Planning Applications Committee

06 September 2023

Title	**LOCAL LISTING REPORT - Reading Bridge**
Purpose of the report	To make a decision
Report status	Public report
Report author	Mark Worringham, Planning Policy Manager
Lead Councillor	Councillor Micky Leng, Lead Councillor for Planning and Assets
Corporate priority	Healthy Environment
Ward	Thames
Address	Reading Bridge
Recommendations	The Committee is asked: 1. To agree that Reading Bridge be added to the List of Locally Important Buildings and Structures

1. Executive Summary

1.1. To report on a proposal to add Reading Bridge to the List of Locally-Important Buildings and Structures. The report considers the nomination against the published criteria for inclusion in the Local List, and recommends that Reading Bridge be added to the Local List, because it:

- Is not within a conservation area, scheduled monument or area subject to an Article 4 direction relating to historic or architectural interest;
- Dates from between 1914 and 1939 and the elements that contribute to a high level of significance in the local context remain substantially complete;
- Contributes to the heritage of the Borough in terms of its historical association;
- Contributes to the heritage of the Borough in terms of its social importance;
- Contributes to the heritage of the Borough in terms of its industrial importance;
- Contributes to the heritage of the Borough in terms of its innovation and virtuosity;
- Contributes to the heritage of the Borough in terms of its group value.

2. Policy context

2.1. The Council's new Corporate Plan has established three themes for the years 2022/25. These themes are:

- Healthy Environment
- Thriving Communities
- Inclusive Economy

2.2. These themes are underpinned by "Our Foundations" explaining the ways we work at the Council:

- People first
- Digital transformation
- Building self-reliance
- Getting the best value
- Collaborating with others

2.3. Full details of the Council's Corporate Plan and the projects which will deliver these priorities are published on the Council's website. These priorities and the Corporate Plan demonstrate how the Council meets its legal obligation to be efficient, effective and economical.

2.4. Reading Borough Council maintains a List of Locally-Important Buildings and Structures ('the Local List'). Its purpose is to recognise the buildings and structures which do not meet the criteria for national listing, but are nonetheless significant to the heritage of the local area. It was agreed by Planning Applications Committee on 2nd December 2020 that decisions on additions to the Local List should be made at PAC.

2.5. The criteria for considering additions to the Local List are set out in Appendix 2 of the Reading Borough Local Plan (adopted 2019).

3. The proposal

3.1. A nomination was received on 16th May 2023 to add Reading Bridge to the Local List. Consultations have been carried out in accordance with the agreed process, and this report sets out the recommended action.

3.2. Reading Bridge is a bridge spanning the River Thames linking Caversham with Reading town centre, one of two vehicular Thames crossings in the Borough. It was opened in 1923.

3.3. The nomination form received for the building identifies the significance of the building as follows:

Plans for the bridge were agreed in 1914 but work was delayed by the First World War. The bridge was opened on 3 October 1923 and therefore this is its centenary year. Repairs and strengthening were carried out in 2014-15 but architecturally it is unaltered.

The building or structure has a well authenticated historical association with a notable person(s) or event: *In 1911, when the northern border of Reading was extended to incorporate Caversham, The Corporation of Reading was required to either replace or widen Caversham Bridge and to "construct and open for traffic a footbridge not less than ten feet in width across the River Thames between the Parish of Caversham and De Bohun Road in the Borough". However, the Corporation chose to build a structure that is 40ft wide and can accommodate all types of traffic. The building project was supervised by the Borough Extension Committee.*

The resulting Reading Bridge allowed the old Caversham Bridge to be closed, demolished and rebuilt, opening in 1926.

The importance of Reading Bridge was demonstrated by the Institution of Civil Engineers as it is listed by their Panel for Historic Engineering Works (ICE PHEW).

The bridge was opened by John Wessley Martin, Chair of the Borough Extension Committee. He was Mayor of Reading 1892-3, 1910-11 and 1911-12. A local solicitor, he achieved some notoriety when in 1926 he was jailed with his brother for having defrauded clients of £8,500.

Mr Charles Marten Powell of Caversham, Chair of the Public Libraries Committee, who had donated £5,000 towards the bridge, which had increased over time to be worth £6,000, unveiled the commemorative plaque on the bridge.

Reading Standard report 6 October 1923 p5 covers the ceremonial of the opening which was brief because of the bad weather on the day. The Mayor at the time was Alderman F A Cox and other local politicians and dignitaries also attended.

The building or structure has a prolonged and direct association with figures or events of local interest and has played an influential role in the development of an area or the life of one of Readings communities: *Reading Bridge facilitated the movement of workers and allowed the integration of Caversham into the Borough of Reading following the Reading (Extension) Order of 1911.*

In 1911, about half of working population of Caversham was employed in Reading. The bridge continues to provide a vital transport link for thousands of people and carries over 24,000 vehicles each day.

The building or structure clearly relates to traditional or historic industrial processes or important businesses or the products of such industrial processes or businesses in the history of Reading or are intact industrial structures, for example bridges: *The French inventor and engineer François Hennebique (1842/1921) developed a means of strengthening concrete using iron and steel bars. In 1909/11, he built the Bridge of Resurgence in Rome with reinforced concrete and a single arch with a span of 330 feet. In December 1913, L G Mouchel & Partners, proponents of the Hennebique system and specialists in the use of reinforced concrete for infrastructure projects in the UK, presented a report to the first meeting of the Borough Extension Committee. It outlined proposed design and costs for both Caversham and Reading Bridges.*

Reading Bridge would have a single span of 180 feet, and an assumed load of as many traction engines of 20 tons each as the roadway would carry. Mouchel outlined the benefits of ferro concrete over steel, with considerably less maintenance required.

By May 1914, the plans were approved but detailed design and construction was delayed by the First World War of 1914/18.

Plans and detailed technical descriptions of the bridge can be found in Reading Bridge 1923-2023 attached with this nomination.

The building or structure is representative of a style that is characteristic of Reading: *The innovative design and construction and the pride that Reading Corporation took in the design and engineering of the bridge is characteristic of Reading.*

Reading Bridge was a statement structure for reinforced concrete. An elegant, open spandrel structure, it was designed in reinforced concrete according to the Hennebique system by L G Mouchel & Partners of Westminster. The contractors were Messrs Holloway Bros (London) Ltd.

The building or structure has a noteworthy quality of workmanship and materials: *Reinforced concrete was a relatively new material in 1923 that allowed the construction of the elegant, slender, economical, durable Reading Bridge. The structure was designed without movement joints and, at the time of its opening in 1923, it had the longest main span of any reinforced concrete bridge in the UK. The parapets are made from Portland Stone. The manufacturer of the lamps is unknown but those on Caversham Bridge were made by the Bromsgrove Guild of Applied Arts.*

The survival of the bridge is testament to the quality of design and workmanship.

