Powderhall Footbridge No. 2 Briefing Note

City & Neighbourhood Services and Transport & Mobility

Place Directorate

14/10/2026

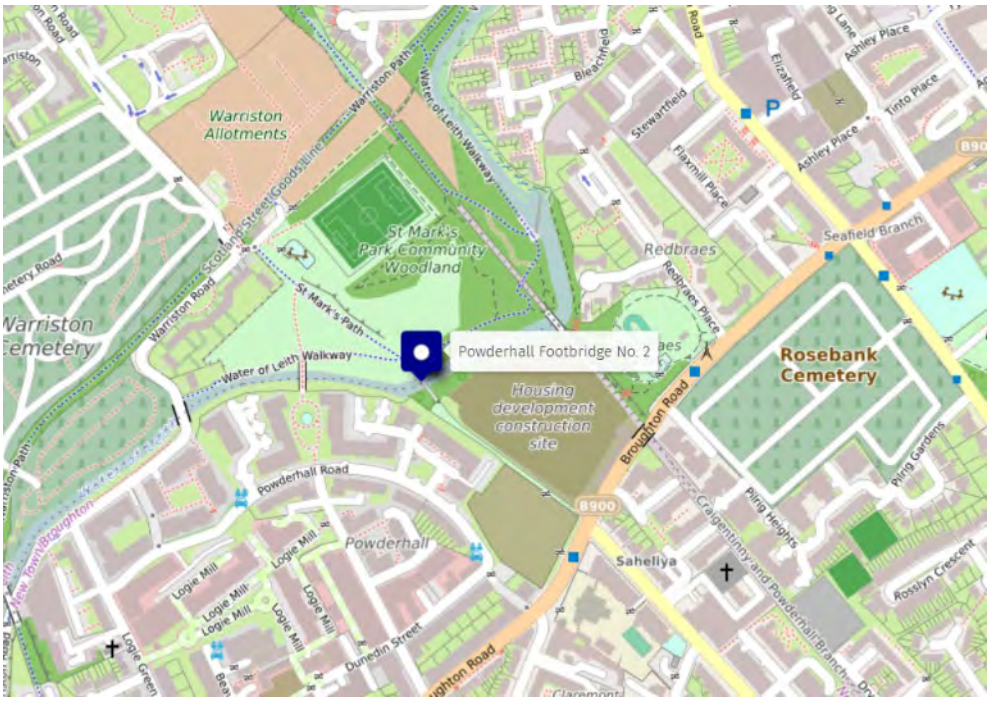
1. Introduction

1.1 This briefing note provides an overview of Powderhall Footbridge No.2, including its current condition, the reasons for its closure in June 2026 and the proposed next steps.

2. Background

2.1 Powderhall Footbridge No. 2 carries St Marks Path over the Water of Leith between Broughton Road and Warriston Road.

Location Plan



Source: OpenStreetMap

2.2 It is a three-span solid hardwood (greenheart) truss, constructed using mortice and tenon joints with steel dowels.

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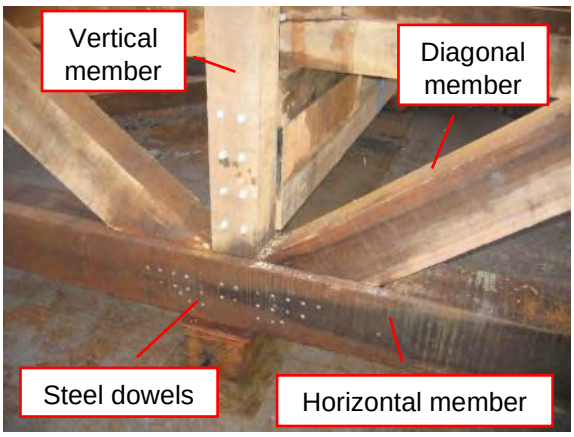
Central span being lifted into position from the former Powderhall Waste Transfer Station site (2008)	One of the mortice and tenon joints with steel dowels (2008)
	 Diagonal and vertical members slot into the horizontal member and is secured with steel dowels.
Source: The City of Edinburgh Council	Source: The City of Edinburgh Council

2.3 The footbridge was opened in 2009 to replace the previous bridge (Powderhall Bailey Footbridge) in the same location.

