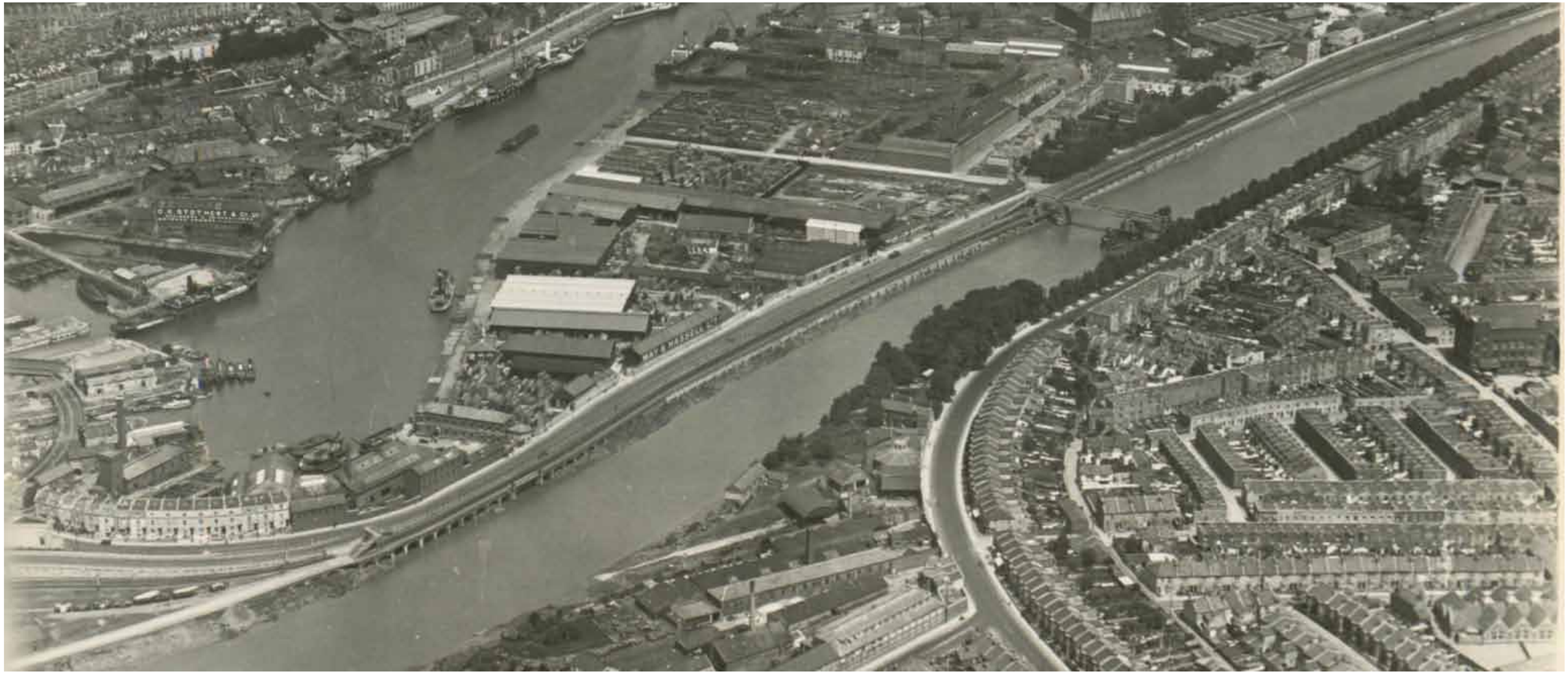
The River Avon



City Design Group

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City Design Group

Contents

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Cover image Spike Island, 1930s, Bristol Archives, Albert Clarke Collection, 44819/3/67

1

Introduction

Vauxhall Bridge ink drawing by Samuel Loxton,
Bristol Libraries, C140

Introduction

1.1 The New Cut

Like all the great cities, Bristol was founded on a significant watercourse that enabled access to overseas and inland trade. The unique factor for Bristol is the extreme tidal range of the River Avon.

The 15m maximum tidal range between high and low water results in navigational difficulties and led to ships being moored in a muddy harbour and low tide often resulting in damage to their hulls.

To solve this problem the engineer William Jessop proposed the creation of the Floating Harbour that enclosed approximately 6km of water between lock gates at Cumberland Basin and Netham. In addition to the Floating Harbour the New Cut was created to take the tidal river. The resulting landscape is one of Bristol's most significant and distinctive heritage assets. It was opened in 1809 and the engineer Isambard Kingdom Brunel designed improvements in the 1840s.

Rising sea level predictions present a 21st century challenge for the city. In order to ensure the resilience of the city for the next 100 years tidal defences are called for that will potentially have a significant landscape impact. The main challenge will be to create tidal defences that positively contribute to the city's landscape creating a 21st century place that respects and enhances the historic landscape.

1.2 Purpose and scope of the assessment

The purpose of this document is to set out the key aspects of the historic environment along the modern river corridor that new interventions will need to positively respond to or where appropriate mitigation measures will need to be demonstrated.

One of the main objectives is to identify the opportunities that the historic landscape presents in terms of making a quality resilient place for the future.

The assessment has taken a landscape approach based on the historic significance of the area and the contribution that specific assets make to this significance. Consequently the overall character of the area is taken as the baseline that needs to be preserved or enhanced in accordance with planning policies. Where there is expected to be significant impacts to individual assets these have been covered in more detail.

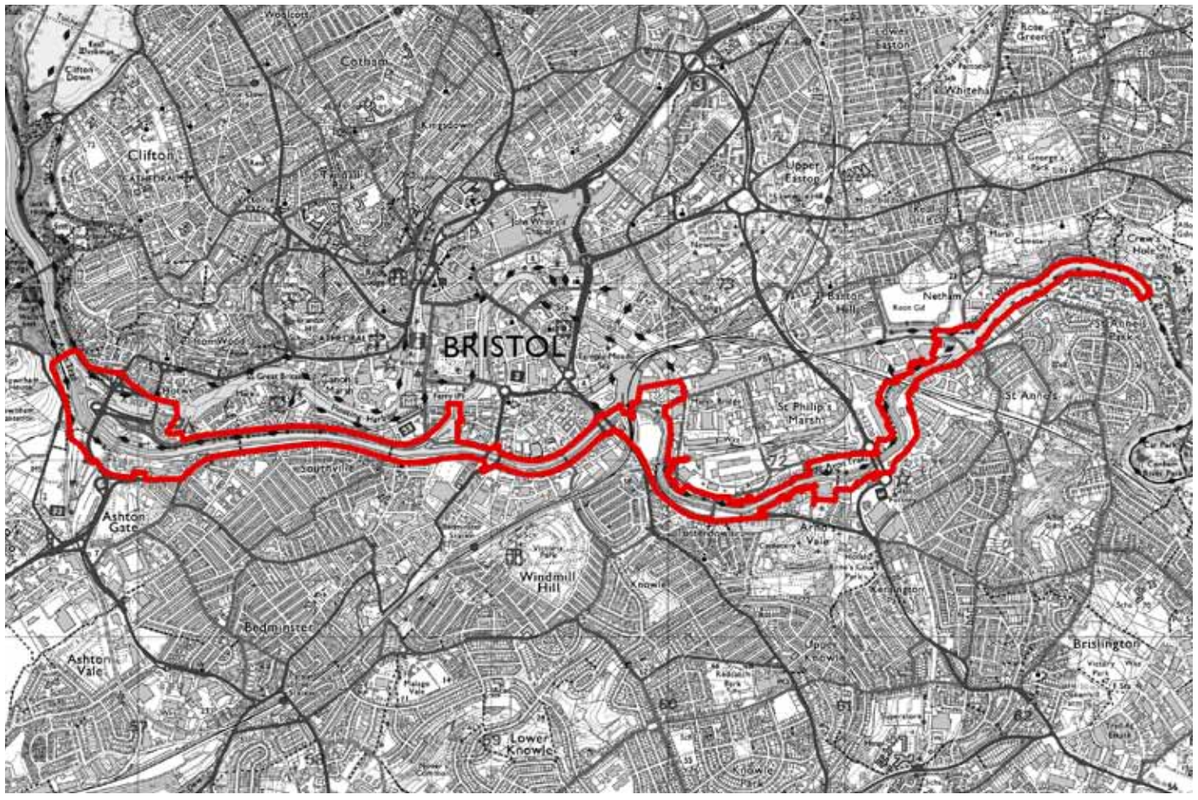


Fig 1
Study area

Not to scale

Fig 2
Conservation Areas

- City Docks
- Bedminster
- Bower Ashton
- The Downs
- Redcliffe
- Clifton and Hotwells
- Old City and Queen Square
- College Green
- Park Street and Brandon Hill
- Avon Valley
- Old Market
- Arnos Vale

Study area

The study area is defined as the tidal river from Cumberland Basin to Netham along which the majority of future tidal defence works can be expected.

These works and this assessment focuses on the north bank of the River Avon and includes the Cumberland Basin environment, Bathurst Basin, Totterdown Basin and Netham Lock.

Approximately half of the study area lies within a conservation area; mainly the City Docks Conservation Area, but also parts of Redcliffe Conservation Area and the Avon Valley Conservation Area around Netham.

The study area is also visible in views from other conservation areas contributing to their significance primarily The Downs Conservation Area and the Clifton and Hotwells Conservation Area.

Policy background

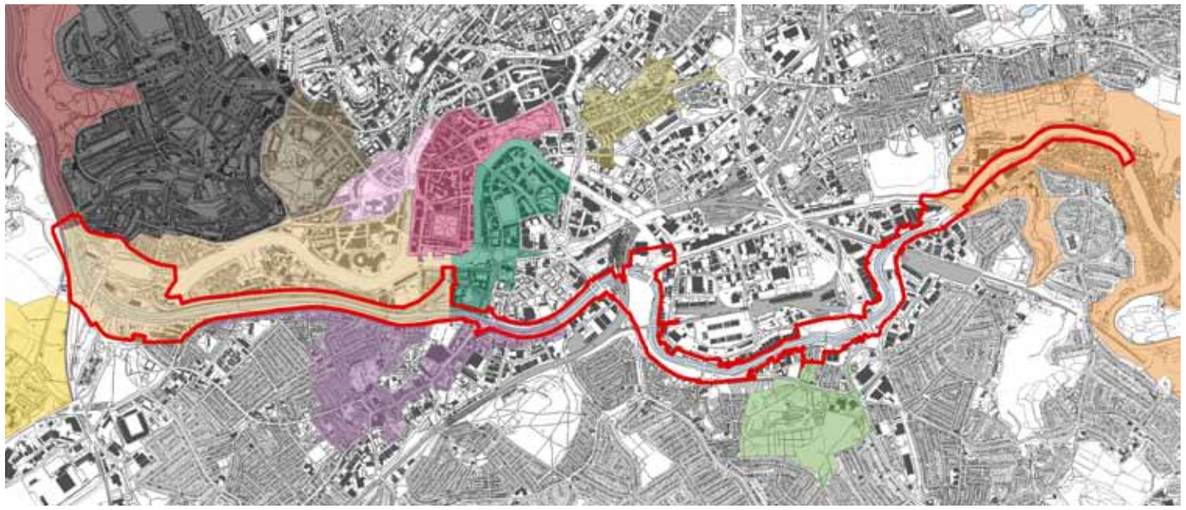
There is duty under Section 72 (1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 to pay special attention to the preservation or enhancement of the surrounding conservation area.

The National Planning Policy Framework (NPPF) is national policy in the conservation and enhancement of the historic environment which must be taken into account by the Council.

Section 12 of the NPPF states that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the assets conservation with any harm or loss requiring clear justification.

Bristol Core Strategy Policy BCS22 (adopted June 2011) states that development proposals should safeguard or enhance heritage assets and the character and setting of areas of acknowledged importance including Conservation Areas.

Policy DM31 in the Site Allocations and Development Management Policies (adopted July 2014) express that projects should safeguard and preserve or enhance historic settings.



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Not to scale

Significance

Significance is a collective term for the sum of all the heritage values attached to a place, be it a building an archaeological site or a larger historic area such as a whole village or landscape.

'Conservation Principles' sets out a method for thinking systematically and consistently about the heritage values that can be ascribed to a place. People value historic places in many different ways; 'Conservation Principles' shows how they can be grouped into four categories:

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

Historical value: the ways in which past people, events and aspects of life can be connected through a place to the present - it tends to be illustrative or associative.

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

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

Conservation Principles, Historic England

Evidential Value

The landscape as a whole retains considerable evidential value in terms of the development of the city. The remains relating to previous maritime use of the area from quaysides to individual mooring posts contribute to the overall significance of the area in terms of evidential value. This is most evident at the western end of the study area where maritime activities were and remain concentrated. These aspects largely relate to the City Docks Conservation Area designation.

Other historic landscape assets of evidential value include the remains of the former harbour railway in terms of the general dockland infrastructure and the Chocolate Path as an early example of leisure use in the area.

Historic Value

As a landscape derived from feats of engineering the aspects of the River Avon and the New Cut that are of the highest historic significance relate to assets that can be attributed to known historical engineers:

William Jessop - engineer and designer of the Floating Harbour including the New Cut, 1804-9
- Cumberland Basin
- South Junction Lock
- Bathurst Basin
- Totterdown Lock
- Netham Lock

I**sambard Kingdom Brunel** - designed alterations to the Floating Harbour system in the 1840s
- South Entrance Lock and swing bridges over both entrance locks, 1844-49
- The Underfall, 1830s

Thomas Howard - Docks Engineer, 1867-73
- North Entrance Lock
- North Junction Lock

Aesthetic Value

Since the closure of the commercial docks in the early 1970s the landscape as a whole has gone through a process of transformation from an industrial landscape to a leisure landscape. As a result the aesthetic values have increased particularly at the western end of the study area where views of the Avon Gorge, Clifton Suspension Bridge, Clifton terraces, Leigh Woods and the Ashton Court estate can now be appreciated from many vantage points that were largely inaccessible before the 1960s.

At the eastern half of the study area despite an urban transformation that has seen increased light industrial land use since the 1920s the area retains its natural aesthetic values. This is in part helped by the introduction of public parks; Spark Evans and Netham Park within the rivers setting the latter itself on a former industrial site.

Fig 3
View into the Avon Valley Conservation Area from Netham Lock

Communal Value

This is probably the least well understood value in terms of the study area possibly as a result of the transformation of the area in living memory from a place of work to a place of leisure.

Memories of working environments along the length of the river contribute to the significance of the River Avon and New Cut.

More recent leisure use now further contributes to the communal value of the landscape.

Works to improve access to the river both physical and intellectual is one of the primary opportunities that the tidal defence works can offer.

2

Historic overview

Watercolour by T.L. Rowbotham showing the Overfall Dam, New Cut and Cumberland Basin in 1827, Bristol City Museum and Art Gallery, M2931

Historic overview

Approximately two thirds of the study area between Cumberland Basin and Totterdown Lock is a man-made channel, the New Cut, and associated lock basins created in the early 19th century as part of the engineering works for the Floating Harbour. The New Cut was created to carry the River Avon and tidal waters along a new water course south of the original route of the meandering river. Adding lock gates at Cumberland Basin, Bathurst Basin, Totterdown Basin and Netham removed the former water course from the tidal regime so that ships would remain floating rather than grounding on the muddy river banks when the tide went out.

A separate structure, Mylne's Culvert, was created to take the flow of the River Frome from the northern end of the City Centre to drain in to the New Cut close to Bathurst Basin.

Prior to the creation of the Floating Harbour and the New Cut the study area was a flat low-lying agricultural flood plain to the south of the Avon. This former landscape now only survives in the alignment of roads in Southville that largely correspond to the alignment of former field boundaries particularly in the cast of roads to the north of Stackpool Road such as Beauley Road. Greenway Bush Road is likely to be an earlier route leading from the medieval route of North Street to a former ferry crossing.

Draining this agricultural landscape were further tributaries of the Avon particularly the Malago and Colliter's Brook both of which now empty into the New Cut. The area of Bathurst Basin was formerly a series of channels and pools associated with a mill at the mouth of the Malago, Trin Mill.

Beyond Totterdown Basin the water course follows its original route around St Philip's Marsh.

The creation of the New Cut took five years between 1804 and 1809. The bulk of the up cast from the excavation for the channel was added to the south bank resulting in the raised route of Coronation Road.

The creation of the Floating Harbour encouraged new industry particularly increased ship building in the Hotwells area and increased housing developments on both sides of the New Cut.

Despite the engineering achievements of the early 19th century the increasing size of ships led to further alterations to the Floating Harbour in the 1840s by Brunel and again in the 1860-70s by docks engineer Thomas Howard to increase the width of the entrance and junction locks at Cumberland Basin. However, these later works were not sufficient to ensure the long term future of Bristol Harbour that eventually closed to commercial operations in the early 1970s after a long period of decline.

Since the 1970s the engineering legacy has become one of the city's key attractions for cultural and leisure activities.

Fig 3
Cumberland Basin, New Cut and Floating Harbour, Bristol Archives, 44818/3/85

Fig 4
Historic overview

1	**2**	**3**
4	**5**	**6**

1 The Rownham Ferry and Ashton Avenue Swing Bridge in the early 20th century, Bristol Archives, 43207/9/29/71

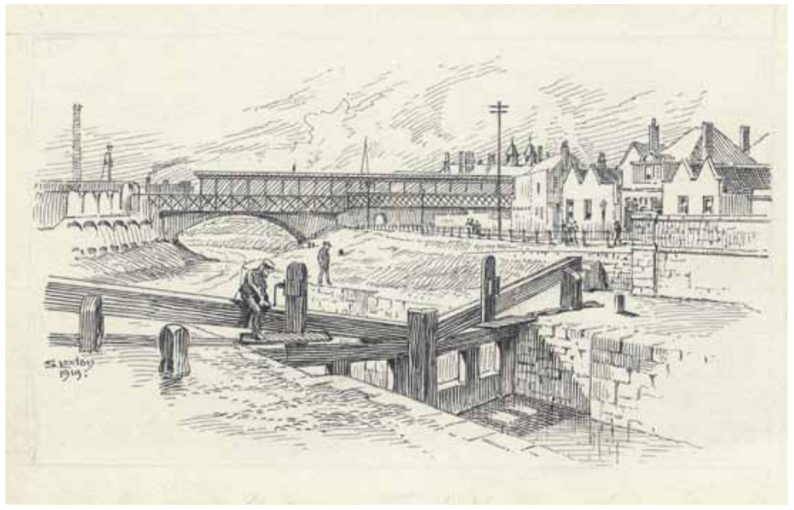
2 The Gaol Ferry, 1919, Bristol Archives, 43207/9/13/76

3 Entrance to Bathurst Basin, 1906, Bristol Archives, 43207/9/37/47

4 View from Bedminster Bridge, early 20th century, Bristol Archives, 43207/9/13/71

5 Totterdown Lock, Samuel Loxton drawing, early 20th century, Bristol Libraries, U1146

6 Netham Lock in the early 1960s, photo courtesy of Know Your Place, HC3062



3

River Avon Character Areas

Character Areas

Overview

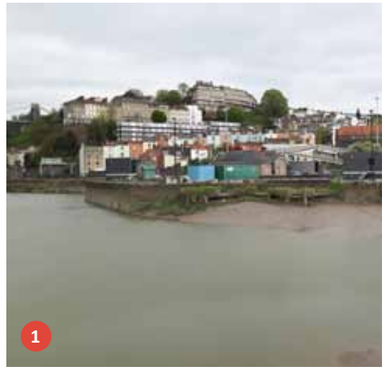
For the purposes of creating a coherent landscape assessment the study area has been divided into eight character areas. Where relevant these have been drawn from previous character appraisals.

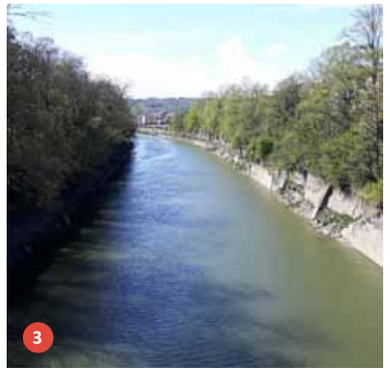
Each defines an area of distinctive character identified from the historic landscape development.

1 Cumberland Basin
2 Underfall Yard
3 New Cut West
4 Bathurst Basin
5 New Cut East
6 Totterdown Lock
7 Avon Riverside
8 Netham Lock (including the Feeder and St Anne's riverside)

Each character area is described in terms of its:

Historic development	**The key phases that have led to the current landscape**	Evidential value Historic value
Heritage assets and significance	**The designated and undesignated heritage assets within the character area with a specific focus on any individual assets that are likely to require special consideration within future proposals**	Historic value Aesthetic value Communal value
Character and setting	**A description of the key views that contribute to the character of the area and a SWOT analysis that aims to highlight particular opportunities for future proposals**	Aesthetic value Communal value





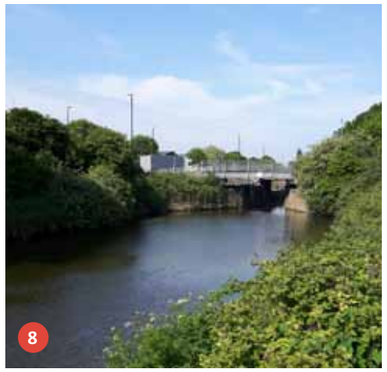
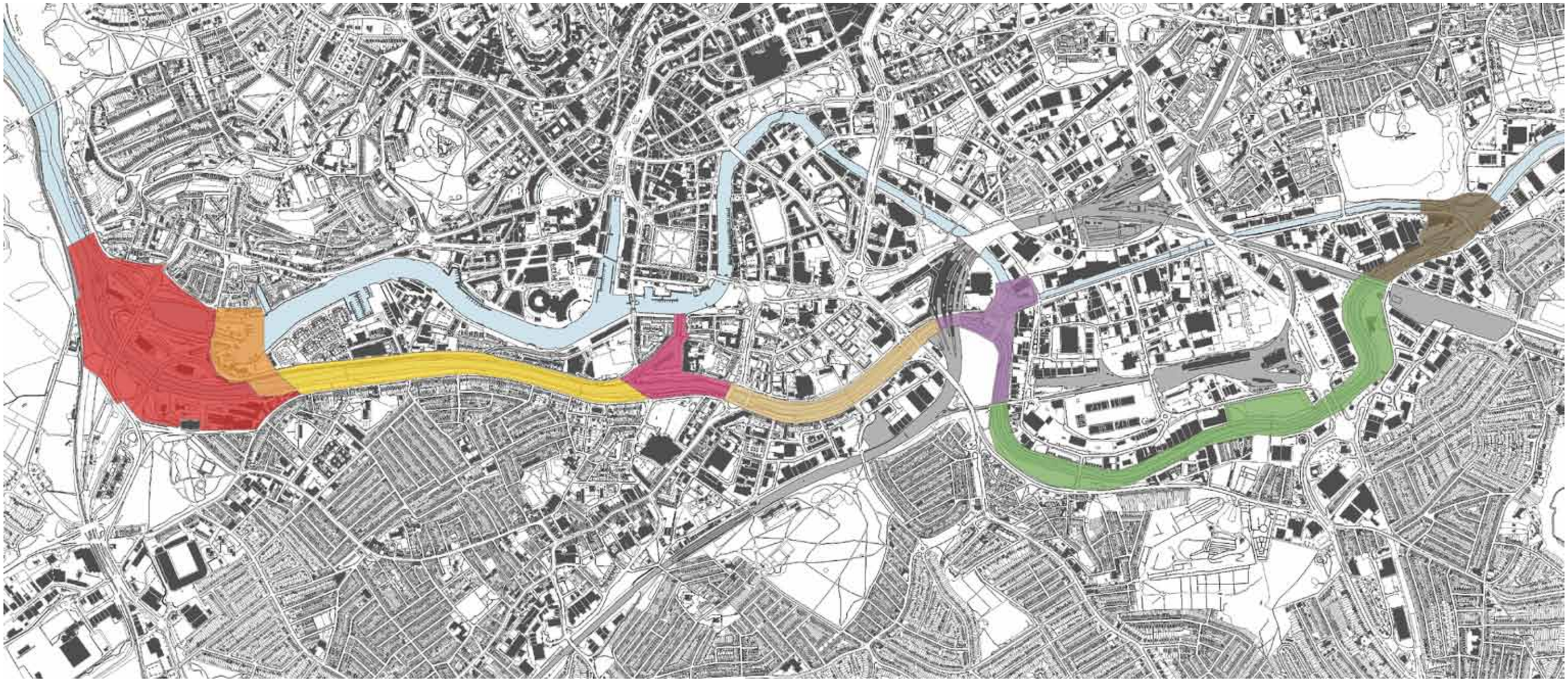


Fig 5
Character Areas

- Cumberland Basin
- Underfall Yard
- New Cut West
- Bathurst Basin
- New Cut East
- Totterdown Lock
- Avon Riverside
- Netham Lock



4

Cumberland Basin

Cumberland Basin Historic development

Topography

Flood plain of the River Avon transected by the early 19th century Cumberland Basin east to west and 1960s road infrastructure north-south.

The low plain is flanked by the Clifton escarpment lined with residential listed terraces to the north and the Rownham/Burwalls escarpment that provides a green backdrop to views to the west.

Historic character

The landscape of Cumberland Basin is the product of two grand engineering projects; the creation of the Floating Harbour in 1804-9 and the construction of the highway interchange in 1963-5. Both have radically changed the landscape of this part of the city.

The creation of the Floating Harbour introduced the large Cumberland Basin and associated lock gates into an area of the River Avon flood plain. West of the Underfall, the river still flows along its original/pre Floating Harbour course.