The building or structure is the work of a notable local or national architect/engineer/builder: *François Hennebique (26 April 1842 – 7 March 1921) was a French engineer and self-educated builder who patented his pioneering reinforced-concrete construction system in 1892, integrating separate elements of construction, such as the column and the beam, into a single monolithic element. The Hennebique system was one of the first appearances of the modern reinforced-concrete method of construction.*

Louis Gustave Mouchel (11 January 1852 – 27 May 1908) was the founder of Mouchel, one of the United Kingdom's largest engineering consultancies. He became the agent

for a system of reinforced concrete developed by François Hennebique which he referred to as ferroconcrete.

The building or structure shows innovation in materials, technique, architectural style or engineering: *Reading Bridge was a statement structure for reinforced concrete. An elegant, open spandrel structure, it was designed in reinforced concrete according to the Hennebique system by L G Mouchel & Partners of Westminster. With the exception of the Portland stone parapets, the entire bridge is constructed in concrete, the exposed concrete surfaces embellished by mouldings at the cornices.*

The buildings/structures form a group which as a whole has a unified architectural or historic value to the local area: *Reading and Caversham Bridge were planned together.*

For Caversham Bridge, just as for Reading Bridge, L G Mouchel & Partners were appointed as the consulting engineers, to advise the Borough Engineer Mr A.S. Parsons. They designed all the reinforced concrete works, in accordance with the Hennebique system of reinforcement. Likewise, Messrs Holloway Bros (London) Ltd were the contractors. As the principal parties of the project team were the same as for Reading Bridge, work at Caversham was deferred until 1924, once the new bridge downstream had been completed and could relieve the traffic flow.

Caversham Bridge is now within St Peters Conservation Area and therefore carries a similar heritage designation to that of Local Listing.

The buildings/structures are an example of deliberate town planning from before 1947: *Reading Bridge facilitated the movement of workers and allowed the integration of Caversham into the Borough of Reading.*

4. Consultations

4.1. The following were consulted on the proposed addition to the Local List:

- Reading Borough Council Highways (landowner);
- Thames ward councillors;
- Reading Conservation Area Advisory Committee;
- Reading Civic Society; and
- Caversham GLOBE and CADRA (local community group(s)).

4.2. Responses were received from:

4.3. **Reading Borough Council Highways**

No response received

4.4. **Ward councillors**

Councillor Adele Barnett-Ward (Thames): *I would support locally listing Reading Bridge: it is a significant structure in the history of Reading and local listing is an appropriate way to mark its centenary.*

4.5. **Reading Conservation Area Advisory Committee**

No response received, as CAAC made the nomination alongside CADRA.

4.6. **Reading Civic Society**

In the anniversary year of the construction of the bridge it is good to see that CADRA have made this nomination made. That RBC have been working in recent weeks to re-install the missing lamp standard (first on the right as you head to Caversham) is to be applauded. Fully supported.

4.7. **Caversham GLOBE**

Caversham GLOBE give our full support to this proposal.

4.8. **CADRA**

As the application was made by CADRA with CAAC, we naturally support it but will not comment further.

5. Assessment

The proposal to add a building or structure to the Local List should be considered against the criteria in Appendix 2 of the Reading Borough Local Plan (adopted 2019).

5.1. **Exclusions**

5.1.1 The Local Plan specifies that a building should not be considered for the Local List where it is already part of a conservation area, scheduled monument or subject to an Article 4 direction relating to historic or architectural interest. Reading Bridge is not within any of these existing designations and can therefore be considered against the other criteria.

5.2. **General principles**

5.2.1 Reading Bridge dates from 1923 and therefore needs to be considered against the following general principle:

c. 1914 - 1939: Any building, structure or group of buildings where the elements that contribute to a high level of significance in the local context remain substantially complete.

5.2.2 Reading Bridge has remained largely unaltered in the 100 years since its initial construction. In recent years repairs and strengthening have been carried out, but this has not affected those elements that contribute to its significance.

5.3. **Significance**

5.3.1 To be added to the Local List, a building or structure must fulfil at least one of the defined significance criteria, which fall into two categories – historic interest and architectural interest. These are assessed below.

Historic Interest

a. Historical Association

i. The building or structure has a well authenticated historical association with a notable person(s) or event.

ii. The building or structure has a prolonged and direct association with figures or events of local interest.

5.3.2 The main event with which Reading Bridge is associated is the 1911 expansion of Reading to incorporate the urban district of Caversham. This is dealt with under social importance. Although a number of local officials were involved in its commissioning and unveiling, it is this expansion which is the principle historical association of the Bridge,

b. Social Importance

The building or structure has played an influential role in the development of an area or the life of one of Reading's communities. Such buildings/structures may include places of worship, schools, community buildings, places of employment, public houses and memorials which formed a focal point or played a key social role.

5.3.3 The construction of Reading Bridge is intrinsically linked to the expansion of Reading's boundaries in 1911 to include Caversham, formerly an urban district in its own right within Oxfordshire. This expansion is of great significance in the history of Reading as a whole, and the communities north of the Thames in particular, as it marked their transformation from separate settlements into a more suburban role, albeit that there

was already a strong trend for Caversham residents to work in Reading. The bridge project was agreed in 1914, shortly after the extension of Reading, and was overseen by the Borough Expansion Committee, so it is clear that consolidating its expansion was the main purpose.

c. Industrial Importance

The building or structure clearly relates to traditional or historic industrial processes or important businesses or the products of such industrial processes or businesses in the history of Reading or are intact industrial structures, for example bridges.

5.3.4 Reading Bridge is an intact bridge, and therefore clearly qualifies under this criterion. As set out in more detail on the nomination form, it was built using the reinforced concrete system developed by François Hennebique. This system was first used for a building in Europe in 1897 for the Weavers Building in Swansea[1], and was first used for a UK bridge at Chewton Glen in Hampshire in 1902, with LS Mouchel & Partners, the consulting engineers for Reading Bridge, being mainly responsible for its UK use[2]. The use of this technology became widespread for bridges until the 1960s.

Architectural Interest

a. Sense of place

i. The building or structure is representative of a style that is characteristic of Reading.

5.3.5 The style is reflective of its counterpart, Caversham Bridge, but this is considered separately under group value. Although the points made in the nomination about being reflective of the pride taken in the construction being characteristic of Reading are noted, this is best dealt with in relation to other criteria and it is not considered that the Bridge represents an architectural style that is characteristic of Reading in particular.

b. Innovation and virtuosity

i. The building or structure has a noteworthy quality of workmanship and materials.

ii. The building or structure is the work of a notable local/national architect/engineer/builder.

iii. The building or structure shows innovation in materials, technique, architectural style or engineering.

