

**Report title: Prince Street Bridge Refurbishment Works**

**Wards affected: Cabot**

**Strategic Director: Barra Mac Ruairi**

**Report Author: Gareth Vaughan-Williams**

**RECOMMENDATION for the Mayor's approval:**

- 1. That the necessary work to return the existing Prince Street swing bridge to a serviceable condition is carried out, allowing the maritime operation of the City Docks and the passage of pedestrians, cyclists and light vehicles to continue. The project is to be funded from Transport capital budgets.**

**Key background / detail:**

**a. Purpose of report:**

To establish the way forward with the refurbishment of Prince Street Bridge as the cost of the work requires the matter to be considered by Cabinet prior to a Key Decision by the Mayor.

**b. Key details:**

1. Following a periodical inspection of the bridge in late 2014 and advice from the City Council's insurers, Zurich, it was concluded that the bridge should be withdrawn from use until structural repairs were complete.
2. The bridge was closed to vehicles in August 2015 and the construction of a temporary footbridge was completed in October 2015. The work planned at that time had a budget of £400k and was to take six months on the basis of prior inspections made of the visible elements of the bridge.
3. The enclosed sections of the bridge had been dismantled and cleaned by mid December 2015, thus revealing the full extent of the corrosion in the previously hidden internal structure. The condition of the bridge is substantially worse than originally thought and the cost and duration of the refurbishment works have both significantly increased as a result.
4. The total cost of returning the bridge to operation is now estimated to be £1.2m with an overall project timescale of approximately 12 months, which would allow the bridge to be reopened in Autumn 2016.
5. The bridge's capability to carry vehicular traffic provides important resilience in the highway network.
6. The heritage nature of the structure may mean that works to the bridge will require an application for Listed Building Consent to be made.
7. The recommendation of this report is, therefore, to repair Prince Street Bridge in its original form and to return the bridge to its previous operational status.

**BRISTOL CITY COUNCIL  
CABINET  
1<sup>st</sup> March 2016**

**REPORT TITLE:** Prince Street Bridge Refurbishment Works

**Ward(s) affected by this report:** Cabot

**Strategic Director:** Barra Mac Ruairi/Strategic Director, Place

**Report author:** Gareth Vaughan-Williams/Service Manager, Highways

**Contact telephone no. & e-mail address:** 0117 90 36833  
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**Purpose of the report:**

To establish the way forward with the refurbishment of Prince Street Bridge as the cost of the work requires the matter to be considered by Cabinet prior to a Key Decision by the Mayor.

**RECOMMENDATION for the Mayor's approval:**

**1. That the necessary work to return the existing Prince Street swing bridge to a serviceable condition is carried out, allowing the maritime operation of the City Docks and the passage of pedestrians, cyclists and light vehicles to continue. The project is to be funded from Transport capital budgets.**

**Background:**

1. Prince Street Bridge is a Grade II listed wrought iron swing bridge constructed in 1879 to span the City Docks. The bridge carries pedestrians and cyclists on its west side and light vehicles (less than three tonnes) on its east side.
2. A principal inspection of the bridge carried out in late 2014 recommended that significant work be undertaken. This recommendation included the replacement and repair of corroded structural components and repairs to the masonry abutments along with a structural assessment to determine the strength of the bridge to allow its continued use.
3. A further inspection in 2015 by the City Council's insurers, Zurich, recommended that the bridge be withdrawn from use until the structural repairs and other work to the swinging mechanism were complete.
4. The bridge was, therefore, closed to vehicles in August 2015 and the construction

of a temporary footbridge was completed in October 2015. Following this, the swing bridge was decommissioned and work commenced on further investigation and repairs. The work planned at that time had a budget of £400k and was to take six months on the basis of prior inspections made of the visible elements of the bridge.

5. The enclosed sections of the bridge had been dismantled and cleaned by mid December 2015, thus revealing the full extent of the corrosion in the previously hidden internal structure (see photographs in Appendix 4).
6. The condition of the bridge is substantially worse than originally thought and the cost and duration of the refurbishment works have both significantly increased as a result.
7. The total cost of returning the bridge to operation is now estimated to be £1.2m with an overall project timescale of approximately 12 months, which would allow the bridge to be reopened in Autumn 2016.
8. As the level of spend required is now in excess of £500k, a Key Decision is needed before the work can be carried out.