2.4 The footbridge was designed with a design life of 120 years, in accordance with the Design Manual for Roads and Bridges (DMRB) standards.

2.5 The footbridge was closed in June 2026, following increasing concern over cracking within the upper main horizontal structural member (known as the top chord).

2.6 The closure is unrelated to the works associated with the nearby Powderhall regeneration project.

3. Design Life

3.1 The design life is the intended working life of a structure, during which it is expected to perform its intended function, subject to appropriate inspection and maintenance.

3.2 A 120-year design life does not mean that every component of the footbridge is expected to last for 120 years. Some individual components, such as decking, are expected to require replacement during the design life of the footbridge.

3.3 The 120-year design life is not a warranty or guarantee that the bridge will last for 120 years. A warranty period is separate from the design life, and there was no warranty provided at the time of construction – such a warranty would be unusual for this type of construction project. As is typical with bridge construction projects, the contract included a defects period of 52 weeks, within which any construction defects could be notified to the contractor to address.

3.4 The current defects have developed within the design life, despite being inspected and maintained in accordance with the relevant DMRB standards and criteria.

4. Inspections

4.1 The footbridge has been subject to General Inspections (GIs) and Principal Inspections (PIs) in accordance with DMRB standards.

4.2 GIs are routine visual checks of a bridge to identify defects and changes in condition.

4.3 PIs are more detailed inspections involving close examination of the bridge.

4.4 GIs are undertaken more frequently than PIs, in accordance with DMRB requirements.

4.5 GIs and PIs on Powderhall Footbridge No. 2 have been undertaken by appropriately qualified and competent personnel on the following dates:

- 23rd May 2013 (GI);
- 12th May 2015 (GI);
- 17th June 2017 (PI);
- 13th November 2019 (GI); and
- 6th July 2022 (GI);

4.6 Additional ad-hoc engineering inspections by appropriately qualified and competent personnel were undertaken on the following dates:

- 15th November 2022;
- 14th October 2025; and
- 21st June 2026.

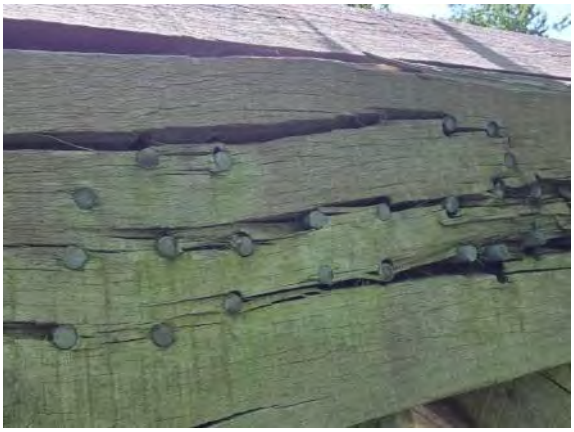
4.7 The footbridge has also been visually inspected annually as part of the Parks Quality Assessment (PQAs), using the Green Flag Award field criteria.

4.8 The PQA is a non-invasive visual assessment and not a formal engineering inspection. Where concerns indicate potential safety risks, such as missing deck elements, unstable parapets, or compromised handrails, interim control measures are implemented and an inspection by an engineer is requested. These inspections were undertaken on the following dates:

- 17th July 2022;
- 21st July 2023;
- 12th July 2024; and
- 11th April 2025.

5. Inspection Findings

5.1 The footbridge was recommended for closure following an independent review of cracks in the joints of the top chord, by Mott MacDonald in June 2026. This recommendation was implemented by the City of Edinburgh Council (CEC) immediately.