Following the creation of the Floating Harbour the area became dominated by dockside structures and activities. The last significant buildings associated with these maritime activities being the bonded warehouses (A-C) built between 1905 and 1919 and now form a set of distinctive landmarks that contribute to the overall character of the area.

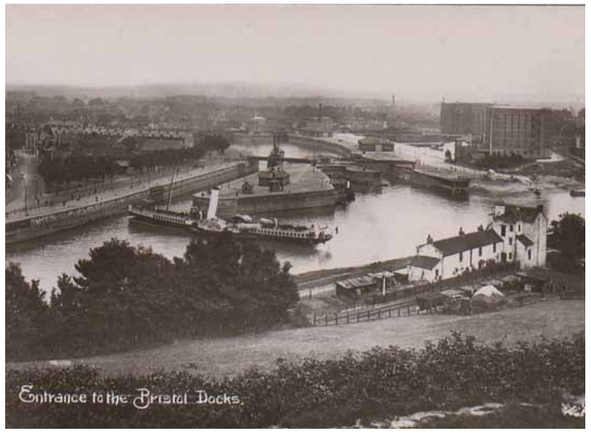
In addition to the warehouses and lock gates, the area retains numerous mooring posts, dockside buildings and associated maritime related features that contribute to the significant character of the area.

The commercial operations of the harbour ceased in the early 70s, although by the late 60s the role of the docks within the city and dramatically reduced.

In 1963 the construction of the Cumberland Basin road scheme began. This introduced the flyover, bridges and slip roads that largely dominate the area today. Associated with this road scheme was a landscape designed by Dame Sylvia Crowe that aimed to soften the impact of the highways and introduce public - pedestrian activity through the area including play areas and market spaces.

The scheme as a whole removed housing and a school from the area between Hotwell Road and Cumberland Basin Road and introduced a new elevated road way across the 19th century landscape.

Despite this 1960s intervention and closure of the commercial docks the area retains its Victorian maritime heritage character.



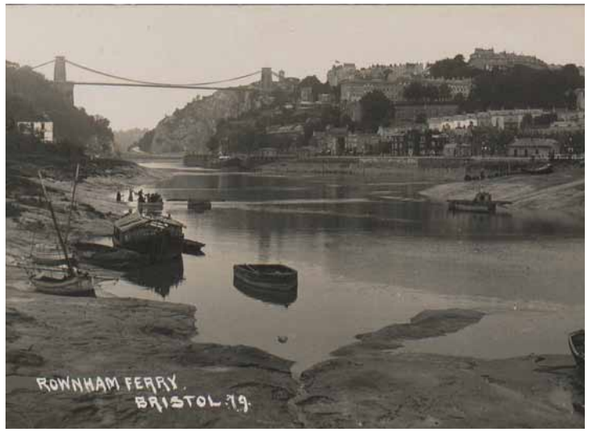
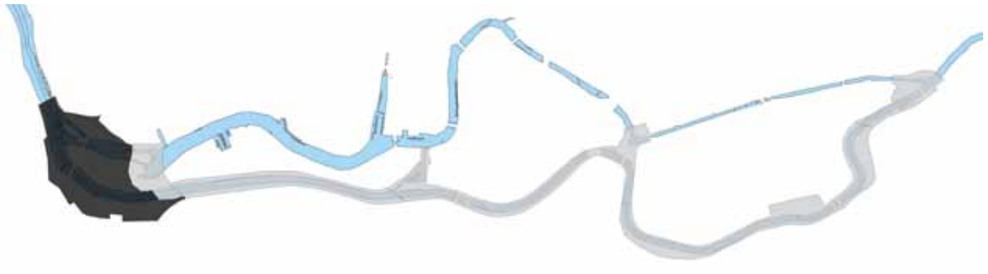


Fig 6
Historic development

1 Cumberland Basin, c.1920s, Bristol Archives, 43207/9/30/232

2 Rownham Ferry, 1900-10, Bristol Archives, 43207/9/29/77

3 and 4 Cumberland Piazza, part of the proposals for the Cumberland Basin Bridges drawn by Wendy Powell for the landscape design by Dame Sylvia Crowe in 1964, Bristol Archives, 37167/353



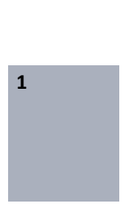


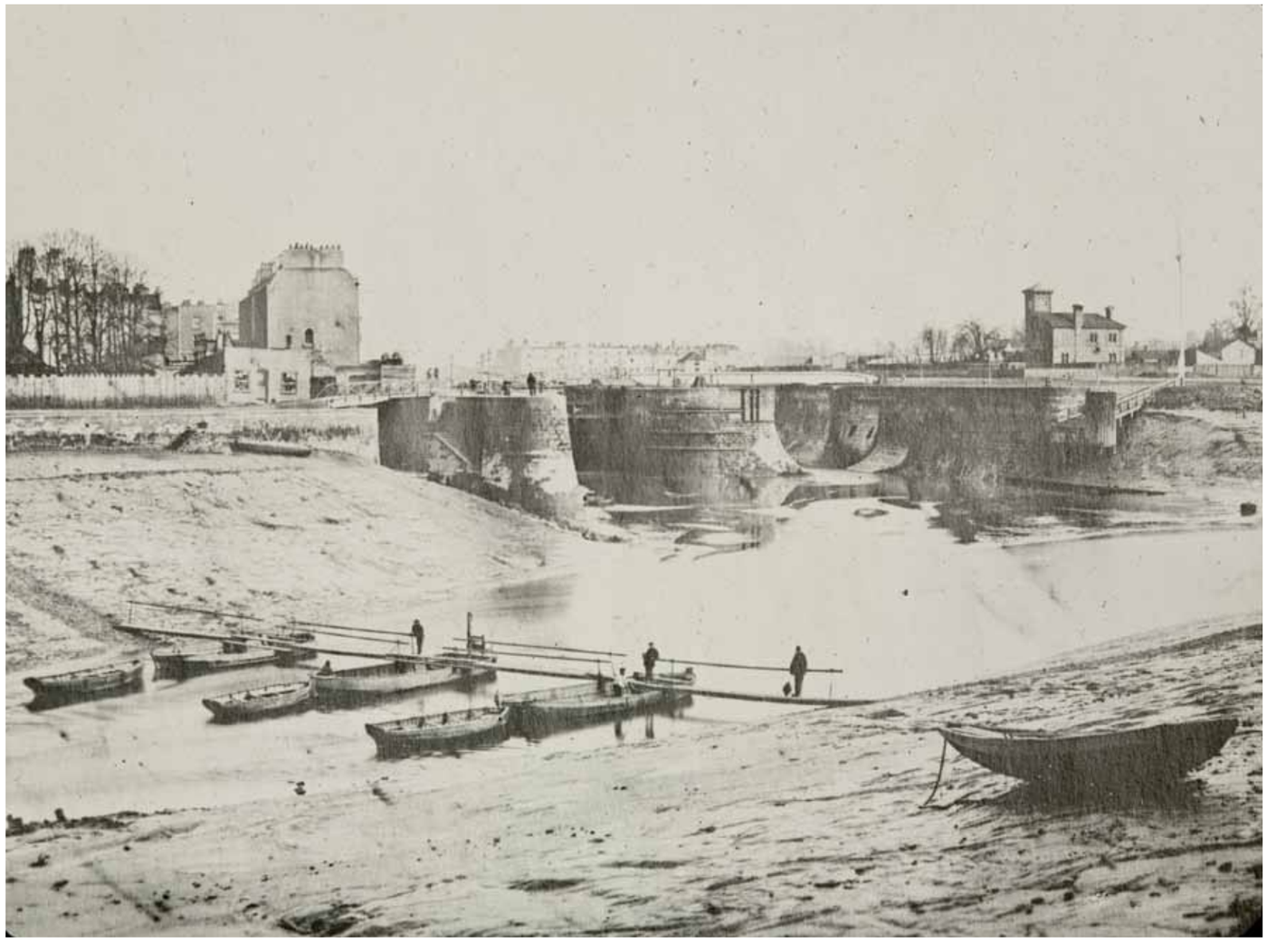
Fig 7
Rownham Ferry

1 Slipways for the Rownham Ferry visible at low tide

2 The original Rownham Ferry, c.1860, Bristol Libraries, LS.364

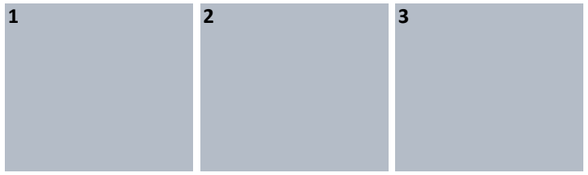
Rownham Ferry

Before the completion of the Clifton Suspension Bridge in 1864, the Rownham Ferry was the main crossing for people moving between Clifton and Hotwells to the Somerset side of the river. The original crossing shown in the image right was moved in 1867 when the North Entrance Lock was created. The remains of this later crossing are visible at low tide on both river banks (below).



Cumberland Basin Historic development

Fig 8
Cumberland Basin historic development



1 George Ashmead, 1828

2 Ordnance Survey, 1880

3 Ordnance Survey, 1903

Surviving features added at each phase

Surviving principle assets from previous phases

1828 main features:

- By 1828 the main landscape feature that had been created and that survives today was the Cumberland Basin itself 1 together with the original Entrance Lock (South Entrance Lock) 2 and Junction Lock (South Junction Lock) 3 now both dammed.
- The entrance lock originally consisted of two lock gates until the engineering amendments in the later 19th century. The northern of these two locks survives as a small dock set within the 'Knuckle'.
- The South Entrance Lock was widened by Brunel in 1849 while the South Junction Lock is the original Jessop 1809 design.

1880:

- Brunel's 1849 alterations to the Entrance Lock included the introduction of the swing bridge over what is now the South Entrance Lock. This was later moved to the North Entrance Lock that it now sits alongside. 4 The bridge over the South Entrance Lock was created in 1875 as a replica of Brunel's bridge.
- In 1867-73 the locks were altered again by Docks Engineer Thomas Howard resulting in the creation of the current configuration including the North Junction Lock 5

1903:

- The introduction of the harbour railway to the area by 1900 including a rail link across the Junction Locks, now removed 6
- The current road bridge over the South Junction Lock had been created by 1900 7
- To the east of the area the key buildings of the present Underfall Yard complex had been created by 1900.

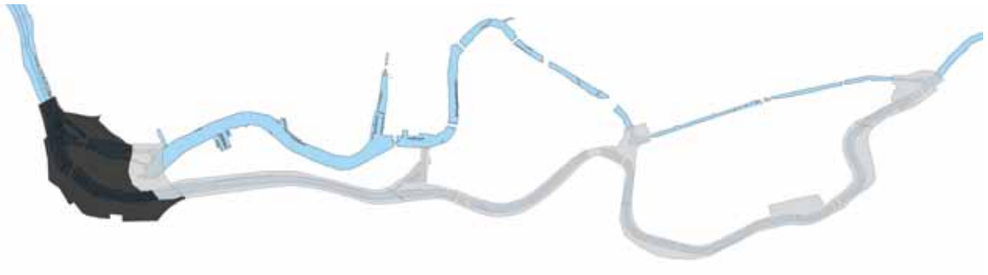


Fig 9
Cumberland Basin historic development

1 2 3

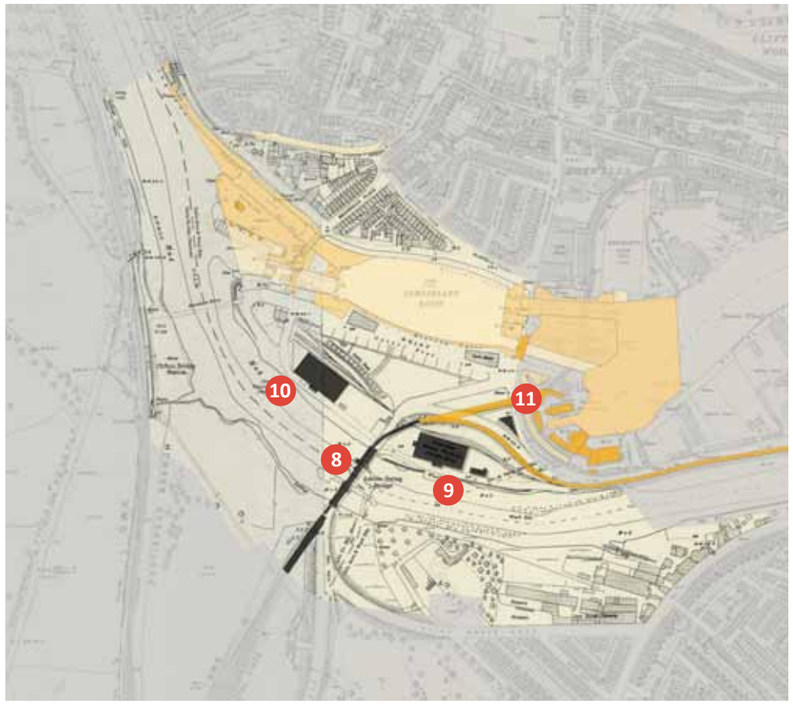
1 Ordnance Survey, 1913

2 RAF aerial photograph, 1946

3 Ordnance Survey, 1950s

Surviving features added at each phase

Surviving principle assets from previous phases



1913:
- In 1906 the harbour railway was extended over the River Avon with the creation of the Ashton Avenue Swing Bridge 8
- This corresponded with the construction of the bonded warehouses A Bond in 1905 9 and B Bond in 1908 10 and the electricity sub-station building also 1908 11

1930s-1946:
- The swing bridge over the North Junction Lock 12 was completed in 1925 as part of road improvement works in the area.
- Terrace of municipal houses added c.1930 13
- There was limited bomb damage within the character area during the war

1950-1965:
- Introduction of the current road infrastructure in 1963-5 and associated landscape designed by Sylvia Crowe 14

Cumberland Basin 1965 landscape

Construction of this road scheme began in the early 1960s and opened to traffic in 1965. For 9 years before the completion of the M5 and the Avonmouth bridge to the west, Cumberland Basin was the main vehicular route connecting Taunton and Exeter to Gloucester, Birmingham and beyond. As such the flyovers and slip roads were designed as a proto motorway interchange complete with rest area and restaurant/cafe. Although there was no filling station as part of the design it is interesting to note that the filling station on Hotwell Road was created in the mid 60s coinciding with this road scheme.

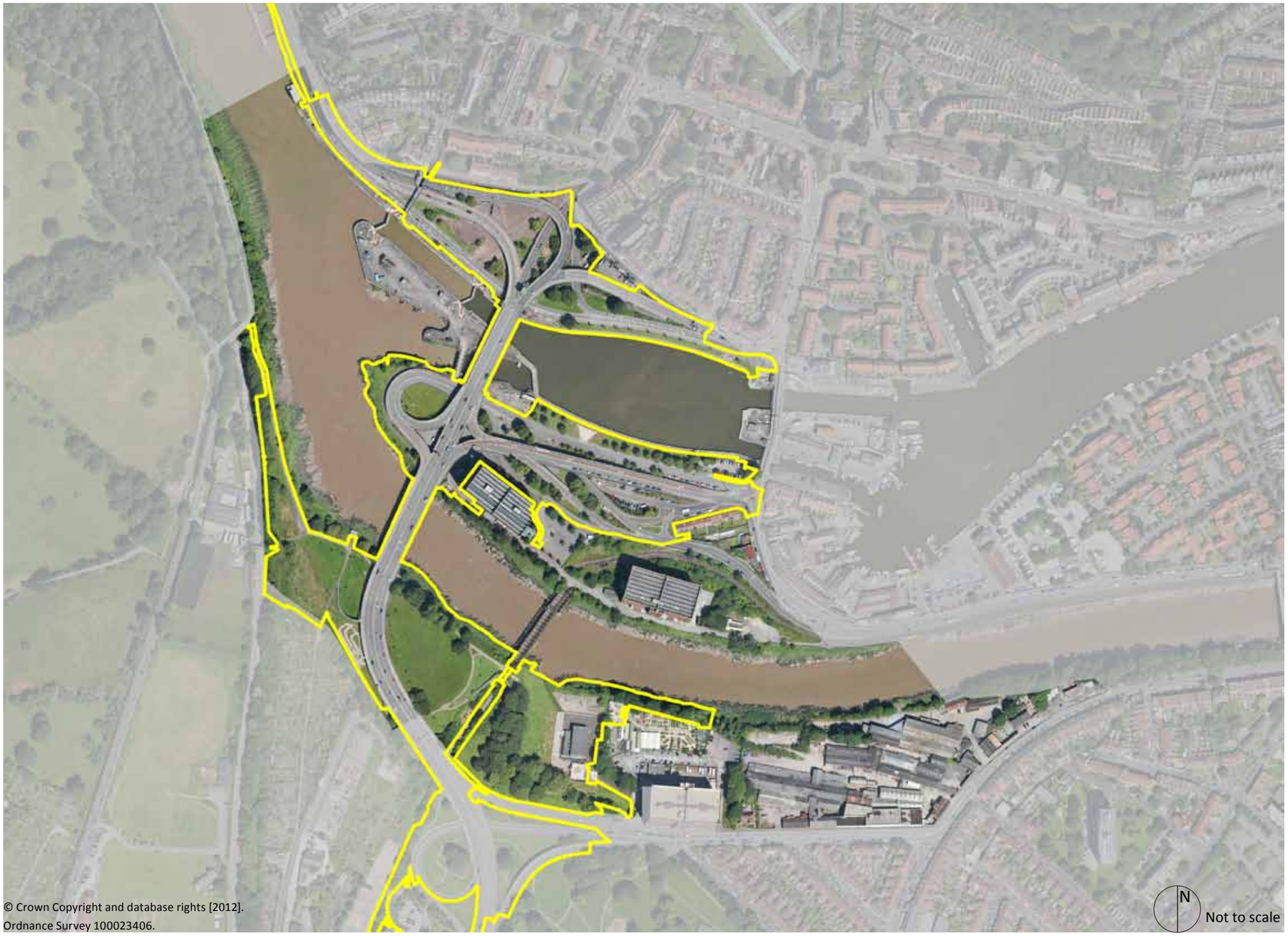
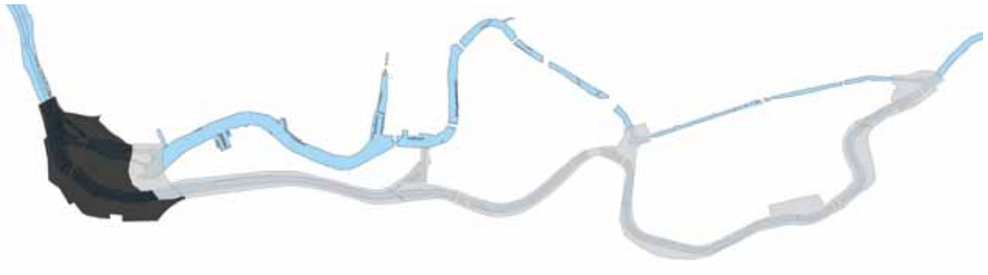


Fig 10
Extent of 1960s landscape



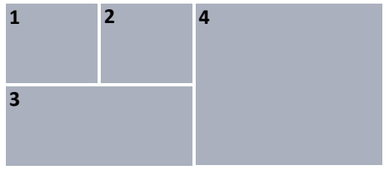


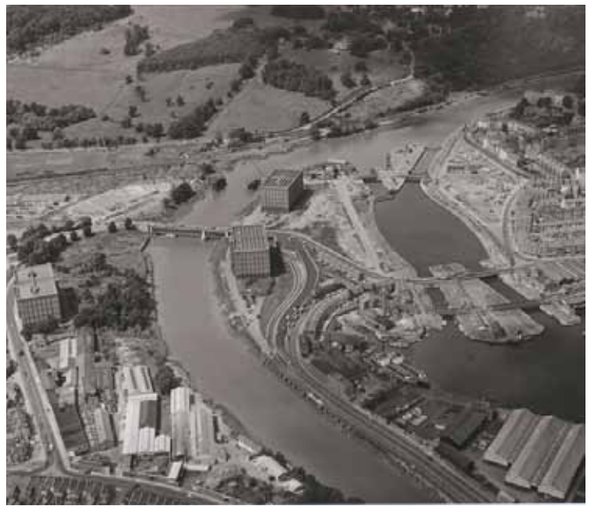
Fig 11
Cumberland Basin

1 Initial stages of the Cumberland Basin road scheme with houses and other buildings having been cleared, Bristol Archives, 40826/DOC/28

2 Avon Bridge over the New Cut under construction in 1964, Bristol Archives, 40826/CUM/18

3 Near completed road scheme, 1965, Bristol Archives, 40826/CUM/20

4 Construction works mid scheme, c.1964, Bristol Archives, 40826/FLO/14



Cumberland Basin heritage assets and significance

The whole of the Cumberland Basin character area lies within the City Docks Conservation area.

The character area contains 7 listed assets that positively contribute to the area's character and appearance:

1 Cumberland Basin including all quay walls and bollards. This would also include the area of the 'Knuckle' and all associated lock gates and remains of timber pier (Grade II listed)
2 The South Entrance Lock as designed by Brunel (Grade II* listed)
3 Brunel swing bridges over the North and South Entrance Locks (both Grade II* listed). Associated with these bridges is a raised area partially enclosed with iron railings. This linked the two bridges and forms part of the listed curtilage of the structures
4 Ashton Avenue swing bridge (Grade II listed)
5 A Bond (Grade II listed)
6 B Bond (Grade II listed)

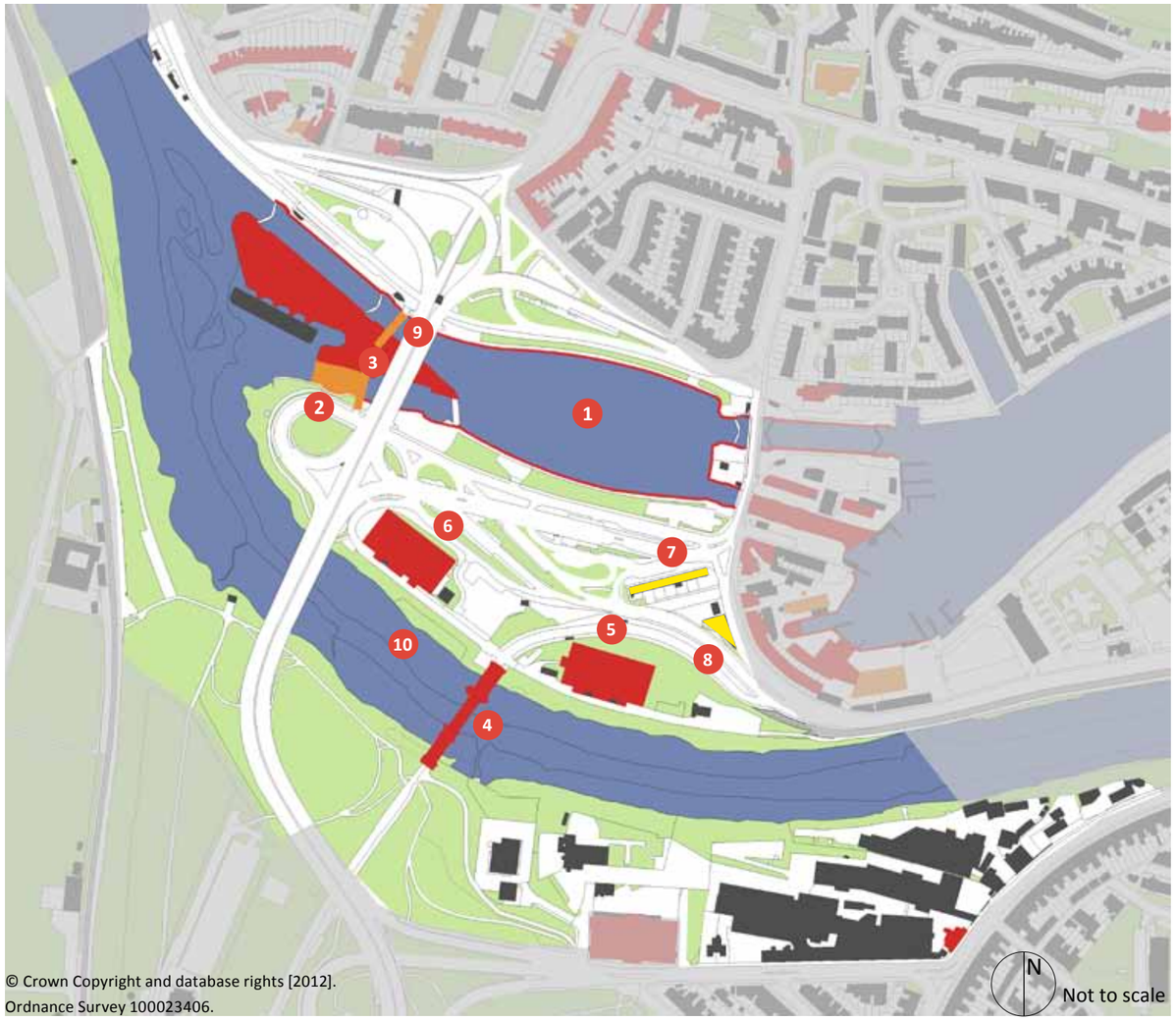
In addition to the designated assets other undesignated assets contribute to the character of the conservation area:

