



**Canal &
River Trust**

Making life better by water

Design Access & Heritage Statement:

Dam Leakage Repairs at
Wilton Water Reservoir, Kennet &
Avon Canal.



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Introduction

The following Design Access and Heritage Statement is to accompany a Listed Building Consent application for:

Repairs and maintenance to dam headwall and culverts east of the bank of sluices at Wilton Water, Kennet & Avon Canal, SN8 3DW

The Canal & River Trust is proposing to carry out maintenance works to the dam wall and culverts at Wilton Water Reservoir, including:

- A) Repairing dam wall reinstating dislodged masonry and using like-for-like materials where required. Its poor condition is allowing leakage through the structure causing settlement and unevenness of a concrete slab over all 3 culverts.
- B) Installation of grouting to concrete slab and culvert barrel jointing below slab, to prevent current continuous leakage through wall and slab into culverts.

The site is a designated heritage asset Grade II Listed Building.

The three sluices and adjacent three weirs control flows of the groundwater source of Wilton Water Reservoir (often referred to as Crofton Reservoir) which is the key water supply to the eastern end of the Kennet and Avon Canal. The Crofton pump takes water directly from the lake and pumps it into the Crofton Leat which then flows into the canal summit.

Water management and conservation on the Kennet & Avon Canal is a significant and growing challenge. The challenges of climate change and extreme weather have exacerbated this as a high priority for the Trust. The proposed works are part of a wider project to improve the long-term resilience of the canal to these pressures and to safeguard the canals water supplies.

The proposed works are necessary as part of the Trusts water management strategy for the Kennet & Avon Canal ensuring its long-term community benefit continues to be provided to its users.

This Listed Building Consent application examines the heritage context, the relative significance of the elements subject to repair and sets out an assessment of the impact upon heritage values of the repair and maintenance proposal.

In this way the application demonstrates that the current proposals have a suitably low impact upon the heritage values and overall significance of the Listed Structure and are part of the Trust's commitment to ensuring that conservation of its significant places is carried out in accordance with accepted conservation principles.

All works proposals presented are to be carried out in accordance with the Trust's Mandatory Heritage Standard. Due to the unique nature of the Trust's heritage assets and the particular operational challenges presented by the context of managing waterways heritage some details of elements of proposed repairs may not be fully understood until the immediate site around the dam wall is dewatered.

The Trust is committed to taking long term strategic view that assumes a presumption in favour of preserving its waterway heritage wherever possible, whilst recognising the need to ensure operational functionality of its assets.

Relevant selected policies from The Trust's Heritage Standard –

The Trust will ensure that every addition and alteration to its historic structures is carefully judged. It is important that the needs of safety, cost, historical integrity, use, aesthetics and more are sensitively balanced. Regard should be had for the historic functionality of waterways; e.g., gauge of track, turnover bridge configuration, positioning of bollards, strapping posts and rope hooks. The heritage value of these functional traditions is significant and should be secured.

Background

Reservoir Outfall and Sluices at Wilton Reservoir is designated at GV II – Grade II Listed Building

The works proposed are concentrated on the dam wall and culverts situated adjacent to the bank of sluices and outfall within the curtilage of this Listing. The site falls within a wider complex historic setting which includes Crofton Pumping Station a Grade I listed building.

Wilton Water Reservoir is the key supply of water to the eastern end of the Kennet & Avon Canal. Several springs discovered in Wilton valley were originally channelled to supply the canal. In 1836 the Kennet and Avon Canal Company commissioned the reservoir to contain the springs of Wilton village and to collect rainfall in the valley ensuring a reliable water source for the canal. This was achieved by building a dam wall across a narrow branch valley.

Summary description of proposals: and scope of works

Maintenance is required at the dam wall to prevent leakage into the earth bank and into the culverts. This will require reinstating loose and displaced masonry along with sections of localised rebuilding using like-for-like materials.

Behind the dam wall a large concrete slab covering the earth bank and culverts also requires repairs to prevent leakage entering the culverts. Leakage through the dam wall has caused settlement to occur resulting in the slab becoming uneven and causing fractures in the culvert barrel jointing allowing leakage into the culverts.

The slab and culvert barrels are of concrete construction, and cementitious mortar has been used to repair the dam wall in the past. These modern elements likely date from the restoration of the canal in the 1970s, pre-dating the listing of the site. As such the slab and barrels contain no element of historic fabric and therefore cementitious grouting is proposed to arrest leakage through these concrete elements.