Example of a defective joint (internal view)	Example of a defective joint (external view)
	
Source: The City of Edinburgh Council	Source: Mott MacDonald

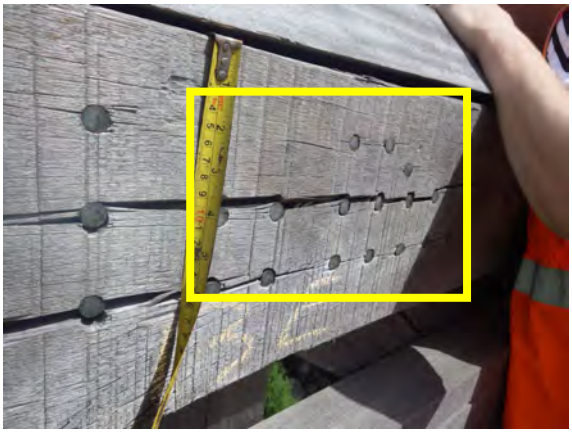
5.2 Cracking in timber bridges is normal and does not necessarily indicate a problem. Timber responds to changes in the environment, such as moisture and temperature, expanding and shrinking as conditions change. This can cause cracks to develop in the timber.

5.3 The cracks in the top chord were first noted during the June 2017 inspection (PI). The assessment concluded that they did not significantly affect the strength of the footbridge and recommended ongoing monitoring.

5.4 The cracks were re-inspected during the November 2019 and July 2022 inspections (GIs), with no indication of any immediate structural concern.

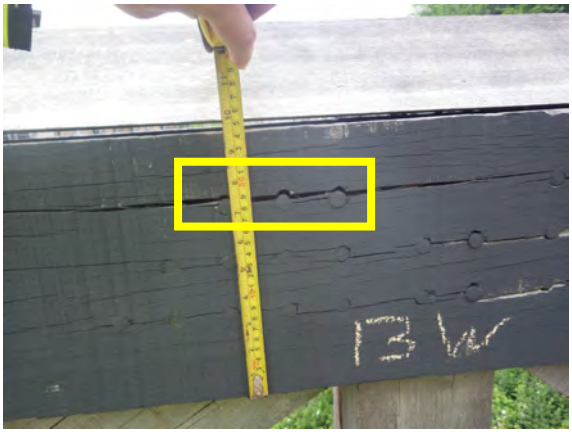
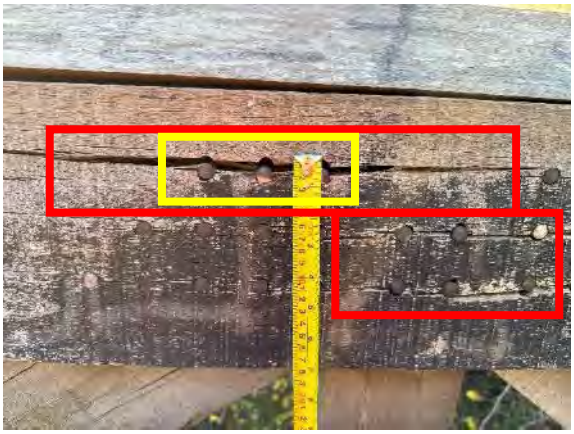
5.5 The ad-hoc engineering inspections were specifically undertaken to monitor the cracks, particularly as the team were aware of the failure of a similar footbridge in Ireland earlier in 2022

5.6 A visual comparison of the recorded cracks between the June 2017 PI and October 2025 ad-hoc inspections are shown below:

Crack of greatest concern – east elevation (2017)	Crack of greatest concern – east elevation (2025)
	
Source: AECOM	Source: Mott MacDonald

The area outlined in yellow above is provided as a common reference point between the two photographs. The area outlined in red above indicates a new crack that has developed since the 2017 inspection.

During the 2017 inspection, the maximum crack width measured at this joint was 6mm, whereas from the 2025 inspection, the maximum crack width measured was 15mm.

West elevation crack (2017)	**West elevation crack (2025)**
	
Source: AECOM	Source: Mott MacDonald

The area outlined in yellow above is provided as a common reference point between the two photographs. The areas outlined in red shows evidence of the cracks opening when compared to the earlier photograph.

5.7 Mott MacDonald was instructed in June 2026 to undertake an impartial review of the cracks, initially with the intention of identifying options for strengthening the footbridge.