5.3.6 Reading Bridge exhibits a noteworthy quality of both workmanship and materials. The bridge has, by and large, stood the test of time, and it continues to represent an attractive enhancement to the riverside environment. The use of Portland Stone for the parapets adds a further flourish of quality to the bridge.

5.3.7 Although the system used for construction was developed by François Hennebique, he had no direct involvement in Reading Bridge. The main engineer of note is Louis Gustave Mouchel, whose company was the consulting engineer. Mouchel and his company are of clear national significance, having been responsible for a large number of reinforced concrete structures in the UK, including five that have been nationally listed, as well as a number of other listed buildings.

5.3.8 In terms of innovation, although the use of reinforced concrete for bridges was relatively widespread in the UK by 1923, the scale of the bridge was innovative at the time, with the longest main span of any reinforced concrete bridge in the UK.

c. Group value

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[1] Swansea and Port Talbot Docks Website (swanseadocks.co.uk)

[2] Development of reinforced concrete bridges

i. The buildings/structures form a group which as a whole has a unified architectural or historic value to the local area.

ii. The buildings/structures are an example of deliberate town planning from before 1947.

5.3.9 It is clear that Reading Bridge and Caversham Bridge were conceived together and involved the same consulting engineer, LS Mouchel & Partners. It was the provision of Reading Bridge which enabled the replacement of Caversham Bridge with a new bridge in 1926.

5.3.10 Caversham Bridge itself was included in the 2018 extension of the St Peter's conservation area, and was identified as a Building of Townscape Merit in the conservation area, so its historic significance is already acknowledged. As for Reading Bridge, Caversham Bridge is noted as a structure of interest by the Panel for Historical Engineering Works of the Institution of Civil Engineers.

5.3.11 Together these new bridges were intended to better connect Caversham and neighbouring communities to Reading, of which they had recently become part, and allowed for their transformation into a more suburban role, an example of deliberate town planning.

5.4. **Conclusion of assessment**

5.4.1 Reading Bridge qualifies for addition to the Local List because it:

- Is not within a conservation area, scheduled monument or area subject to an Article 4 direction relating to historic or architectural interest;
- Dates from between 1914 and 1939 and the elements that contribute to a high level of significance in the local context remain substantially complete;
- Contributes to the heritage of the Borough in terms of its historical association;
- Contributes to the heritage of the Borough in terms of its social importance;
- Contributes to the heritage of the Borough in terms of its industrial importance;
- Contributes to the heritage of the Borough in terms of its innovation and virtuosity;
- Contributes to the heritage of the Borough in terms of its group value.

5.4.2 A description of the significance of the building for inclusion in the Local List is included in Appendix 3.

6. Contribution to strategic aims

6.1. Local listing of buildings and structures helps to achieve the Healthy Environment theme of the Corporate Plan, by helping to retain those buildings that contribute towards making Reading a more attractive place to live and connect Reading's residents to the town's past.

7. Environmental and climate implications

7.1. The Council declared a Climate Emergency at its meeting on 26 February 2019 (Minute 48 refers).

7.2. Local listing of buildings and structures, where it leads to the retention of those buildings or structures, can help to address the climate emergency by negating the need for demolition and new development, which are processes that use significant amounts of energy and result in emissions. However, in the long-term, it can be more difficult to achieve high levels of energy performance in older buildings than in new builds. There are therefore potentially either positive or negative effects, and schemes will need to be assessed at the application stage in terms of their compliance with the Council's policies.

8. Community engagement

8.1. Details of the consultation carried out are set out in section 4 of this report. The scope of consultation to be carried out on proposals for addition to the Local List was part of the local listing process agreed by Planning Applications Committee on 2nd December 2020 (Minute 56 refers).

9. Equality impact assessment

9.1. It is not expected that there will be any significant adverse impacts on specific groups due to race, gender, disability, sexual orientation, age or religious belief as a result of the recommendations of this report.

10. Other relevant considerations

10.1 None of this report.

11. Legal implications

11.1. Addition to the Local List is not a statutory process, and there are no legal implications of the recommendations of this report.

12. Financial implications

12.1. Consideration of this nomination and any resulting amendments to the Local List will be accommodated within existing budgets.

