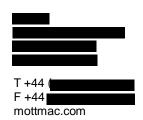


Reservoirs Act 1975 2019 Annual Supervising Engineer's Statement under Section 12(2) and Section 12(2A)

Poynton Lake

4 October 2019



Cheshire East Council Municipal Buildings Earle Street Crewe Cheshire CW1 2BJ

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Cheshire East Council

Issue and Revision Record

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1 General Details

1.1 Name of Reservoir

Name: Poynton Lake

Dam category: B

The reservoir has been given a high-risk designation under the Reservoirs Act 1975 (as amended by the Flood and Water Management Act 2010).

1.2 National Grid Reference

O.S. NGR: SJ 923845

1.3 Name and Address of Undertakers

Name: Cheshire East Council

Address: Asset Management Services

Municipal Buildings

Earle Street Crewe Cheshire CW1 2BJ

Contact:

Contact Address: As above

Office tel.:

Mobile tel.:

Email:

1.4 Name and Address of Supervising Engineer

Name:

Company: Mott MacDonald

Address:

Office tel.:

Mobile tel.:

Email:

1.5 Alternative Supervising Engineer contact details

711	contains capervious Engineer contact actains
Name:	
Company:	Mott MacDonald Ltd
Office tel.:	
Mobile tel.:	
Email:	
If neither the emergency,	Supervising Engineer nor Alternative Supervising Engineer is available in an contact Mott MacDonald as follows:
Office: Mobile: Email:	
1.6 Na	me of last Inspecting Engineer or Construction Engineer
Name:	(Inspecting Engineer)
Company:	Mott MacDonald
Address:	
000	
Office tel.:	

.

Email:

Mobile tel.:

2 Status and Findings

2.1 Construction Engineer's Requirements in relation to sections 6(2) to 6(4)

These sections do not apply as the reservoir has been in service for some years with the Construction Engineer's recommendations having been superseded by those in a subsequent inspection under Section 10 of the Reservoirs Act 1975.

2.2 Statement under section 12(2A) on the directions given for maintenance of the reservoir under Section 10(3)(b)

The Inspecting Engineer recommended the following Recommendations to be taken in Respect of Maintenance under Section 10(3)(b):

'I recommend that a new Prescribed Form of Record (PFR) shall be obtained and that all relevant details of the reservoir shall be entered into the Record including water level readings that shall be recorded each month and entered into Part 1 of the PFR. The completed PFR shall be kept in a safe place so that all future records can be maintained.'

The Supervising Engineer in September 2019 was instructed by the Undertaker to draft an Electronic Prescribed Form of Record and was duly prepared and submitted to the Undertaker on the 26th September 2019. It contains monthly water level records from January 2016 through to August 2019. The Undertaker has advised that the PFoR is held and maintained by the Council's Statutory Compliance team with the monthly monitoring undertaken by the Park Rangers team as at present.

The following recommendations (Table 2.1) were also identified by the Inspecting Engineer in respect of maintenance in the last Section 10 Inspection Report, but not under Section 10(3)(b):

The colour of the table cell indicates the following:

- Green no further action currently required
- Yellow action required within next 12 months
- Red action urgently required

Table 2.1: Recommendations as to Measures to be taken in Respect of Maintenance

No.	Recommendation by last Inspecting Engineer	Status
1.	An assessment of the condition of the revetment boards along the upstream face should be carried out to identify those parts that are in need of repair or replacement. These localised repairs should then be implemented.	During this visit the upstream face was assessed. Where the boards end there is evidence of some erosion, but at this time there are no areas requiring attention. This will be reviewed at the next visit.
2.	Any fallen or leaning trees that are threatening the integrity of the upstream face should be removed. When the roots and stumps have been cleared away, the upstream face should be reinstated to the correct line and new revetment boards should be installed to provide erosion protection.	There are several leaning trees on the upstream face of the embankment. I advise to have these removed and any damage repaired around the root bowl. There was more attention given to the removal of tree saplings.
3.	The trees on all parts of the embankment should be managed and checked on a regular basis. Any trees that become unhealthy and which may be in danger of toppling should be removed. If the tree canopy becomes too dense then I recommend that careful pollarding of the trees should be carried out to reduce the height of the trees and to let more light through to the ground beneath.	During the Supervision visit there was evidence of some trees which have fallen over. It is advisable that a survey is completed by an arboriculturist to assess the trees on a regular basis, and that trees are cut-down before they fall of their own accord.