5.8 The report following the independent review (Appendix A) recommended the urgent closure of the footbridge. The key points highlighted within the report include:

- Significant splitting was identified at several joints in the top chord of the longest span of the footbridge which are critical to the stability of the footbridge.
- A structural failure could occur at any time, triggered by uncontrolled risks for example a heavy crowd or extreme weather conditions.
- Failure of a single joint could result in the loss of the load carrying capacity of the footbridge, resulting in collapse.
- Given the height of the footbridge over the Water of Leith (approximately 8.5m), any collapse whilst the footbridge is occupied would likely result in serious injuries or fatalities.
- Current Health and Safety Executive (HSE) guidance states that where the consequences of failure are severe, the risk should be eliminated immediately, rather than waiting for further studies to determine the likelihood of failure.
- The timber could fail suddenly, without much warning, so monitoring the joints would not be sufficient to protect the public.

5.9 The report also refers to the collapse of a similar timber footbridge in the UK. This, together with the defects identified, led to discussions with a specialist engineer about other such failures nationwide.

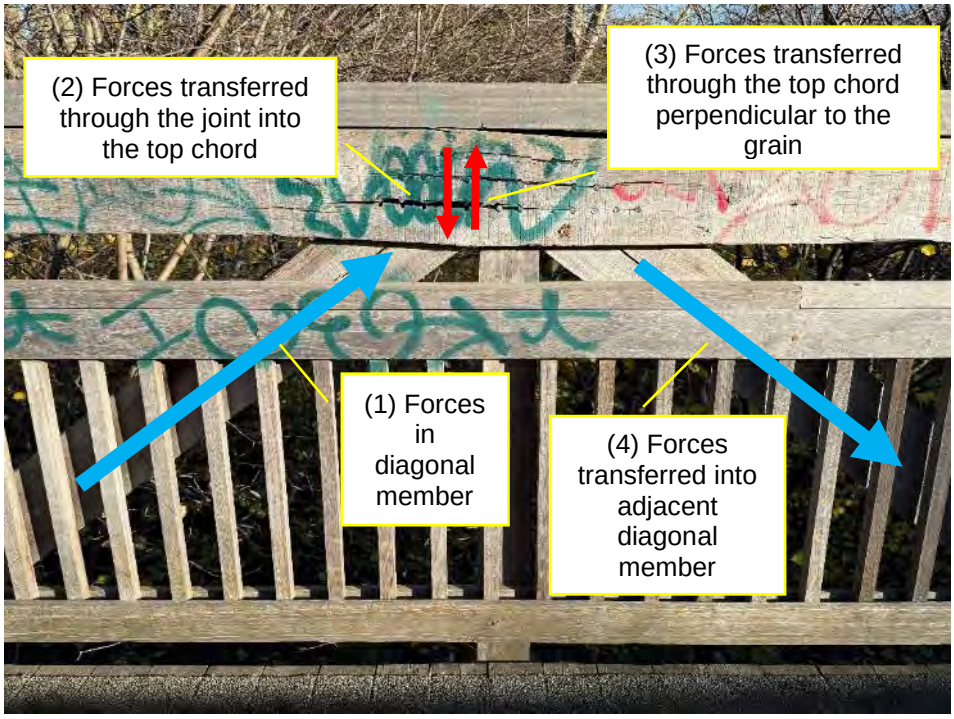
6. Specialist Review

6.1 Following the closure, and in discussion with Mott Macdonald following their report, an informal meeting was held with engineers from an independent structural engineering consultancy specialising in timber and complex analysis. One of those engineers is currently preparing a paper, for submission to the Institution of Structural Engineers (IStructE), on the failure of UK timber footbridges, which includes footbridges of similar age and construction where similar defects have been identified.

6.2 A potential cause of premature deterioration and failure has been identified, and is summarised as follows:

- Forces from the diagonal members are transferred into the top chord in a direction (perpendicular to the grain) where the timber is more vulnerable to splitting.

Simplified force interaction diagram at a joint



Source: The City of Edinburgh Council

- The joint detail allows water to collect and enter the timber, where it becomes trapped. This can cause the timber to swell and deteriorate, leading to further cracking and opening of the joint. This allows more water to enter, causing a cycle of water ingress and deterioration.

6.3 This method of construction was designed in accordance with the standards and engineering knowledge applicable at the time.