13. Timetable for implementation

13.1. Not applicable.

14. Background papers

14.1. There are none.

Appendices

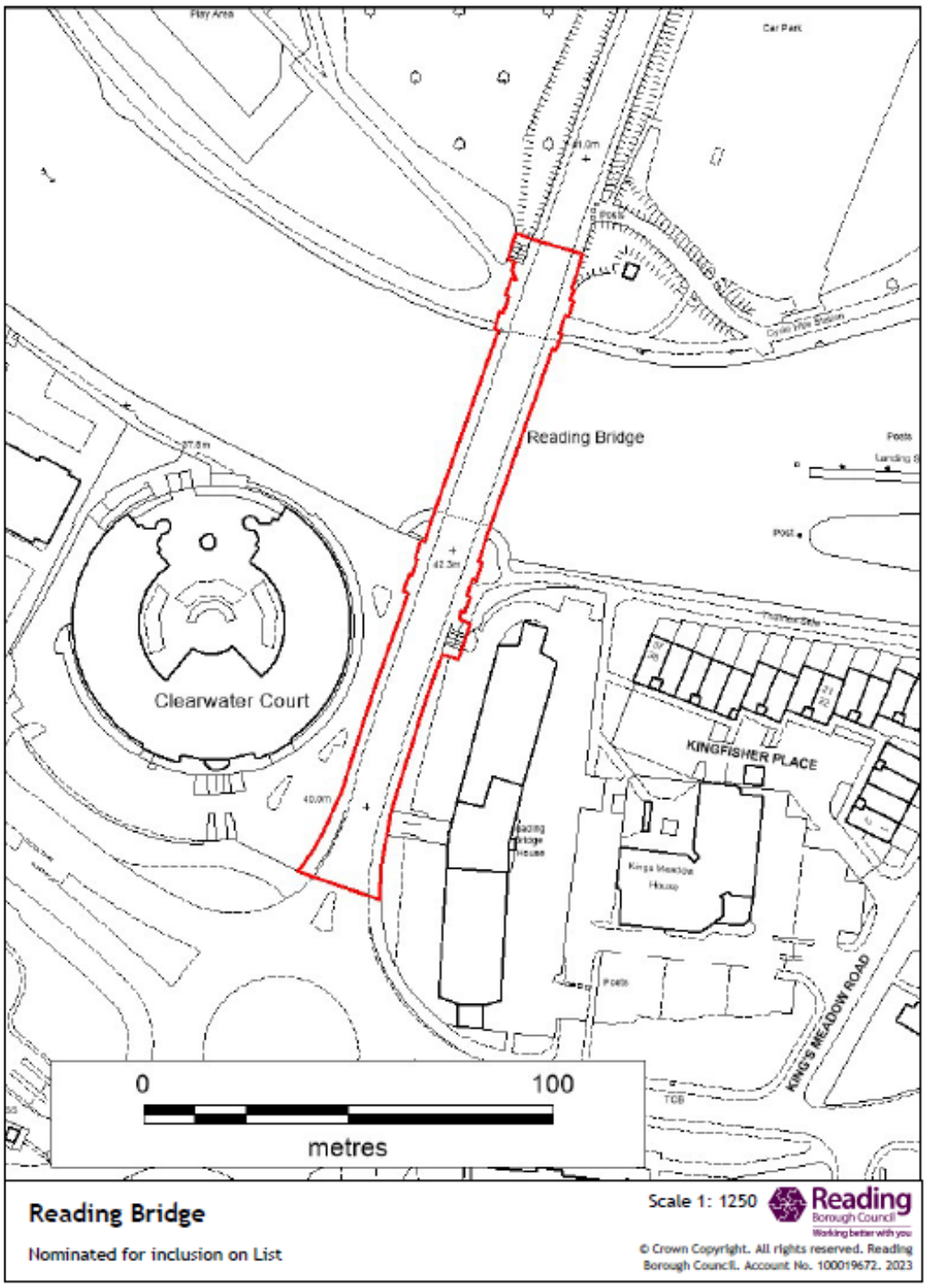
1. Location map

2. Relevant photos and illustrations

3. Nomination form and evidence

4. Proposed local list text

Appendix 1: Location plan



LIST OF LOCALLY IMPORTANT BUILDINGS AND STRUCTURES - NOMINATION

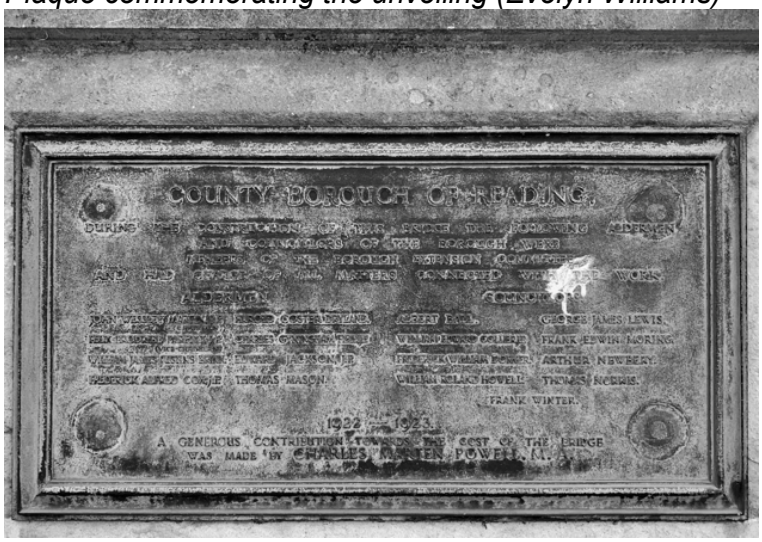
Appendix 2: Relevant photos and illustrations

Bridge from the north east (Helen Lambert)

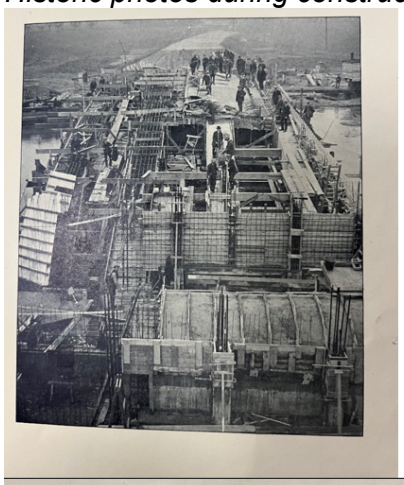
Bridge from the south west (Helen Lambert)

Lamps on the bridge with hooks for hanging baskets (Helen Lambert)

Plaque commemorating the unveiling (Evelyn Williams)

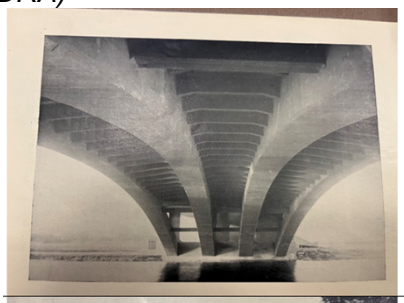


Historic photos during construction (source: CADRA)



Bridge under construction (1)

Bridge under construction (2)



4 arched ribs

Completed bridge

Testing of bridge

2015 bridge repairs (Evelyn Williams)

Appendix 3: Nomination form

Address of building/structure:
Reading Bridge, De Bohun Road/George Street

Postcode of building/structure: RG1 8LS

Owner of building (if known): Reading Borough Council

Age of building:
(c) 1914 - 1939: any building, structure or group of buildings that is/are substantially complete and unaltered and of a high level of significance

Please provide comments or further explanation of above: Plans for the bridge were agreed in 1914 but work was delayed by the First World War.
The bridge was opened on 3 October 1923 and therefore this is its centenary year.
Repairs and strengthening were carried out in 2014-15 but architecturally it is unaltered.

The building or structure has a well authenticated historical association with a notable person(s) or event: Yes

Please provide further comments or explanation:
In 1911, when the northern border of Reading was extended to incorporate Caversham, The Corporation of Reading was required to either replace or widen Caversham Bridge and to "construct and open for traffic a footbridge not less than ten feet in width across the River Thames between the Parish of Caversham and De Bohun Road in the Borough". However, the Corporation chose to build a structure that is 40ft wide and can accommodate all types of traffic. The building project was supervised by the Borough Extension Committee.

The resulting Reading Bridge allowed the old Caversham Bridge to be closed, demolished and rebuilt, opening in 1926.

The importance of Reading Bridge was demonstrated by the Institution of Civil Engineers as it is listed by their Panel for Historic Engineering Works (ICE PHEW).

The bridge was opened by John Wessley Martin, Chair of the Borough Extension Committee. He was Mayor of Reading 1892-3, 1910-11 and 1911-12. A local solicitor, he achieved some notoriety when in 1926 he was jailed with his brother for having defrauded clients of £8,500.

Mr Charles Marten Powell of Caversham, Chair of the Public Libraries Committee, who had donated £5,000 towards the bridge, which had increased over time to be worth £6,000, unveiled the commemorative plaque on the bridge.

Reading Standard report 6 October 1923 p5 covers the cermonial of the opening which was brief because of the bad weather on the day. The Mayor at the time was Alderman F A Cox and other local politicians and dignitaries also attended.

The building or structure has a prolonged and direct association with figures or events of local interest:
Yes

Please provide further comments or explanation:
Reading Bridge facilitated the movement of workers and allowed the integration of Caversham into the Borough of Reading following the Reading (Extension) Order of 1911.