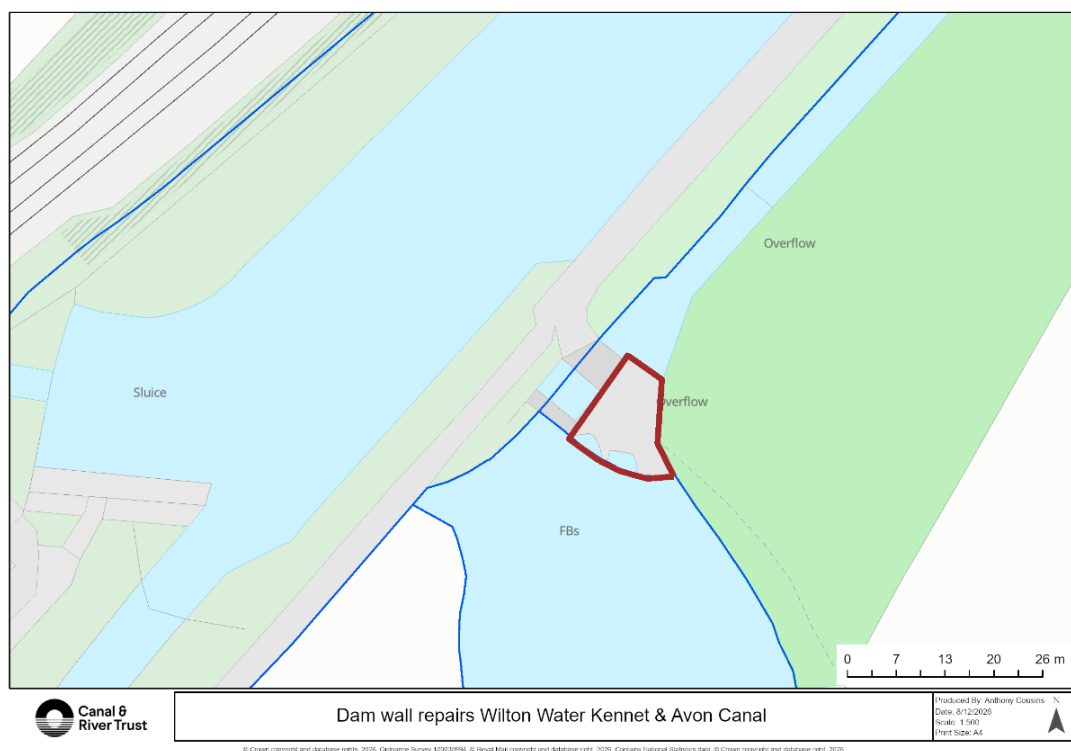
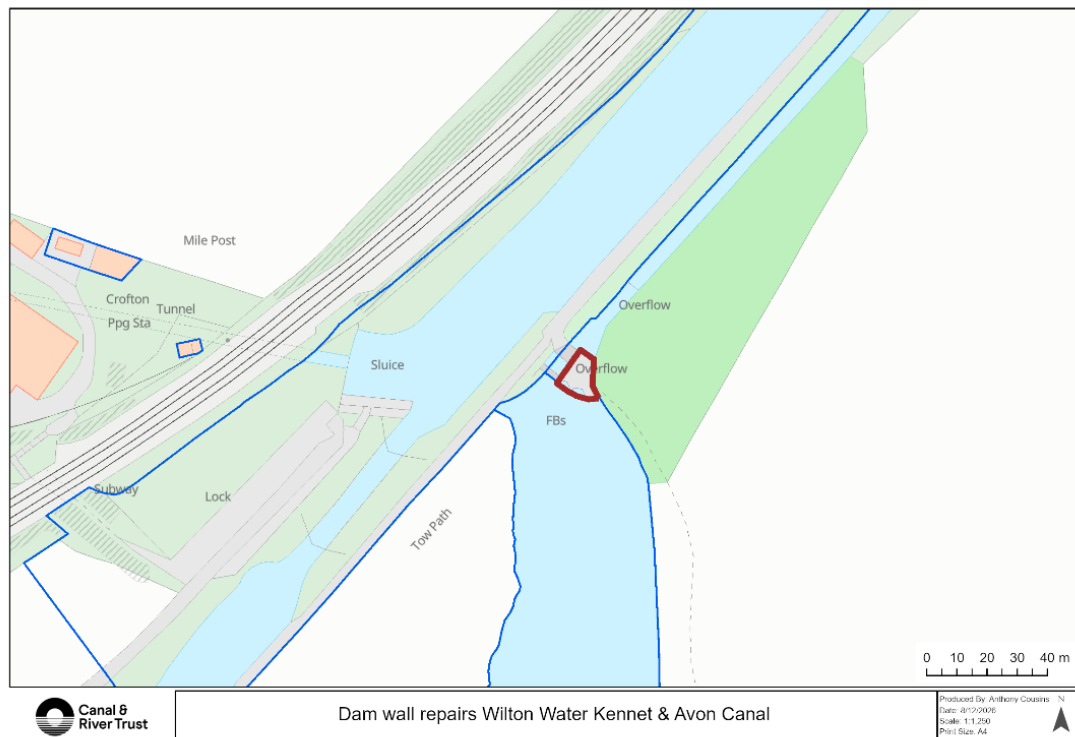
The work is part of the Trust's commitment to ensuring that conservation of its significant places is founded on an appropriate sustainable routine maintenance in accordance with accepted conservation principles.

