maybe the bywash cill and NWL is 25 to 50mm above this to maintain a flow and level throughout the lower pounds in the canal.

The lower limit of the NOZ is generally governed by the minimal navigable depth of the section of canal in question, below NWL. Assuming pound datum and NWL are the same, then typical values of the lower limit of NOZ are in the region of - 200mm from pound datum. Depending on location, this can vary between -450mm and -100mm.

The upper limit of the NOZ is generally governed by the available freeboard of the section of canal and then subtracting a 'margin' from this. The freeboard enables the canal to have a degree of passive control, by the waste and bywash weirs (and in some areas the top beam of the lock gates), before requiring active intervention/flood control activities to avoid overtopping of the canal. In some locations on the network, the upper limits of NOZ is governed by the air draft under a bridge, i.e. the point below NWL beyond which navigational issues occur due to restricted head room.

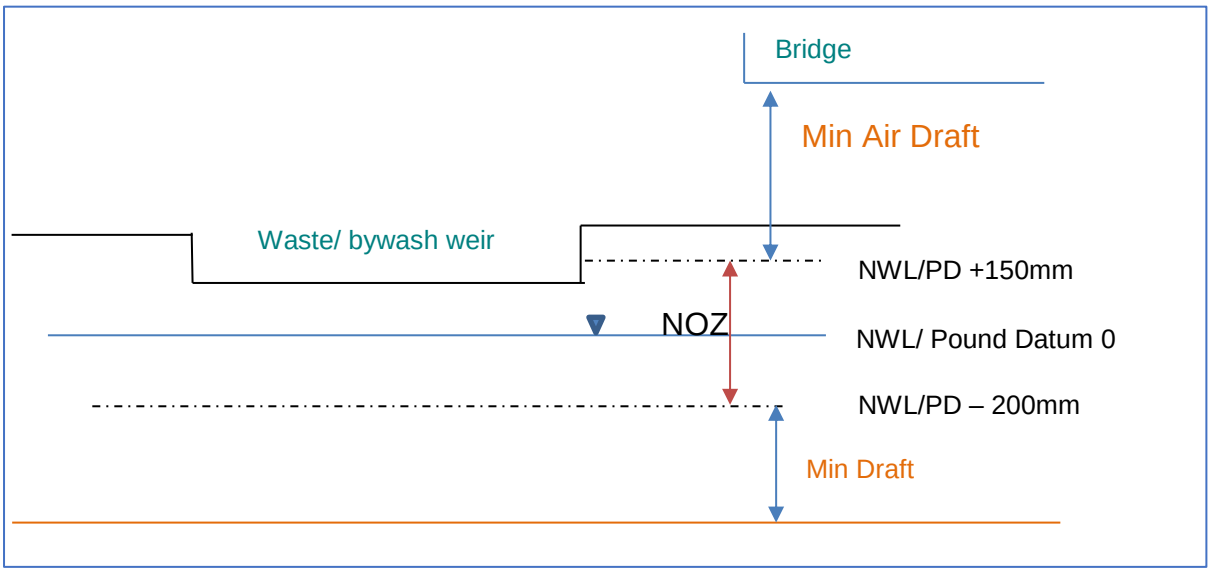



**Figure 8.41: Example of Normal Operating Level on Canal & River Trust Navigations**

8.5 CRT438_Trosnant Spring Evidence of Abstraction

**Telemetry/SCADA data:**

The abstraction is measured and recorded via the Trust's telemetry/SCADA system. Figure 8.51 below shows the daily mean abstraction quantities for the period 2011-2017 inclusive.