No.	Recommendation by last Inspecting Engineer	Status
4.	On the downstream face of the embankment regular ground clearance activities shall be carried out to minimise the spread of the undergrowth and to expose the dam surface in the areas between the large trees.	There appeared to be some areas where ground clearance has taken place. However, this is not the case along the entire length. A good example of what should be achieved has been identified in this report which should be applied to the remainder of the embankment.
5.	A detailed inspection of the masonry wall that retains the embankment toe shall be carried out to identify those parts of the wall that are showing signs of distress with missing stones, open joints and bulging of the surface. Localised repair work shall then be carried out to those parts that have suffered damage to fill the gaps and to reinstate the wall to the correct profile.	The entire length of the masonry retaining wall was inspected and found generally to be in fair condition. The Undertaker has undertaken a structural survey of the wall and will be carrying out its recommendations.
6.	The disused Council Yard area at the downstream side of the dam shall be tidied up to facilitate access to this part of the dam and in order that any repairs to the wall within the yard can be carried out.	The depot area which had been sold to a developer is again up for sale. It is unclear where the land ownership boundary is, and it is recommended that this is ascertained. The area was not inspected but noted to be heavily overgrown preventing a full inspection of the masonry wall where the embankment is at its narrowest.
7.	The undertakers should enter into Council personnel so that regular surveillance and inspection of the downstream toe and the route of the overflow pipe can be carried out.	The council has been in contact with drainage issues. It is the intention of the Undertaker to replace one of the pipes.

2.3 Matters to be watched by the Supervising Engineer under Section 7(5) or 10(4)

The following specific matters (Table 2.2) were identified by the Inspecting Engineer for the guidance of the Supervising Engineer in the last Section 10 Inspection Report:

The colour of the table cell indicates the following:

- · Green no further action currently required
- Yellow action required within next 12 months
- Red action urgently required

Table 2.2: Matters to be watched by the Supervising Engineer

Status	Recommendation by last Inspecting Engineer	No.
Visits to the site have been undertaken on the 20 October 2020, previous visit being the 4 October 2019.	The Supervising Engineer shall visit the reservoir at least once per year. This should be altered to coincide with different seasons to assess the performance of the embankment.	1.
The downstream side of the embankment was inspected and no signs of leakage. No new movement appeared evident.	The Supervising Engineer should assess the conditions on the downstream side of the embankment and should check the conditions for any signs of movement, leakage or untoward behaviour	2.
The downstream masonry wall was visually inspected, and no signs of further movement or water egress were noted.	The inspection shall include a full walk over survey across the downstream toe of the embankment and along the masonry retaining wall to check for signs of deformation or water egress.	3.
No formal access was granted – but, from the roadside, nothing detrimental was evident. However, it will be necessary to access the area to examine it properly and this should be arranged as soon as practicable and before next year's annual supervision visit.	Provided that suitable access can be arranged he should also check conditions along the downstream toe of the embankment at its highest section.	4.

No.	Recommendation by last Inspecting Engineer	Status
5.	Observe the condition of the upstream face to check for signs of erosion damage or movement arising from the instability of the trees and assess the on-going erosion protection that is afforded by the timber revetment boards.	The upstream face appeared in reasonable condition – although at the ends of the timber revetment boards there was some evidence of erosion although no worse than previous visits – this shall continue to be checked. The trees along the upstream face are providing good protection – although their health is to be kept monitored.
6.	If there is an extreme flood event such that the overflow pipe is required to operate with an unusually high discharge, then it is recommended that the Supervising Engineer should inspect the works after the flood to evaluate the condition and performance of the overflow	No extreme event has occurred since the appointment of the Supervising Engineer. The overflow was clear at the time of the visit.

2.4 Records, monitoring and supervision by the Undertaker under Section 11

The keeping of records under Section 11 of the Reservoirs Act 1975, as directed by the last Inspecting Engineer in his Section 10 Inspection Report, and their status are as given below (Table 2.3):

The colour of the table cell indicates the following:

- Green no further action currently required
- Yellow action required within next 12 months
- Red action urgently required

Table 2.3: Records Prescribed by the last Inspecting Engineer

No.	Direction by last Inspecting Engineer	Status
1	A prescribed form of recorded to be commenced within 3 months of the Inspection Report (previous PFR has been lost)	The PFoR has been created in an electronic format following the revised prescribed format.
2	The reservoir water levels to be recorded monthly	The PFoR was updated by the SE on the 26th September 2019. It now contains monthly water records from with the latest being for October 2020. The Undertaker's Statutory Compliance team is to hold and maintain the PFoR