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Competencies:

The works will be undertaken by contractor under supervision of direct services construction team with previous extensive experience of repairs to similar masonry structures and modern concrete culverts along the Kennet & Avon Canal. The works on site will be subject to monitoring by the Trust's heritage Team to ensure adherence to the specifications as set out in this LBC application.

Site Location Plan



Designation: List Description

Sluices: Heritage Category: Listed Building
Grade: II

List Entry Number: 1034022
Date first listed: 30-Jul-1986

List Entry Name: Reservoir Outfall and Sluices to Wilton Reservoir
Wilton Reservoir Outfall and Canal Crossing Lock

Location

Statutory Address: RESERVOIR OUTFALL AND SLUICES TO WILTON RESERVOIR
WILTON RESERVOIR OUTFALL AND CANAL CROSSING LOCK
District: Wiltshire (Unitary Authority)
Parish: Grafton
National Grid Reference: SU 26262 62266

Details

GRAFTON CROFTON SU 26 SE 5/29

Reservoir outfall and sluices to Wilton Reservoir

GV II

Outfall to Wilton reservoir, 1836 by John Blackwell, for the Kennet and Avon Canal Co. Brick with stone corners and timber sluices. Three sluices in row, restored, controlling outfall water at various levels, with weir to 2 and channel to feeder cut. Two weir sinks for overflow, with piped outfall beneath apron also to feeder cut. Feeder has gauge weir and channel to pound below Lock 61 (q.v.). Syphon under towpath. The reservoir was constructed to contain the springs of Wilton village as a reliable water source for the canal. One of an important group of industrial and utilitarian monuments of special interest.

Listing NGR: SU2626262266

[Reservoir Outfall and Sluices to Wilton Reservoir Wilton Reservoir Outfall and Canal Crossing Lock, Grafton - 1034022 | Historic England](#)

HER Results

A search on the HER website returned following results:

HER Number: MWI40315
Name: Reservoir Outfall and Sluices, Wilton Reservoir
Grid Reference: SU 262 622
Parish/District/County: Grafton, Kennet, Wiltshire

View record on Wiltshire and Swindon HER:

<https://services.wiltshire.gov.uk/HistoryEnvRecord/Home/ViewHERItem?HER=MWI40315>

Monument Type(s):

LEAT (Mid C19 - 1836 AD to 1836 AD)
SLUICE (Mid C19 - 1836 AD to 1836 AD)
WEIR (Mid C19 - 1836 AD to 1836 AD)

Designations

Listed Building (II) 1034022: RESERVOIR OUTFALL AND SLUICES TO WILTON RESERVOIR WILTON
RESERVOIR OUTFALL AND CANAL CROSSING LOCK

Summary

Outfall to Wilton reservoir, 1836 by John Blackwell, for the Kennet and Avon Canal Co. The reservoir was constructed to contain the springs of Wilton village as a reliable water source for the canal. For full details of this building, please check the Listed Building description.

Description and Sources

<1> Firth, A., 2014, Heritage Assets in Inland Waters (Report). SWI28535.