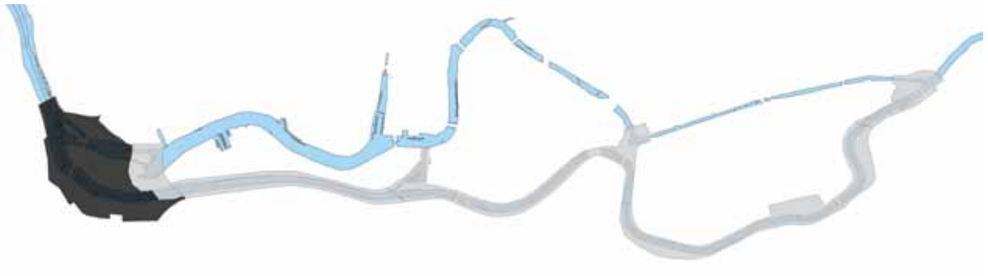
7 Nos.1-7 Ashton Avenue, inter-war municipal housing identified as character buildings in the City Docks Conservation Area Character Appraisal
8 Former electricity sub-station on Avon Crescent, identified on the Know Your Place community layer
9 Plimsoll Bridge swing bridge control tower
10 Remains of bonded warehouse wharfs including mooring posts and pier timbers visible at low tide

Fig 12
Listed assets

Grade II* listed

Grade II listed





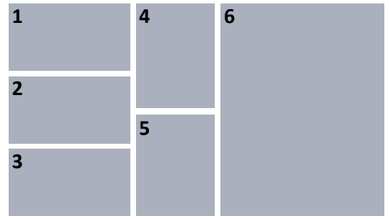


Fig 13
Cumberland Basin

1 Brunel's original swing bridge on the quayside by the North Entrance Lock

2 Looking across the raised former walkway from the South Entrance Lock Bridge towards the North Entrance Lock

3 Original railings

4 Original Victorian lamp post

5 Swing bridge bollards on north side of entrance lock

6 1880s Ordnance Survey First Edition

Brunel swing bridges

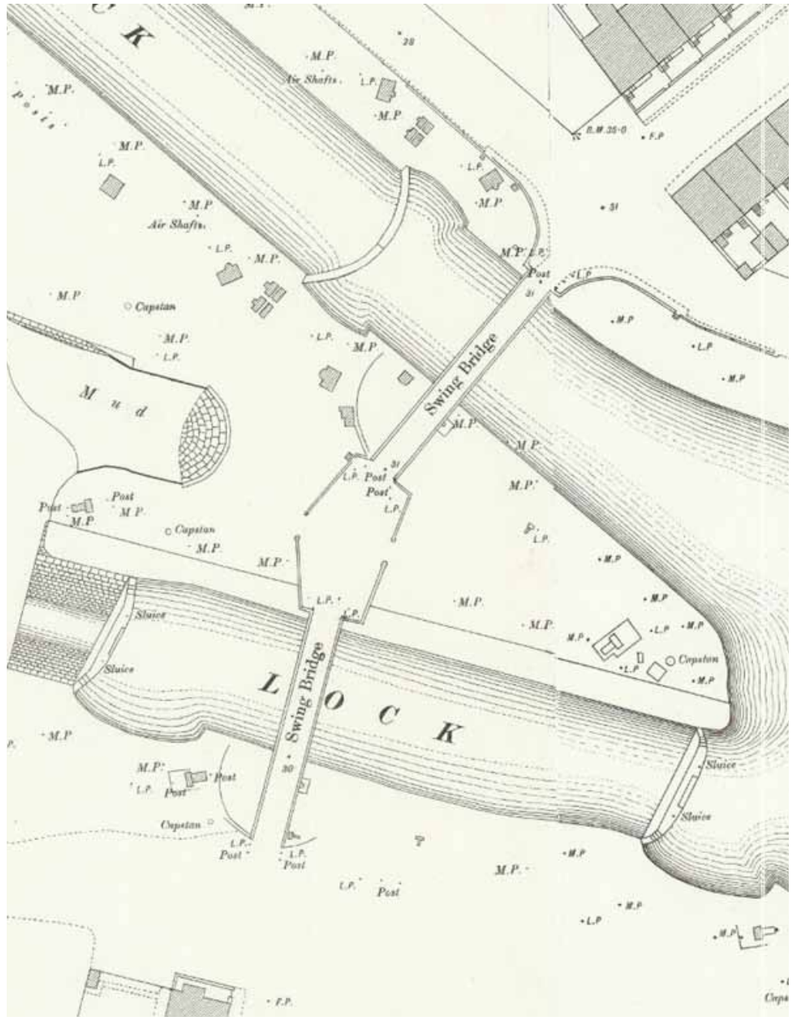
Brunel swing bridges, both listed Grade II*. The area between them once formed a raised route enclosed by iron railings. This presumably formed a safe pedestrian route for residents of housing that once stood in the area now occupied by the 1960s road infrastructure to the south of the entrance locks.

This railed route survived intact until the 1960s.

Only one section of original railings survive. Other railings appear to be 20th century steel replacements possibly associated with the 1960s landscaping.

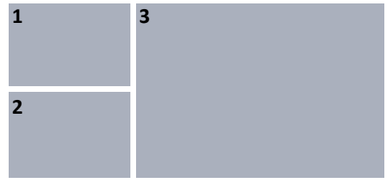
The swing bridge landing on the northern side of the lock survives complete with bollards, although 1960s railings now partially block the original route.

There is one surviving cast iron lamp column that was recorded on the First Edition Ordnance Survey 1880s Town Plan.



Cumberland Basin character and setting

Fig 14
Character and setting



1 Clifton Suspension Bridge, Bristol Archives, 43207/9/30/263

2 Cumberland Basin flyovers, 1970s, Bristol Archives, 43207/9/12/10

3 Ashton Meadows, 'View from wooded hill' part of Dame Sylvia Crowe's landscape proposals for the Cumberland Basin road scheme drawn by Wendy Powell in 1964, Bristol Archives, 37167/353

Key views

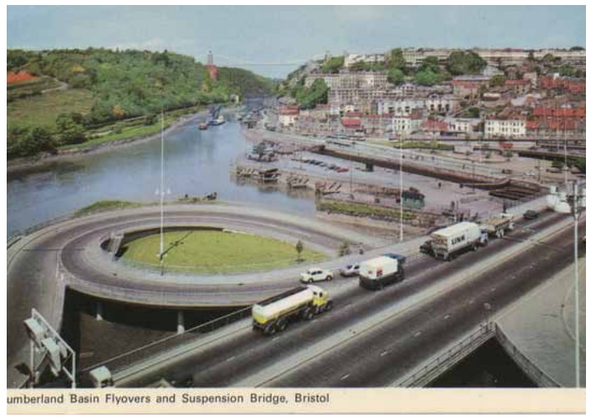
The character of the area is largely defined by the iconic views north west out of the area along the gorge with the woodland rural setting to the west and early urban residential terraces to the east.

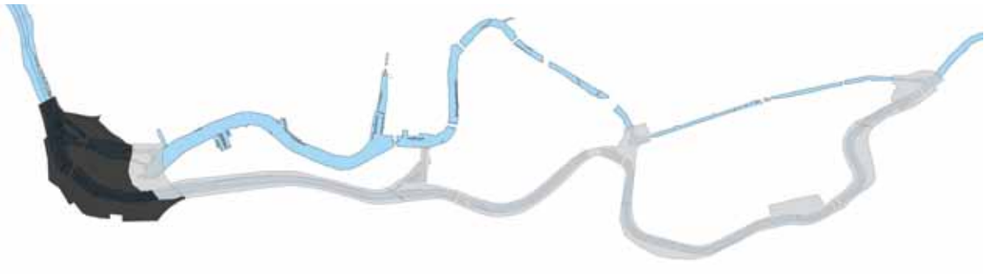
The vast number of historic images along the gorge both before and after the construction of the Clifton Suspension Bridge indicate the high significance of these views including:

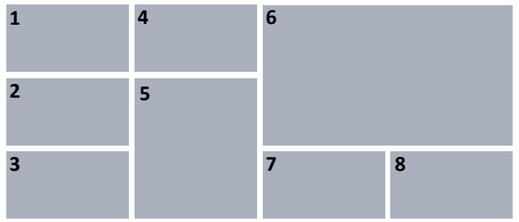
1 The designed viewpoint within the Sylvia Crowe landscape
2 Continual views along Brunel Way
3 Pedestrian/cyclist views within the Sylvia Crowe landscape south of the river

Within the area the three bonded warehouses (A-C) form important landmarks for views into the character area from:

— Along the New Cut
— Along the southern walkway and viewing parapets of the suspension bridge
— Clifton
— The Floating Harbour as part of the ensemble of structures particularly Underfall Yard







5 1960s control tower for the Plimsoll Swing Bridge

6 The 1960s memorial view point

7 Mooring posts alongside the North Entrance Lock

8 The eastern lock gate at the North Entrance Lock

Fig 15
Character and setting

1 Remains of wharf alongside A Bond

2 Mooring post near B Bond

3 Mooring posts around 1960s landscaping

4 Remains of 1880s timber piers for ship repairs on the south side of the Knuckle

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Cumberland Basin quay walls, bollards etc Grade II	**Retains strong dockside open character with important views to Clifton, suspension bridge, Leigh Woods and Ashton Court. This character is particularly evident from the 'Knuckle'** **The retained locks, quayside materials and mooring posts with associated structures positively contribute to this character**	The 1960s elevated roadway creates a visual barrier and diminishes the experience of this historic character	Tidal defence work risks creating new visual barriers and additional modern clutter to this historic landscape Works to the North Entrance Lock gates will certainly be required that is likely to involve significant impacts to the historic fabric	Reuse of existing bollards/mooring posts impacted by any works can add to the maritime character of any new landscape	Any works that impact on the quay walls, lock gates, mooring posts or any associated fabric will require listed building consent. Any application for consent will require robust justification and changes to the area will be expected to preserve or enhance the character and setting of the conservation area.
Brunel swing bridges Grade II*	**These Form part of a wider Brunel period landscape from the suspension bridge to Temple Meads** **The bridge infrastructure remains legible despite impacts from the 1960s road scheme** **Restored bridge could form part of a strategic walking and cycling route** **Current community project that aims to restore the swing bridge across the North Entrance Lock with initial funding from Historic England**	Additional funding required to bring north swing bridge back into use The 1960s road infrastructure has a negative impact to the setting of these assets The access to the bridge on the south side of the South Entrance Lock is very narrow and works would be required to improve the access on the north side of the northern swing bridge	Tidal defence work risks causing substantial harm to these bridges and the associated infrastructure	A relandscaped setting for these bridges utilising the existing raised area linking the two structures should form part of the tidal defences. Incorporating the restored swing bridges as part of this new landscape will gain significant community support and create a new part of a strategic walking and cycling route	As above
South Entrance Lock Grade II*	**Remains a significant part of Bristol's Brunel landscape in association with the swing bridge now fixed over the damned lock** **Despite not being in use for approximately 100 years the original character and function remains legible**	The 1960s road infrastructure has a negative impact on the asset's setting	Tidal defence work risks causing significant harm to this heritage asset and its setting	Utilising the fixed swing bridge as part of the tidal defence landscape could potentially enhance the setting of the lock, minimise harm to the asset and introduce the public benefits of an improved walking and cycling route	As above

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Ashton Avenue Swing Bridge Grade II	**The bridge has been recently as part of the works for Bristol Metro Bus**	The bridge is relatively low to the river and can no longer swing so it is impassable at high tide	Work for any tidal defences will have a potential impact to the northern side of the bridge or its setting particularly as the current character is a tree lined bank	Relandscaping the area offers the chance to improve the setting of the asset	As above
Bonded warehouse (A and B) Grade II	**Together with C Bond on the south bank these warehouses form significant historic landmarks**	Although B Bond is in active use housing the Create Centre and Bristol Archives, A Bond appears inactive although it is used for storage	Tidal defence works will have a potential impact to the setting of these assets	Future works for tidal defences should have no physical impact to these assets and relandscaping should enhance their setting	As above
Former warehouse wharfs Undesignated	**Currently tree lined north bank to the river contributing to the setting of the listed warehouses and character of the conservation area**	Surviving mooring posts and associated maritime features are often obscured by trees and bushes	Tidal defences would potential have a negative impact to the existing trees and wharf features harming the character and setting of the assets	A relandscaped area should enhance the character of the area and introduce a better managed green environment	Any works to trees will require consent
Mooring posts on river bank alongside footpath Undesignated	**Contributes to the historic character of the City Docks Conservation Area and feature on the historic Ordnance Survey plans**	No longer used and likely to have been repositioned or introduced in the early 20th century	Works including relandscaping will likely have a significant impact on these features	Reuse of existing bollards/mooring posts impacted by any works can add to the maritime character of any new landscape	No specific consent required, although these features are heritage assets and contribute to the overall character of the conservation area so any planning proposals will need to address relevant national and local policies relating to the historic environment
Remains of Rownham Ferry slipway Undesignated	**Significant historic feature contributing to the character of the conservation area**	Not visible at high tide and no longer in use at any time	Tidal defence works should aim to avoid any impact to the slipway	The slipway should be beyond any works area, but relandscaping offers the opportunity to better reveal this heritage asset	As above
Concrete memorial view point Undesignated	**One of the best viewpoints in the city likely to have been marked with this concrete plinth and bench structure as part of Sylvia Crowe's landscape scheme** **Forms part of the character of the conservation area**	The 1960s road infrastructure that relates to the creation of this viewpoint point feature actually forms a barrier to it and diminishes its setting	Tidal defence landscaping works will potentially impact this 1960s feature and risk further diminishing the prominence of this viewpoint	Relandscaping works should work with this existing viewpoint and enhance the character of this area	As above

5

The Underfall and Junction Locks

The Underfall and Junction Locks
Historic development

Topography

Former flood plain of the River Avon. The bulk of the area is formed from an early 19th century manmade dam that separates the Floating Harbour from the tidal New Cut. To the north the flood plain is now built over with the 90s residential Poole's Wharf development with the Clifton Wood escarpment beyond.

Historic character

The Underfall character area contains some of the harbour's most significant heritage assets and as a consequence retains a great deal of its historic character.

The most significant asset is the Underfall itself. Originally designed by Brunel as a series of sluices that would help to reduce the excessive silting that occurred at the western end of the harbour where it met the Overfall Dam in Jessop's original design. Although the sluices have been renewed on several occasions the original engineered design contributes to the significance of the asset. As a result of this significance the area of the Underfall is a Scheduled Monument.

The adjoining shipyard sits within the Scheduled area and includes a series of historic buildings built in the early 20th century. The consistency of design and materials of these buildings contributes to a strong historic character.

The site's continued use for ship building is one of the strengthens of the area. A recent successful Heritage Lottery Funded project has enhanced this asset particularly in restoration of the historic buildings and the creation of a visitor centre to complement the maritime activities.

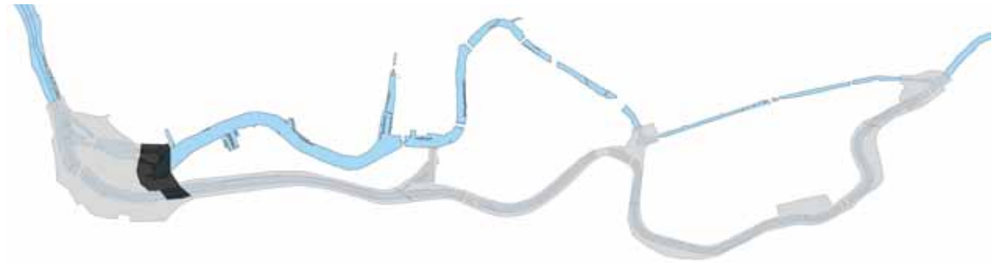
Fig 16
Historic development

1 Scott's Yard the predecessor of Underfall Yard, watercolour by T.L. Rowbotham, 1826, Bristol City Museum and Art Gallery, M2931

2 Marquis of Lorne in the South Junction Lock, undated photo postcard, Bristol Archives, 43207/34/1/88

3 The 'New' swing bridge over the North Junction Lock, c.1930, Bristol Archives, 43207/9/29/10

4 View from Hotwells Dock, c.1930s, M Shed Hartley Collection photograph, 27293



1

2

Fig 17
The Overfall and the Underfall

1 Watercolour by T.L. Rowbotham showing the Overfall Dam, New Cut and Cumberland Basin in 1827, Bristol City Museum and Art Gallery, M2931

2 The Underfall viewed from Payne's Shipyard on the south side of the New Cut

The Underfall

William Jessop's original design for the Floating Harbour and New Cut included an Overfall Dam intended to help maintain a constant water level in the Floating Harbour as excessive water over fell the dam into the New Cut at low tide. It was hoped that sufficient silt would also be removed by this process, but by the 1830s excessive silt and sewage was building up in the docks.

Brunel proposed a series of sluices to help remove this material from the Floating Harbour. These consisted of three shallow sluices to help adjust the harbour water level and a deeper scouring sluice. When the deeper sluice was opened at low tide silt and waste would flow out with the tide.

This 'Underfall' replacing the Overfall Dam was opened in 1834, although it was rebuilt in 1880 with longer sluices.

The structure is now bridged by Cumberland Road and the Harbour/Heritage Railway and Chocolate Path. The stone arches and abutments either side of the Underfall were created in 1897-1900 as part of the superstructure for the railway and path.

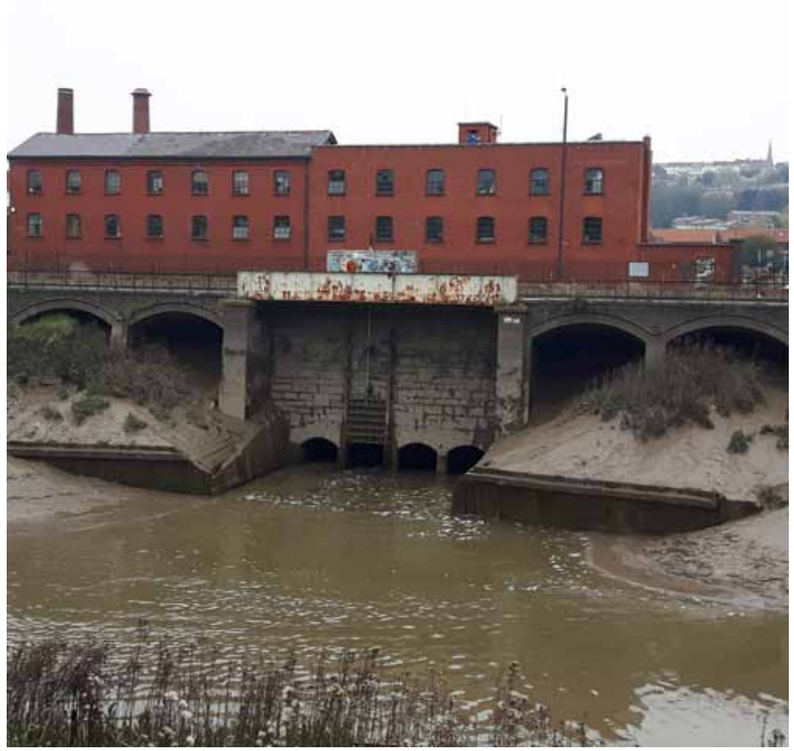
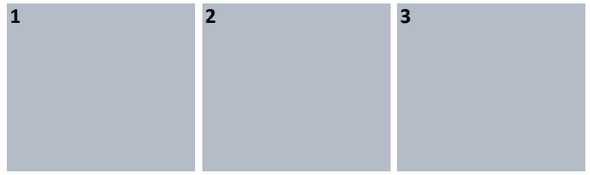


Fig 18
Underfall historic development



1 George Ashmead, 1828

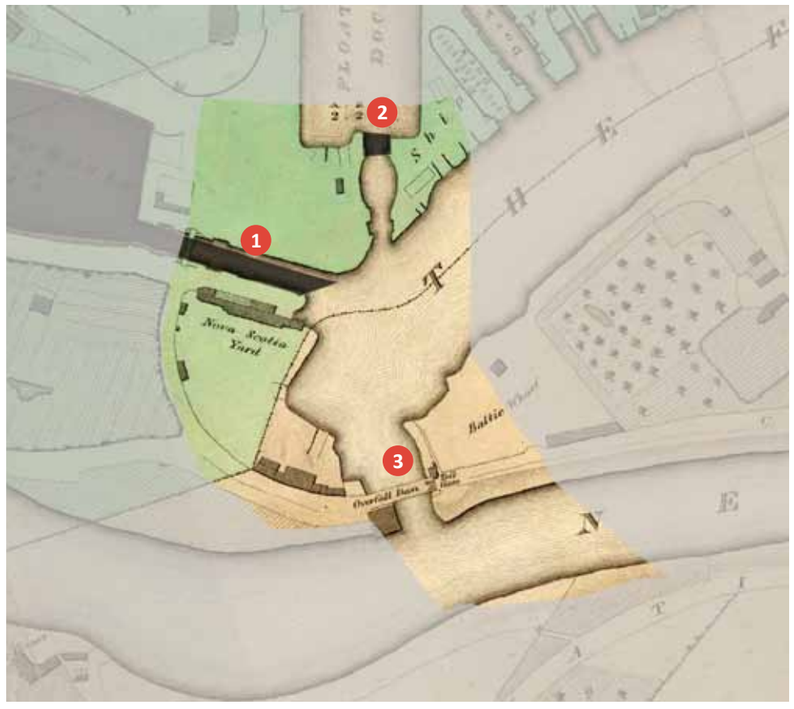
2 Ordnance Survey, 1880

3 Ordnance Survey, 1903

The Underfall and Junction Locks
Historic development

Surviving features added at each phase

Surviving principle assets from previous phases

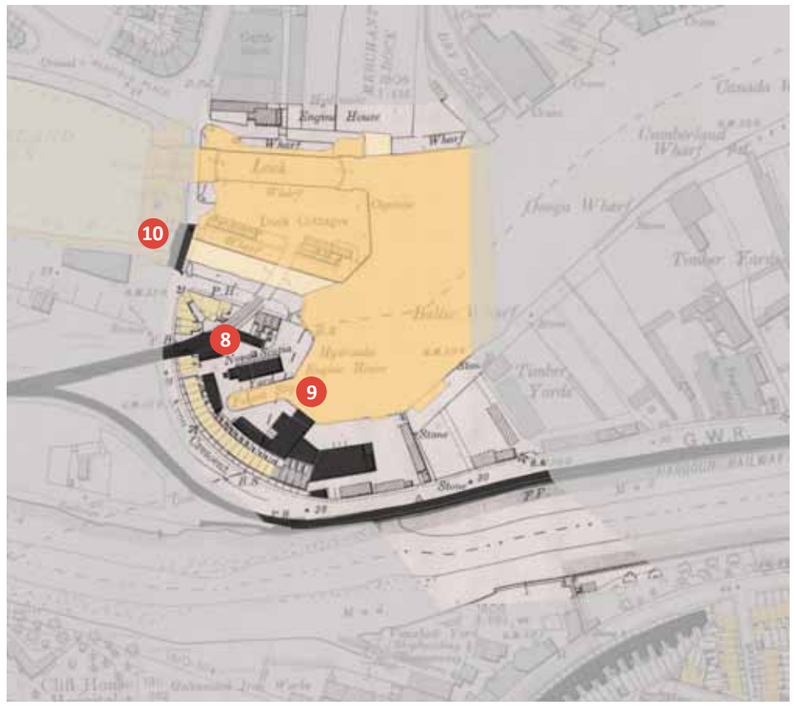


1828 main features:

- By 1828 in addition to the Floating Harbour itself the main surviving features in the modern landscape from this early phase of development are the Junction Lock (South) 1 and the entrance to the 'Floating Dock' 2
- At this date the link between the Floating Harbour and the New Cut to maintain a consistent level in the harbour was the Overfall Dam 3

1880:

- By 1880, Avon Crescent had been created, built in about 1830. 4
- The building of this terrace of houses coincided with the creation of the Underfall to replace the Overfall Dam 5 and the construction of the dock workers cottages alongside the Junction Lock. 6
- In the late 1860s and early 1870s the last significant phase of engineering for the Floating Harbour had created the North Junction Lock and associated quaysides 7



1903:

- By 1900 the introduction of the Harbour Railway to the area had resulted in the loss of some properties on Avon Crescent and east of the Nova Scotia. 8
- The 1903 Ordnance Survey map shows that the key buildings of the Underfall Yard complex including the Hydraulic Engine House and chimney 9
- The current bridge structure over the South Junction Lock was created around this time. 10