## **The Proposal**

9. Prince Street Bridge forms a vital link enabling pedestrians and cyclists to cross the City Docks. It is also an important route for light vehicular traffic and the consequences of the bridge not being available for such traffic can be felt in several locations on the highway network (see Appendix 1). The bridge is also required to move in order to allow the passage of high-masted vessels in the dock.
10. The bridge's capability to carry vehicular traffic provides resilience in the highway network. This helps to protect the City from problems arising from traffic congestion under normal circumstances and particularly in the event that other dock and river crossings need to be restricted or closed.
11. The heritage nature of the structure may require that works to the bridge are subject to an application for Listed Building Consent. Should such an application be required, Historic England, who are a statutory consultee in that process, are particularly interested in as much of the original bridge being preserved as possible and that repairs are carried out sympathetically in terms of visual appearance.
12. The recommendation of this report is, therefore, to repair Prince Street Bridge in its original form and to return the bridge to its previous operational status.
13. The original design and construction of the bridge does make it susceptible to future deterioration of the same nature as that which has happened to date. Subject to pre-application discussions with Historic England, it may be possible to reduce the rate of corrosion within the bridge and if a decision is made to proceed then this will be fully explored and implemented where practical.

## **Consultation and scrutiny input:**

**a. Internal consultation:**

**City Docks and Events team**

The continuing impact on the City Docks and in particular the consequences of the temporary footbridge obstructing the passage of high-masted vessels in the dock at the time of the 2016 Harbour Festival are being investigated. Mitigation measures could include the removal of the centre section of the footbridge by crane in order to allow vessels to pass. If this proves to be a practical possibility it would, however, obviously prevent the use of the footbridge by pedestrians during that time and would incur additional costs to carry out the removal and replacement in a safe manner.

**Traffic and Network Operations**

Concern has been expressed over the impact of the bridge closure on the transport network. Current experience of additional congestion, knock-on effects and delays to bus services have confirmed the importance of the bridge and its role in helping vehicular traffic to move freely in the City centre. A previous temporary closure in 2004 for bridge surfacing works also caused similar issues. Specific impacts relating to the current closure are listed in Appendix 1.

**Scrutiny**

No Scrutiny input has been sought.

**b. External consultation:**

**Historic England**

The listed status of the bridge requires that listed building consent is required before major refurbishment is carried out. Several meetings have taken place with Historic England (HE) to agree the specifics of the work carried out to date and further formal consent from the Council as Local Planning Authority may be required if the recommendation of this report is approved. HE have been very clear in that they would not be supportive of a replacement bridge option.

An application for Listed Building Consent will be submitted in due course if necessary.

**Specialist Consultant**

Technical input and advice from specialist external consultants with first-hand experience of the conservation and refurbishment of similar heritage structures has been sought and their involvement is ongoing.

**Other options considered:**

**Option 1 - Do nothing**

Prince Street Bridge is currently unserviceable and the temporary footbridge in place obstructs high-masted maritime traffic. To do nothing would be unacceptable as a permanent solution is required to cater for in excess of 6,000 pedestrians and 2,500 cyclists wishing to cross the City Docks at this location, along with well over 4,000 vehicles each day and the need for unfettered use of the City Docks. The bridge also forms part of Bristol's maritime heritage and to allow it to fall into disrepair would be a loss to the City.

## Option 2 – Replace the existing bridge with a new structure

Replacing the bridge with a new one has been considered as follows:

- i) New operational swing bridge for vehicular and pedestrian traffic - approximate cost £5.5m.
- ii) New operational pedestrian and cyclist only swing bridge - approximate cost £2.5m.
- iii) “Replica” operational swing bridge (i.e. a newly manufactured bridge of similar appearance to the existing) - approximate cost £6.5m.

These options are not attractive due to their high cost, long delivery timescales and negative impact on Bristol’s dockside heritage. Historic England have indicated that they would be very unlikely to support the replacement of the existing bridge with a new one.