In 1911, about half of working population of Caversham was employed in Reading. The bridge continues to provide a vital transport link for thousands of people and carries over 24,000 vehicles each day.

The building or structure has played an influential role in the development of an area or the life of one of Readings communities:
Yes

Please provide further comments or explanation: Reading Bridge facilitated the movement of workers and allowed the integration of Caversham into the Borough of Reading following the Reading boundary extension to the north of 1911.

In 1911, about half of working population of Caversham was employed in Reading. The bridge continues to provide a vital transport link for thousands of people and carries over 24,000 vehicles each day.

The building or structure clearly relates to traditional or historic industrial processes or important businesses or the products of such industrial processes or businesses in the history of Reading or are intact industrial structures, for example bridges:
Yes

Please provide further comments or explanation:
The French inventor and engineer François Hennebique (1842/1921) developed a means of strengthening concrete using iron and steel bars. In 1909/11, he built the Bridge of Resurgence in Rome with reinforced concrete and a single arch with a span of 330 feet. In December 1913, L G Mouchel & Partners, proponents of the Hennebique system and specialists in the use of reinforced concrete for infrastructure projects in the UK, presented a report to the first meeting of the Borough Extension Committee. It outlined proposed design and costs for both Caversham and Reading Bridges.

Reading Bridge would have a single span of 180 feet, and an assumed load of as many traction engines of 20 tons each as the roadway would carry. Mouchel outlined the benefits of ferro concrete over steel, with considerably less maintenance required.

By May 1914, the plans were approved but detailed design and construction was delayed by the First World War of 1914/18.

Plans and detailed technical descriptions of the bridge can be found in Reading Bridge 1923-2023 attached with this nomination.

The building or structure is representative of a style that is characteristic of Reading:
Yes

Please provide further comments or explanation:
The innovative design and construction and the pride that Reading Corporation took in the design and engineering of the bridge is characteristic of Reading.

Reading Bridge was a statement structure for reinforced concrete. An elegant, open spandrel structure, it was designed in reinforced concrete according to the Hennebique system by L G Mouchel & Partners of Westminster. The contractors were Messrs Holloway Bros (London) Ltd.

The building or structure has a noteworthy quality of workmanship and materials: Yes
Please provide further comments or explanation:
Reinforced concrete was a relatively new material in 1923 that allowed the construction of the elegant, slender, economical, durable Reading Bridge. The structure was designed without movement joints and, at the time of its opening in 1923, it had the longest main span of any reinforced concrete bridge in the UK. The parapets are made from Portland Stone. The manufacturer of the lamps is unknown but those on Caversham Bridge were made by the Bromspogrove Guild of Applied Arts.

The survival of the bridge is testament to the quality of design and workmanship.

The building or structure is the work of a notable local or national architect/engineer/builder:
Yes

Please provide further comments or explanation:
François Hennebique (26 April 1842 – 7 March 1921) was a French engineer and self-educated builder who patented his pioneering reinforced-concrete construction system in 1892, integrating separate elements of construction, such as the column and the beam, into a single monolithic element. The Hennebique system was one of the first appearances of the modern reinforced-concrete method of construction.
https://en.wikipedia.org/wiki/Fran%C3%A7ois_Hennebique

Louis Gustave Mouchel (11 January 1852 – 27 May 1908) was the founder of Mouchel, one of the United Kingdom's largest engineering consultancies.
He became the agent for a system of reinforced concrete developed by François Hennebique which he referred to as ferroconcrete.

https://en.wikipedia.org/wiki/Louis_Gustave_Mouchel

The building or structure shows innovation in materials, technique, architectural style or engineering:
Yes

Please provide further comments or explanation: Reading Bridge was a statement structure for reinforced concrete. An elegant, open spandrel structure, it was designed in reinforced concrete according to the Hennebique system by L G Mouchel & Partners of Westminster. With the exception of the Portland stone parapets, the entire bridge is constructed in concrete, the exposed concrete surfaces embellished by mouldings at the cornices.

The buildings/structures form a group which as a whole has a unified architectural or historic value to the local area:
Yes

Please provide further comments or explanation:
Reading and Caversham Bridge were planned together.

For Caversham Bridge, just as for Reading Bridge, L G Mouchel & Partners were appointed as the consulting engineers, to advise the Borough Engineer Mr A.S. Parsons. They designed all the reinforced concrete works, in accordance with the Hennebique system of reinforcement. Likewise, Messrs Holloway Bros (London) Ltd were the contractors. As the principal parties of the project team were the same as for Reading Bridge, work at Caversham was deferred until 1924, once the new bridge downstream had been completed and could relieve the traffic flow.

Caversham Bridge is now within St Peters Conservation Area and therefore carries a similar heritage designation to that of Local Listing.

The buildings/structures are an example of deliberate town planning from before 1947:
Yes

Please provide further comments or explanation:
Reading Bridge facilitated the movement of workers and allowed the integration of Caversham into the Borough of Reading.

Please upload any evidence you have assembled that help to make the case as to why the building or structure fulfils the above criteria:
Appendix 1 Souvenir brochure.docx, Appendix 3 Photographs today.docx, Appendix 2 Maps.docx

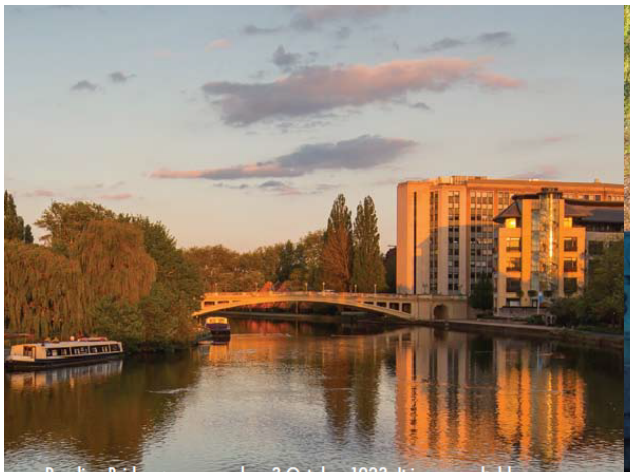
Please briefly describe the relevance of the evidence you have attached: Appendix 1 - Souvenir Brochure from 1923
Appendix 2 - Maps of the location of the bridge
Appendix 3 - Photographs of the bridge today

Reading Bridge 1923-2023 Caversham and District Residents' Association booklet - sent separately due large size.