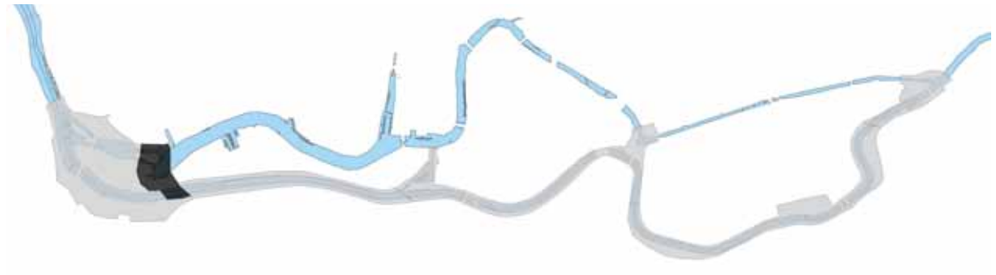


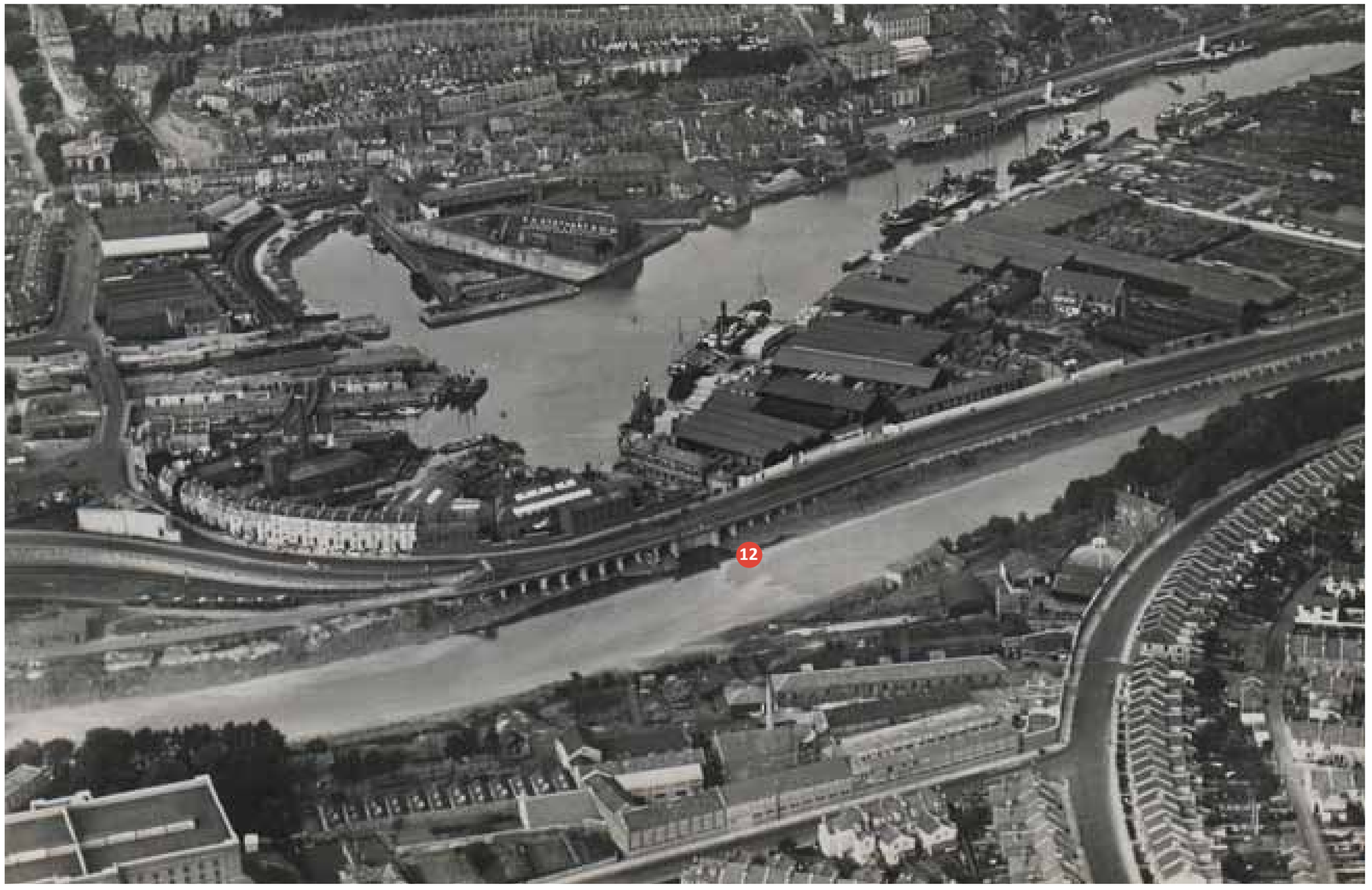
Fig 19
Underfall Basin historic development

1 Ordnance Survey, 1950

2 Aerial view, c.1930s

Surviving features added at each phase

Surviving principle assets from previous phases



1930s-50s:

— In 1925 the current swing bridge was constructed over the North Junction Lock 11

— The 1930s aerial view (right) shows the revealing arches that carry the railway and Chocolate Path structure up to the Underfall. 12 Similar structures support the area of the Vauxhall Bridge (see New Cut West) and the approach to Bedminster Bridge.

The Underfall and Junction Locks heritage assets and significance

The Underfall and Junction Locks character area lies within the City Docks Conservation area.

The most significant designated asset within the character area is the Underfall Yard Scheduled Monument. The scheduling relates to the Underfall itself, but also the slipway, quayside and related dockside assets. Any works within this area would likely require Scheduled Monument Consent from Historic England.

In addition to the scheduled area there are several listed assets within the character area that combine to create a unique historic character.

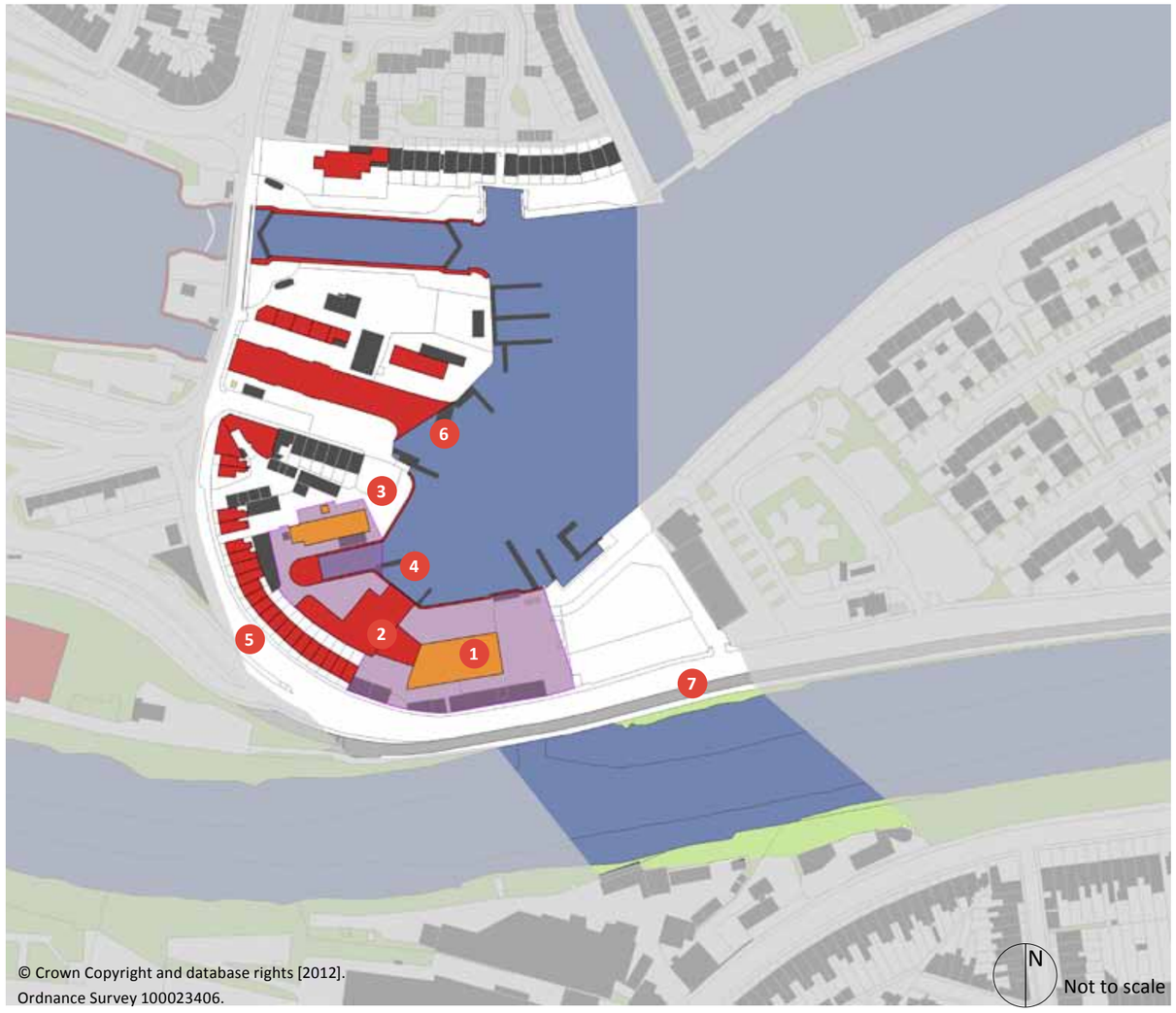
These listed assets include:

1 The Machine Shop (Grade II* listed)
2 The Former Shipwright's Shop and Former Pattern Maker's Shop (both Grade II listed)
3 Chimney and Hydraulic Engine House (both Grade II* listed)
4 The Patent Slip and quay walls (Grade II). This was originally part of the earlier 19th century Nova Scotia Yard
5 Immediately adjacent to Underfall lies Avon Crescent listed terrace of former dock workers houses (Grade II listed)
6 South Junction Lock, the only lock at Cumberland Basin in its original 1809 form (Grade II listed)

Undesignated assets within the character area are the Heritage Railway and Chocolate Path (7) covered in greater detail in the New Cut West section below.

Fig 20
Listed assets

Scheduled area
Grade II* listed
Grade II listed



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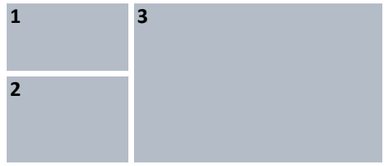


Fig 21
Character and setting

1 Underfall Yard

2 Underfall Yard viewed from the Mardyke

3 South Junction Lock

Key views

Views of the Underfall Yard from either side of the Floating Harbour with Avon Crescent and the Bonded Warehouses beyond are a key feature contributing the special interest of the City Docks Conservation Area.

Of equal importance are views of the Clifton and Hotwells Conservation Area and the Docks from Underfall Yard.

In relation to the flood defence proposals views along and across the New Cut from Bedminster Conservation to the south towards the Underfall and Clifton and Hotwells beyond are significant. Of these views it is often the glimpsed views from Coronation Road that are often the most important.

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Underfall Yard Scheduled monument Grade II* and II listed assets	**The existing buildings form a unique and complete collection that contribute to the historic character of the area** **The continuing shipyard work combined with public access contributes to the vibrant character of the area** **The associated Underfall is an important link back to the Victorian engineering successes.** **Recent Heritage Lottery Funding has restored the buildings and created a popular visitor attraction complementing the M Shed and SS Great Britain dockside attractions.**	Occasionally shipyard activities can require the public route through the site to be closed for safety reasons	Tidal defence work should have no physical impact on the assets Works along the north bank of the New Cut will have a potential harmful impact to views of the assets from the south causing harm to the significance of individual assets and the significance of the City Docks and Bedminster Conservation Areas The Underfall sluices are a vital element of the function of the harbour	Improved pedestrian and cycling access along the New Cut will potentially encourage greater interest in the Underfall Yard Interpretation about the Underfall incorporated with the physical works will help to better reveal this heritage asset	Any works that impact on the Underfall will potentially require Scheduled Monument Consent Any works to the Heritage Railway and/or Chocolate Path will be expected to preserve or enhance the character of the conservation area

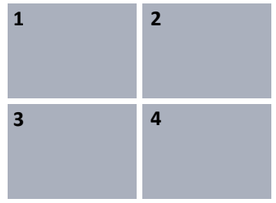
Fig 22
Underfall Yard is now a significant part of the Harbourside walkway and a key landmark from many parts of the docks

6

New Cut West

New Cut West Historic development

Fig 23
Historic development



1 Early 1820s view of the New Cut and derelict remains of an engine house used during the excavation of the Cut, Bristol City Museum and Art Gallery, M2958

2 Early 20th century ink drawing by Samuel Loxton of the Coronation Bridge for the Gaol Ferry, Bristol Libraries, C109

3 Early 20th century ink drawing by Samuel Loxton of the Vauxhall Bridge, Bristol Libraries, C139

4 North side of the New Cut in 1908, Bristol Archives, 43207/9/29/78

Topography

Artificial tidal watercourse created along the southern fringe of the Avon flood plain in the early 19th century. Coronation Road running along the southern bank of the New Cut lies along the upcast from the excavation of the New Cut and carries the road surface above the flood risk area. This can be clearly seen in the decent from Coronation Road down Dean Lane.

Historic character

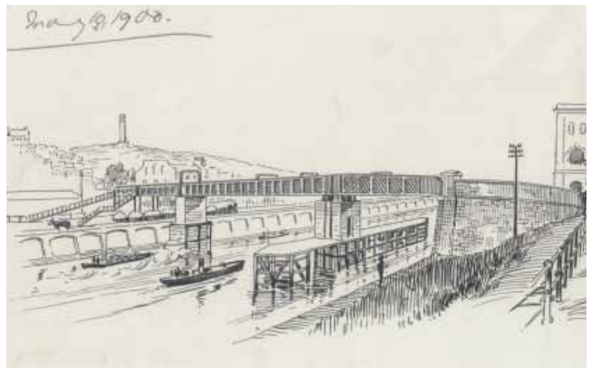
The western area of the New Cut between the Underfall and Bathurst Basin is characterised by the man made channel created in 1804-9 to carry the tidal River Avon.

The upcast from the excavations for this channel was predominantly placed on the southern bank enabling the construction of later terraced houses and tree-lined Coronation Road that now define the character of this southern bank. Prior to the creation of the New Cut houses and businesses in Bedminster were situated further south beyond the river flood plain along North Street.

On the northern bank industrial activity predominated throughout the 19th century with the exception of some small groups of houses along Cumberland Road. The result is a harder landscape as opposed to the verdant green of the southern bank. This character was exacerbated with the introduction of the harbour railway and adjoining Chocolate Path by the early 1900s. The Chocolate Path was one of the earliest leisure features introduced to what would have been a largely industrial landscape. The path would have enabled a walking route from the housing near the remains of the Gaol along the New Cut and around the western end of Spike Island possibly crossing the entrance locks via Brunel's swing bridges. The absence of tree planting along the route suggests that views along the cut from the path were thought to be important.

Roughly contemporary with the creation of the railway and path was the erection of the Vauxhall Bridge connecting the residents of the new housing on Coronation Road to Spike Island and Hotwells beyond. The bridge replaced an earlier ferry that crossed the New Cut from the Vauxhall Shipyard opposite the Underfall.

At the eastern end of the character area another ferry crossed the cut near the Gaol. The Gaol Ferry was accessed via slipways from Cumberland Road on the north bank and through a tunnel beneath Coronation Road on the south bank. The ferry was replaced by the Gaol Ferry Bridge in the 1930s.



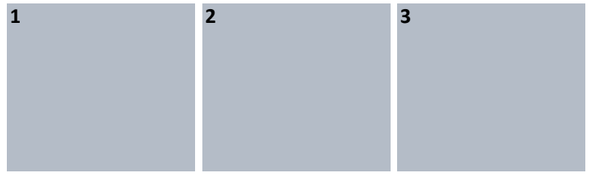


Fig 24
New Cut West historic development

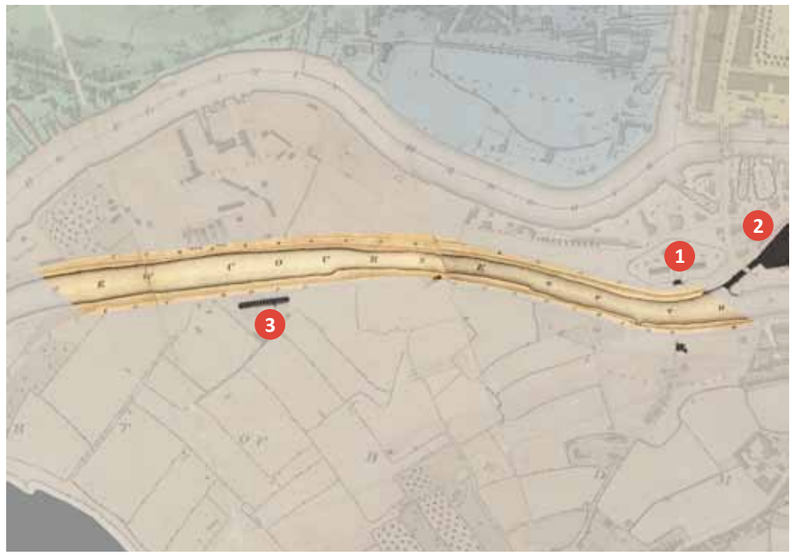
1 George Ashmead, 1828

2 Ordnance Survey, 1880

3 Ordnance Survey, 1903

Surviving features added at each phase

Surviving principle assets from previous phases



1828 main features:

- By 1828 the banks of the New Cut will have appeared relatively bear. The newly constructed New Gaol 1 will have been the significant landmark.
- Bathurst Basin immediately to the east 2 was created at the same time as the New Cut and Floating Harbour.
- The first housing along the south bank had been built by 1828 such as the existing nos.156-170 Coronation Road 3 that would have appeared quite isolated at the time.

1854:

- By the middle of the 19th century additional housing had appeared along the south bank and St Pauls Church 4 had been built for this new community.
- At the same time the Gaol Ferry and slipways 5 were introduced.
- The first housing on the north bank had also been built 6

1903:

- By the early 20th century almost all the housing along Coronation Road had been completed.
- The significant elements introduced by this date were the harbour railway, Chocolate Path and Vauxhall Bridge 7

New Cut West heritage assets and significance

The whole of the New Cut West character area lies within the City Docks Conservation area and borders the Bedminster Conservation Area that lies immediately south of Coronation Road.

The character area contains 1 grade II listed asset that positively contributes to the area's character and appearance:

1 Vauxhall Bridge

Other listed assets lie in the vicinity including the grade II listed Gaol Gate on Cumberland Road (2).

In addition to the designated assets other undesignated assets contribute to the character of the conservation area:

3 Gaol Ferry Bridge and the evidence of the earlier river crossing including slipways and tunnel beneath Coronation Road

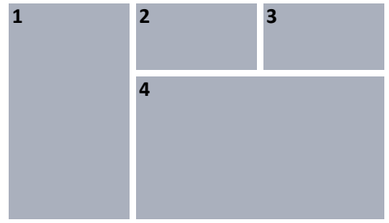
4 The Heritage Railway and Chocolate Path. These lie on a stone retaining structure that is formed of relieving arches either side of the Vauxhall Bridge. The form and materials of these features strongly contribute to the significance of this part of the conservation area.

Fig 25
Listed assets

Grade II* listed

Grade II listed

Fig 26
The Chocolate Path



1 The east end of the Chocolate Path

2 View west along the path, original railings on the right

3 View east from the path towards Gaol Ferry Bridge

4 1914 view of Vauxhall swing bridge open for shipping on the New Cut, notice revealing arches on north bank constructed c.1900 for Chocolate Path and Harbour Railway, Know Your Place, HC3802

The Chocolate Path

The Chocolate Path should be regarded in association with the Heritage Railway and Vauxhall Bridge as they form part of a coherent single phase of historic development.

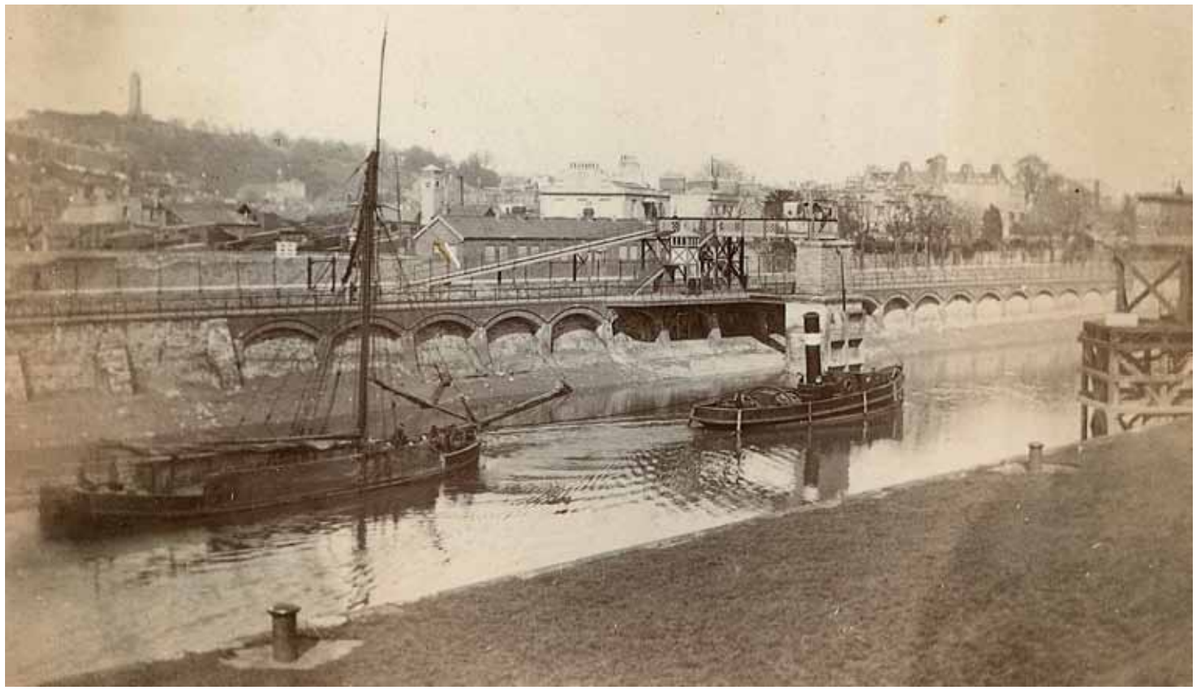
The path and railway structure are currently in poor condition and are closed to use due to areas of subsidence.

The path is fenced either side by iron railings that are also in a poor condition. There are areas of surface repairs to the distinctive 'chocolate bar' blocks that have been less than sympathetic.

The path itself offers good views along the cut particularly west towards the bonded warehouses at Cumberland Basin and the Ashton Court estate beyond.

The structure of the path also contributes to the character and setting of the City Docks Conservation Area and Bedminster Conservation Area in views from Coronation Road.

The Chocolate Path generates a lot of local public interest partly as a result of the unique surface and character of this riverside environment, however, cyclists have often seen the path in less favourable light as it is not necessarily a good cycling surface.



New Cut West character and setting

Key views

Views east and west along the New Cut are an important aspect of the local character.

The vantage points from the Vauxhall and Gaol Ferry Bridges are particularly important as are the views from the Chocolate Path as referenced above.

Glimpsed views northwards of Clifton Wood and Brandon Hill are also an important aspect of the areas setting.

Both bridges are local landmarks within the character area.

Fig 27
View west along the New Cut from Gaol Ferry Bridge

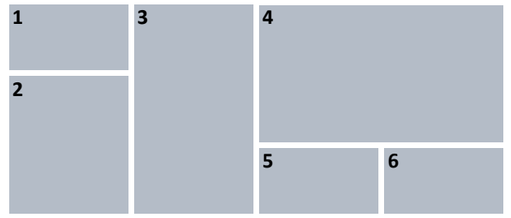


Fig 28
Character and setting

1 Gaol Ferry Bridge where it lands at Cumberland Road

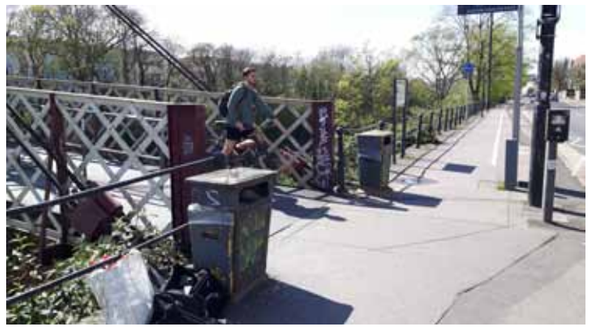
2 One of the original Gaol Ferry slipways, Cumberland Road

3 The currently closed Chocolate Path, original railings on the right

4 View towards the Gaol Gate and St Mary Redcliffe from Gaol Ferry Bridge

5 Cycle route, Cumberland Road

6 Gaol Ferry slip way



Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Vauxhall Bridge Grade II	**The earliest bridge over the New Cut it retains the majority of its original fabric and strongly contributes to the character of the area** **The bridge offers good views east and west along the cut**	No longer swings and although there is level access from Coronation Road the access from the north bank is very convoluted via a modern steel structure	Tidal defence work could potentially impact the bridge footway where it meets the Chocolate Path and significantly change this historic relationship	Improving the current landscape of the Chocolate Path should aim to better reveal the heritage of this bridge and its setting	Any works that impact on the bridge or any associated fabric will require listed building consent. Any application for consent will require robust justification and changes to the area will be expected to preserve or enhance the character and setting of the conservation area.
Gaol Ferry Bridge Undesignated	**Elegant pedestrian suspension bridge that is an increasingly well used crossing point for residents of south Bristol** **The bridge offers good views east and west along the cut**	The bridge is relatively narrow and can become very congested with pedestrian and cyclist use	Any works along this stretch of Cumberland Road will need to consider the interface with the bridge particularly where the cables are connected beneath the existing footway	Landscaping works in this area should consider general improvements to the pedestrian and cycling environment in this congested junction with Cumberland Road	Any works that require planning permission will need to preserve or enhance the character of the conservation area
Remains of the Gaol Ferry crossing Undesignated	**This crossing point remains legible in terms of the surviving slipways on both sides of the cut and the tunnel beneath Coronation Road**	The tunnel is currently used by a scouts group, while the slipways are unused and poorly maintained. They currently attract rough sleepers	Tidal defence work risks causing significant harm to these assets particularly where they meet the existing footway on Cumberland Road	Opportunities to better reveal and enhance the character of this part of the conservation area should be explored	As above

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Chocolate Path Undesignated	**The path retains its late Victorian/ early Edwardian character as a promenade route**	The superstructure underpinning the path is gradually failing leading to subsidence of the structure The textured surface, although contributing to its distinctive character is a poor cycling surface	Tidal defence work will potentially cause substantial harm to this undesignated asset and thereby significantly harm the character of the conservation area	New tidal defences offer the opportunity to repair the path superstructure or replace with an improved walking and cycling environment	As above
The Heritage Railway Undesignated	**Very popular attraction as part of the M Shed offer** **Clearly defines the historic land use in the area**	Currently closed along this section due to the subsidence that is also affecting the Chocolate Path	As above	Tidal defence works should offer the opportunity to enhance the character of the conservation area and strengthen the railway infrastructure	As above

7

Bathurst Basin

Bathurst Basin Historic development

Topography

Former course and flood plain of the Malago tributary originally exploited as a mill pool in the medieval period, adapted to create the present Basin in the early 19th century.