6.4 Examples of similar timber hardwood truss footbridges, constructed using mortice and tenon joints with dowels, which have failed in recent years are shown below:

The Allotments Bridge, Slough – Closed 2025



Source: Datchet, Horton & Wraysbury News



Source: Datchet, Horton & Wraysbury News

Ashford Lane Footbridge, Dorney – Collapsed 2025



Source: Buckinghamshire Council



Source: AtkinsRéalis

Berry Hill Footbridge, Taplow – Closed 2021, central span replaced 2024



Source: Datchet, Horton & Wraysbury News



Source: Taplow Society

Black Potts Bridge, Windsor – Closed 2025

	
Source: Royal Borough of Windsor and Maidenhead	Source: Datchet, Horton & Wraysbury News
Low Moor Footbridge, Clitheroe – Closed 2026	
	
Source: Lancashire County Council	Source: Lifespan Structures

6.5 These timber footbridges range from approximately 18 to 31 years old, from construction to failure. At least 13 bridges similar to Powderhall No.2 have failed or been closed in the UK since 2020.

6.6 Powderhall Footbridge No. 2 has changed and aged over time, with defects developing in the structure, which makes it difficult to accurately assess how it is currently behaving, particularly how loads are transferred through the structure.

6.7 The damaged joints cannot be considered in isolation, as any repair would affect how loads are transferred between the joints and the wider bridge structure.

6.8 The arrangement of the members at the joints makes any potential repair particularly challenging.

6.9 Considering the uncertainty around the long-term performance and safety of a repair, together with the cost of carrying out the works, in consultation with the specialist engineer, it was concluded that replacement of the bridge superstructure was the most appropriate option.

6.10 The existing footbridge supports (piers) are planned to be retained as part of a permanent replacement.

7. Replacement

7.1 A temporary footbridge is not a viable or practical solution for this project, even if an ‘off-the-shelf’ system such as an Acrow temporary bridge is used.

7.2 A temporary footbridge would still require site-specific design, assessment and installation.

7.3 Installing a temporary footbridge on the existing supports would require the temporary bridge to be installed and subsequently removed before the permanent replacement could be installed. This would create an additional stage of construction activity before the permanent works could proceed.

7.4 If a temporary footbridge were to be installed adjacent to the existing bridge, additional foundations and groundworks would be required, with the steep banks and difficult site access presenting significant site constraints. It could also restrict the available working area and interfere with construction of the permanent replacement.

7.5 The Council has contacted a number of bridge designers and contractors to obtain initial budget estimates and explore potential replacement solutions. Options identified include reusing the existing piers and replacing the current timber footbridge with a lightweight alternative.

7.6 Scottish Power and CityFibre have also been contacted to understand the requirements for diverting services that are currently carried by the footbridge, beneath the deck.

7.7 The information received will be used to inform the anticipated projects costs and budget decisions.

8. Funding and timescales for Replacement

8.1 The footbridge is currently maintained by the Council’s Parks team, although the Structures team is providing technical support and assisting with costings for a replacement bridge.

8.2 Initial cost estimates have been received. In addition to the bridge supply and installation, there are significant costs associated with demolition of the existing structure, and diversions of Scottish Power and CityFibre services which currently cross.

8.3 An initial (C3 stage) quotation from CityFibre is £671k. Costs are awaited from Scottish Power.

8.4 In total, including demolition, supply, installation, utility diversions and contingency, based on current information a replacement bridge is estimated to cost around £2.2m. This is in excess of the annual Capital budget allocations for the Structures and Parks teams combined.

8.5 This figure would be subject to refinement as design progresses, and it would be hoped that alternative methods to divert existing services could be explored with utility companies, and the initial cost estimates could be reduced.

8.6 The bridge is part of the City Mobility Plan capital programme and recommended to proceed in that regard. However this is subject to funding, which is currently not allocated for the replacement. Additional Council capital funding is required, and this will need to be allocated as part of the Council’s Capital budget setting process for 2027-28 or beyond.

8.7 If funding becomes available in the new financial year, i.e., April 2027, then realistically, a new bridge would not be installed and open until at least early 2028.

9. Diversions

9.1 The proposed diversion route to St Mark's Park would follow Broughton Road, Logie Green Road, and Warriston Road for pedestrians and cyclists. This route is fully lit and along adopted roads and footways. The distance is about 1,250m, and has been used previously as a diversionary route.