Please provide any additional comments that you would like to make in support of adding this building or structure to the Local List:

Name: Helen Lambert (CADRA) and Evelyn Williams (Reading CAAC)
Email address: chair.readingcaac@gmail.com

Date of nomination: 16/05/2023



Reading Bridge was opened on 3 October 1923. It is a remarkable example of modern bridge construction in reinforced concrete, simple yet striking in appearance, and set off by Portland stone parapets and an elegant line of lamps. Reading Bridge had the longest single span in the UK until 1928. Many other bridges of this period are Grade II or II* listed.

This booklet was developed by Caversham and District Residents Association (CADRA) to mark the centenary of the opening of Reading Bridge on 3 October 1923.

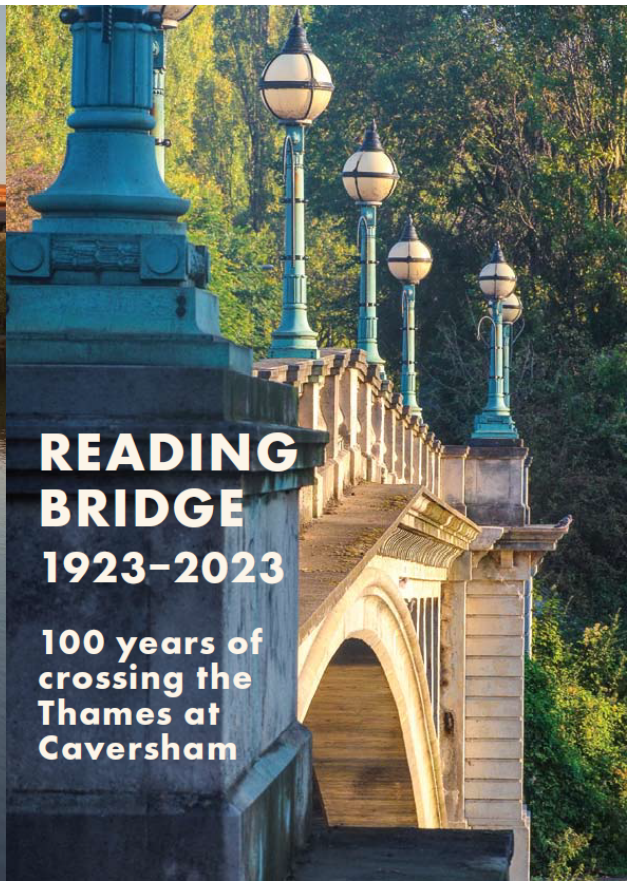
CADRA gratefully acknowledge the kind assistance of Berkshire Record Office (BRO), Reading Libraries, Berkshire Industrial Archaeology Group, Gillian Clark and VolkerLaser.

Front cover photograph: Clive Ormonde
Back cover photograph: Andy Thorne

Available to download free at www.cadra.org.uk/readingbridge100

Research and text: Helen Lambert and Paul Matthews
Design: Anke Ueberberg | www.ueberberg.co.uk

Caversham & District Residents' Association



READING BRIDGE 1923–2023

100 years of crossing the Thames at Caversham

A NEW CROSSING FROM AND TO CAVERSHAM

The earliest bridge at Caversham, close to St Peter's Church, did service for almost seven hundred years before it was replaced with an iron bridge in 1869. Crossing the river at Lower Caversham was more difficult, although there are several references to ferries. A pound lock dating back to 1778 was replaced in 1875; a few years before, in 1871, the Corporation of Reading had obtained leave to build a swingbridge just above the lock, but it never came to fruition. The weir was built in 1884.

About half of Caversham's population worked in Reading; the Clappers, a narrow plank footbridge that ran past the winding gear of the old weir, was a direct route to the Huntley & Palmers factory. As terraced housing grew in Lower Caversham, the Clappers became increasingly busy: a census in 1905 recorded 4836 pedestrians, 19 trucks, 130 bicycles and 70 prams.

The Clappers were the closest crossing to the main workplaces for many among Caversham's population: the Huntley & Palmers biscuit factory and the railway.

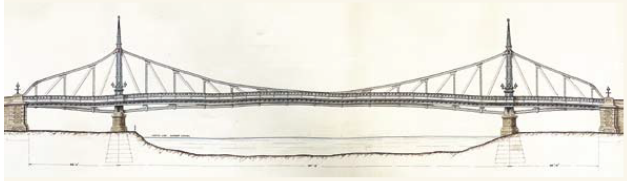
When Caversham and Tilehurst became part of the Borough of Reading in 1911, and with rapid growth in new housing on the Caversham side, better river crossings were required: the iron Caversham Bridge was proving inadequate and the Clappers route was prone to flooding. Reading Corporation commissioned two new bridges – one to replace Caversham Bridge and one to provide a new crossing for both pedestrians and vehicles – but work was delayed by the outbreak of war.

Map: BRO, R/acc6436.1
Photo of postcard: CADRA

DESIGNING A MODERN LANDMARK: PLANS EMERGE

The 1911 Extension Order required the Corporation of Reading to either replace or widen Caversham Bridge and 'construct ... 'a footbridge not less than ten feet in width across the River Thames between the Parish of Caversham and De Bohun Road in the Borough'.

In 1912, the Corporation instead sought parliamentary powers to provide a wider bridge, suitable for vehicles. The plans submitted at the time, by engineers John Webster and John Bowen, showed two designs with a stiffened steel suspension structure.



Two views of one of the bridge designs submitted in 1912 (BRO, R/acc4447.55)

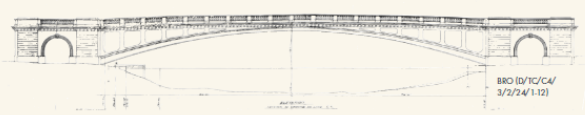
But a new bridge in that section of the river posed challenges: it had to allow unrestricted river flow and navigation, and provide space for footpaths on both sides of the river. This required a substantial structure with a single span. It was also agreed to enlarge the weir and cut away some land, including part of View Island.

Having obtained parliamentary powers to proceed, the Borough Extension Committee, chaired by Alderman John Wessley Martin, met on 18 November 1913. It commissioned the consulting engineering practice L. G. Mouchel & Partners Ltd to provide a first report with designs and costs for both the new Reading Bridge and the proposed replacement for Caversham Bridge.

The Mouchel designs were fundamentally different from the 1912 plans: they proposed reinforced concrete to create a span of 180ft (55m) across the waters of the Thames. In the early decades of the twentieth century, reinforced concrete was increasingly used to construct industrial buildings and other utilitarian structures, including bridges. First developed in the late 1870s, it was an economical and versatile building material with high tensile strength.