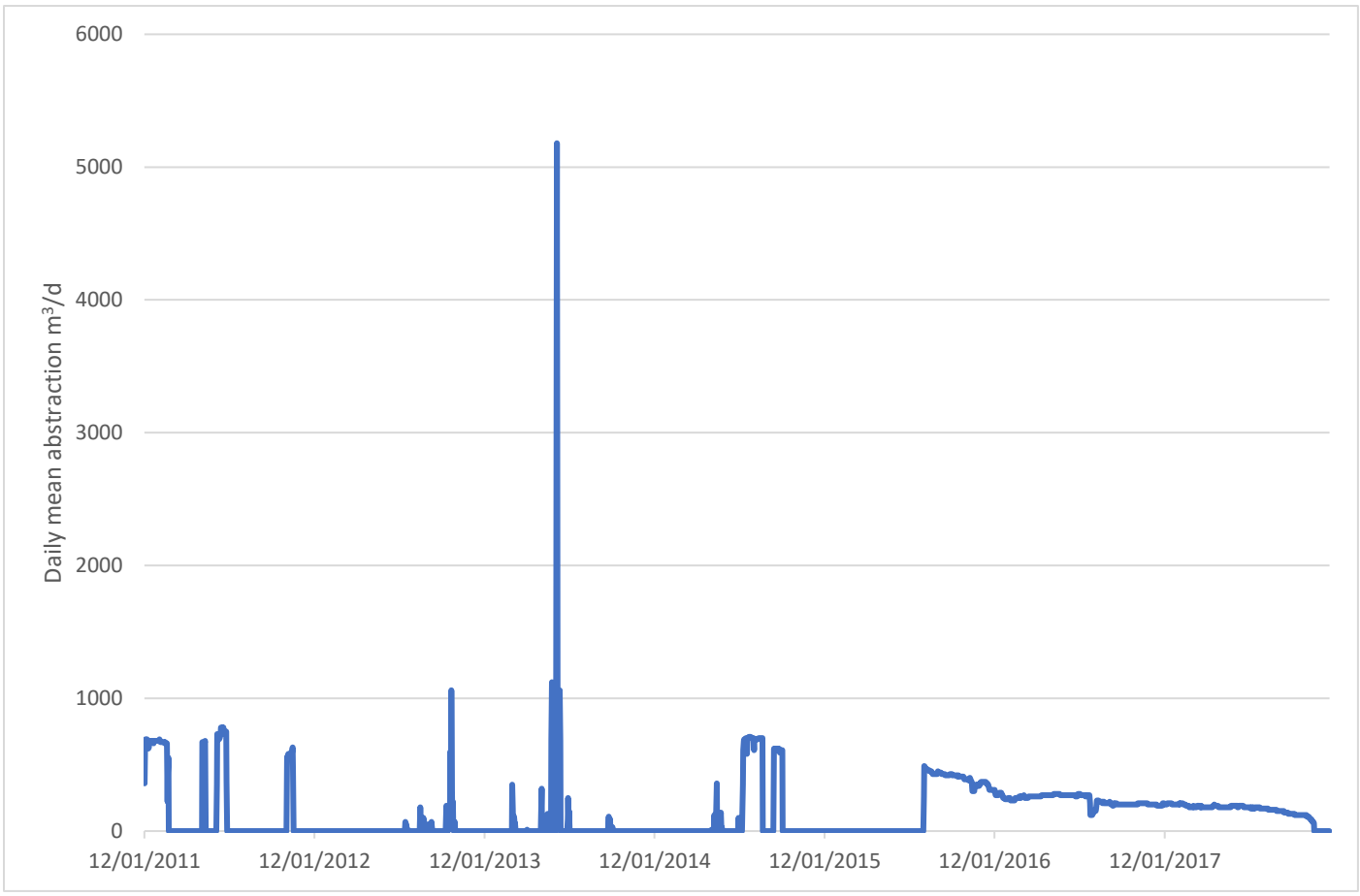



**Figure 8.51 Daily mean abstraction 2011-2017**

As can be seen from the above chart, the data recorded via the Trust's telemetry/SCADA system is of variable quality over the qualifying period 2011-2017. There have been several periods in the record where the flow meter has broken down, and/or there has been damage/blockage to the pipeline which has resulted in the abstraction being stopped. Periods of zero abstraction as shown in the above chart are therefore as a result of either there being issues with the flow meter or no abstraction as a result of damage/blockage to the pipeline.