9.2 It is clear that during the day many people use alternate routes following a steep path down to Dunedin Street from Broughton Road for those able, walking around Powderhall Road to the other footbridge into the park. Similarly, if heading along lit routes from Broughton Road and along Beaverhall Road northwards direct to the other footbridge is also shorter (around 600m). However, once over the footbridge, the park path running parallel to the river is not lit. The connection between the two footbridges is also steep and unbound, which may be challenging for accessibility.

9.3 An alternative connection has been suggested using the former railway bridge to the east. This bridge was formerly leased to the Council from Network Rail, but this lease has since lapsed. Although the lease could be negotiated, the bridge would also need significant investment before it could be used as it is severely dilapidated and would require ancillary work to establish proper connections to the path network. The time that it would take to upgrade the former railway bridge is estimated to be longer than replacement of the failed Powderhall Footbridge No. 2 connecting St Mark's Path to the park. Therefore, this is not considered a viable option. Meanwhile, sections of damaged fence at this bridge should be closed off to avoid unauthorised access.

9.4 Work to sign the diversion route will be progressed shortly.

10. Next steps and communications

10.1 Once funding has been identified, Officers will provide a written briefing to Transport and Environment members, Ward Councillors and local stakeholders. This will outline a timetable for design, construction, and installation.

11. Review of Similar Bridges

11.1 Given the number of similar bridge failures that have occurred in recent years, a review of the Council's bridge stock has been undertaken to identify similar structures.

11.2 The following bridges have been identified for further review and monitoring, and have been prioritised for further inspections:

- Carrick Knowe Avenue Footbridge;
- Powderhall Footbridge; and
- Westfield Avenue Footbridge.

12. Contact details

Structures & Flood Management, e-mail: bridges.structures@edinburgh.gov.uk

Parks, e-mail: parks@edinburgh.gov.uk

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MOTT MACDONALD

CEC Bridges Partnership

Powderhall Footbridge No. 2
HY623/211

Project:	100103506 CEC Bridges Partnership		
Our reference:	100103506-012-TN11	**Your reference:**	tbc
Prepared by:	D. Hoyle	**Date:**	22 June 2026
Approved by:	C. Sangster	**Checked by:**	E. Batchelor
Subject:	Failure of nodes in main span top chord		

For attention of Laurence Liu & Stephen Knox (City of Edinburgh Council)

Powderhall Footbridge No. 2 (HY623/211) is a three-span timber truss footbridge carrying St Marks Path over the Water of Leith. City of Edinburgh Council instructed Mott MacDonald Ltd to review splitting in the main span top chord. Following review of the information provided by Laurence Liu by email on 5th June 2026, and an informal site visit by a Mott MacDonald engineer on 21st June 2026, we observe that:

1. The nodes in the top chord (mortise and tenon joints with steel dowels) which are readily inspectable from the footpath exhibit signs of splitting along the grain of the timber in the top chord.
2. The main span is approximately twice the length of the two side spans. The nodes towards the end of this span, which must transmit the highest forces between diagonal members, are detailed with the same dowel arrangement as the other nodes and exhibit the most serious splitting.
3. The severity of the splitting at the most highly stressed locations indicates that the connection has failed to perform as the designer intended.
4. Failure of the node may be possible at any time, either due to an incidence of high live loading, environmental actions such as unusually hot weather, or under dead load after further deterioration. None of these risks are currently controlled.
5. The lack of redundancy in this type of truss structure means that a single failed node is likely to lead to total loss of the span.
6. Given the height of the bridge over the Water of Leith, the consequence of collapse for any persons on the bridge are likely to be serious or fatal.
7. Where the probability of an event is uncertain, but where the possible consequences of the event are severe and well understood, HSE guidance (*Reducing Risks, Protecting People, 2002*) places emphasis on addressing the consequences as a priority, before then better understanding the probability of the event occurring.

To ensure public safety, we recommend a closure of the footbridge to the public is implemented urgently. Final failure of the timber is unlikely to be ductile and monitoring of the connection is unlikely to be sufficient to protect the public. Previous timber footbridges with similar connections have collapsed, including Ashford Lane Footbridge, Buckinghamshire, in June 2025. The reopening of the footbridge should only be undertaken once suitable repairs or replacement have been implemented and checked by a suitably qualified bridge engineer, or the bridge has otherwise been demonstrated to be suitably safe.