Alderman John Wessley Martin (Reading Libraries)

The most successful promoter of reinforced concrete was the French engineer François Hennebique (right, 1842–1921), who had patented his method of strengthening concrete using iron and steel bars in 1892. Hennebique was an astute businessman: he developed a worldwide network of franchises and agents. Among them was Louis Gustave Mouchel, another Frenchman, who had moved to Britain. He was Hennebique's agent and made it his life's work to introduce 'ferroconcrete' across Britain. (Image: tbc)

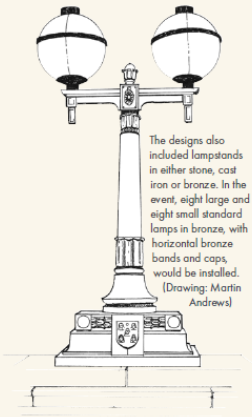


BRO (D/TC/C4/3/2/24/1-12)

Nationally, there was some competition between steel and concrete engineers, and John Webster later protested that his designs would have saved the Corporation almost £7000 in construction costs. But reinforced concrete needs little maintenance; unlike exposed steel, it is resilient against corrosion and increases in strength after construction.

Designed for an assumed load of as many traction engines of 20 tons each as the roadway would carry, the new Reading Bridge was also intended to be a modern landmark: it would be the largest structure in ferroconcrete in the UK, and the longest single span. Mouchel's design won out on all counts.

The outbreak of World War I on 28 July 1914 halted progress for almost seven years, but in early 1922, a contract for the construction was finally agreed with Holloway Brothers Limited of Westminster. Construction commenced in March 1922 and took 18 months to complete.

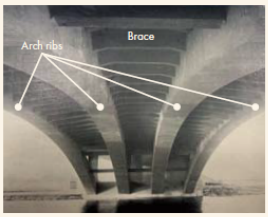


The designs also included lampstands in either stone, cast iron or bronze. In the event, eight large and eight small standard lamps in bronze, with horizontal bronze bands and caps, would be installed. (Drawing: Martin Andrews)

'COMMENDABLY SIMPLE' AND GRACEFUL

Masonry arch bridges have been used for over 3000 years using stone, brick and concrete. These materials are weak in tension, so the 'triangular' spaces between the arch and the road surface ('spandrels') were filled with masonry or rubble to ensure that the arch remains in compression. The filling increases the weight of the structure and can limit the span and flatness of the arch. Steel is strong in tension but, in compression, long small-section rods tend to buckle if they are not heavily braced. Hennebique combined the best characteristics of steel rods and concrete. This allowed the construction of light, elegant, durable open spandrel arch bridges, including Reading Bridge.

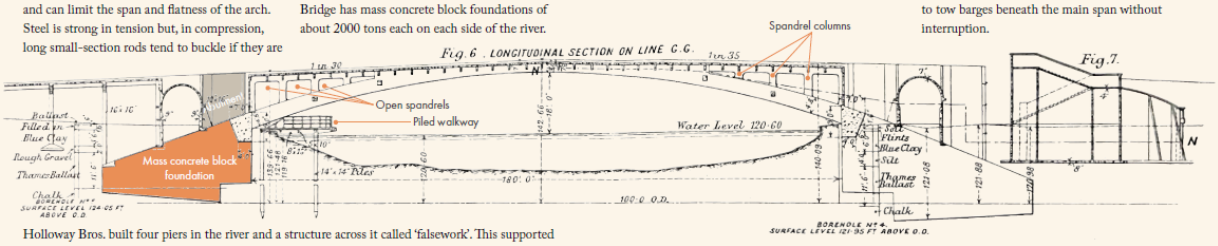
Arches tend to cause their foundations to spread outwards so, to prevent this, Reading Bridge has mass concrete block foundations of about 2000 tons each on each side of the river.



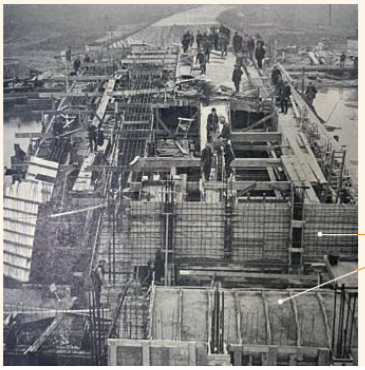
The main structure of the arch is formed by four reinforced concrete ribs 180 ft (55m) long, rising to 18 ft (5.5m) at the centre, linked by braces.

Spandrel columns support a grid of longitudinal and transverse beams that form the bridge deck. At the centre of the bridge the longitudinal deck beams sit directly on top of the arches. The deck is 40ft (12.2m) wide between the parapets, with a road width of 27ft (8.2m) and two footways 6.5ft (2m) wide.

The piled walkway under the Reading side of the bridge, above the water level, allowed horses to tow barges beneath the main span without interruption.



Holloway Bros. built four piers in the river and a structure across it called 'falsework'. This supported the shuttering for casting the ribs. The steel reinforcement was then assembled within the shuttering, and freshly mixed concrete placed and compacted *in situ*. The structure is monolithic, which means that there are no joints in the concrete. With the exception of the Portland stone parapets and the northern embankment, the whole structure was built in reinforced concrete.

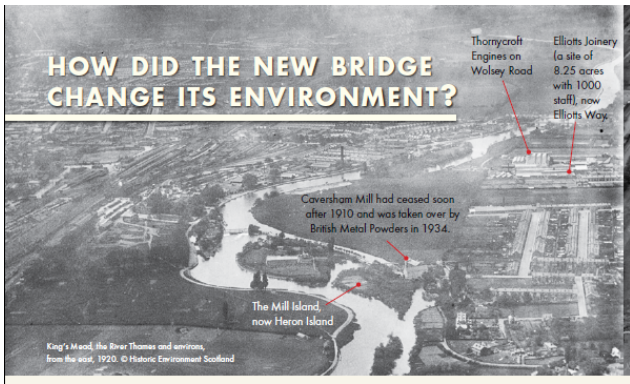


Unemployment was very high after the war, and grants from the Unemployed Grants Committee, set up in 1920, helped pay 60% of local wages for building the new road.

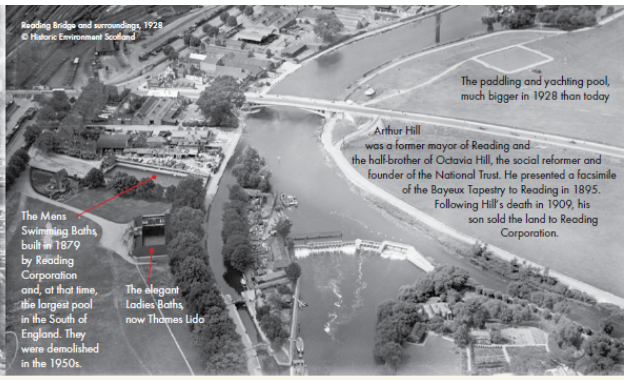
The total cost of the bridge and its approach roads was almost £70,000, of which £6000 was donated by Charles Powell of Eastfield Caversham.

All images: Reading Libraries

HOW DID THE NEW BRIDGE CHANGE ITS ENVIRONMENT?