The electronic PFoR was reviewed and the following updates are recommended: -

- The Undertakers Representative requires updating on the Cover sheet and in Part 3 to reflect the change from
- Part 4 needs to be populated with key information taken from the emergency drawdown plan.
- In Part 5, update the fetch length and direction from the flood study (800m and 189° respectively).
- Part 6, update top of dam level from 90.92mAD to 90.88mAD and the dam height from 7m to 6.3m.
- Part 7 shall be updated with information from the 2019 Flood Study. Indirect catchment is now recorded as 1.96km² and the indirect as 4km². The standard average annual rainfall (SAAR) is now 897mm.
- Update Part 9 with the dates of the emergency plan and the flood study.
- Part 12 requires the recording of the 10(6) certificate provided by provided by December 2019.

2.5 Inspection under Section 10(2)

2.5.1 Date of last Section 10 Report and Section 10(5) Certificate

The last inspection under Section 10 of the Reservoirs Act was carried out by on 11 July 2016. The final report and certificate were issued on 23 August 2016.

2.5.2 Description and status of any measures to be taken in the Interests of Safety under Section 10(6)

The inspecting engineer in 2016 made two recommendations in the interests of safety (MloS) which are repeated below (Table 2.4):

The colour of the table cell indicates the following:

- Green no further action currently required
- Yellow action required within next 12 months
- Red action urgently required

Table 2.4: Matters in the Interests of Safety Recommended by the last Inspecting Engineer

No.	Direction by last Inspecting Engineer	Status
1	An Emergency Drawdown Plan shall be prepared for the reservoir to descr be the methods to be used and the procedures to be followed to facilitate a lowering of the water in the reservoir by up to 300mm in the first 24 hours of an emergency. Further details of this requirement are given in Section 10.4.	An emergency drawdown plan has been produced outlining the methods via pumps to draw the reservoir down in an emergency. The plan was overseen and signed off by of Jacobs on 5th December 2019.
2	A Flood Study Assessment shall be prepared for the reservoir. This shall include an estimation of the inflow hydrographs for the Design Flood and the Safety Check Flood, the hydraulic characteristics of the inlet works to the reservoir (direct and indirect catchments), discharge characteristics of the overflow weir and outlet pipe, and flood routing to determine flood surcharge levels. The study should also incorporate an estimate of wave heights and the potential for wave over-topping that could occur during the passing of these floods, as well as a topographic survey of the embankment crest.	A flood study has now been completed by Jacobs under the supervision of who has also signed off the matters in the interest of safety. The flood study has concluded that the overflow is unsatisfactory and that an emergency overflow provision is required. These follow-on works are being overseen by of Jacobs on 5th December 2019.

2.5.3 Date of next scheduled inspection under section 10(2) of the Act

An Inspection under Section 10 was completed on 11 July 2016. The report of that inspection states that the next inspection must be carried out by 11 July 2026.

2.5.4 Recommendation under Section 12(3) for an inspection under section 10(2)

No recommendation is made for an inspection at this time.

2.6 Directions by the supervising engineer as to the visual inspection by the undertaker under section 12(6)

No directions are given.

Signature of Supervising Engineer and Expiry Date of Five-Year Panel 2.7 **Appointment**



Signature of Supervising Engineer:

23rd October 2020

Date of expiry of current panel appointment: 4th November 2024

3 Site Visit Report – Poynton Lake

3.1 Visit Date and Details

- Tuesday 20th October 2020.
- Accompanied by: of Cheshire East Council
- Reservoir Level: 170 mm over the weir.
- Weather: 11°C and fair.

3.2 Water Level, Site Conditions and Scope of Inspection

The reservoir was full at the time of the inspection, with about 170mm depth overflowing the overflow. The area around the gauge board was clear and an accurate level could be taken (Photo 2). As there is no abstraction from the lake, the natural condition is for the outflow via the overflow to balance the run-off from the catchment.

The inlet from the indirect catchment at the southern end, behind Parklands Way, was visited and found to be relatively clear except for recent leaf fall (Photo 11).

The site was found to be in reasonable condition – see Sections 3.5 to 3.9. However, the main finding of the visit is that the Undertaker needs to undertake a more robust approach to vegetation management on the embankment with a tree survey undertaken and more clearance to achieve a general appearance as seen on sections of the embankment (Photo 6).