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Figure 1: Top chord node – severe splitting in all members. Note right-hand diagonal displacing up and left-hand diagonal pulling down



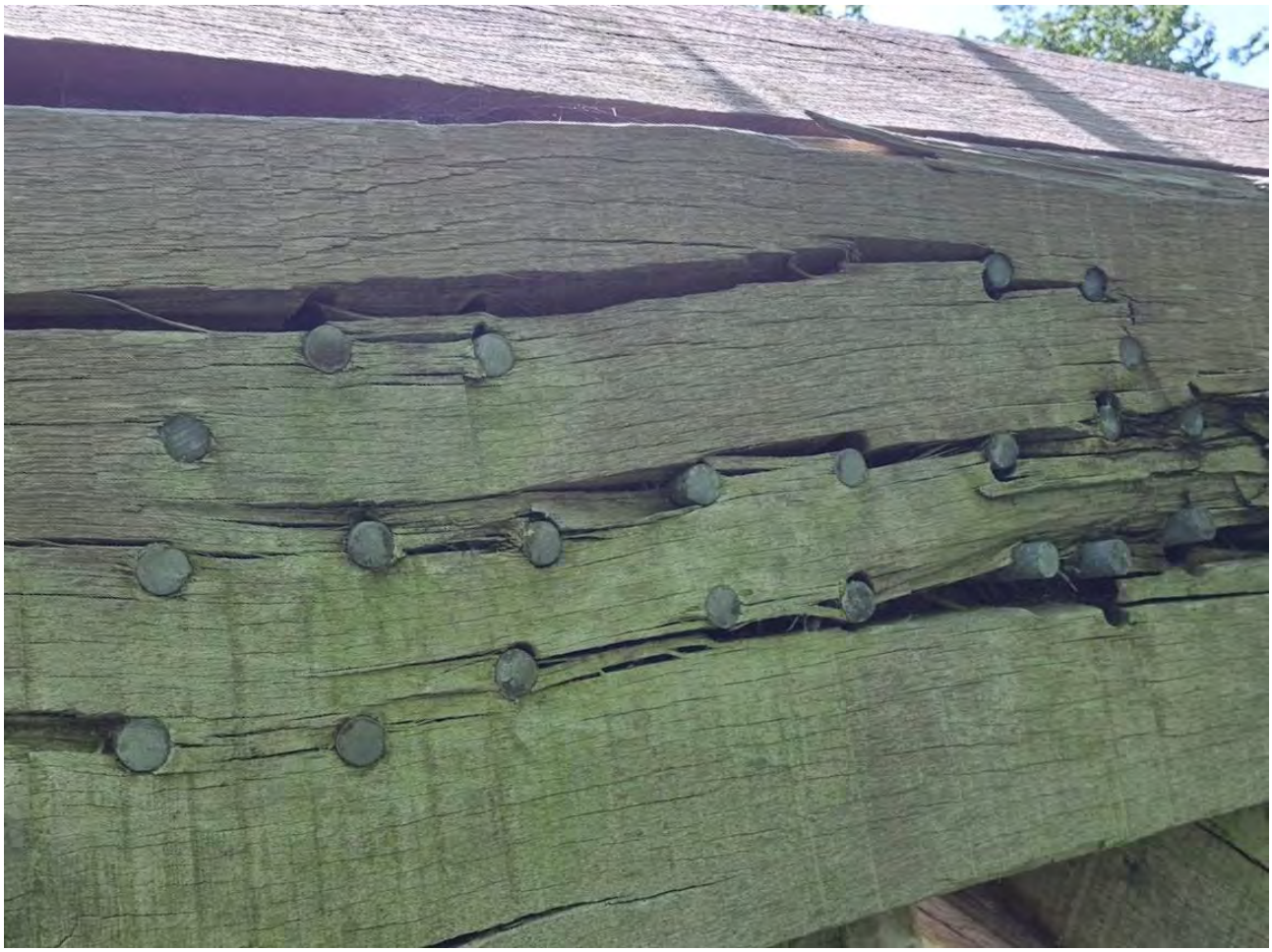
Source: Mott MacDonald Ltd

Figure 2: Top chord node – internal view.