The report considers the threats to heritage assets in inland waters, their management and the potential for greater awareness and appreciation. Attention is also paid to recent developments in methodologies and techniques through which assets in inland waters can be investigated.

<2> Slocombe, P., 2008, A Guide to the Industrial Archaeology of Wiltshire, p.6 (Booklet). SWI28692.

Reservoir made for the Kennet and Avon Canal in 1836. fed by existing streams. Has outfall and three controlling sluices at various levels. The water is pumped into the canal by the Crofton Pumping Station at Great Bedwyn.

HER Number: MWI18857
Name: Neolithic Causewayed Enclosure, Crofton
Grid Reference: SU 263 625
Parish/District/County: Grafton, Kennet, Wiltshire
Great Bedwyn, Kennet, Wiltshire

View record on Wiltshire and Swindon HER:

<https://services.wiltshire.gov.uk/HistoryEnvRecord/Home/ViewHERItem?HER=MWI18857>

Monument Type(s):

- CAUSEWAYED ENCLOSURE (Neolithic - 4000 BC to 2351 BC)
- LITHIC SCATTER (Late Prehistoric - 4000 BC to 42 AD)
- FINDSPOT (Bronze Age - 2350 BC to 701 BC)
- FINDSPOT (Roman - 43 AD to 409 AD)
- FIELD SYSTEM (Medieval to Late C19 - 1066 AD to 1900 AD)
- LYNCHET (Medieval to Late C19 - 1066 AD to 1900 AD)

Designations

None

Summary

A Neolithic causewayed enclosure excavated in 1984.

Description and Sources

<1> English Heritage, D/SU2562/1/197-8 (Aerial Photograph). SWI5966.

A causewayed enclosure of single ring type, excavated by Sue Lobb in 1984. (TWA NO W82). Scatters of Prehistoric pottery and flintworks were found.

<2> Wessex Archaeology, 1983, Crofton, Great Bedwyn Preliminary Fieldwork (wiltm Report 1983.007) (Report). SWI22540.

<3> Wiltshire County Council, 1971, A26/222236 (Aerial Photograph). SWI15178.

<4> 1995, The Wiltshire Archaeological and Natural History Magazine - Volume 88 (master), pp.18-25 (Serial). SWI992.

A small exploratory trench across the bank and ditch in 1984, coupled with a programme of field walking in and around the enclosure, confirmed a probable Neolithic date for the enclosure. Surface finds included Bronze Age and Romano-British potsherds, plus over 2500 worked flints. Flints from the primary ditch fill were of Neolithic character.

<5> 1975-1976, The Wiltshire Archaeological and Natural History Magazine - Volume 70/71 (master), pp.124-125 (Serial). SWI964.

Causewayed enclosure of single ring type, with an apparent diameter of 600 metres.

<6> English Heritage, NMR Aerial Photographs (master), D/SU2562/2/405-6; SU 2662/16/371 (961/371) 07-JUL-1976; SU 2662/63 (2127/619) 12-AUG-1982; (Aerial Photograph). SWI9475.

The cropmark remains of the probable Neolithic causewayed enclosure described by the previous authorities was mapped from aerial photographs as part of the English Heritage: Savernake Forest NMP project. The site appears as an incomplete sub-circular enclosure measuring between 570 metres and 590 metres in diameter which is made up of segments of ditch of varying length. The enclosure encircles the village of Crofton and has been cut by the course of the Kennet and Avon Canal.

<7> English Heritage, NMR Aerial Photographs (master), SU 2562/10 (4678/21) 13-AUG-1990; SU 2662/7/332 (974/332) 28/JUL-1976; (Aerial Photograph). SWI9475.

<8> English Heritage, NMR Aerial Photographs (master), SU 2662/14/366 (961/366) 07-JUL-1976; SU 2662/18/379 (961/379) 07-JUL-1976 (Aerial Photograph). SWI9475.

<9> Crutchley, S., Small, F. + Bowden, M., 2009, Savernake Forest: A Report for the National Mapping Programme (Report). SWI25624.

<10> Historic England, Various, National Record of the Historic Environment (NRHE) Entry, NRHE 867544 (Digital archive). SWI29488.

<11> Carolyn Dyer, 1995, Crofton Causewayed Enclosure Project (Monograph). SWI26398.