The inspection comprised of a walkover of the crest where accessible and the downstream toe of the embankment.

A number of photographs were taken during the inspection to illustrate key points and these are included as Appendix A of this report.

3.3 Significant events since previous inspection

No significant events have occurred since the Supervising Engineer was appointed.

3.4 Access

There is good vehicular access to the reservoir site. There is a car park at the northern end of the embankment and from this point there is direct pedestrian access on to the path that runs along the crest. The footpath alongside the A523 extends along the full length of the dam and gives access to the retaining wall and to the downstream face. At several points along its length there are gaps through the wall and steps which connect the footpath with the crest.

In addition, there is vehicle and pedestrian access around the southern end of the lake (South Park Drive and Woodside Lane) via which the inlet works and bifurcation arrangement on the Poynton Brook can be reached. The field to the west of the A523 which includes a part of the downstream face is not owned by the Council requiring an appointment to be made to enter.

3.5 Embankments

3.5.1 Upstream Face

The reservoir was full and, consequently, only a small part of the face that stands above the water surface was exposed. As can be seen in Photo 4 to Photo 6, there are considerable amounts of

vegetation along the upstream edge that obscured the view. In general, the upstream face of the embankment appeared to be reasonably intact.

Where erosion has taken place, timber revetment boards have been installed to provide protection and reinstate the path width. Where these are present there is evidence of some erosion at either end, but in general these all appeared to be in reasonable condition. The latest visit was undertaken after significant leaf fall and some recent vegetation clearance, it was found that the erosion at the ends of the revetment boards is not significant and similar to previous visits.

It was noted that tree management has been ongoing with a number of trees cut down and sections of the upstream face cleared of saplings. However, there are many leaning trees along the upstream face and a number of fallen trees (Photo 4). Fortunately, the crest is very wide and there does not appear to be a risk of the entire crest width being damaged by a fallen tree along the upstream face. It is recommended that any fallen or leaning trees that are threatening the integrity of the face should be removed, along with any tree saplings before they become established. When the roots and stumps have been cleared away, the upstream face should be reinstated to the correct line and new revetment boards should be installed to provide erosion protection.

3.5.2 Embankment Crest

The crest of the dam comprises two parts; the gravel path that runs along the upstream edge and the broad expanse of grassy/woody area, sometimes at a higher level than the path. The path was in a good state of repair. It has a regular surface of gravel-type material and appeared to be well maintained. There were a few minor humps and bumps in the path but nothing more than might be expected from localised settlement. There were no signs of excessive disturbance, settlement or cracking that might arise from movement of the embankment (Photo 5 and Photo 6).

It is obvious from the water level compared to the path that the embankment does not have an even elevation. This may be addressed as part of the follow-on works resulting from the recent flood study.

The downstream part of the crest has minimal grass cover and instead is predominantly covered by ivy, low shrub and numerous mature trees. Between the trees, the grass and other soft vegetation should be cut back from time to time as part of normal ground maintenance. One section appears to have had some of the low-lying vegetation removed which has encouraged some grass cover (Photo 6). I suggest that this is repeated along the entire length, especially the narrower sections of embankment. Walking through these areas the ground is uneven but there were no signs of unexpected movement.

It is recommended that the trees be managed and checked on a regular basis by an arboriculturist. Any trees that become unhealthy and which may be in danger of toppling should be removed. If the tree canopy becomes too dense then I suggest that careful pollarding of the trees should be carried out to reduce the height of the trees and to let more light through to the ground beneath to encourage healthy grass growth.

3.5.3 Downstream Face and Retaining Wall

The downstream face varies; in some places there is a masonry wall at the toe whilst in other parts the face slopes down directly to the path alongside the road. Various views of the face are shown in Photo 7 to Photo 10. As far as could be determined and, taking due account of the curvature of the dam, it appeared that the alignment of the face (both the wall section and the sloping face) was regular and on the whole, has not suffered any serious displacement. As with

the grassy parts of the crest, it is recommended that regular ground clearance activities are carried out to minimise the spread of the undergrowth and in order to expose the dam profile in the areas between the large trees.

The masonry retaining wall is shown in Photo 7 to Photo 9. The overall alignment was reasonable as it follows the line of the footpath. The wall appears to be stable and there were no indications of imminent collapse, this is despite having mature trees growing directly behind the wall. However, several areas are noted where individual stones have eroded away and where localised bulging is occurring. The Undertaker has recently completed a structural survey of the masonry wall. It has recommended a number of works, including the removal of trees and large vegetation behind the wall. The Undertaker is advised to implement the recommendations of the masonry wall structural survey.