## Option 3 – Refurbish the existing bridge with a lighter deck only suitable for pedestrians and cyclists

This option could reduce the replacement cost of the bridge deck and surfacing by perhaps £20k. However, it would render the bridge unsuitable for use by vehicles under any circumstances and the concerns over the function of the highway network without the bridge carrying the light vehicular traffic which it normally does would not be addressed. The potential cost saving is also small as a percentage of the overall estimated cost of the work and represents a good investment in network resilience.

Returning the bridge to its previous carrying capacity is a better option, as this does not preclude a future policy decision on what traffic the bridge may carry if overall traffic conditions in the City were to change.

## Risk management / assessment:

**FIGURE 1**

**The risks associated with the implementation of the (subject) decision :**

No.	RISK  Threat to achievement of the key objectives of the report	INHERENT RISK (Before controls)		RISK CONTROL MEASURES  Mitigation (ie controls) and Evaluation (ie effectiveness of	CURRENT RISK (After controls)		RISK OWNER
		Impact	Probability		Impact	Probability	
1	Delay/work takes longer than expected	Medium	High	Carry out up-front accurate assessment and programming with specialist advice from consultant with previous first-hand knowledge of similar work	Medium	Low	Highways
2	Costs exceed initial estimates	Medium	High	As above	Medium	Low	Highways
3	Necessary Listed Consent refused	High	Medium	Early and thorough engagement with Historic England	High	Low	Highways

**FIGURE 2**

**The risks associated with not implementing the (subject) decision:**

No.	RISK  Threat to achievement of the key objectives of the report	INHERENT RISK (Before controls)		RISK CONTROL MEASURES  Mitigation (ie controls) and Evaluation (ie effectiveness of	CURRENT RISK (After controls)		RISK OWNER
		Impact	Probability		Impact	Probability	

1	Temporary footbridge cannot remain indefinitely so people would not be able to cross the City Docks at this location	High	High	Implement recommendation	Low	Low	
2	Use of the City Docks would remain restricted	Medium	High	Implement recommendation	Low	Low	
3	Additional Highway Network delays due to bridge closure would be on-going	Medium	High	Implement recommendation	Low	Low	

## Public sector equality duties:

*Before making a decision, section 149 of the Equality Act 2010 requires that each decision-maker considers the need to promote equality for persons with the following “protected characteristics”: age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex, sexual orientation. Each decision-maker must, therefore, have due regard to the need to:*

*i) eliminate discrimination, harassment, victimisation and any other conduct prohibited under the Equality Act 2010.*

*ii) advance equality of opportunity between persons who share a relevant protected characteristic and those do not share it. This involves having due regard, in particular, to the need to:*

*- remove or minimise disadvantage suffered by persons who share a relevant protected characteristic.*

*- take steps to meet the needs of persons who share a relevant protected characteristic that are different from the needs of people who do not share it (in relation to disabled people, this includes, in particular, steps to take account of disabled persons' disabilities);*

*- encourage persons who share a protected characteristic to participate in public life or in any other activity in which participation by such persons is disproportionately low.*

*iii) foster good relations between persons who share a relevant protected characteristic and those who do not share it. This involves having due regard, in particular, to the need to tackle prejudice and promote understanding.*

## Public sector equality implications:

Implementing the recommendation of this report would return the bridge to its previously accessible condition, so to not implement the recommendation would restrict use by anyone and everyone.

There are no equality implications because this report is not proposing a change in policy, it relates to an engineering need to maintain a previously existing situation.

An Equality Impact Relevance Check is included as Appendix 2.

## Eco impact assessment

The significant impacts of this proposal are the use of non-renewable materials and the potential for pollution of the City docks.

The proposals include the following measures to mitigate the impacts: use of new materials will be minimised and recycled/renewable alternatives used wherever possible, great care

will be taken to minimise the possibility of a pollution event occurring.

The net effects of the proposals are negative in the short term (because of material use, paint etc.) but positive in the long term (due to the reduction in traffic congestion – CO<sub>2</sub> & local air quality).

An Eco Impact Checklist is included as Appendix 3.

## **Resource and legal implications:**

### ***Finance***

#### **a. Financial (revenue) implications:**

The ongoing revenue costs for maintenance will be absorbed within the existing revenue budgets for Transport.

