

For the Attention of Ruth Evans  
Cadw Welsh Historic Monuments  
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Cardiff  
CF10 3GY

Your Ref:  
Our Ref: Llan/6/2/Pontcysyllte

4<sup>th</sup> July 2003

Dear Ruth,

**Re: Pontcysyllte Aqueduct Refurbishment – Scheduled Monument Consent  
“The Canal in the Sky”**

Further to our meeting with Sian Rees and Mary Kelly on 4<sup>th</sup> June 2003, please find enclosed the following documents in relation to the above:

- Application for Scheduled Monument Consent
- Supporting documents consisting of:
  - Summary of historical research and refurbishment approach
  - Appendix 1 - Historical research information
  - Appendix 2 - General items relevant to the refurbishment of the Aqueduct
  - Appendix 3 - Surface preparation and protective coating of the cast iron
  - Appendix 4 - Towpath refurbishment
  - Draft conservation plan

Clearly the refurbishment of a structure of such historical importance needs to be undertaken with the utmost care and in the most appropriate manner. In view of the complexity of the proposed repairs we have submitted, when possible, alternative refurbishment processes. The alternative options are included in the enclosed appendices and approval of one or more of the options put forward is sought.

Some of the refurbishment options are inherently complex and in order to provide clarity and clarify some of the details, a meeting would be an appropriate opportunity for British Waterways to address these issues. At this stage a meeting towards the end of August would be useful and I should be grateful if you would let me know if the 21<sup>st</sup> August would be a convenient and timely date for a meeting between British Waterways, Cadw and your consultees.

As you will see the Conservation Plan is currently in draft format and we would appreciate your comments to enable us to complete the report.

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**North West Regional Office**

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Our current programme for the refurbishment works shows a start date of 3<sup>rd</sup> November, 2003. The start date is clearly dependent upon obtaining Scheduled Monument Consent and it is suffice to say that the refurbishment work will not commence until approval is gained.

The approach which British Waterways propose to adopt is to dewater the Aqueduct and carry out a comprehensive survey prior to undertaking repairs. I feel it is important to ensure the pre and post-refurbishment condition of the structure is well documented for future reference and I hope this approach becomes evident from the enclosed supporting documents.

I trust you will find our proposals acceptable. If I can provide you with any more information please do not hesitate to contact me.

Yours sincerely,

A handwritten signature in black ink that reads "Chris Smith". The signature is written in a cursive style with a horizontal line underneath the name.

Chris Smith  
Senior Project Engineer

Please quote our reference on all correspondence

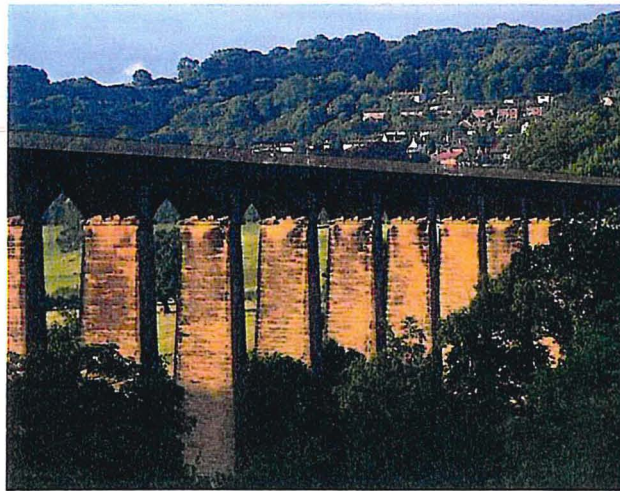
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Enc



**British  
Waterways  
Dyfrffyrdd  
Prydain**



**PONTCYSYLLTE AQUEDUCT  
REFURBISHMENT**

**APPLICATION FOR SCHEDULED  
MONUMENT CONSENT:  
SUPPORTING INFORMATION**

**Summary of historical research and  
refurbishment approach**

JULY 2003

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## **1. Introduction**

1.1 This report and the supporting documents forms the basis of British Waterways Application for Scheduled Monument Consent for the refurbishment of the Pontcysyllte Aqueduct on the Llangollen Canal.

1.2 British Waterways propose to undertake a comprehensive survey and refurbishment project of the Aqueduct during the forthcoming winter canal stoppage period (2003/2004) with site work commencing on 3<sup>rd</sup> November, 2003.

1.3 The refurbishment project generally consists of:

- Comprehensive survey of structure to record the pre and post refurbishment condition
- Masonry corbel repairs
- Removal of graffiti
- Inspection and replacement of the bolted connections
- Reinforcing the joint sealant
- Refurbish the towpath structure and parapet repairs
- Surface preparation and application of protective coating
- Other ancillary items

1.4 The details of the refurbishment proposals are included as:

- Appendix 1 – Historical Research report
- Appendix 2 – General items, including parapet repairs, joint sealant reinforcement, masonry corbel repairs, graffiti removal, vegetation, etc
- Appendix 3 – Surface preparation of the cast iron and protective coating
- Appendix 4 – Towpath refurbishment

### Appendix 1

1.5 Appendix 1 includes the “Report on the documentary sources for the history of Pontcysyllte Aqueduct, with particular reference to the ironwork of the Aqueduct” and is included for reference and information purposes.