For other New Authorisations applications on our navigation network, it has been possible to estimate the abstraction quantities where data is missing or there are breaks in the record e.g. using donor catchments and estimating flows pro rata by catchment area, taking into account the hydraulics of the existing abstraction structures. However, this has not been possible at this site as the exact method of abstraction is unknown and not possible to determine as it takes place under ground level.

The abstraction at this location was originally undertaken by a third party. An abstraction licence (number 20/56/12/76) was granted on 14 September 1983, to regulate this abstraction. The means of abstraction was given as 'an existing intake chamber and pipeline to the Monmouthshire & Brecon Canal' but no further details are given as to the means of entering said intake chamber. The third party ceased to operate and no longer required the abstraction in 2004. The Trust, then British Waterways, took over the management of this licence at this time, until revoked some time later. The Trust have continued to abstract at this location to support navigation in the bottom pound of the M&B Canal under the Water Resources Act (1991) S.26 exemption.

Please see abstraction licence appended to this document for further details.

**Photographic Record:**

Photograph 1: Intake chamber and continuation flow in Trosnant Brook 23.10.13


Photo 2: Location of control valve and flow meter, below discharge point B on M&B Canal at Pontymoel 21.02.05

Photo 3: Control valve and flow meter, below discharge point B on M&B Canal at Pontymoel 22.01.19