To the south the former Malago flood plain extends across an area now largely occupied by the Asda car park. Immediately east of the basin the land rises as part of Redcliffe Hill. The former Bristol General Hospital is the key landmark building within this character area.

Historic character

This character area is dominated by the lock basin created at the same time as the New Cut. As described above the Basin took advantage of the extensive mill pool of the Trin Mill that stood at the mouth of the Malago (fig.29-1).

Despite being dammed in the Second World War, permanently closing the access to the Basin from the New Cut, the area retains its 19th century character by virtue of the amount of surviving historic fabric, particularly features such as the stone carved water level marks (fig. 32-1).

Of particular interest in terms of early history is the surviving ramp access to the area now known as 'God's Garden'. This ramp relates to access to the original lock gates similar to that at Netham.

The creation of the New Cut and Basin resulted in the introduction of industries to the area and even when these were replaced by the creation of the Bristol General Hospital in the mid 19th century much of the ground floor of this imposing building was taken up by warehouse space that was let as an income stream for the hospital.

The new watercourse and basin also attracted more direct maritime uses such as the Cardiff and Channel Steamship Company who established a base of operations at the mouth of the basin. Remnants of this use survive including their boatshed and remains of their quay on the north bank of the Cut (fig.33-3).

With the outbreak of the Second World War and the threat of air raids potentially damaging the locks and causing flooding the entrance to the basin was dammed with a concrete wall and the entrance infilled. This permanently closed the New Cut entrance to the Basin, but the surviving dam forms part of the historic significance of the Basin.

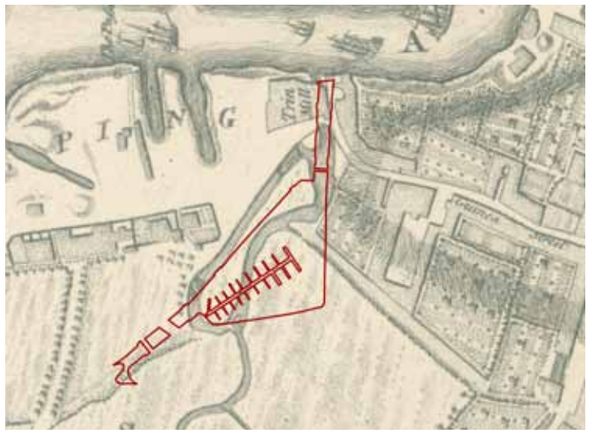


Fig 29
Historic development

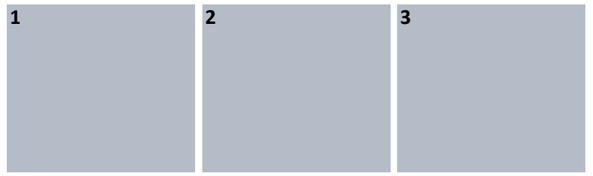
1 Extract from Rocque's 1750 map of Bristol with existing Basin area overlain in red

2 Bathurst Basin in 1822, watercolour by Hugh O'Neill, Bristol City Museum and Art Gallery, M3384

3 View across the New Cut, c.1900, Bristol Libraries, Bristol Pictorial Survey, 292

4 Lock gate to Bathurst Basin in foreground of this view of the Bristol General Hospital, c1931, Tarring Collection, 59-P2220122

Fig 30
Bathurst Basin historic development



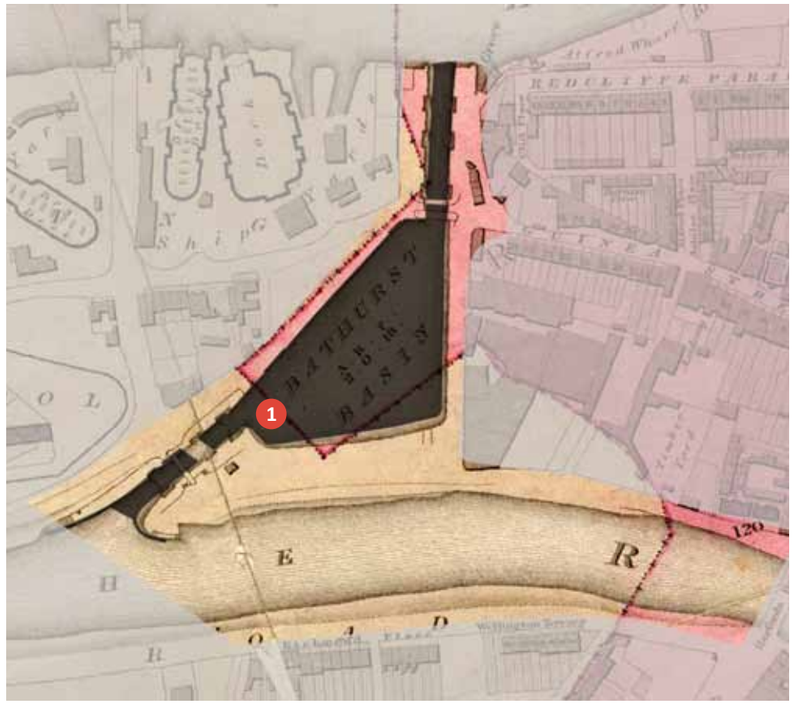
1 George Ashmead, 1828

2 Ordnance Survey, 1903

3 Ordnance Survey, 1913

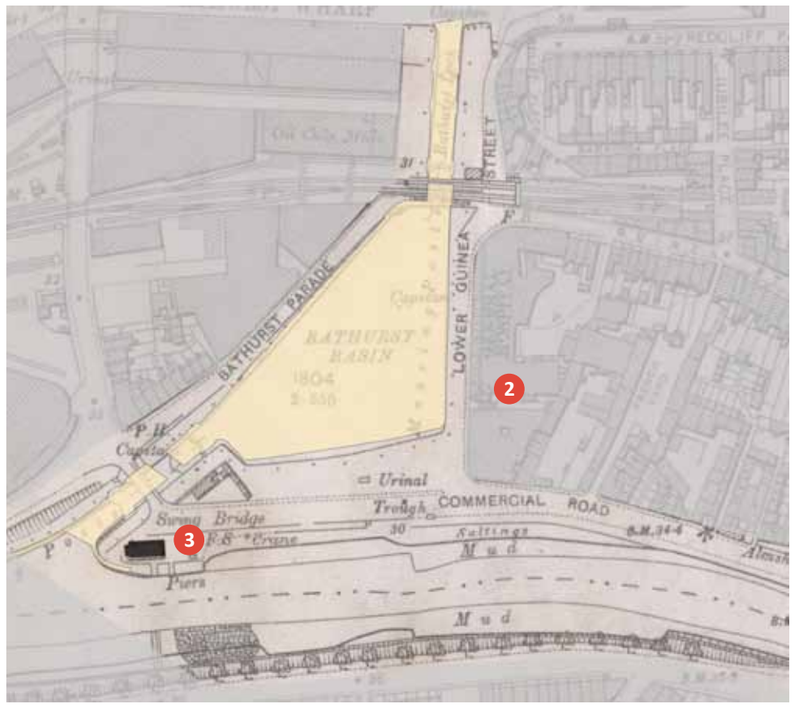
Surviving features added at each phase

Surviving principle assets from previous phases



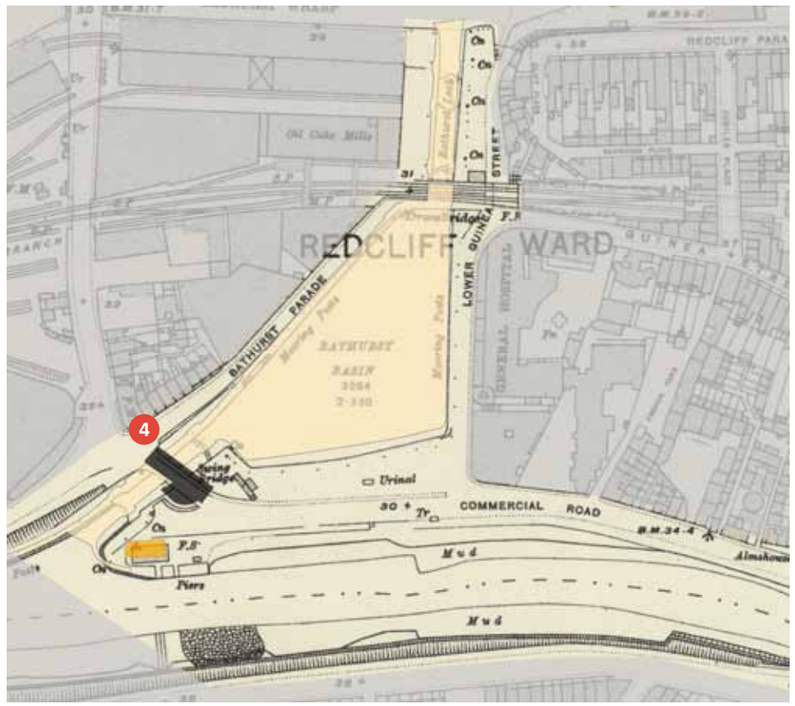
1828 main features:

- By 1828 the main landscape feature that had been created and that survives today was the Bathurst Basin itself (1) together with the original lock that was dammed in 1940 to help reduce the potential impact of any enemy bombing in terms of flooding and water levels within the Floating Harbour.
- The creation of the lock basin led to the introduction of industries including an iron works and sugar refinery to the east of the Basin.



1903:

- During the 19th century the basin remained relatively unchanged, although the General Hospital was constructed on the site of a former iron works in the 1850s (2)
- In 1883 the surviving Cardiff and Channel Steamship Co shed was added on the banks of the New Cut (3)



1913:

- In 1906 the current swing bridge over the basin entrance lock was created to replace the earlier swing bridge (4)

Bathurst Basin heritage assets and significance

Bathurst Basin lies within the City Docks Conservation Area and lies adjacent to the Redcliffe Conservation Area immediately to the east and Bedminster Conservation Area to the south.

There are several designated and undesignated assets in and around Bathurst Basin that positively contribute to the area's character and appearance:

1 Bathurst Basin itself including the associated quays and bollards (Grade II listed)
2 Bristol General that forms a significant landmark backdrop to the basin as evidenced in many views historic and present (Grade II listed)
3 Several buildings around the basin are also designated most prominent of which is the Robinsons Warehouse building on the west side (Grade II listed)

In addition to the designated assets the most significant undesignated assets are the former Cardiff and Channel Steamship Co shed (4), the early 20th century former swing bridge (5) and the ramped path alongside the entrance lock that may date to the earliest phase of the New Cut and Basin (6). This ramp led to a set of steps shown on the 1828 plan and suggests that this feature may have related to the construction phase of the New Cut. The steps appear to have gone out of use by the mid 19th century, but the site of these steps is now covered in debris within a gap in the New Cut retaining wall (below).

Fig 31
Listed assets

Grade II* listed

Grade II listed

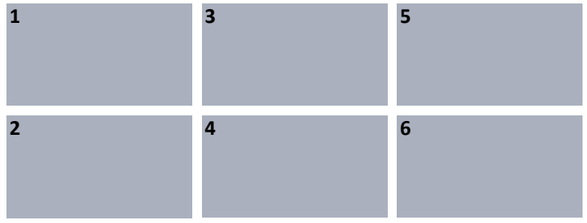


Fig 32
Bathurst Basin entrance lock

1 Original stone carved water level markings close to original lock gate fixings

2 Lockside bollard relocated as part of works for new Metrobus bridge on the right

3 Iron fixings for the original outer lock gate

4 Entrance to the lock now in filled

5 Original ramped path alongside lock

6 Second World War concrete dam

Bathurst Basin entrance lock

The entrance lock to Bathurst Basin has not operated since the Second World War. It was deliberately dammed in 1939-40 to prevent the potential catastrophic flooding that would be caused by bombing of the basin. Similar efforts were made at Totterdown Lock.

Despite this engineering work in the Second World War the entrance lock at Bathurst Basin retains a lot of its original features and its historic character. Most significant of these are the stone carved water level marks that date to the early 19th century and the quay walls and bollards that are all covered by the Grade II listing designation for Bathurst Basin.

The route of an original early 19th century path runs down from the swing bridge footpath. This ramped path once led to a stepped access to the New Cut depicted on the 1828 Ashmead plan and may date to the construction of the New Cut itself.

The concrete dam from the Second World War also has a degree of historic significance despite being a later alteration that permanently ceased the original function of the lock.

Bathurst Basin character and setting

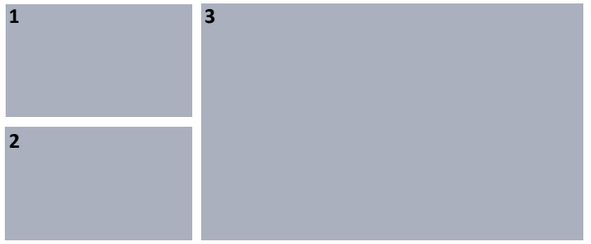


Fig 33
Character and setting

1 Glimpsed view from the Wapping Road end of the swing bridge into the city

2 View from the swing bridge across the lock entrance towards St Pauls Church

3 Glimpsed view of the character area from Coronation Road

Key views

From within the character area on the New Cut side of the Basin there are limited key views. Of these views along the Cut towards Bedminster Bridge or towards the Bristol General are significant.

The most significant views relate to those from adjoining character areas into and across the character area. The most significant landmark in views from the south and west is the Bristol General Hospital.

Views from the south tend to be glimpsed views as a result of the tree cover on the south bank of the New cut.

Fig 34
Character and setting

1 Cardiff and Channel Steamship Co shed built in 1883

2 New Metro bus bridge built alongside 1906 swing bridge

3 Swing bridge over the lock built in 1906

4 View towards the entrance to Bathurst Basin from Coronation Road Gaol Ferry slipway

5 View towards Bedminster Bridge and Totterdown beyond from close to the steamship co shed

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Bathurst Basin Grade II	**An original feature of William Jessop's early 19th century design. The surviving features relating to the former use of the entrance lock to the contribute to the overall significance of the City Docks Conservation Area**	Since the Second World War the lock is no longer in use The bridge structures block views into the docks from the south	Tidal defence work could potentially impact the historic fabric relating to the lock and its character and appearance	Recent works associated with Metro bus have improved cycling and pedestrian movement across the lock. Further changes should minimise impact to the surviving historic fabric or better reveal this heritage	Any works that impact on the Bathurst Basin listed fabric including quay walls and bollards will require listed building consent. Any application for consent will require robust justification and changes to the area will be expected to preserve or enhance the character and setting of the conservation area.
19th century ramped path Undesignated	**An early landscape feature that now provides access to a small green space now named 'God's Garden'**	A poorly understood and under appreciated landscape feature	Proposed works will have a potential impact to this historic fabric, reducing access and harming the character and appearance of the conservation area	Landscaping works could improve access and better reveal this early historic feature	Any works that require planning permission will need to preserve or enhance the character of the conservation area
Cardiff and Channel Steamship Co shed Undesignated	**A character building within the City Docks Conservation Area with a degree of historic significance resulting from its former use**	Currently in private use its setting is compromised by poor boundary treatments on the Commercial Road side	Tidal defence works should have no physical impact on this structure, although access will be a consideration to ensure there is no impact to the viable use of the building	Landscaping works could provide better boundary treatments for the site on Commercial Road	As above

Fig 35
Current access to the former Cardiff and Channel Steamship Co shed

8

New Cut East

New Cut East Historic development

Topography

Former shallow valley between Redcliffe Hill to the north and Totterdown to the south exploited for the creation of the New Cut in the early 19th century.

Historic character

The route of this stretch of the New Cut between Bathurst Basin and Totterdown Lock was largely defined by the high ground of Redcliffe Hill to the north. The Cut skirts the edge of this hill avoiding the need to excavate large quantities of stone.

Associated with the creation of the New Cut was the creation of the two bridges on the arterial routes into the city from Bedminster and Bath. Both of these bridges were replaced later in the 19th century with further bridges added to create roundabouts on these routes in the 1960s.

The creation of the New Cut improved the landscape in the area so that within a few years streets and housing developments on both sides of the river had been introduced as seen on the 1828 map.

With the increase in residential developments to the south of the river particularly in Windmill Hill by the 1880s a further bridge was required to provide improved pedestrian links across the Cut. Consequently Langton Street Bridge was added in the mid 1880s and represents a further engineering response to the growth of Bristol.

The area remained relatively unchanged until the 1950s when post war housing shortages led to the clearance of poor quality housing on the north side of the river and the creation of the Redcliffe Estate. This collection of tower blocks designed by the City Architect Albert Clarke now form the main back drop to the north side of this stretch of the New Cut.

Slightly after the creation of this residential blocks new roundabouts were created at Bath Road and Bedminster Bridges leading to the creation of two new concrete highway bridges alongside the historic bridges.

Fig 36
Historic development

1 View west from Bedminster Bridge, c1900, Bristol Archives, 43207/9/13/71

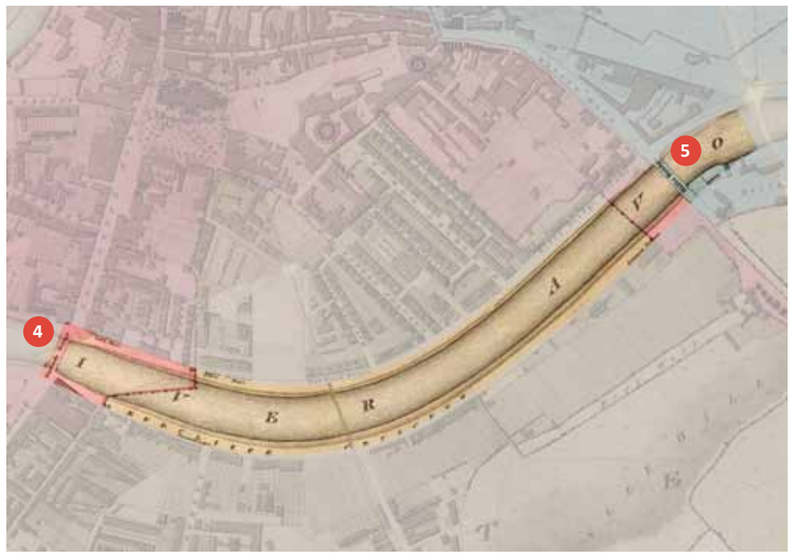
2 Langton Street and Clarence Road from south of the New Cut, c.1905, image from Know Your Place

3 1920s aerial view, Albert Clarke Collection, Bristol Archives, 44819/3/81

4 Redcliffe development area, early 1960s, Public Relations Collection, Bristol Archives, 40826/HSG/68

1750 main features:

- Rocque's 1750 map depicts the pre-New Cut landscape features that helped to define the early 19th century engineering project.
- The map indicates the high ground of Redcliffe Hill that is formed of Redcliffe sandstone to the north of the Cut. 1 This defined the curving nature of this stretch of the cut as it hugged the southern edge of this sandstone hill
- The presence of pools in the area indicates the low lying nature of the area underlain by clays 2
- The two arterial routes into the city; Bath Road and Bedminster Parade/Redcliffe Hill that required bridges from the earliest phase 3



1828:

- The creation of the New Cut by 1809 necessitated the creation of two new bridges to carry the key arterial routes at the west and east end of this stretch of the Cut
- Harford's Bridge or Bedminster Bridge was constructed in 1807 as an iron bridge carrying the road from Bedminster to Bristol. This bridge was replaced by the surviving listed structure 4
- Hill's Bridge was constructed to carry the Bath Road over the New Cut at a similar date. This iron bridge was struck by a steam barge in 1855 and replaced 5

1900:

- Following the creation and then replacement of the two carriageway bridges in the 19th century, the Langton Street footbridge was added in the 1880s to provide a better pedestrian link between the new communities on either side of the Cut 6

New Cut East heritage assets and significance

New Cut East lies on the fringe of two conservation areas; Redcliffe Conservation Area covers the extreme western end of the character area including Bedminster Bridge while Bedminster Conservation Area covers a large proportion of the southern bank of this stretch of the New Cut..

There are three designated assets within the character area:

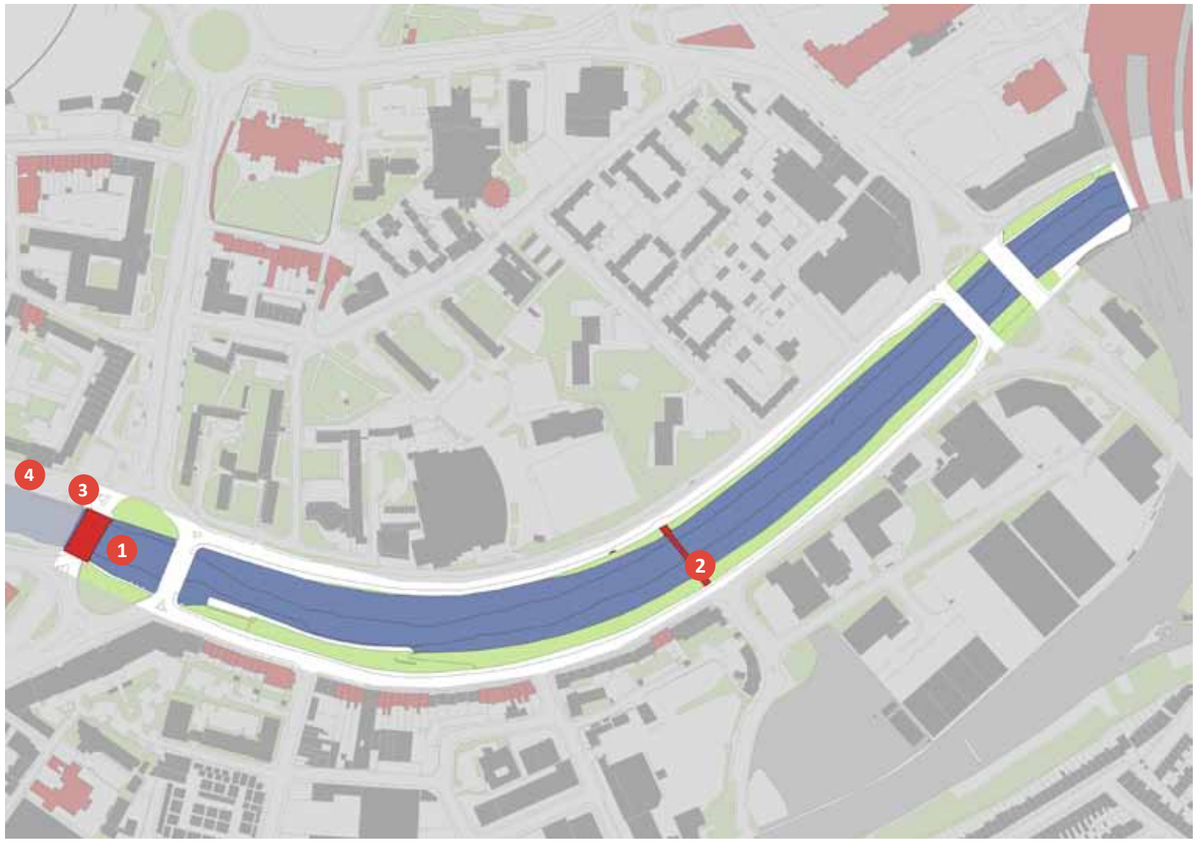
1 Bedminster Bridge (Grade II listed)
2 Langton Street Bridge, colloquially known as the Banana Bridge (Grade II listed)
3 Drinking fountain approximately 3 metres north-west of Bedminster Bridge (Grade II listed)

In addition to the designated assets within the character area the area lies within the setting of several grade II listed terraced houses along York Road and the grade I listed Temple Meads railway station.

Non-designated heritage assets within this character area relate to the structure of the New Cut itself. Of particular significance are the relieving arches of the Commercial Road and Clarence Road within the structure of the approach to Bedminster Bridge (4). These mirror the engineering approach elsewhere along the New Cut such as at Underfall and Vauxhall Bridge. These arches also influenced the design response to the 1960s Francombe House, part of the Redcliffe flats development. On the east side of Bedminster Bridge these arches have been impacted by the creation of the 1960s bridge.

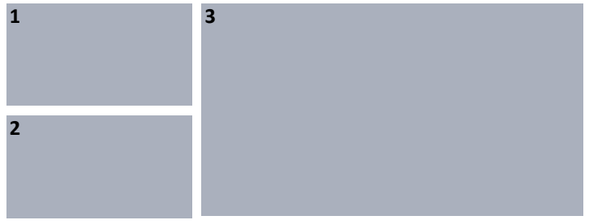
Fig 37
Listed assets

Grade II listed



N
Not to scale

Fig 38



1 Langton Street Bridge viewed from the east

2 Railings along the Clarence Road approach to the bridge

3 The stepped access to the bridge from the Clarence Road side, wheel channels for cycles on the right hand side

Langton Street Bridge

Locally known as the Banana Bridge, this Victorian structure was built in the 1880s to connect the relatively new communities of South Redcliffe and York Road and Windmill Hill beyond.