Cropmarks of a probable Neolithic causewayed enclosure are centred on SU263626 and completely surround the modern village of Crofton, Wiltshire. The site lies in a slight valley, and the Kennet and Avon canal follows the course of an old stream which would have originally run through the enclosure. The

enclosure comprises a single ditched interrupted enclosure with a sub-circular shape and diameter of, on average, 600 metres. In its complete state, it would have enclosed an area of 28 ha (70 acres). The site was plotted at 1:2500 scale by the RCHME Air Photography Unit in January 1995. This photogrammetric survey formed part of the larger Industry and Enclosure in the Neolithic Project (Event UID 927099, Parent Event UID 923509). The enclosure is remarkable in having surrounded the confluence of two tributaries of the River Kennet (now obscured by the course of the Kennet and Avon Canal). Subsequent to the photographic transcription, limited field investigation confirmed that earthworks which survive in a pasture field on the south side of the enclosure relate to later cultivation.

<12> Historic England, Various, National Record of the Historic Environment (NRHE) Entry, NRHE 1089236 (Digital archive). SWI29488.

(SU 2657 6234) In July 1997, RCHME carried out a Level 2 analytical earthwork survey of earthworks preserved in pasture on the southern side of Great Bedwyn causewayed enclosure (NMR SU 26 SE 53), following the transcription of the cropmarks of the Neolithic monument. The earthworks comprise a 30m length of ditch and segments of a series of at least six cultivation terraces, probably of different phases, but both likely to be Medieval or later in date. Given that they are certainly unrelated to the causewayed enclosure, no further research was carried out. For further details, see plans at 1:1000 and 1:5000 held in HE Archives.

HER Number: MWI40342

Name: Crofton Pumping Station

Grid Reference: SU 261 622

Parish/District/County: Great Bedwyn, Kennet, Wiltshire

View record on Wiltshire and Swindon HER:

<https://services.wiltshire.gov.uk/HistoryEnvRecord/Home/ViewHERItem?HER=MWI40342>

Monument Type(s):

- BOILER HOUSE (Early C19 - 1802 AD to 1809 AD)
- CANAL FEEDER (Early C19 - 1802 AD to 1809 AD)
- ENGINE HOUSE (Early C19 - 1802 AD to 1809 AD)
- LEAT (Early C19 - 1802 AD to 1809 AD)
- POUND LOCK (Early C19 - 1802 AD to 1809 AD)
- RESERVOIR (Early C19 - 1802 AD to 1809 AD)
- WATER PUMPING STATION (Early C19 - 1802 AD to 1809 AD)
- WATER PUMPING STATION (Early C19 - 1802 AD to 1809 AD)

Designations

Listed Building (I) 1034049: CROFTON PUMPING STATION

Summary

Pumping Station for the Kennet and Avon Canal Co, built 1802-1809 by John Rennie, chief engineer, enlarged 1843 and restored 1971.

For full details of this building, please check the Listed Building description.

Description and Sources

<1> Firth, A., 2014, Heritage Assets in Inland Waters (Report). SWI28535.

The report considers the threats to heritage assets in inland waters, their management and the potential for greater awareness and appreciation. Attention is also paid to recent developments in methodologies and techniques through which assets in inland waters can be investigated.

<2> Slocombe, P., 2008, A Guide to the Industrial Archaeology of Wiltshire, p.7 (Booklet). SWI28692.

Built in 1807 for the Kennet & Avon Canal to raise water 40 feet from streams near Wilton (later a reservoir) to the summit and return it by a feeder leat to the summit level just above the top lock. The 42 inch cylinder steam engine of 1812 is the oldest Boulton & Watt beam engine still in use in its original setting anywhere in the world.

<3> Historic England, Various, National Record of the Historic Environment (NRHE) Entry, NRHE 224942 (Digital archive). SWI29488.

<4> Ordnance Survey, 1961, Ordnance Survey 6 inch Map 1961 (Map). SWI13358.
[SU 26146228] Crofton pumping station [shown but not described].

<5> Cossons, N. + Hudson, K., 1971, Industrial Archaeologists' Guide 1971-73, p.67 (Bibliographic reference). SWI31477.
SU 260622. Crofton Beam Pumping Engines. The Kennet and Avon Canal Trust acquired the pumping station from British Waterways in 1968.