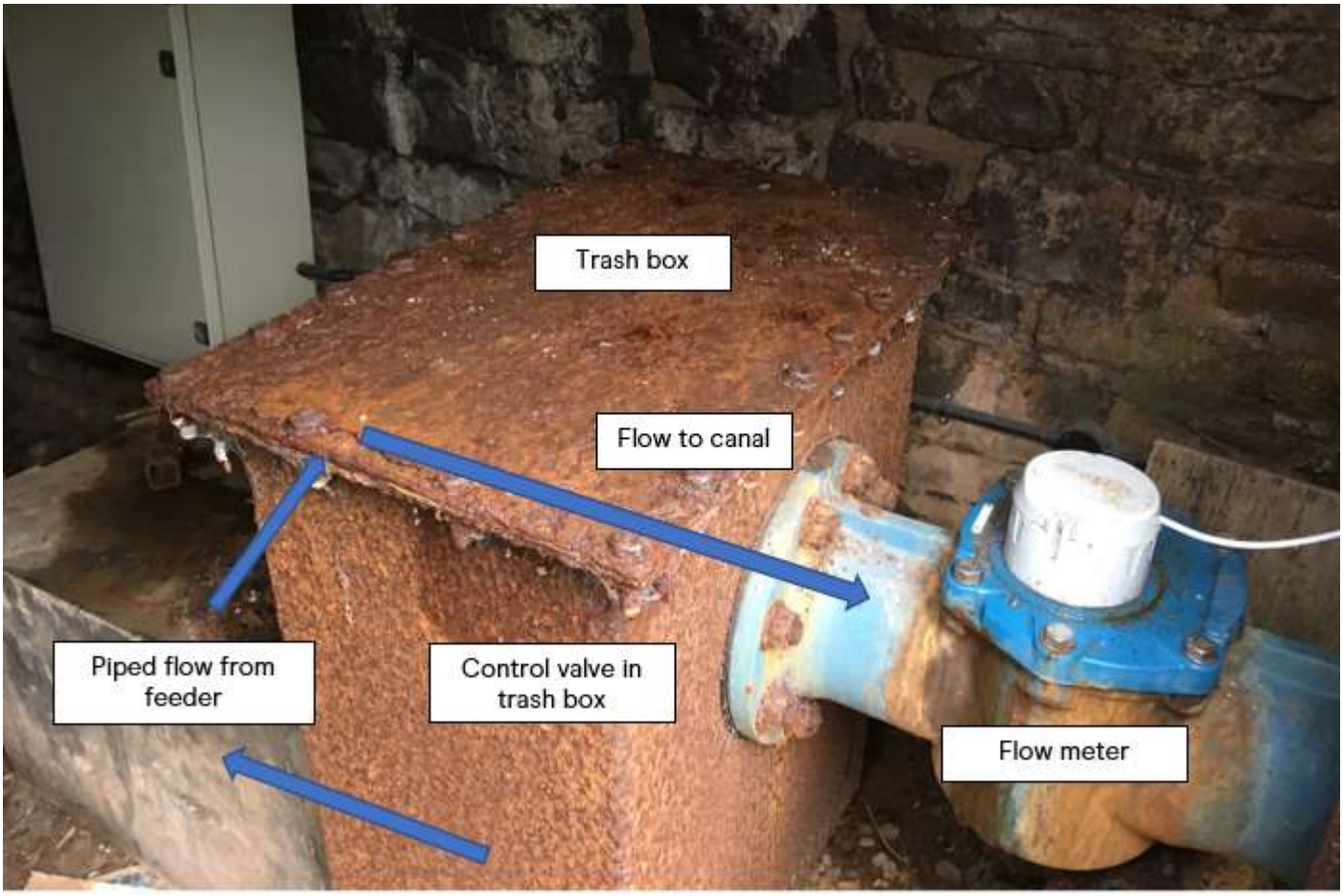
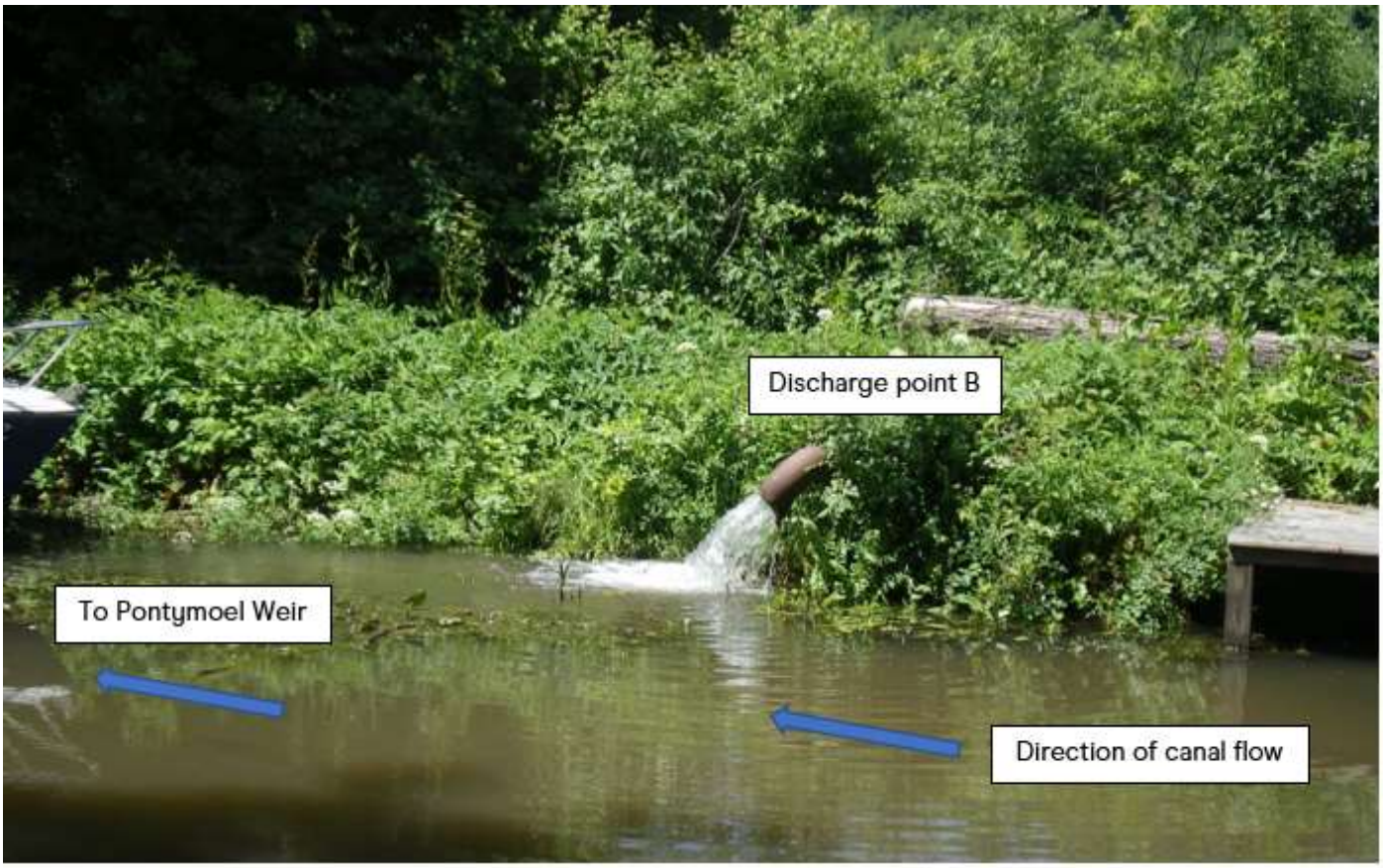