**Advice given by** Tian Ze Hao, Finance Business Partner  
**Date** 15<sup>th</sup> February 2016

#### **b. Financial (capital) implications:**

Funding has been identified within the 2015/16 (£400k) and 2016/17 (£800k) existing Transport capital budgets to cover the total estimated cost of the refurbishment works including contingency. This does not present additional funding pressures to the existing capital programme. Breakdown of estimated cost elements is as follows:

Structural assessment	£25k
Main girder web replacement and repair	£150k
Main girder flange replacement and repair	£140k
Transverse cross beam replacement and repair	£320k
Counterbalance section refurbishment	£100k
Corroded rivet replacement	£80k
Replacement of end termination cross beams	£60k
Masonry and dock wall stabilisation	£60k
Replacement of decking and resurfacing	£60k
Repair and replacement of swinging mechanism components	£40k
Total repaint	£100k
Contingency	£65k

**Total estimated cost** £1.2m

**Advice given by** Tian Ze Hao, Finance Business Partner  
**Date** 15<sup>th</sup> February 2016

## **Comments from the Corporate Capital Programme Board:**

The funding source for the £800k required in 2016/17 was approved by the January 2016 Corporate Capital Programme Board.

**c. Legal implications:**

The proposed work will require an application for Listed Building Consent if it amounts to work for the demolition of a listed building or for its alteration or extension in any manner which would affect its character as a building of special architectural or historic interest. The Secretary of State has directed that the Local Planning Authority must notify Historic England of such applications.

**Advice given by** Lynne Harvey, Solicitor  
**Date** 3<sup>rd</sup> February 2016

**d. Land / property implications:**

Prince Street Bridge is an important component of the City's infrastructure, for the docks as well as the highway network. Restoring function and use will make a material positive contribution to our land & building assets.

**Advice given by** Robert Orrett, Service Director  
**Date** 18<sup>th</sup> February 2016

**e. Human resources implications:**

There are no HR implications.

**Advice given by** Mark Williams, People Business Partner  
**Date** 27<sup>th</sup> January 2016

**Appendices:**

Appendix 1 - Traffic/Highway Network Operations internal consultation  
Appendix 2 - Equality Impact Relevance Check  
Appendix 3 - Eco Impact Checklist  
Appendix 4 - Photographs showing extensive corrosion of bridge structure

**Access to information (background papers):**

None

## Appendix 1

### Traffic/Highway Network Operations internal consultation

Notes on impact of closure of Prince Street Bridge:

- Increased use of the The Grove resulting in queues that sometimes extend its full length. This has caused very long delays to buses resulting in high number of lost miles.
- Redcliffe Roundabout has become extremely busy resulting in exit blocking that again affects buses.
- Bedminster Bridge now takes considerably more right turning traffic from Redcliff Hill to Coronation Road/Commercial Road. This has affected the Commercial Road to Clarence Road and York Road movements as exits are often blocked by right turning vehicles.
- Queue lengths on Commercial Road have increased resulting in frequent complaints about insufficient 'green' time at Bedminster Bridge. This is not something that can be increased without affecting the operation of the whole roundabout.
- Redcliff Hill is now often queued between Bedminster Bridge and Redcliffe Roundabout resulting in delays to bus services.
- Evidence that some vehicles are now using Hotwell Road instead of Prince Street and travelling through the centre which is undesirable under normal circumstances and a particular problem given the current city centre construction works.

## Appendix 2

### Bristol City Council Equality Impact Relevance Check



This tool will identify the equalities relevance of a proposal, and establish whether a full Equality Impact Assessment will be required.

Please read the guidance prior to completing this relevance check.

<b>What is the proposal?</b>	
Name of proposal	Prince Street Bridge repairs
Please outline the proposal.	To approve the use of transport capital funds to enable prince Street Bridge, which is currently closed, to be re-opened for its previous use.
What savings will this proposal achieve?	N/A
Name of Lead Officer	Gareth Vaughan-Williams, Highways Service Manager

#### **Could your proposal impact citizens with protected characteristics?**

(This includes service users and the wider community)

Please outline where there may be significant opportunities or positive impacts, and for whom.

There is currently no vehicular access. Pedestrian access has been retained but may not be suitable for those with restricted mobility. Re-opening the bridge will improve this and make it easier for some disabled and older people to get to where they need to go.