Towards the southern end of the dam there is an old and now disused Council Yard that occupies the land between the road and the dam. The yard has now been sold to a with unknown intentions for the land. The area continues to be in a state of disrepair (Photo 8) and neglect and this includes the perimeter wall at the east side of the yard that forms a boundary with the face of the embankment. It is recommended that the Undertaker finds out the new ownership boundary and to confirm if it retains rights to access and maintain the wall. If not, the Undertaker should advise the owner of their responsibilities as a joint Undertaker.

The highest section of the dam is towards the northern end and at this point the downstream face continues on the downstream (western) side of the road. This section of the face is shown in Photo 10, and within a field that is the was no access during the visit. The overall alignment appeared to be satisfactory.

There has been some recent dialogue with the landowner regarding issues with the pipes running through the field and a replacement pipe is currently being planned.

3.6 Overflow / Spillway

The inlet overflow was inspected, the screen had some build up of leaves on the screen, but there was a steady flow passing through the screens and over the weir (Photo 2). This flow was discharging into the chamber and into the downstream pipe without hindrance. The majority of the overflow works are buried and cannot be readily inspected; however, as far as could be seen, the overflow was operating satisfactorily, and the modest spill flow was passing through the pipe system to reach the course of the Poynton Brook at the downstream side.

3.7 Outlet Works

As reported above there are no outlet works at this reservoir and no permanent means by which water can be abstracted from the reservoir. For a small reservoir this is not so unusual and need not be an immediate problem. However, in the case of an emergency there might be a need to lower the water level in the reservoir in order to reduce the hydrostatic load on the embankment.

An emergency drawdown plan has been prepared by Jacobs, the Undertaker's Consultants and outlines the steps to be taken to implement a drawdown through the use of mobile pumps.

3.8 Seepage/drainage flows

There is no formalised drainage to review. There is no history of seepage and therefore no monitoring is set up. During the visit there were no signs of seepage through any part of the embankment structures.

3.9 Settlement and movement

There are no signs of instability within the embankments, such as slips. There are also no signs of differential settlement around the inlet/outlet structure and low-level control structure.

Due to the size of the embankment, the last Inspecting Engineer did not believe it warranted further instrumentation or settlement monitoring.

3.10 Instrumentation

The reservoir water level can be read from a graduated gauge board that is fixed to the upstream side of the inlet structure to the overflow (Photo 2). The area around the gauge board was clear and it could be easily read.

It is recognised that the reservoir remains full or near to full most of the time. Taking this into account the Inspecting Engineer recommended that water levels should be taken and recorded at least once per month. In addition, exceptionally high levels during flood conditions or low levels that might occur during a drought should also be recorded. In accordance with Section 11(1) of the Reservoirs Act, the undertakers have a legal obligation to monitor the reservoir including the taking and recording of water levels in the Prescribed Form of Record and this contains monthly water level records from January 2016. A peak of 190mm above weir level was recorded in March and September 2020.

3.11 Area Downstream of the dam

The Supervising Engineer is not aware of any changes to the downstream conditions.

3.12 Flood Plan

The Floods and Water Management Act 2010 requires Flood Plans to be produced for specified reservoirs. However, as yet, no guidance has been issued by the Environment Agency. As a precursor to the preparation of flood plans, flood inundation maps that indicate the extent of flooding should there be a breach of a dam and an uncontrolled escape of water were produced by the Environment Agency in 2009. These inundation maps are primarily for Emergency Planning purposes, but for information the basic maps showing the extent of the flood outline are in the public domain and have been issued to all reservoir Undertakers.

For a high-risk reservoir, such as Poynton Lake, it is likely that some form of on-site flood plan will become a statutory obligation, although the exact requirement (if any) would need to be determined when further guidance is provided by the Environment Agency and a Direction made by the Secretary of State. A key component of the On-Site Plan would be the Drawdown Plan for the reservoir.

The drawdown plan was reviewed and remains valid.