<6> National Monuments Record, 1986, List of Buildings of Special Architectural or Historic Interest: District of Kennet 1986, 16, pp.52-53 (Scheduling record). SWI30955.
Crofton pumping station is listed as Grade I, this is the key element of an important group of industrial and utilitarian monuments in Crofton which also includes the Wilton reservoir outfall and a 1939-45 Pillbox
The flue to the pumping station c1851. Brick with iron banding. Listed grade II*.

<7> National Monuments Record, 1960-1970, National Record of Industrial Monuments, Record No. WI34 (Record card). SWI29755.
Recorded by LC Cameron, 16-May-1965

HER Number: MWI40650

Name: 19th Century Flue, Crofton Pumping Station

Grid Reference: SU 261 622

Parish/District/County: Great Bedwyn, Kennet, Wiltshire

View record on Wiltshire and Swindon HER:

<https://services.wiltshire.gov.uk/HistoryEnvRecord/Home/ViewHERItem?HER=MWI40650>

Monument Type(s):

- FLUE (Built after 1851, Mid C19 to Unknown - 1851 AD)

Designations

Listed Building (II*) 1300317: FLUE TO CROFTON PUMPING STATION

Summary

Brick flu built by the Great Western Railway Co after their purchase of the canal in 1851.
For full details of this building, please check the Listed Building description.

Description and Sources

<1> Firth, A., 2014, Heritage Assets in Inland Waters (Report). SWI28535.
The report considers the threats to heritage assets in inland waters, their management and the potential for greater awareness and appreciation. Attention is also paid to recent developments in methodologies and techniques through which assets in inland waters can be investigated.
<2> Slocombe, P., 2008, A Guide to the Industrial Archaeology of Wiltshire, p.7 (Booklet). SWI28692.
Flue of brick with iron banding, flared towards base. Built by GWR after purchase of canal in 1851.

Assessment of Significance

As a designated Grade II Listed heritage asset of regional to national significance Outfall and Sluices to Wilton Reservoir, Kennet & Avon Canal, SN8 3DW is identified as ‘**buildings of special interest**’ by Historic England.

In accordance with Historic England’s guidance in Conservation Principles (2008) four key heritage values from which significance may be derived, these being:

Evidential value: *which derives from the potential of a place to yield evidence about past human activity.*

Historical value: *which derives from the ways in which past people, events and aspects of life can be connected through a place to the present.*

Aesthetic value: *which derives from the ways in which people draw sensory and intellectual stimulation from a place.*

Communal value: *which derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.*

Outfall and Sluices to Wilton Reservoir

Against the criteria outlined above a value of ‘**Low, Moderate, or High**’ may be attributed - on this basis the following assessment of heritage values at Outfall and Sluices to Wilton Reservoir can be broadly summarized as follows:

Evidential value: the site has low to moderate evidential value as an example of a ‘canal structure’ derived from the physical form, which is informative, and is a part of the wider context of Kennet & Avon canal structures. The reservoir was created in 1836 to contain the springs of Wilton village as a reliable water source for the canal. However later repairs to the culverts and dam wall slab during the mid to late 20th Century (prior to its listing) means some loss of evidential value will have occurred. The sluice gates were most recently replaced, like-for-like in 2023.

Historical value: the site has moderate historic value by virtue of its links to the combined group value of industrial and utilitarian structures in the vicinity of Crofton Pump House, and as a part of wider canal history. the engineering of the canals and the people who built them.
Associative value is increased by the involvement of John Blackwell, Superintendent Engineer of the Kennet & Avon Canal adding a further degree of historic interest.
Illustrative value is gained from the reservoir and outfall and sluice gates in representing early 19th century ingenuity in supplying water near to the summit of the Kennet & Avon Canal.

Aesthetic value: the bank of sluices and the dam wall have low to moderate aesthetic value as part of the assemblage of canal features in close proximity to the picturesque Wilton Water Reservoir, also Crofton Pump Engine and chimney visible in the near distance.
The use of brick construction with minimal stone dressing is typical of works along this stretch of the Kennet & Avon. Some aesthetic value of the dam wall has been eroded by repairs and restoration during the mid to late 20th Century.

Communal value: the site has low communal value seeing comparatively low visitor numbers compared with the nearby Crofton Pump Engine. The footpath near to the dam wall may be accessed by boaters, walkers or by local residents.
The reservoir provides recreational fishing and is an important wildlife haven.

Proposals

Repair works are required to stop leakage at the dam headwall (wave wall) at Wilton Water Reservoir.