### Appendix 2

1.6 The proposed repairs of the general items included in Appendix 2 are generally accepted as being appropriate methods of repair and they have therefore been submitted as separate appendix.

### Appendix 3

- 1.7 The surface preparation and coating of cast iron is a complex and difficult subject. For this reason a number of surface preparation and protective coating options have been put forward. British Waterways does not have any preconceived ideas on the matter but has stated their preferred option based on expert heritage advice and previous correspondence with Cadw.

### Appendix 4

- 1.8 Appendix 4 includes the options available for the refurbishment of the towpath. The preferred option is to reconstruct the towpath in the original form but with modern-day materials, however an option to restore with original materials has been included.
- 1.9 The option to reconstruct the towpath with more modern materials could be interpreted as contributing to the heritage value of the structure, i.e. the towpath structure has undergone technological advancements as more modern materials have been developed.

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## 2. Summary of Historical Research

- 2.1 The Pontcysyllte aqueduct is considered to be one of the heroic monuments that symbolizes the world's first Industrial Revolution and its transformation of technology.
- 2.2 The great Pontcysyllte Aqueduct, at a height of 38.4m above the river Dee, still the loftiest navigable canal aqueduct ever built forms part of the heritage of that first blooming of heroic-scale structures.
- 2.3 Where it was revolutionary was in the use of cast iron for the trough of such a large structure, the bottom and sides of the water channel being formed of cast-iron plates.
- 2.4 Adjacent to the east is the Chirk Tunnel (419.7m). With its opening coal could be taken south to branch canals at Frankton leading to Llanymynech limestone quarries and used in limekilns en route.
- 2.5 The huge 307m long and 38.4m high Pontcysyllte Aqueduct with its cast-iron trough cast in the specially built Plas Kynaston Foundry nearby was the highest canal aqueduct ever built.
- 2.6 The huge approach embankment on its southern side would itself stand as a remarkable civil-engineering structure even if the aqueduct did not exist.
- 2.7 The abandonment of the proposed canal mainline up to the intended summit level north of the aqueduct meant that an alternative water supply had to be sought. A (navigable) feeder to the river Dee was completed in 1808 with an elegant weir called the Horseshoe Falls. Upstream the large Bala Lake in the Welsh mountains was heightened by a dam (now replaced) in order to serve as a reservoir.
- 2.8 The Trevor basin to the north of the Pontcysyllte Aqueduct has one original (1805) overbridge which is a composite structure of iron and ashlar masonry, having shallow segmental masonry arches supported on curved cast-iron ribs. The basin also served as a trans-shipment point for coal for the twin-track horse-drawn railway. The basin area is currently undergoing restoration and regeneration works to enhance the environs of the surrounding area.
- 2.9 The majority of the Aqueduct structure remains unchanged from its original construction nearly 200 years ago. The towpath is the only major element of the Aqueduct which has changed from the original.
- 2.10 The Pontcysyllte Aqueduct was scheduled as an ancient monument in 1958.
- 2.11 More recently (1965) the aqueduct was refurbished by British Waterways. The work consisted of repairing the towpath and supporting structure and repainting the structure.



- 2.12 In 2000 a trial refurbishment of a central span (bay 11) was embarked upon to establish the future maintenance aspects of the Aqueduct. A report on the findings of the trial refurbishment is available at the Northwich Regional Engineering Office (Ref2458).
- 2.13 In 2002, a historical research study investigating the history of the aqueduct from it's conception through to the present day and paying particular attention to the historical maintenance was commissioned. This report is included as Appendix 1.
- 2.14 A comprehensive listing of reports, drawings and documents has been compiled. This list is also included in Appendix 1.
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### **3. Summary of Refurbishment Proposals**

- 3.1 In outline terms, British Waterways propose to dewater the Aqueduct at the beginning of November, 2003. A detailed inspection and survey will be undertaken to compile a database recording the location of defects, the proposed type of repair and photographic evidence demonstrating the need for the repair. A corresponding record of the completed repair will also be added to the database to ensure a pre- and post- refurbishment condition of the Aqueduct is maintained.
- 3.2 Following the survey it is expected that the repair of certain items will differ depending on the current condition of the structure and the location of the repair. To ensure that the repairs are completed in the most appropriate manner British Waterways will liaise closely with Cadw's Ancient Monument Inspector and obtain approval prior to undertaking the repairs. Details of the anticipated types of repair are included in appendices 2, 3 and 4 and approval of these generic type repairs is sought.