King's Mead, the River Thames and environs, from the east, 1920. © Historic Environment Scotland



Reading Bridge and surroundings, 1928. © Historic Environment Scotland

North and south of the Thames, land had to be purchased and cleared to build the approach roads to the bridge.

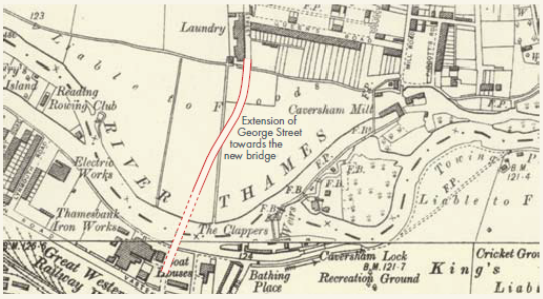
On the Reading side, De Bohun Road led to the river from Vastern and Kings Meadow Roads. The MacDuff Temperance Hotel was purchased by the Corporation before the outbreak of war and then used for billeting soldiers. East's Boat Building Company Limited, immediately next to the bridge, received a settlement for lost business.

On the Caversham side, George Street only extended just past the end of the Reading and Caversham Laundry Co Ltd; beyond it were grazing meadows previously owned by Arthur Hill. The road had to be raised and the laundry entrance moved to connect with the new road across the embankment to the bridge.

Access to the river and a new promenade was by stairs down from the bridge deck on both sides of the river, and pedestrian arches under the bridge approaches.

As early as July 1923 a quote was submitted for installing a paddling and yachting pool in Christchurch Meadows at a cost of £2718. The pool opened in 1924.

In 1936, the now iconic avenue of 24 Lombardy poplars was planted along George Street to commemorate the coronation of King George VI.



OS Six Inch, 1888–1913: Oxfordshire IVI.SE, Revised 1897, Published 1900; Berkshire XXXVII.NE, Revised 1898, Published 1900. Reproduced with the permission of the National Library of Scotland


Image: Reading Libraries

A BRIDGE FIT FOR PURPOSE...

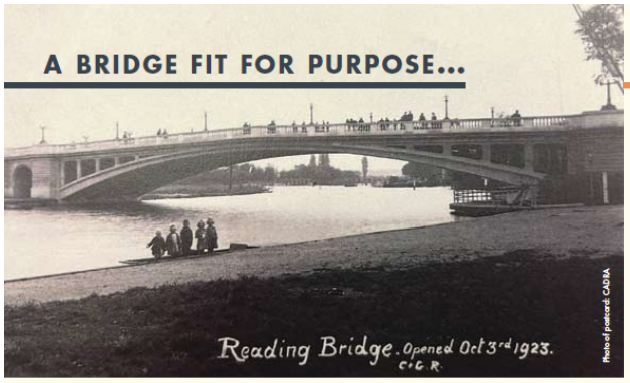


Photo of postcard: CADBA

Before the opening, a spectacular trial was conducted. Bridges had been known to collapse, and there was concern for public confidence as a span of this length was largely unknown.

The designs assumed a load of as many traction engines of 20 tons each as the roadway would carry. Mr A.C. Cookson, from the office of the Engineer to Great Western Railway Co, was appointed at a fee of 50 guineas to put this to the test.

On 25 September 1923, 30 traction engines and Foden wagons, in three rows of ten engines each, rolled onto the bridge. Their combined weight was almost 372 tons, well above the standard rolling load of 293 tons laid down by the Ministry of Transport – yet deflection at the centre was less than ¼in. Mouchel reported that 'the test demonstrated the great strength of the bridge and can be considered as eminently satisfactory'.

The formal opening on 3 October 1923 was marked by rain and high winds. John Wessley Martin, Chairman of the Borough Extension Committee, opened the bridge. Bronze plaques on either side of the bridge were unveiled and the bridge opened to traffic. The first vehicle to cross from Caversham was a van from the Reading and Caversham Laundry Co Ltd.


Image: Reading Libraries

...FOR THE NEXT HUNDRED YEARS


A different kind of stress test: in 1967, Rosie Brooks took this photo 'when the circus left King's Meadow' (Reading Libraries)

The bold decision to build an innovative structure that required little maintenance held good for over 80 years, but by the early 2000s, the cracks were beginning to show.

The Portland Stone parapets, originally installed by stonemasons A.F. Jones, had begun to crumble as a result of oxidation and road salt. Still in business 91 years on, A.F. Jones was commissioned to carry out the repairs using a higher grade of Portland Stone.

By 2013, the pressure of 27,000 vehicles crossing daily, and the erosion of the structure by the elements, were also taking their toll. With the help of a £3 million government grant, the Council commissioned VolkerLaser to devise and install thin, strong, flexible carbon fibre plates that would strengthen the bridge without changing its appearance.


Scaffolding allowed for a detailed inspection which identified hollow points across the whole structure (Photo: VolkerLaser)


A lampstand with fittings for hanging baskets (Photo: Kim Pearce)

Over six weeks, 16 lorries a day delivered 1500m³ of foam concrete to pump into the structure. The concrete was then allowed to settle before being sealed. Shear bolts were fixed to the abutments to make the structure stronger. The roadway was stripped so that carbon plates could be fitted to the underside of the bridge deck and beams, and carbon wrapped round the spandrel columns.

The globes, banding and caps of the lights were first replaced in the 1960s. Some of the lampstands were damaged around 2020; at that time, all Reading streetlights were also being converted to LED. The lampstands were repaired and fitted with new globes, bands and connections, and the iconic line of lights was back in action.

Appendix 4: Proposed local list text

Reading Bridge, a vehicular bridge crossing the River Thames between Reading and Lower Caversham, was constructed in 1923, and was opened on 3rd October of that year. A new bridge was required in association with the 1911 expansion of Reading to incorporate the former urban district of Caversham, to complement Caversham Bridge, which itself was shortly afterwards replaced by the current Caversham Bridge. The Corporation of Reading decided that the bridge should be wide enough to accommodate all types of traffic, and it remains one of only two vehicular bridges over the Thames within Reading.

The Bridge was constructed in reinforced concrete using the system devised by François Hennebique. The consulting engineers for both Reading Bridge and the new Caversham Bridge were LG Mouchel & Partners, the company founded by Louis Gustave Mouchel, which were primarily responsible for the spread of the Hennebique system within the UK.

The Bridge has a single span of 180 feet, at the time of construction the longest main span of any reinforced concrete bridge in the UK, and a width of 40 feet. Its exposed concrete surfaces embellished by mouldings at the cornices. The parapets are constructed in Portland Stone. The bridge has remained intact since its opening in 1923 other than repair and strengthening carried out in 2014-15. The Bridge has group value with Caversham Bridge, opened in 1926.