Please outline where there may be significant negative impacts, and for whom.

Some disabled and older people may have found the bridge to be unsuitable in its previous condition; we will not be able to improve this.

#### **Could your proposal impact staff with protected characteristics?**

(i.e. reduction in posts, changes to working hours or locations, changes in pay)
Please outline where there may be significant opportunities or positive impacts, and for whom.
N/A
Please outline where there may be negative impacts, and for whom.
N/A

<b>Is a full Equality Impact Assessment required?</b>	
<p>Does the proposal have the potential to impact on people with protected characteristics in the following ways:</p> <ul style="list-style-type: none"> <li>• access to or participation in a service,</li> <li>• levels of representation in our workforce, or</li> <li>• reducing quality of life (i.e. health, education, standard of living) ?</li> </ul>	
<p>Please indicate yes or no. If the answer is yes then a full impact assessment must be carried out. If the answer is no, please provide a justification.</p>	<p>No – there are no negative impacts or positive opportunities offered in repairing the bridge and bringing it back into use.</p>
<p>Service Director sign-off and date:</p>	<p>Equalities Officer sign-off and date:</p> <p>Anne James</p> <p>Equality and Community Cohesion Team Leader</p> <p>22 January 2016</p>

## Appendix 3

### Eco Impact Checklist

<b>Title of report: Prince Street Bridge Refurbishment Works</b>				
<b>Report author: Gareth Vaughan-Williams</b>				
<b>Anticipated date of key decision: 1<sup>st</sup> March 2016</b>				
<b>Summary of proposals: To return Prince Street Bridge to a structurally sound and operational condition, including full repaint, new deck and road surface and necessary repairs to dock walls.</b>				
Will the proposal impact on...	Yes/ No	+ive or -ive	If Yes...	
			Briefly describe impact	Briefly describe Mitigation measures
Emission of Climate Changing Gases?	Yes	Both	Repair of the bridge will provide resilience in the highway network and allow shorter vehicle trips and hence reduced emissions from road traffic. Repair activity will result in emission of some climate changing gas.	Minimise activity which results in emissions.
Bristol's resilience to the effects of climate change?	No	-	-	-
Consumption of non-renewable resources?	Yes	-ive	Repair works will involve use of materials which are non-renewable, such as steel, GRP and paint and corrosion prevention systems.	Use of new materials will be minimised and recycled/renewable alternatives used wherever possible.
Production, recycling or disposal of waste	Yes	-ive	Waste will be generated in the form of corroded/deteriorated material removed from the bridge.	As much original material will be retained/reused as possible. Unavoidable waste will be disposed of in the proper manner.
The appearance of the city?	Yes	+ve	This work will repair and restore a listed heritage asset.	
Pollution to land, water, or air?	Risk	-ive	There is a risk of pollution occurring, however, proper management of the site and activity will reduce the likelihood	Measures to prevent pollution events occurring will be undertaken. A particular example is that the bridge will be contained within a

			to an acceptable level.	dust-proof tent when grit-blasting to prepare for painting. A pontoon over the water has been constructed under the bridge for health & safety reasons and to prevent waste and other materials such as fuel/chemicals entering the dock.
Wildlife and habitats?	No	-	-	-

**Consulted with: BCC Environmental Performance Team**

**Summary of impacts and Mitigation - to go into the main Cabinet/ Council Report**

The significant impacts of this proposal are the use of non-renewable materials and the potential for pollution of the City docks.

The proposals include the following measures to mitigate the impacts: use of new materials will be minimised and recycled/renewable alternatives used wherever possible, great care will be taken to minimise the possibility of a pollution event occurring.

The net effects of the proposals are negative in the short term (because of material use, paint etc.) but positive in the long term (due to the reduction in traffic congestion – CO<sub>2</sub> & local air quality).

**Checklist completed by:**

Name:	G Vaughan-Williams
Dept.:	Place
Extension:	36833
Date:	27/1/16
Verified by Environmental Performance Team	Steve Ransom

**Appendix 4**

Photo 1 - Corroded cross beam



Photo 2 - Widespread corrosion below road surface level



Photo 3 - Perforated main girder web



Photo 4 - Missing material on end termination beam flange