The Grade II listed structure is a significant landmark along the New Cut that retains a great deal of its historic fabric. Its yellow colour, added in the 1990s, has now added to its communal value.

The stepped approach on both sides means that the bridge is not completely accessible. Sloping metal wheel channels have been added to the side of the steps in attempt to facilitate cycle access, visible to the right in figure___.

In recent years there have been proposals through the Cycling Ambition Fund to explore options to improve accessibility including adding a new bridge structure or ramps over the steps. The costs of implementing these proposals combined with the impact to the historic significance of the bridge outweighed the public benefits of these schemes, particularly as there are alternative routes at Bath Road and Bedminster Bridges.

New Cut East heritage assets and significance

In addition to the Langton Street Bridge, there will be other individual assets where the introduction of flood defences will have a potential impact within this character area.

1 The listed drinking fountain near Bedminster Bridge is attached to the existing railings and is proposed to be restored as part of an initiative to bring some of these fountains back into use.
2 The relieving arches supporting the Commercial Road approach to Bedminster Bridge. These undesignated assets contribute to the character of the conservation area particularly with the architectural reference of the roof form in the residential block above.
3 At Bedminster Bridge the impact is likely to be minimal given the height of the structure above the flood risk area.
4 Along Clarence Road are a set of steel mooring posts set within concrete buttresses. These are set between surviving 19th century stone buttresses and are likely to date to the 1960s relating to a later phase of the Redcliffe Estate development or associated demolition works. Although outside of any conservation area they contribute to the historic character of the area and the setting of the Bedminster Conservation Area to the south.

Fig 39
Heritage assets

1 Drinking fountain near Bedminster Bridge

2 1960s view of Francombe House with 19th century relieving arches below Clarence Road in foreground

3 Bedminster Bridge

4 Steel mooring posts on Clarence Road

New Cut East character and setting

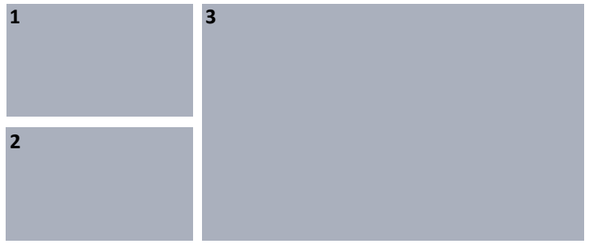


Fig 40
Character and setting

1 View towards Bedminster Bridge from the Bathurst Basin character area

2 Looking into the Bedminster Conservation Area from Clarence Road

3 View towards Gaol Ferry Bridge from near to Bedminster Bridge

Key views

From within the character area the principal views that contribute to its significance are those along the New Cut towards the bridges such as Gaol Ferry Bridge and Bedminster Bridge. The northern side of the Cut along this stretch has fewer trees than the south side affording a sequential views east and west.

Built form north and south of the Cut limits viewing opportunities to the wider city, although the terraced houses along the south side of the Cut particularly those within the Bedminster Conservation Area contribute to the area's setting along with the trees along the south bank.

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Bedminster Bridge Grade II	**19th century bridge that makes a positive contribution to the character of the local area particularly in views along the Cut**	Very busy highway with relatively poor pedestrian and cycling environment	The height of the bridge and carriageway should result in minimal impact from tidal defence work	Any works that impact the area should look for opportunities to improve the pedestrian and cycling environment	Any works that impact on the bridge will require listed building consent. Any application for consent will require robust justification and changes to the area will be expected to preserve or enhance the character and setting of the conservation area.
Victorian drinking fountain near Bedminster Bridge Grade II	**This asset dates to 1861 and forms part of the historic character of the area** **There are proposals to bring the drinking fountain back into use**	Currently not in use and subject to vandalism	Tidal defence works are likely to be minimal in the area given the levels along this area of the bank, however any works will have a potential impact to the stone structure and its setting	Any works should look to improve the setting of the drinking fountain	As above
Langton Street Bridge Grade II	**19th century bridge that contributes to the character of the local area particularly in views along the New Cut**	Current not fully accessible	Tidal defence works will have a potential impact to the designed elements of the bridge where it lands on Clarence Road	Any works should consider improvements to accessibility whilst responding positively to the asset's significance	As above

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Commercial Road relieving arches and retaining structure Undesignated	**Part of the 19th century engineering design for the retaining structure along the north bank of the New Cut. The arches create visual interest contributing to the character of the conservation area** **The design of the residential flats to the north responds to the visual appearance of these arches**	The works to create the second Bedminster Bridge to create the existing roundabout in the 1960s has impacted the arches to the east and obscured any surviving arches	Tidal defence works may have an impact on these arches even if it is a visual impact	Any works should respond positively to the appearance of the arches in relation to the residential flats beyond	Any application for consent will be expected to preserve or enhance the character and setting of the conservation area.
Steel mooring posts and buttresses on Clarence Road Undesignated	**These assets potentially relate to the development of the Redcliffe Estate a significant late 50s-early 60s residential development and consequently form part of the historic interest of the area** **The 20th century buttresses lie between 19th century stone buttresses that form part of the relieving structure of the north bank**	Currently little understood and not in use	Tidal defence work may have a negative impact on these features	Any works should aim to avoid impacts to these features	These undesignated features lie outside of any conservation area, but contribute to the setting of the Bedminster Conservation Area so works would be expected to preserve or enhance this setting

9

Totterdown Lock

Totterdown Lock Historic development

Topography

Former course of the River Avon at is begins its meander around St Philip's Marsh to the east. The land rises steeply above the floodplain to the west towards Totterdown. The area is defined as the junction between the New Cut and original course of the Avon. To the west, beyond the scope of the study, the Floating Harbour continues along the Feeder towards Netham.

Historic character

The Totterdown Lock character area comprises the interface between the manmade, 19th century landscape and the natural watercourse. The western end of Feeder Road where it meets Cattlemarket Road is essentially a dam infilling the former course of the River Avon. The former Totterdown Lock was cut through this fill material by 1809 to link the lock controlled Floating Harbour and the tidal Avon.

Associated with the lock was a bridge and toll house providing road access between the industries that were developing on St Philip's Marsh from the late 18th century.

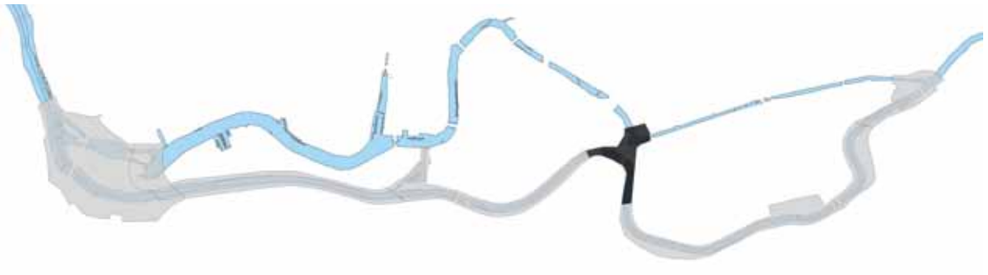
In the 1840s the Great Western Railway and Bristol and Exeter Railway stations opened at Temple Meads. This station complex has seen two significant developments; the creation of the Temple Meads Joint Station by 1878 that added the train sheds designed by Digby Wyatt and the 1930s expansion known as the Culverhouse extension in the 1930s.

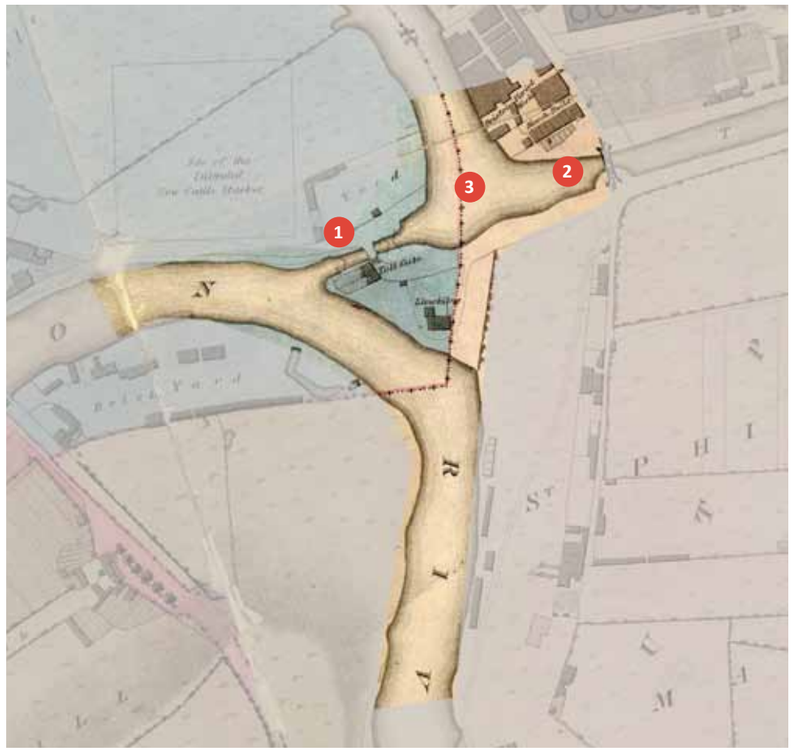
This latter work completely replaced the Victorian railway bridge over the River Avon and added the existing structure and platforms.

As at Bathurst Basin, during the Second World War Totterdown Lock was infilled to prevent flooding of the area resulting from enemy bombing. This infill permanently closed access between the Floating Harbour and the tidal Avon at this point although the walls of the lock remain.

Recent landscaping works have further changed the immediate character of the area most notably with the addition of Brock's Bridge that crosses the river from Feeder Road/Cattlemarket Road to the site of the former Diesel Depot on the southern bank. Associated with the creation of this bridge has been landscaping works to raise road levels and reduce some of the risk from flooding.

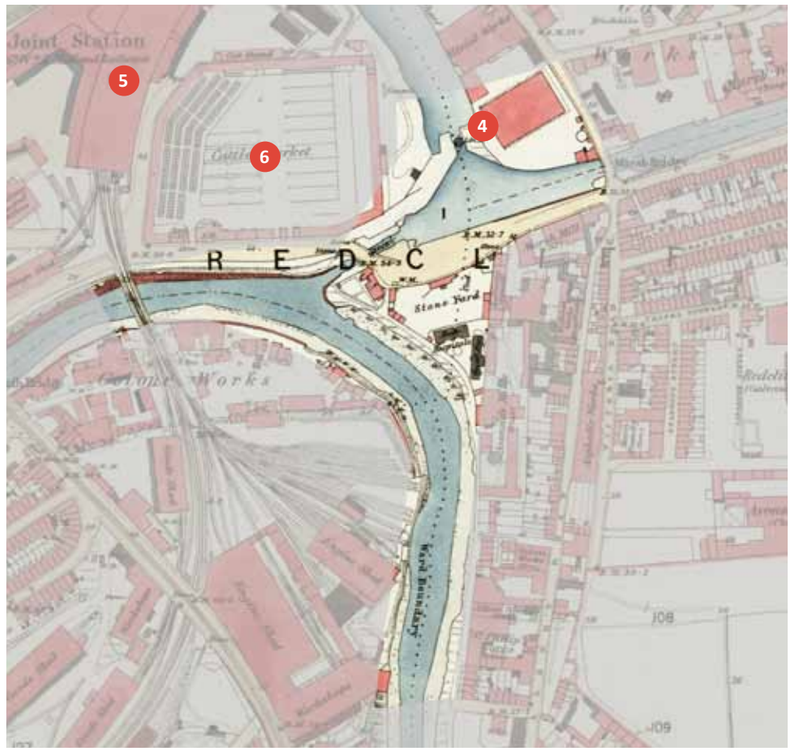
Fig 41 Early 20th century drawing by Samuel Loxton of Totterdown Lock, Bristol Archives, U1146





1828 main features:

— Plumley and Ashmead's 1828 map of Bristol depicts the post Floating Harbour/New Cut landscape with Totterdown Lock 1 and the Feeder Canal 2 either side of Totterdown Basin 3

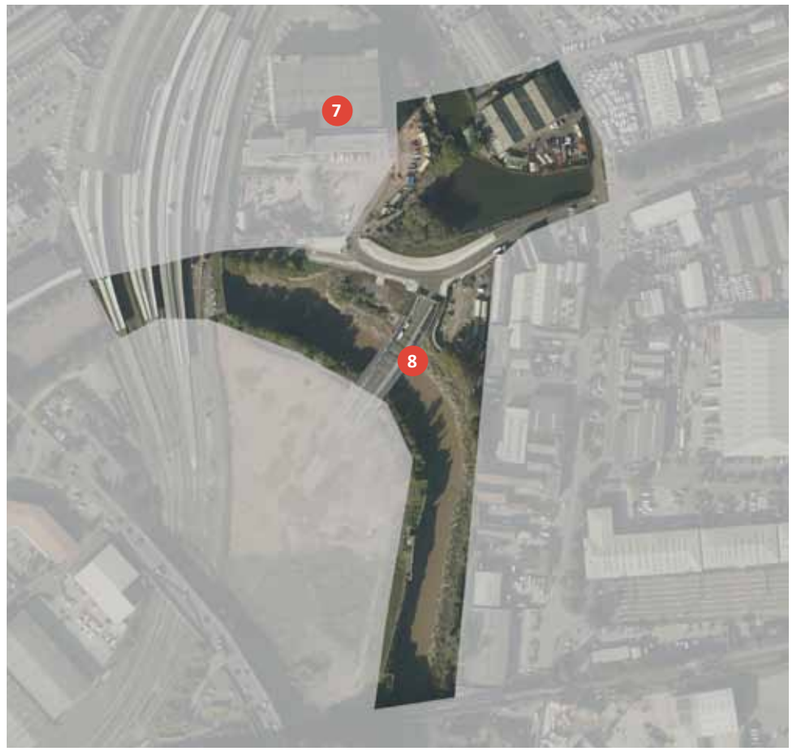


1880:

— By 1880 an additional lock had been added to the northern entrance to the Totterdown Basin 4

— Temple Mead station had opened originally in the 1840s and then expanded in the 1870s 5

— As a result of the improved transport links by rail and water the cattle market had opened adjacent to Totterdown Basin 6



2016:

— In landscape terms the area remained relatively unchanged during the 20th century. The most significant change being the further expansion of Temple Meads station in the 1930s and the closure of the cattle market to be replaced by the Post Office Sorting Office 7

— More recently a new bridge, Brock's Bridge has been constructed over the river 8

Totterdown Lock heritage assets and significance

The Totterdown Lock area lies outside of any designated conservation areas, although it does lie in an area of historic significance within the setting of several listed buildings including:

1 Temple Meads railway station (Grade I listed)
2 The former gas works building and Marble Mosaics Warehouse (Grade II listed)

The Temple Meads structure forms the western boundary of this character area. This large railway bridge was constructed as part of the 1930s expansion of the station, but is physically attached to the earlier Victorian fabric that is of greater significance.

The former Marble Mosaic works forms the backdrop to the north side of the Totterdown Basin together with its substantial pennant sandstone rubble boundary walls that are part of the listed curtilage of the asset.

In terms of undesignated assets the basin as a whole (3) including the remains of its entrance lock and mooring posts and other dockside fabric are of historic significance dating to similar periods as the listed fabric elsewhere in the Floating Harbour.

The remains of Totterdown Lock (4), although greatly altered through recent highway works and the Second World War infilling is an undesignated heritage asset with historic significance relating to the creation of the Floating Harbour.

Fig 31
Listed assets

Listed assets

N

Not to scale

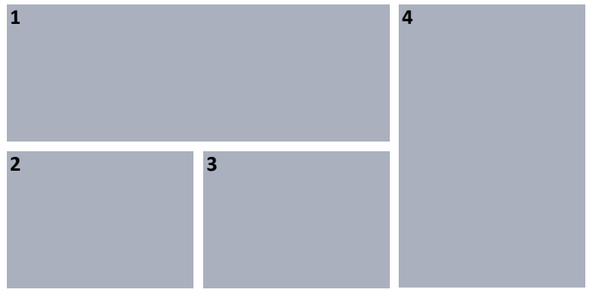


Fig 42
Totterdown Lock and Basin

1 Aerial view of Totterdown Lock

2 Dockside fabric alongside Totterdown Basin

3 Totterdown Basin

4 Surviving cast iron lamp post

Totterdown Lock and Basin

The surviving historic fabric within the Totterdown Lock area contributes to the character and setting of the surrounding heritage assets.

Of particular interest are the dock and lock walls and the dockside fabric within the basin that includes crane bases and mooring posts.

Views of the station and assets beyond from Avon Street bridge were identified as important views within the Temple Quarter Enterprise Zone Heritage Assessment.

Views across the basin are also important looking along the Floating Harbour and east along the Feeder Canal.

Other views from within the character area are terminated by the 1930s railway bridge to the west or limited by the river topography to the south.

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Temple Meads Grade I	**The station complex within the character area is largely 1930s in date, but significant in terms of the historic association with the second phase of significant railway investment**	The bridge infrastructure forms a visual barrier into and out of the character area and creates a poor pedestrian environment given its width. It is also a significant low river bank area susceptible to flooding	Given the continued need and use of the station as a whole the asset is not vulnerable to changes caused by the flood defence works although there will be a potential impact to its general setting in terms of views from the east	Any works should aim to improve the pedestrian environment beneath the bridge without causing additional harm to the setting of the asset	Any works that impact on the fabric of the station including the structure of the bridge will require listed building consent. Any application for consent will require robust justification.
Totterdown Lock Undesignated	**The mouth of the historic lock remains legible**	Currently not in use and greatly altered by the Second World War infilling and recent highway and flood defence works	Increased flood defences may further erode the historic legibility of the significant asset	Any works should look to better reveal this heritage asset	The lock is identified on the Bristol Historic Environment Record and is a recognised undesignated heritage asset covered by planning policies BCS22 and DM31 of the Bristol Local Plan. Consequently works that harm the asset should be avoided where possible unless robust justification is provided

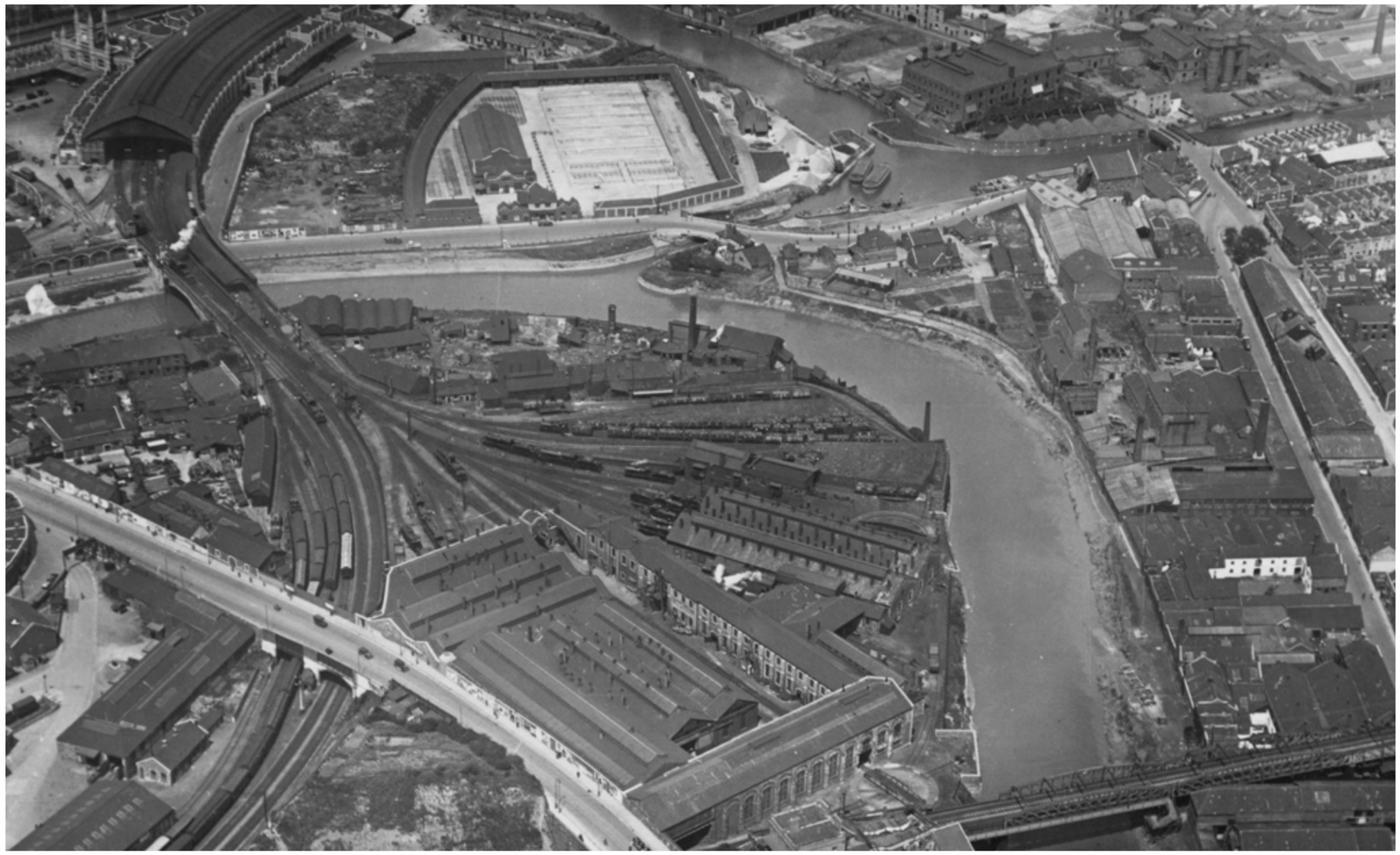


Fig 43
Totterdown Lock and Basin with the railway yards in the foreground, Albert Clarke Collection, Bristol Archives, 44819/3/26

10

Avon Riverside

Avon Riverside Historic development

Topography

This character area is defined by the course of the tidal River Avon as it meanders around St Philip's Marsh. To the north the river flood plain extends across St Philip's until the land slopes upwards towards the Dings, Old Market and Lawrence Hill. Immediately to the south of the river the ground slopes up steeply to the Totterdown and Arnos Vale escarpments.

Historic character

The river through this character area follows its historic watercourse. As Bristol expanded in the 18th and early 19th century increasing numbers of industries were attracted to the river around the fringe of St Philip's Marsh. As a consequence of the movement of materials to and from these industries the existing riverside path originated as a tow path for barges and is marked as such on the early 20th century Ordnance Survey plans.

On the south side of the river the Bath Road occupied the majority of the bankside. By the later 18th century this route had become a Turnpike with a tollhouse close to the present Totterdown Bridge.

As a result of continual flooding and river erosion the road was moved in the mid 1830s to a route on higher ground to the south to its current alignment. The tollhouse was also relocated and is now the Grade II listed public house now named the Thunderbolt

From about 1840, the surrounding area was gradually becoming dominated by railway infrastructure so that by 1880 several railway bridges crossed the river and large areas of railway sidings occupied land either of the river.

During this period increasing numbers of residential dwellings were constructed along Bath Road and across Totterdown above.

In 1902 Sparke Evans Park was opened on the north side of the river. Until 1933 when the associated suspension footbridge was created, access to the park for local residents was only possible from Totterdown Bridge and the riverside path.

After this early 20th century developments the landscape of the Avon Riverside area remained relatively unchanged until the creation of the St Philip's Causeway that created a large physical and visual impact to the area.