Photo 4: Discharge point B to the M&B Canal at Pontymoel 22.01.19

Photo 5: Discharge point B to the M&B Canal at Pontymoel 17.06.10



13.1 CRT438_Trosnant Spring - Other Abstractions

| **Table 13.1 – Details of any other abstraction(s) (licensed or exempt) that are associated with this application** | | | | | |
|---|---|---|---|---|---|
| National Grid Reference (12 digit) of where you abstract water | Source name and type | Purpose of abstraction | Where do you use the water? | When do you abstract the water | Is this a pending application, or already licensed?<br>Please provide the application or licence number as appropriate |
| SO 29207 11704 | Tributary of River Usk – Single point | Transfer from one source of supply to another | Monmouthshire & Brecon Canal | All year | Pending application – CRT61_Castle Turn |
| SO 14327 19473 | Afon Crawnon – Single point | Transfer from one source of supply to another | Monmouthshire & Brecon Canal | All year | Pending application CRT91_Cwm Crawnon |
| SO 20844 16956 | Nant Onnau-fach – Single point | Transfer from one source of supply to another | Monmouthshire & Brecon Canal | All year | Pending application CRT234_Llangattock |
| SO 30500 07288 | Nant Rhyd-y-Meirch – Single point | Transfer from one source of supply to another | Monmouthshire & Brecon Canal | All year | Pending application CRT263_Mill Turn Feeder |
| SO 29704 09116 | Tributary of Ochram Brook – Single point | Transfer from one source of supply to another | Monmouthshire & Brecon Canal | All year | Pending application CRT276_Ochran Turn |
| SO 03975 28882 | River Usk – Single point | Transfer from one source of supply to another | Monmouthshire & Brecon Canal | All year | Pending application CRT327_River Usk at Brecon |

Trosnant Spring is one of seven feeders to the M&B Canal. There are six additional feeders that support navigation on the canal. These are shown in Table 13.1 above and separate applications have been submitted for each.

The River Usk and its tributaries are designated a Special Area of Conservation (SAC) under the Habitats Directive. To comply with this directive, Natural Resources Wales (NRW) have indicated that for each of these feeders, conditions will need to be applied to licences. This will most likely result in a reduction in supply to the canal, once these licences are determined and lead to the canal being closed for significant periods every year.

The Trust has therefore been working with Natural Resources Wales, together with Dwr Cymru Welsh Water and the Wye & Usk Foundation as part of the UWAG (Usk & Wye Abstraction Group), to come up with an agreed solution to secure the long-term resources to the canal. In addition to improvements to existing feeders, this solution may also include abandoning some and establishing new, alternative sources of supply.

Please note however, that this work is still ongoing and an agreed and funded solution has not yet been reached. Separate applications have therefore been submitted for each existing feeder to the M&B Canal.