There is a collection of 3 weir outlet culverts running behind the wave wall and from the overflow weirs. Leakage pathways through the dam headwall (wave wall) flow under the concrete dam slab and into the 3 culverts at their joints. This is a result of leakage through the dam wall causing settlement and unevenness of the concrete slab capping leading to leakage into the culverts. Further leak pathways exist in the earth embankment portion of the dam to the east of the slab which also requires sealing.

Scope of proposal

- Repair to leaking wave wall/dam headwall.
- Fill leak pathways and voids below slab which currently flow into the culverts.
- Use grout curtain to fill leak pathways within earth dam and prevent future leaks.
- Reinststate scoured sections of earth embankment to match slab level.

These are works of maintenance which would not materially affect the external appearance of the asset.

Repairs to dam headwall /wave wall, to arrest leakage

Repairs to the dam masonry structure will involve some localised sections of rebuilding the true extent of works here is unknown until the area has been dewatered.

Repaired section will be tied into the existing masonry wall. Any localised failed areas will be rebuilt, any lost or loose masonry units will be reinstated, and any missing mortar repointed.



Figure 3: Area of dam head wall to be rebuilt

A minimum intervention approach is to be taken, only the areas that require repair (bulging brickwork, masonry damage, hungry joints) shall be considered.

All repairs shall be of a `like for like` nature using matching traditional materials that have been previously consented for use on several Listed Structures on the K&A canal.

Re-pointing and replaced missing bricks these shall be carried out using the previously LBC approved lime mortar mix for the K&A Canal:

K&A lime mortar Specification

1.0 Part:	NHL 3.5 (or NHL 5 where below the waterline repair)
1.0 Part:	Sharp Sand
1.0 Part:	Soft Sand
0.5 Part:	Limestone Aggregate

Limestone Aggregate shall be Crushed Bath stone with a particle range from 150mc up to 2mm.



Figure 4: Section of Headwall to be repaired and missing bricks replaced like-for-like.

Voiding behind to be infilled

The total length of wall requiring repair is approximately 12m, depth of masonry wall, ranging from 0.5m – 1m. Void at back of headwall to be filled.

Installation of grouting to concrete slab and culvert barrel jointing below slab, to prevent current continuous leakage through wall and slab into culverts.

The proposal is to use cementitious grouting to fill leak pathways and voids below concrete slab to address current leakage to culvert structure.



Figure 5: Leak within the culvert through culvert barrel jointing



Figure 6: Multiple leaks through culver barrel jointing

Concrete slab over dam headwall to be grouted, and repair mortar installed to infill joints



Figure 7: Concrete slab over dam headwall

Justification

The slab and culvert barrels are of concrete construction. These modern components likely date from the restoration of the canal in the 1970s, pre-dating the listing of the site. As such the slab and barrels contain no element of historic fabric and therefore cementitious grouting is proposed to arrest leakage through these concrete elements.



Figure 8: Footpath on earth embankment to be topped up to make slab

The proposal includes reinstating scoured sections of earth embankment to match slab level.

Grout curtain to be installed along earth embankment and concrete slab. Earth embankment to be topped up along its length, to build up to concrete slab level and remove any trip hazards. This is to be carried out using 100mm layers of well compacted MOT Type 1. Topped with 50mm layer of 12mm to dust.

Heritage Impact Assessment

The impact of proposal upon the heritage values of Wilton Water Reservoir dam wall (as set out in Historic England's guidance in Conservation Principles 2008) can be summarized as follows - using the criteria and value of impact or harm as 'None, Low, Moderate, or High'

Repairs and localised rebuilding of dam wall reinstating displaced masonry units and using like-for-like bricks where required.

Evidential value: No impact – the repairs have been carefully considered in terms of adherence to accepted conservation principles of ensuring maximum retention of historic fabric. The repairs are specified strictly on a 'like-for-like' basis of matching materials and using traditional methods. Only masonry units that are either already lost, or severely damaged will be replaced as part of this proposal

Historical value: Low impact- Only masonry units that are either already lost, or severely damaged are part of this proposal.

Aesthetic value: Low impact – minor changes in aesthetic values arising from repairs when first carried out will recover over time. The adherence to using only 'like-for-like' materials and methods minimises harm to heritage values.

Communal value: No negative impacts – increase in communal benefit of ensuring the original function of the historic waterways structures continue to remain in active community use. Without regular conservation repairs the heritage asset would fall into disrepair and eventually out of serviceable use.