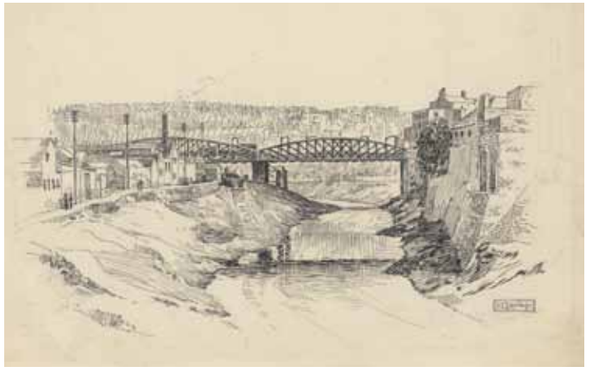


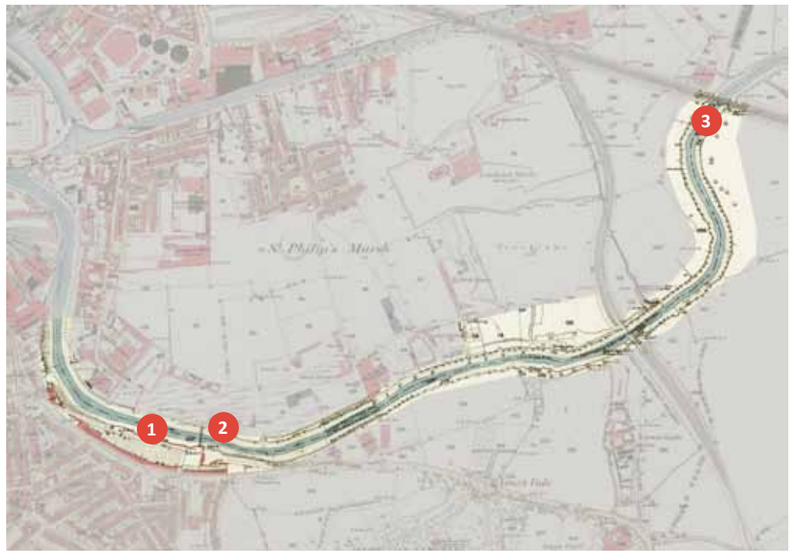
Fig 44
Historic development

1 Ink drawing by Samuel Loxton of the railway bridge over the Avon viewed from Totterdown Lock, Bristol Libraries, C118

2 Ink drawing by Samuel Loxton of Totterdown Bridge Bristol Libraries, C137

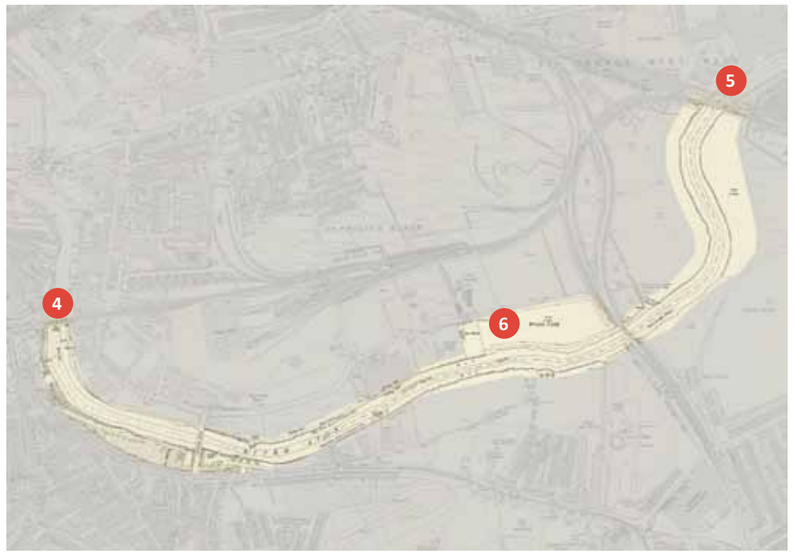
3 A view of the western bank of the River Avon, April 1972, image courtesy of Know Your Place

4 St Philip's Marsh, c.1930, Geoffrey Tarring Collection



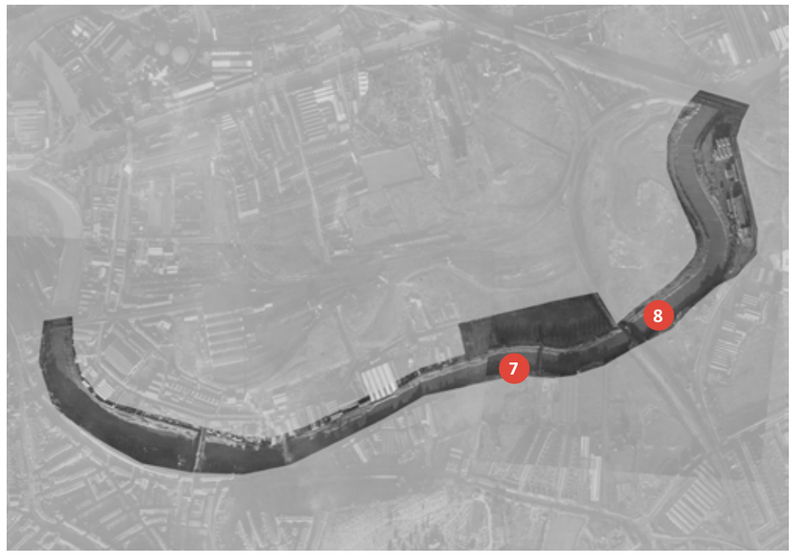
1880 main features:

- As a natural river course, the most significant features within this area tend to relate to the historic bridges or bankside land uses and their interfaces with the river. However, the earliest significant landscape feature is the former route of the Bath Road 1 . This was realigned to its current location by the mid 19th century as a result of persistent flooding and landslips, although it's former coarse was retained to provide rear access to properties fronting the new Bath Road.
- Totterdown Bridge was constructed in the 1880s to provide highway access to St Philip's Marsh 2
- The earliest bridge along this stretch of river is the Avon railway bridge constructed in 1839 by Brunel 3



1910:

- In the late 19th century an additional railway bridge was constructed as part of the growing railway infrastructure across St Philip's 4 . This bridge defines the western end of this character area
- Additional railway lines were added either side of Brunel's Avon bridge in the late 19th century as railway use increased 5
- Sparke Evans Park opened in 1902 6



1946:

- The suspension bridge over the Avon connecting to Spark Evans Park was constructed in 1933 by John Lysaght Ltd of St Philip's 7
- The introduction of the St Philip's Causeway structure and associated elevated highway infrastructure in the 1990s resulted in the removal of a Victorian railway bridge and general erosion of the historic character towards the eastern end of the character area 8

Avon Riverside heritage assets and significance

The only nationally designated heritage asset within this character area is the 1839 Avon railway bridge (1).

Sparke Evans Park (2) is a locally registered historic park and garden.

The other undesignated heritage assets include:

3 The Sparke Evans Park bridge

4 Totterdown Bridge

5 Victorian railway bridge

6 The remains of the former Bath Road now overgrown along the southern bank

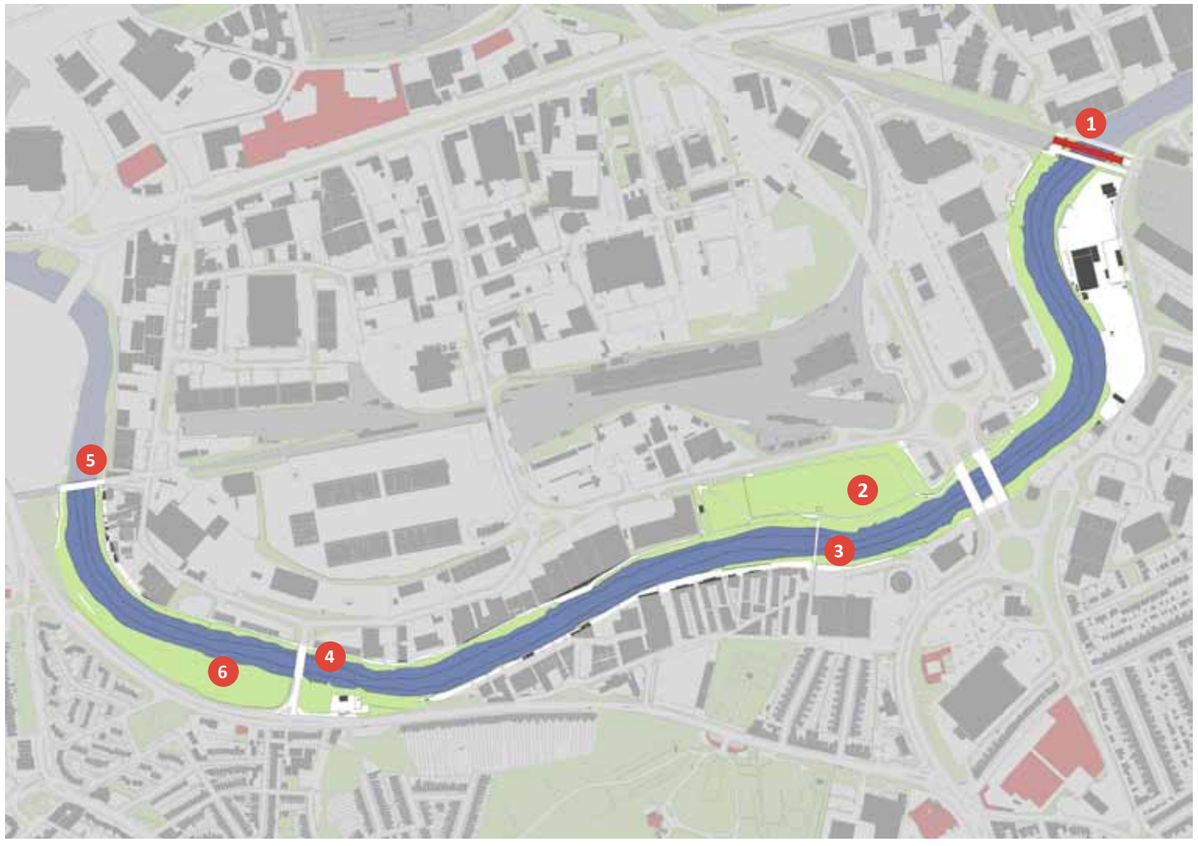


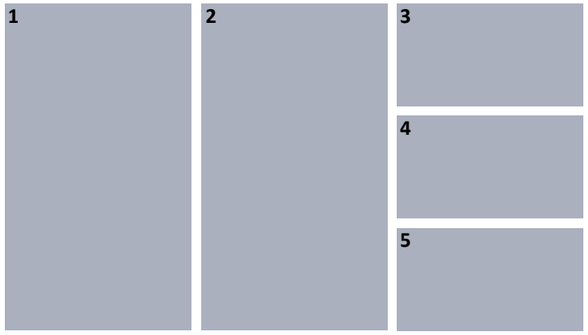
Fig 45
Listed assets

Listed assets

N

Not to scale

Fig 46
Brunel's Avon Bridge



Brunel's Avon Bridge

This railway bridge was constructed in 1839 to the design of I K Brunel as part of the Bristol and Exeter railway line. The bridge is Grade I listed despite being almost entirely obscured by the two later iron railway bridges that now stand alongside Brunel's stone structure.

The Grade I listed bridge incorporates the Tudor architectural style that Brunel used in many of his railway structures along the Great Western and Bristol and Exeter Railways. Of particular interest are the moulded stone arches and the semi-octagonal buttresses that form refuges for railway workers above.

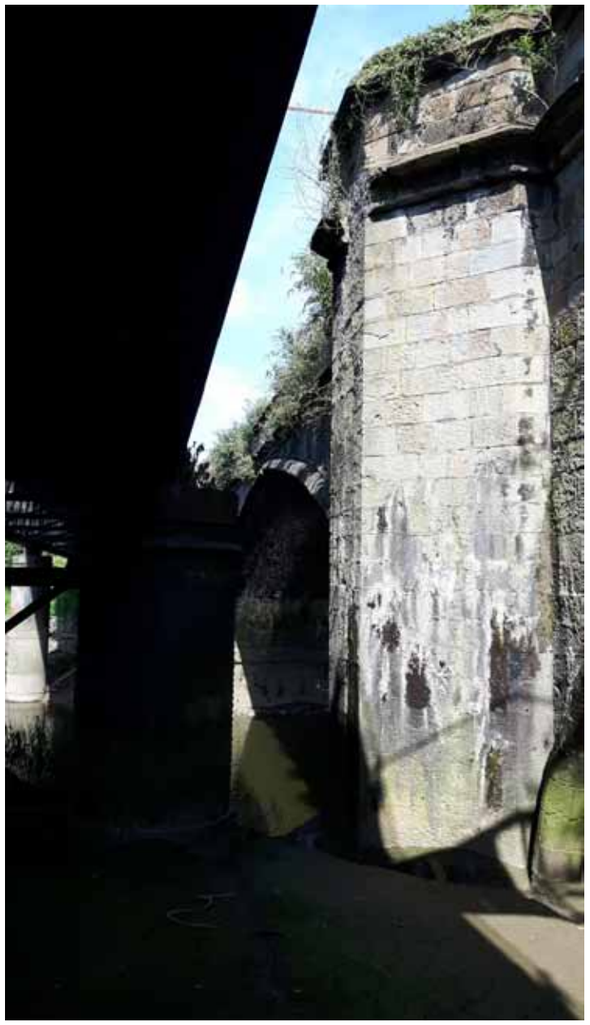
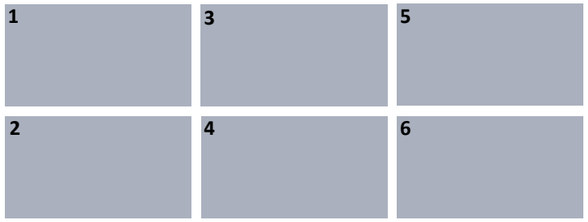


Fig 47
Heritage assets



Avon Riverside heritage assets and significance

In addition to the Avon Bridge, there will be other individual assets where the introduction of flood defences will have a potential impact within this character area.

1 Sparke Evans Park and bridge, this should be outside the area of tidal defence works although works will have a potential impact to access and trees along the southern boundary of the park

2 There are fragmentary archaeological remains of maritime uses along this stretch of the river that may be affected by construction works

3 Totterdown Bridge, the implications of tidal defence works here are unclear, although aspects of the historic fabric of the bridge may be impacted by construction works such as the access doorway on the riverside path

4-6 Towards the eastern end of the character area the riverside path is incomplete or currently inaccessible due to river erosion

Avon Riverside character and setting

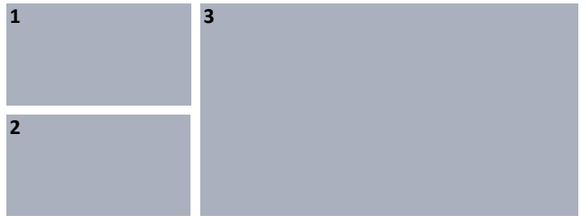


Fig 48
Character and setting

1 View west from Sparke Evans Park Bridge

2 Paintworks from the Avon riverpath

3 View east from St Philip's Causeway junction bridge

Key views

The key views within the character area tend to be views along the river either from the riverside path or from the bridges, although between St Philip's Causeway and Netham access to the river is poor and views are currently limited.

There are important views into the character area provided by the steep escarpment of Totterdown to the south.

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Avon Bridge Grade I	**A good example of a Brunel phase railway bridge still in use as part of the main line rail network**	The later Victorian iron railway bridges almost completely obscure this highly graded asset. There is no appropriate pedestrian access	Forming part of the mainline infrastructure this asset should not be vulnerable to significant change through the tidal defence works	Any works should aim to provide better access to this asset where appropriate	Any works that impact on the fabric of the bridge will require listed building consent. Any application for consent will require robust justification.
Sparke Evans Park bridge Undesignated	**An attractive footbridge that provides pedestrian access to Spark Evans Park particularly for the new residents of the Paintworks development**	Poor lighting on the Spark Evans end of the bridge combined with the fact that there is limited riverside path access east of the bridge contributes to a perceived threatening environment late in the day	The bridge itself is above the flooding environment, although construction works may affect access	Any works should aim to improve access particularly eastwards pedestrian and cycling connections	The bridge is identified on the Bristol Historic Environment Record and is a recognised undesignated heritage asset covered by planning policies BCS22 and DM31 of the Bristol Local Plan. Consequently works that harm the asset should be avoided where possible unless robust justification is provided
Totterdown Bridge Undesignated	**A late Victorian stone and iron bridge that forms an important highway connection to St Philip's Marsh**	This is a very busy road junction with congestion at peak times. Lighting on the riverside path below is poor with poor onward connecting routes through a car park into the St Philip's area	Tidal defence works may impact the character and setting of the bridge and some of it's fabric such as the historic opening into the abutment from the footpath	Improvements to the pedestrian and cycling environment particularly in terms of lighting and onward connections	A above

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Riverside path Undesignated	**The whole route from Totterdown Lock to the Spark Evans Park provides a pleasant walking and cycling environment away with good views along the river and connections between the Temple Meads area and St Anne's, Paintworks and Totterdown**	There are areas where lighting is poor, but the key weakness is the poor environment around St Philip's Causeway and the lack of access beyond	An inappropriate design to tidal defence works in the this area will have a negative impact on the semi-rural character of the riverside path	Improvements to access particularly the eastwards connections around and beyond St Philip's Causeway and improved access to better reveal Brunel's Avon Bridge	The design of tidal defence works will need to comply with Policy DM26 of the Local Plan particularly where these will have a potential impact on the character of the area

11

Netham Lock

Netham Lock Historic development

Topography

Course of the river as it emerges from the St Philip's Marsh floodplain area and approaches Crew's Hole upstream to the east. To the north and south of the river at this point the land rises towards Blackswarth/ Redfield to the norther and St Anne's to the south. The Feeder joins the river at this point via Netham Lock.

The river is dominated by the Netham Dam or Weir that marks the effective limits of normal tides on the Avon and diverts water along the Feeder.

Historic character

Netham Lock was created in 1809 as part of the Feeder Canal infrastructure.

From this early date a road bridge over the lock formed part of the original design to connect Feeder Road and the industries on St Philip's Marsh to Netham Road and the communities of Redfield and St George.

As residential developments increased to the south of the Avon in the area of St Anne's a new bridge was created, New Brislington Bridge, in 1900 and can be seen in fig 49-2.

This bridge was replaced by the current concrete bridge in the 1930s as traffic use, particularly heavy lorries increased necessitating a stronger bridge.

Since this the 1930s the most significant change to the area has been the introduction of the two steel 'Bailey Bridges' over the lock replacing the original arched stone bridge. These bridges appear to have been added in the 1970s as traffic use increased further.

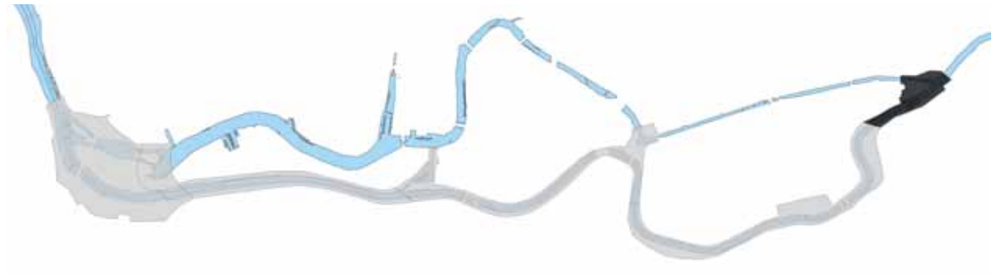
Fig 49
Historic development

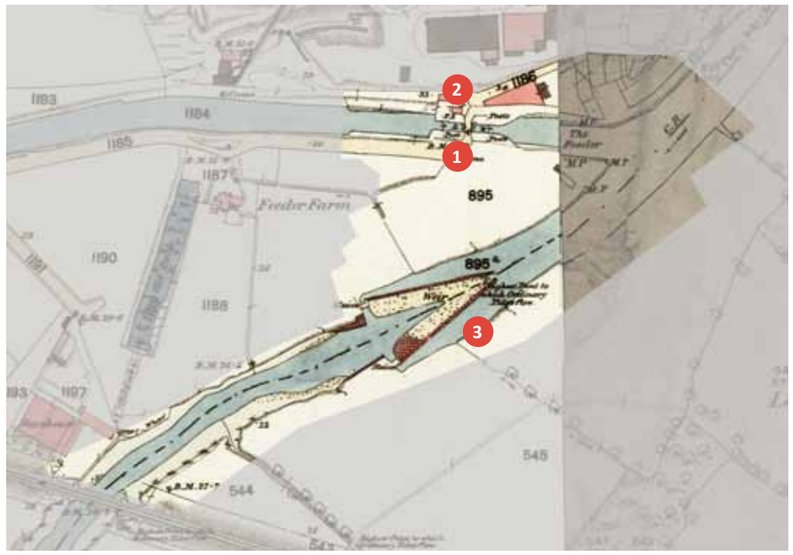
1 The Feeder Canal in the 1920s with Netham Lock distant right of the image and the Netham Chemical Works on the norther canal side, Port of Bristol Collection, M Shed, P13756

2 1920s aerial view, Albert Clarke Collection, Bristol Archives, 44819/3/197

3 Netham Lock in the early 1960s, image from Know Your Place

4 Netham Lock, mid 1960s, image from Know Your Place





1880 main features:

- Netham Lock was created as part of William Jessop's design for the Floating Harbour, Feeder Canal and New Cut. 1 A bridge over the lock connected Feeder Road with Netham Road to the north, although until about 1900 there was no bridge over the river to the south
- The lock-keeper's cottage was built at the same time as the lock 2
- Netham Dam or Weir was also constructed in 1809 to divert water into the Feeder. 3 It was later raised in height at the suggestion of Brunel and has subsequently been modified

1900:

- About 1900 the first New Brislington Bridge was constructed 4 to connect Feeder Road and Netham Road with new housing at St Anne's
- By this date industrial development had increased on both sides of the Feeder 5

1946:

- By 1946 the earlier New Brislington Bridge had been replaced by the current concrete bridge in the 1930s 6
- The original 1809 stone bridge over the lock was replaced by the existing two 'Bailey Bridges' at some point in the 1970s

Netham Lock heritage assets and significance

Netham Lock and the northern end of this character area lie within the Avon Valley Conservation Area.

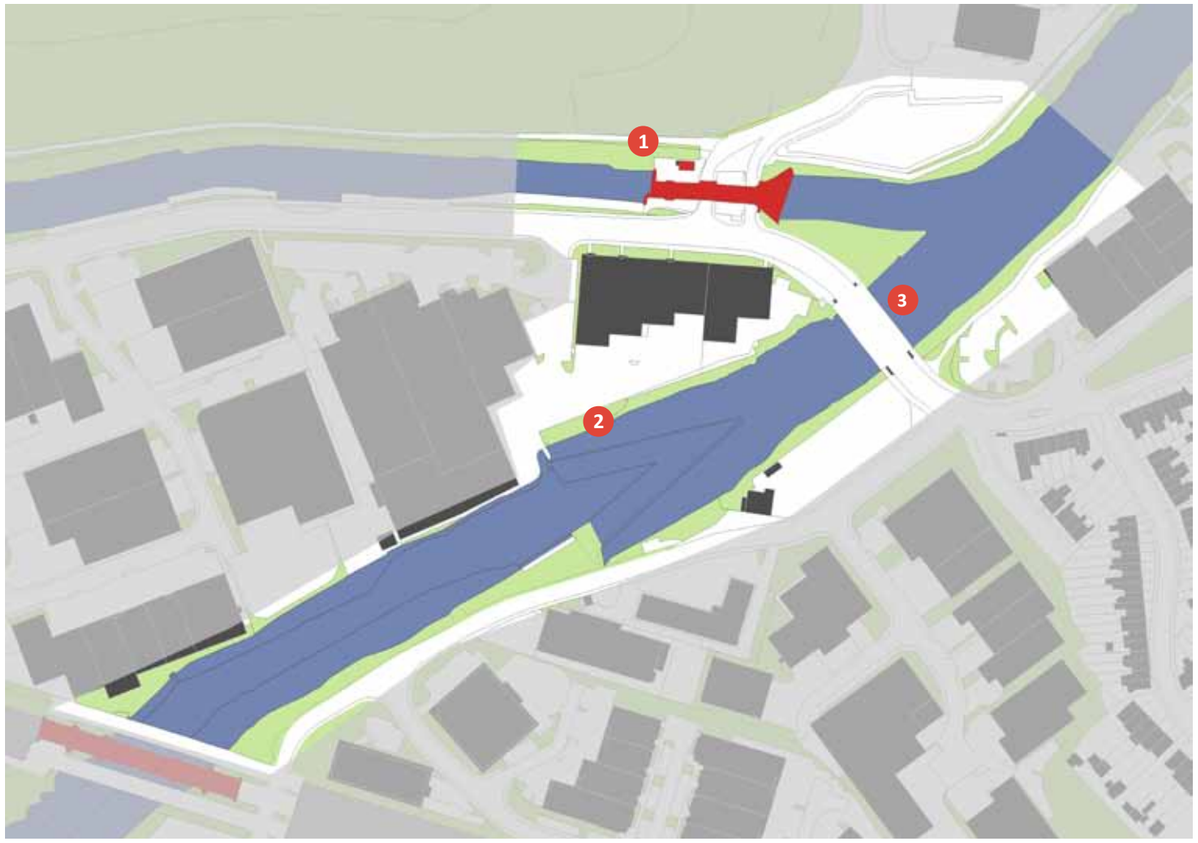
Netham Lock and the Lock-keeper's cottage are both listed Grade II. The listing for the lock includes the remains of the earlier stone bridge that underlie the western of the two existing 'Bailey' bridges.

Netham Weir is undesignated, but it dates to the Jessop phase of harbour development, although substantially altered it has a degree of historic significance and retains its original form.

The New Brislington Bridge dates to 1930 and lies on the boundary of the conservation area. This undesignated asset has a distinctive concrete form that contributes to the character of the area.

Fig 50
Listed assets

Listed assets



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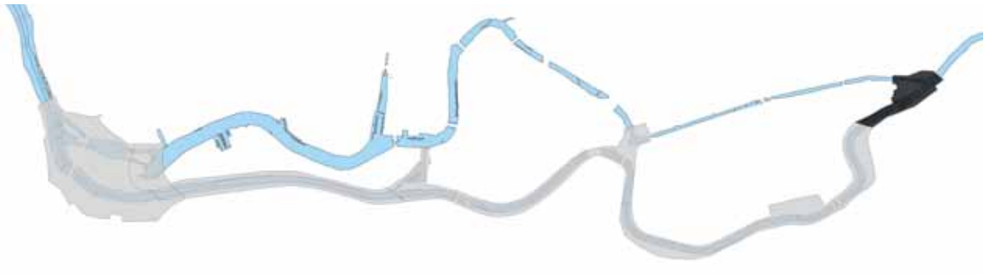


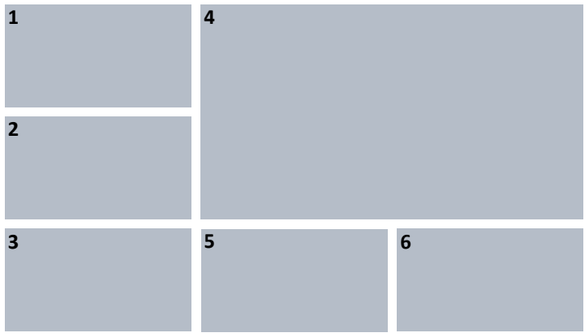


Fig 51
Character and setting

1 View from the west, Feeder Canal approach to the lock

2 Lock-keeper's cottage

3 View towards the Feeder Canal entrance

4 Cobbled lock gate treads either side of the lock

5 Stone steps within the lock

6 View towards the western bridge across the original line of the lock bridge

Netham Lock and Lock-keepers Cottage

These two Grade II listed assets make a unique contribution to the character of the area. The retained historic materials, lock gates and surfaces form part of a coherent historic canal setting despite the addition of the two 'Bailey' road bridges. Although the western of these two bridges aligns with the original bridge the eastern of the two now partially obscures the lock.