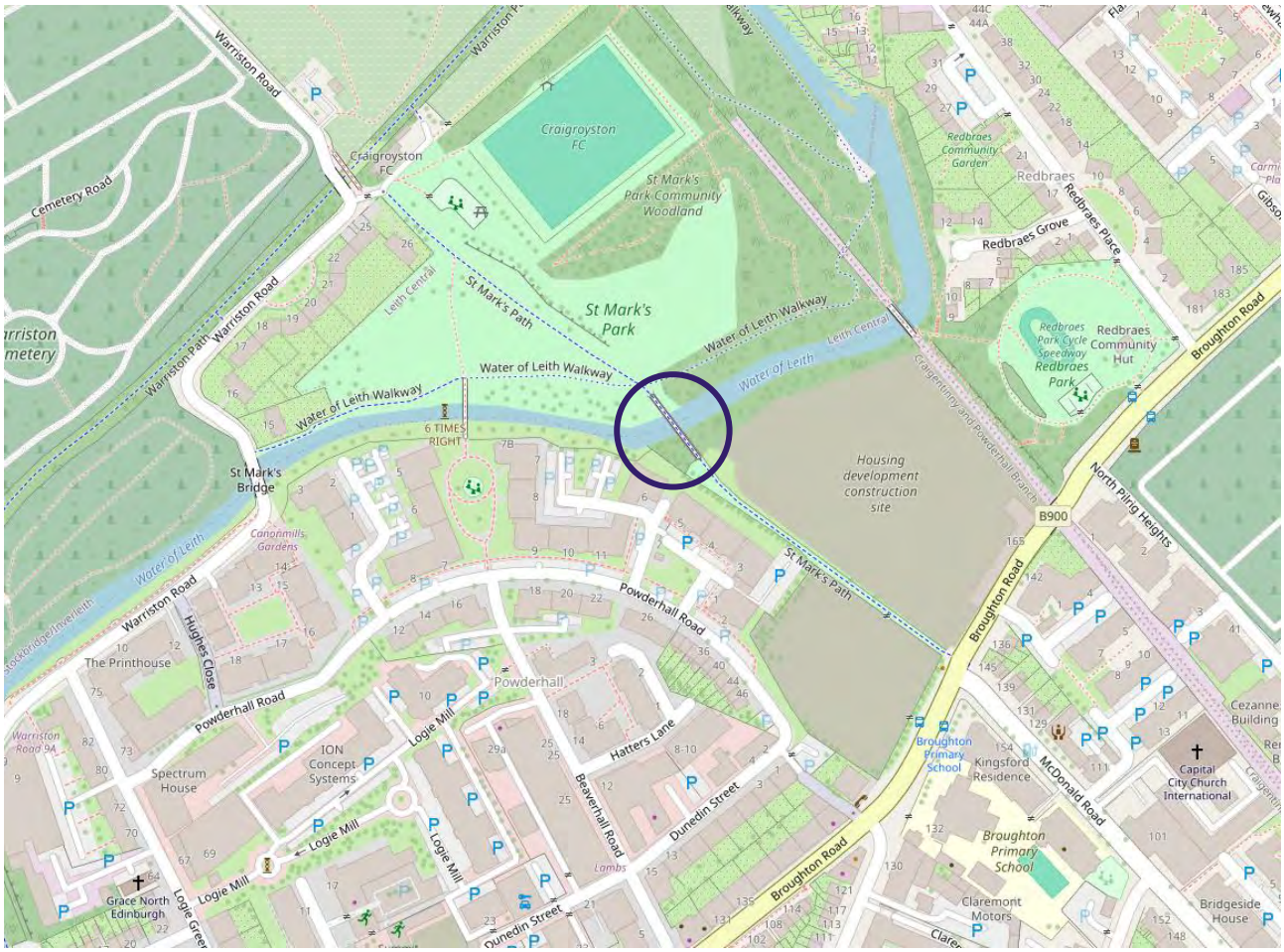
Source: Mott MacDonald Ltd

Figure 3: Top chord node – external view



Source: Mott MacDonald Ltd

Figure 4: Location map



Source: © OpenStreetMap contributors