Appendices

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A. Photographs

Photo 1 - General View of the Lake at the Northern End

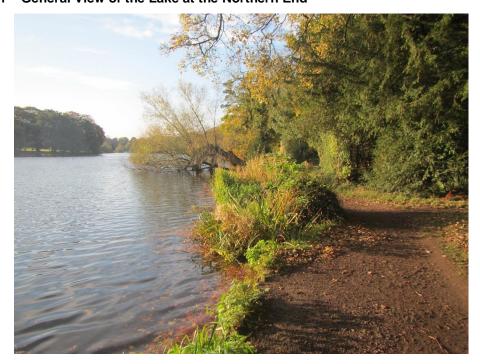


Photo 2 - Inlet Structure with Screen at the Upstream end of the Overflow Pipe



Photo 3 – Route of Overflow Pipe in Downstream Valley



Photo 4 – Leaning Trees along Upstream Face



Photo 5 - Broad Crest Dam south of the Overflow



Photo 6 – Example of what vegetation management is expected along entire length of embankment



Photo 7 – Masonry Retaining Wall Alongside the A523 (southern end)



Photo 8 – Masonry Retaining Wall within the Old Council Depot



Photo 9 - Northern Section of Where Masonry Wall Runs-out



Photo 10 - Downstream face at the highest section



Photo 11 - Inlet Arrangement - behind Parklands Drive

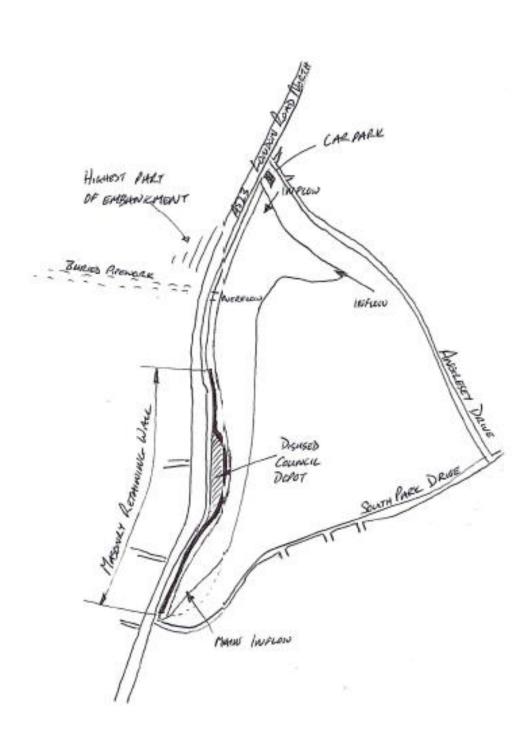


Photo 12 – Chamber Downstream of Overflow Chamber (2019)



B. Site Layout Plan





C. Summary of advisory maintenance actions suggested by the Supervising Engineer

The colour of the cell in Table C.1 indicates the following:

- Green previously noted, action completed
- Yellow early action recommended but not immediately required (however issue could deteriorate if left unchecked)
- Red action urgently required

Table C.1: Advisory maintenance actions suggested by the Supervising Engineer

Ref	Description	Planned Action	Closure
1	Records, monitoring and supervision PFoR to be kept up to date with monthly water level records	Ongoing	
2	2.4 Records, monitoring and supervision The PFoR is to be updated as detailed under Section 2.4.		
3	2.5.2 Matters in the Interests of Safety Following the completion of the Flood Study in 2019, the QCE made a recommendation of follow-on works to address a deficiency in the provision of overflow capacity. The QCE recommended that an agreed solution should be prepared within 18months of the 10(6) certificate (issued 5th December 2019) and physical works completed within 4 years.	The Undertaker has appointed Jacobs to undertake this work and has been appointed by the Undertaker as the QCE to supervise work.	
4	3.5.1 to 3.5.3 Embankment It is recommended that a more robust approach to vegetation management needs to be implemented open up the surface of the embankment. This includes: - • the removal unhealthy trees, • remove trees and large vegetation from behind the masonry wall, • and the clearance of saplings, scrub and shrubs from the embankment surface and to	As a minimum, the Undertaker is recommended to undertake a tree survey by a competent arboriculturist and to implement their recommendations.	
	encourage grass growth. A good example of what is desired is found on the embankment to the south of the old depot area (Photo 6).		
5	3.5.3 Downstream Face and Retaining Wall The Undertaker is advised to implement the recommendations as outlined in the structural assessment of the masonry wall.		
6	3.5.3 Downstream Face and Retaining Wall The Undertaker is to enquire regarding the landownership boundary of the previous highways depot area as sold by the council and whether the wall is included or not. There is the potential that the new owners can be considered joint undertakers if their ownership includes the masonry wall and will therefore have obligations to		

Ref	Description	Planned Action	Closure
	maintain the structure. If not, a right of access by the Undertaker needs to be agreed		