Repairs to concrete slab and fractures in culvert barrel jointing

Evidential value: No impact - Evidential value was lost during restoration works in 1970s. The use of cementitious grouting to seal jointing fractures within modern concrete elements does not impact historic fabric.

Historical value: No impact – the structural elements involved are not historic, being of concrete construction dating from mid-late 20th Century repairs and restoration.

Aesthetic value: No impact – No historic fabric is involved. Minor changes in aesthetic of concrete slab fractures through repairs when first carried out will recover over time through weathering. The cementitious grouting around culvert barrels is below ground resulting in no visual impact.

Communal value: No negative impacts – increase in communal benefit of ensuring the original function of the historic waterways structures continue to remain in active community use. Without regular conservation repairs the heritage asset would fall into disrepair and eventually out of serviceable use.

Based on the Historic England guidance the assessment of impact of the proposal upon heritage values of the site from the proposed masonry repairs can be attributed as having a Low impact on the Aesthetic value of the heritage asset which would be regained over time with ageing, weathering & regaining patina.

In order to more fully understand the effect of the impact on the heritage value of the building and its wider context, the heritage impact assessment provides a comparable analysis of the heritage value against the proposed level of change. This assessment is carried out in line with the NPPF and is based on the criteria set out by ICOMOS and is a clear way of understanding the impact of change and how levels of impact vary according to the value of the heritage asset.

Level of impact is assessed based on the following criteria set out in Table 1 that follows.

Magnitude of Impact	Definition
High Beneficial	The development considerably enhances the heritage value of the heritage assets in the view, or the view as a whole, or the ability to appreciate those values
Medium Beneficial	The development enhances to a clearly discernible extent the heritage value of the heritage assets in the view, or the view as a whole, or the ability to appreciate those values
Low Beneficial	The development enhances to a minor extent the heritage value of the heritage assets in the view, or the view as a whole, or the ability to appreciate those values
Imperceptible/None	The development does not affect the heritage value of the heritage assets in the view, or the view as a whole, or the ability to appreciate those values
Low adverse	The development erodes to a minor extent the heritage value of the heritage asset in the view, or the view as a whole, or the ability to appreciate those values
Medium adverse	The development erodes to a clearly discernible extent the heritage value of the heritage asset in the view, or the view as a whole, or the ability to appreciate those values
High adverse	The development severely erodes the heritage value of the heritage asset in the view, or the view as a whole, or the ability to appreciate the value

Repairs and localised rebuilding of dam wall reinstating displaced masonry units and using like -for-like bricks where required.

Imperceptible/None	The development does not affect the heritage value of the heritage assets in the view, or the view as a whole, or the ability to appreciate those values
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NPPF places a duty on Local Authorities to consider the following when determining applications for heritage assets:

189. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance

- An appropriate description of the heritage asset and its significance has been provided by the applicant.

Considering potential impacts

195. Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- (a) the nature of the heritage asset prevents all reasonable uses of the site; and
- (b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and
- (c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and
- (d) the harm or loss is outweighed by the benefit of bringing the site back into use.

- The harm or loss of heritage value has been assessed as Low impact on Aesthetic value (using Historic England criteria and guidance) and / or Imperceptible impact to Low beneficial (using ICOMOS criteria and guidance)

196. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use

- The proposal will lead to less than substantial harm to the heritage asset- this low adverse impact to overall significance is considered to be greatly out-weighed by safety benefits provided to the community from this proposal. The proposed work safeguards the long-term resilience of the water supply to the canal ensuring its long term viable usage, helping to reduce canal closures due to lack of water supply and ensuring long term community benefits.

Conclusion

The Design Access & Heritage statement has provided a sufficient level of information (proportionate to the proposal) on the assessment of significance of the heritage assets, and an assessment of the impacts of the proposed development upon the respective heritage values.

Using accepted conservation guidelines (provided by Historic England and ICOMOS) the assessment of harm to the heritage value of the assets has been assessed as imperceptible adverse impact (repairing dam headwall) whilst also providing low beneficial impact.

The proposals have been shown to have an appropriately low impact upon the heritage values and overall significance of the Listed Structures at the site and are part of the Trust's commitment to ensuring that conservation of its significant places is carried out in accordance with accepted cultural heritage conservation principles.