Despite these later additions the cobbled lock gate tread and stone steps are visible between the two steel bridges.

During certain tidal conditions the lock gates remain open as river flow enters the Feeder Canal.

Netham Lock heritage assets and significance

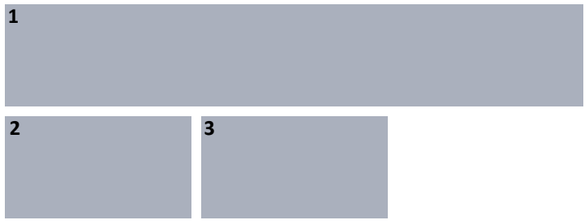


Fig 52
Heritage assets

1 Netham Weir viewed from the southern bank

2 New Brislington Bridge

3 Stone abutment at the junction of canal and river showing clear signs of structural movement

In addition to the listed assets, Netham Weir and the New Brislington Bridge contribute to the character of the area.

The Weir itself has been raised in height since its original design and further changes have been made during the 20th century including the change to the sluices on the northern side of the river.

The original New Brislington Bridge lasted only about 30 years before it was replaced by the existing distinctive concrete bridge.

The eastern stone abutment that forms the junction of the Feeder and tidal river is likely to date to 1809 along with the lock fabric. At least one mooring post as marked ('M.P.') on the historic plans is visible on the end of this abutment. Concrete retaining structures have been added to the western end of this abutment and there are severe structural cracks visible in the stonework.

Netham Lock character and setting

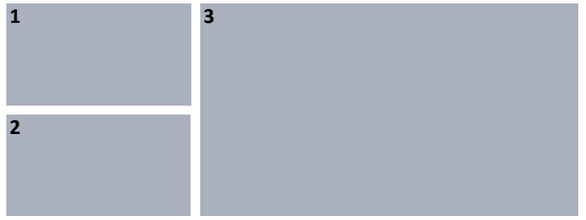


Fig 53
Character and setting

1 View towards Netham Lock from the cycle path approach within the Avon Valley Conservation Area

2 View along the river from New Brislington Bridge into the conservation area

3 View towards Netham Weir from New Brislington Bridge

Key views

Despite the heavy traffic use, the Netham Lock area retains a semi-rural setting with primary views along the river from within the character area particularly into the conservation area that extends to the east.

Views towards the lock from the east contribute to the special character of the Avon Valley Conservation Area.

The Feeder

In addition to the works at Netham proposals are likely to include opportunities to enhance the cycling and pedestrian environment along the south bank of the Feeder Canal.

The Feeder itself forms part of the nationally significant early 19th century engineering works that created the Floating Harbour and New Cut, although none of its associated physical fabric is currently designated as a heritage asset except for some industrial buildings on the north bank.

Between Netham and the modern St Philip's Causeway there is no canal side tow path beyond the roadside pavement that is flanked by standard Bristol cast iron post and rail fence.

Immediately beyond the Causeway road bridge there is gate access to a grass covered tow path that dates to the 19th century. This tow path is now tree lined and is a popular site for anglers.

The Totterdown Basin end of the Tow Path has a stepped access from Feeder Road.

Consequently enhancement works should focus on Feeder Road where there is level access and minimal potential for any significant heritage impacts.

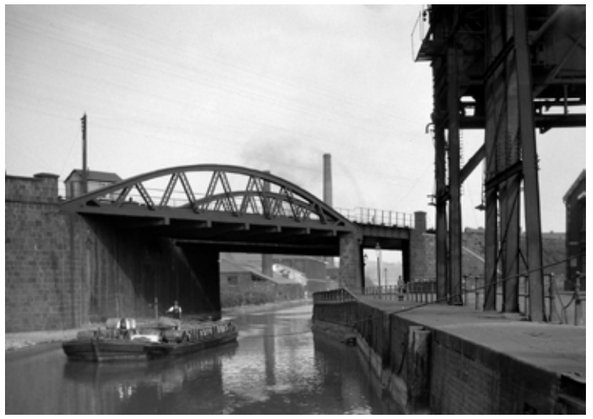


Fig 54
The Feeder

1 The Feeder in 1920 looking east towards the St Philip's railway bridge. The modern St Philip's Causeway now cuts across this view. Notice the ramped access to the tow path in the distance, Port of Bristol Privileges Collection, M Shed, P13759

2 Closer view of St Philip's railway bridge beyond the access to the tow path in the 1930s, Tarring Collection, 067-067-P4280134

3 Great Western Cotton Works on the north side of the Feeder in the 1930s, Tarring Collection, 069-069-P4280138

St Anne’s

To the east of Netham Lock, tidal defence works will be required along the south bank of the River Avon at St Anne’s.

Until the early 20th century this area was predominantly agricultural land, the most significant heritage site being St Anne’s Chapel that lay close to the mouth of Brislington Brook.

In the first half of the 20th century the area became dominated by St Anne’s Board Mills that opened in 1912. The mills processed wood pulp from Scandinavia to create cardboard and related products.

The extensive factory closed in the early 1980s and the site was redeveloped for housing and businesses by the Bristol Development Corporation. Consequently the existing riverside landscape is predominantly late 20th century in character with associated planting and secondary woodland contributing to the verdant riverside charater in this part of the Avon Valley Conservation Area.

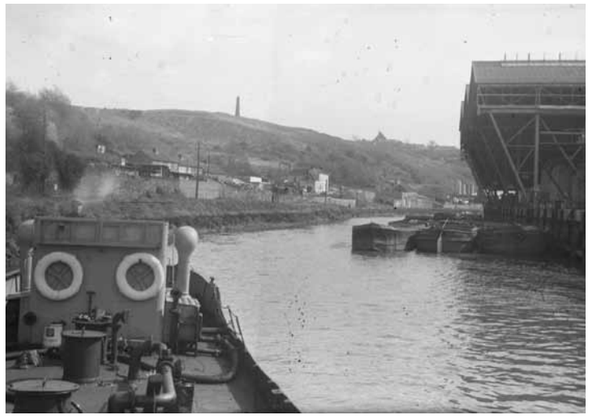


Fig 55
St Anne’s Board Mills

1 View east along the river toward Trroper’s Hill in the 1960s. St Anne’s Board Mills on the right, Know Your Place, SGMRG/BIAS photograph

2 1920s aerial view of St Anne’s Board Mills, Albert Clarke Collection, Bristol Archives, 44819/3/142

3 Scandanavian wood pulp in storage at the Board Mills. The concrete dockside in front of these sheds now forms the riverside for the Burgess Green Close 1980s BDC development, Hartley Collection, M Shed, 265095

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Netham Lock Grade II	**Distinctive canal side character contributing to the overall character of the Avon Valley Conservation Area**	The later road bridges, particularly the eastern of the two partially obscure the historic lock. The traffic use also impacts the semi-rural character of the area	Tidal defence works are likely to require physical changes to the lock that risk eroding the historic character	Any works have the opportunity to better reveal the heritage assets	Any works that impact on the fabric of the lock or associated fabric will require listed building consent. Any application for consent will require robust justification.
Netham Weir Undesignated	**This historic feature provides visual interest to the river**	Currently only easily visible from New Brislington Bridge	As this is a significant element of the Floating Harbour infrastructure its historic significance is unlikely to be impacted and the current sluices are later in date	Any works should look to better reveal this heritage asset	The weir is identified on the Bristol Historic Environment Record and is a recognised undesignated heritage asset covered by planning policies BCS22 and DM31 of the Bristol Local Plan. Consequently works that harm the asset should be avoided where possible unless robust justification is provided
New Brislington Bridge Undesignated	**Distinctive concrete bridge that contributes to the character of the adjoining Avon Valley Conservation Area** **The bridge affords good views along the river**	This is a relatively heavily trafficked route that negatively affects the pedestrian environment	Tidal defence works should have limited or no impact on the bridge	Any works should look to improve the pedestrian environment	As above

Asset	Strengths	Weakness	Vulnerability to change	Opportunities	Policy requirements
Feeder canal/river abutment Undesignated	**Likely to date to the earliest phase of harbour/canal construction this stonework together with its associated mooring posts contribute to the character of the Avon Valley Conservation Area**	Suffering from structural movement it is likely that parts of this feature are in danger of collapsing into the river	Almost certainly if tidal defence works are required here it will necessitate the loss of this feature that may be failing in any case	Creating a robust abutment that contributes to the verdant setting of the conservation area and includes reused materials such as the stoneworks and mooring posts	Works to this area will be required to preserve or enhance the character of the conservation area
Feeder canal west of Netham Undesignated	**Dates to the earliest phase of 19th century engineering. Provides a historic setting to industrial listed structures on the north bank.** **Currently tree lined and popular with anglers**	The associated tow path is not continuous and although there is a level ramped access at the east end, access at the west end is stepped.	The open nature of the tow path greatly contributes to the local character and setting of the listed assets. Adding any barriers will harm this setting and character.	Enhancement of the adjoining carriageway will greatly improve the pedestrian and cycling environment without harming the heritage assets	Works to this area will be expected to preserve or enhance the character and settign of the listed assets
Avon Valley Conservation Area	**Verdant riverside character with remnants of instrial heritage that contribute to the local character, in particular the landmark Troopper's Hill chimney**	There has been a lot of late 20th century developments that have not responded well to the local character and in places have created a hard environment of car parking areas close to the riverbank	Erosion of the local character will occur with the loss of trees or the introduction of inappropriate new landscaping	Tidal defence works along the south bank of the river at St Anne's can potentially contribute to the verdant character of this part of the conservation area	Works to this area will be required to preserve or enhance the character of the conservation area

12

Summary and Recommendations

Summary of key views

One of the key aspects of the character of any area are the views that help define the aesthetic and experiantial value of a place.

These views can be panoramic incorporating several landmarks and natural topography or a focussed view point to a single significant landmark.

Design proposals can contribute to an enhancement of the views in an area and projects will be expected to preserve or enhance any key view.

The contribution that certain views make to the character of specific character areas along the River Avon have been discussed in each of the characetr area sections above. The key viewpoints as highlighted in the document and previous conservation area character appraisals are identified in fig.56.

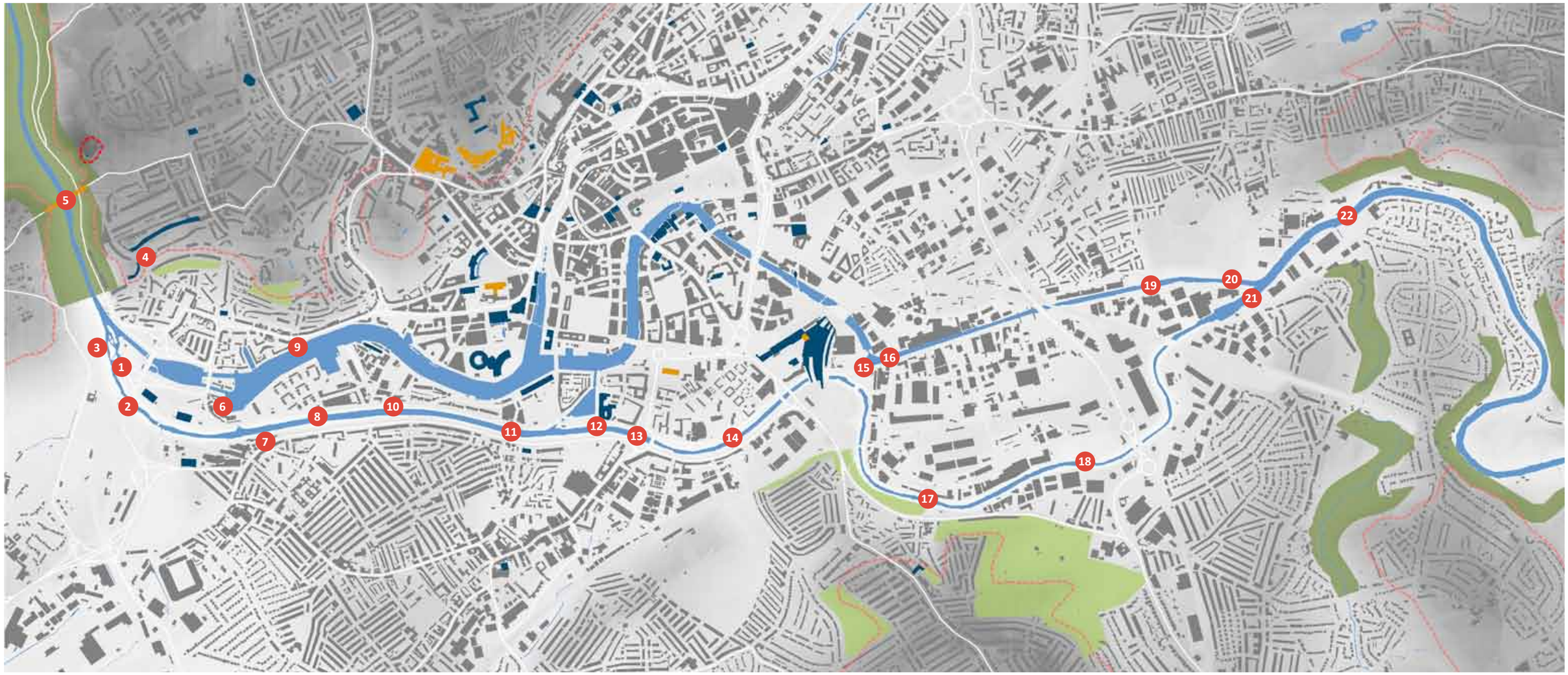
Although this is not an exhaustive list, the impact on these views will require assessment as part of any future proposals.

The plan is based on the landmark catagories identified in the forthcoming Urban Living Supplementary Planning Document.

Viewpoint	Description	Viewpoint	Description
1	**Sylvia Crowe designed viewpoint towards the suspension bridge and gorge**	12	**Views east and west from north side of New Cut**
2	**Sequential views along Brunel Way**	13	**View west from Bedminster Bridge**
3	**Views towards the gorge and Clifton from Sylvia Crowe landscape and pedestrian/cycling route**	14	**Views from Langton Street Bridge**
4	**Views from Clifton of Cumberland Basin, Floating Harbour and associated landmarks**	15	**Views of Totterdown Basin and associated landmarks from south side of the basin**
5	**Views from Clifton Suspension Bridge**	16	**Views east and west from Avon Street Bridge**
6	**Views of Clifton Wood and teh Floating Harbour from Underfall Yard**	17	**Views from Totterdwon Bridge**
7	**Glimpsed views from Coronation Road of Underfall Yard and Clifton terraces**	18	**Views from Spark Evans Bridge**
8	**Views east and west from Vauxhall Bridge**	19	**Views from Barton Hill Bridge**
9	**View towards Underfall, bonded warehouses and landscape beyond from the northern side of the Floating Harbour**	20	**Views east from Netham Lock**
10	**Sequential views along the Chocolate Path east and west**	21	**Views east from New Brislington bridge**
11	**Views from Gaol Ferry Bridge**	22	**Sequential views along the cycle path on the north side and from the St Anne's footbridge**

Fig 56
Key view points along the River Avon corridor within the area of study

- Primary landmark buildings
- Secondary landmark buildings
- Prominent green hillsides and ridges
- Steep sided valleys and gorges



Recommendations

The general principle for any landscaping works along the River Avon should be to preserve or enhance the character and appearance of the area. Where this is within a conservation area this is a national legislation and policy requirement, but the approach should be applied along the whole route to ensure maximum benefits of the scheme are realised.

There will undoubtedly be some level of unavoidable harm to specific assets along the route of the proposed flood defences. These assets have been identified and addressed within the relevant sections of this document.

This document should form part of the design process so that future proposals positively respond to each of the assets including the key views, character and setting of the Cumberland Basin, New Cut and River Avon.

Any harmful impacts even where these are less than substantial will need to be outweighed by public benefits in accordance with national and local policy. These benefits could include improved walking and cycling infrastructure in association with improved green infrastructure.

Substantial harm where an asset will be totally removed or where its significance is completely compromised should always be avoided.

This document has identified opportunities for specific assets within the SWOT analysis at the end of each character area section.

One general opportunity that should form a principle of future design work is where ever possible the heritage should be better revealed by the landscape scheme either through improved physical access or as part of a project wide interpretation strategy.

Fig 57 The only known image of part of the New Cut construction infrastructure. This painting by Rev. John Eagles produced in the early 1820s shows the derelict remains of an engine house for a fire [steam] engine, used between the Ropewalk at Wapping and Clift House during the excavation of the New Cut 1804 to 1809, Bristol City Museum and Art Gallery, M2958

The Feeder and Netham, 1913, ink drawing by Samuel Loxton, Bristol Libraries, H743

Appendix

Tidal Flooding in Bristol

(historical records between 1483 and 1990)

Bristol Harbour Flood.

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
15th October 1483 (OS)	**In the evening the greatest wind that ever was at Bristol ... caused a wonderful great flood.** **Great damage was done at Bristow in the merchants' houses and cellars. Ships at the mouth of the Avon were damaged and the Anthony and the Katherine were lost (Seyer, 1823).**	7.5m ODN at 18.44
20th January 1606 (OS)	**A major storm coinciding with a high spring tide caused widespread coastal flooding throughout the Bristol Channel and Severn Estuary (Smith, 2015).** **In Bristol, contemporary reports indicate the Back and the Key flooded and it was so high in Redcliffe Temple and St Thomas Street as men's girdles (Adams, 1910). The River Avon rose 5 feet [1.5m] at Treen Mills (now Bathurst Basin).**	8.0m ODN at 08.54
4th November 1636 (OS)	**A south west wind blowing hard on a full spring tide caused a great inundation at Bristol. All the shops and the cellars on the Back and Key were flooded (Adams, 1910).**	7.2m ODN at 20.06
22nd March 1687 (OS)	**There was widespread flooding on both sides of the Severn Estuary on this date. Records suggest the inundation was on a similar scale to those of 1607 and 1703.** **Seyer (1823) records from a 17thC source that on March 22nd 1687 a very high tide came up in Bristol, flooding and causing great damage. A boat came to the entrance of Baldwin Street and in the country [the floodwater] drowned many cattle.** **Further archival research might reveal more information on the extent of flooding and associated weather.**	7.8m ODN at both 07.37 and 20.00
27th November 1703 (OS)	**A severe storm caused widespread structural damage and both sea and land floods in the Bristol Channel and Severn Estuary region (Smith, 2015).** **One of Defoe's correspondents, Danial James, wrote from Bristol: on Saturday 27th November, between 1 and 2am, arose a most prestigious storm of wind, which continued with little intermission for 6hrs. There was great damage done by the wind but the greatest damage done to the city was the result of the violent overflowing of the tide. Forced by the wind, the tide flowed to an extraordinary height; it broke in with great fury over the Marsh Country, forcing down the banks or sea walls, drowning abundant sheep and other cattle. Many persons lost their lives (Defoe, 1704).** **The parish records of St Stephen's, adjacent to the key on the River Frome in Bristol, state that the water attained a depth of 6 feet on the floor of the church (Stone, 1909). The church sustained considerable damage from the wind as three of the four pinnacles were blown off (Seyer, 1821).**	6.9m ODN at 06.34
10th January 1738	**At Bristol, a prodigious flood occurred on the Avon and Frome owing to protracted rains. A high tide aided the inundation and many low-lying streets were submerged (Latimer, 1893).** **On the previous day, a violent storm and inundation on the South Gloucestershire coast was recorded (Fosbroke, 1807), confirming the likelihood that a storm surge contributed to flooding in Bristol. Further research might identify the extent of the flooding.**	7.3m ODN at 07.54

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
January 1739	**Another great flood took place in Bristol in January 1739 (Latimer, 1893).**	
October 1794	**On 29th October, a spring tide and a high westerly wind caused Bristol to be visited by the highest flood in memory of man (Nicholls & Taylor, 1881). This date is questionable, as spring HWs were in the week before. Also, earlier in the month, Cork in southern Ireland had experienced a sea-flood from the 'highest tide known for years' (London Packet, 20th October 1794). The Cardiff area suffered flooding at the end of the month (The Sun, 5th December 1794).**	
25th January 1796	**At Bristol, on 25th January, surge tides both in the morning and evening caused flooding in most of the lower parts of the city. So high a flood had not been seen since 1703 (The Times, 29th January 1796). The predicted tides were average springs, 13.6m ACD at Avonmouth. The coincident surge must have exceeded 1.0m to cause flooding. This was not an isolated event; storms were reported all along the south coast, in London and in the North Sea in the days following (The Times, 27th and 28th January 1796).**	7.1m ODN at both 07.44 and 20.12
1798	**Two major storms, in September and November 1798, accompanied by high tides, resulted in sea-flooding in Somerset (Williams 1970; WWA, 1979). Further research may reveal whether Bristol was affected.**	
1808	**Floods in Bristol (The Times, 18th April 1808)**	
1809	**Severe floods in Bath and Bristol (Horton, 1995)**	
10th November 1810	**The Bristol Journal of Saturday November 17th 1810, reports that on Friday night, and the whole of Saturday 10th November, there was one of the heaviest gales of wind, accompanied by incessant rain. In Bristol, floods several feet deep resulted at Baptist Mills, in the streets in St Pauls, in Broad Weir and Merchant Street.**	7.1m ODN at 18.32
25th December 1810	**Severe gales affected the whole of Great Britain at the end of December 1810. Tempestuous weather in the Severn Estuary caused flooding in Gloucestershire and storm-surge flooding was reported on the Welsh and Somerset coasts on Tuesday 25th December. The waters of the Frome overflowed its banks; and the valley between Bristol and Stapleton was one continued sheet of water. (The Times, 1st January 1811). If the flooding at Bristol was due to a storm tide, the surge possibly exceeded 1.5m.**	6.6m ODN at 18.28
1821	**Great gales and floods occurred in December. Levels in the River Avon at Bath rose a full 12 feet above normal and hundreds of families suffered hardship as a result of the floods (Horton, 1995). Further research might reveal if Bristol was adversely affected.**	
1823	**Continued rain through October, November and December caused the River Avon to rise to unprecedented levels. The city of Bath in particular suffered from remarkable flooding (Horton, 1995). Further research might reveal if Bristol was adversely affected.**	

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
29th November 1836	**The Bristol Mercury, on Saturday 3rd December 1836, reports that a violent storm occurred on the evening of Monday 28th November and into the morning of Tuesday 29th November 1836. On this occasion, the tide may not have contributed to flooding. However, two hours of torrential rain on the Tuesday morning resulted in flooding of the low lying areas of Bristol. At 10am, the rain stopped but at that time, the wind came on from the west and south-west, causing structural damage in the city and several severe injuries to people.**	4.4m ODN at 10.06
29th October 1838	**A damaging storm affected the whole of the southern Britain from 28th to 29th October. The windstorm hit Somerset on the night of 28th/29th October, causing losses on land and at sea. On the tidal River Avon at Pill, a surge of ten feet (3m) caused vessels to be stranded (Bristol Mercury, 3rd November 1838). The predicted high water at Avonmouth was just 10.5m ACD and the vessels could not be floated off until the spring tide 5 days later. In parts of Somerset, on 2nd November, a storm coincided with this high spring tide to cause coastal flooding.**	4.0m ODN at 03.31
29th January 1846	**The Bristol Mercury newspaper of Saturday 31st January 1846, reported extraordinary high tides, floods and destruction of property as a result of remarkable high tides in the Bristol Channel and Severn Estuary. The coastal lowlands on both sides of the Severn were flooded with livestock and property lost.** **Portishead suffered one of the greatest floods ever seen on Thursday morning. The inundation was extensive and the water in some houses stood several feet high.** **At Bristol, the tide rose rapidly, meeting the fresh in the Frome and Avon. The 'fresh' means the rivers were swollen from the rains. George Muston's meteorological register, published in the Bristol Mercury of 7th February 1846, records rain throughout the week preceding the flood.** **At the Cumberland Basin, the tide rose to an unprecedented height, floating a boat over the top of the dock-gate, and at Bathurst Basin, the tide rose to a great height, surmounting the gate.**	8.1m ODN at 08.31
25th October 1859	**Two storms in October and November 1859 resulted in flooding on the Somerset coast. The first of these on 25th /26th October 1859 coincided with a spring tide in the Severn Estuary. This storm, the Royal Charter Storm, is so called because of the loss of the SS Royal Charter, together with the lives of 500 passengers and crew, off the coast of Anglesey (Lamb, 1991). The Western Counties Herald and Bridgwater Mercury of Wednesday October 26th 1859 reported that, in total, more than 600 vessels were lost or damaged in the storm. The tide at Bridgwater rose 5ft higher than the predicted level. Further research might reveal if Bristol was adversely affected by the surge tide.**	7.3m ODN at 18.36
31st January 1869	**The wreck register for 1869 records 2114 shipwrecks and 933 lives lost in British waters (Bristol Mercury, 29th October 1870). At least six events affected the Bristol Channel and Severn Estuary in 1869. The first of these, on Saturday 30th, Sunday 31st Jan and Monday 1st February, caused widespread inundation as heavy gales of wind raised the tides to unprecedented levels (Western Daily Press, 2nd February 1869).** **A storm-surge of 1m was recorded on the River Avon at Bristol on Sunday morning. Coinciding with a high spring tide, the tide overflowed and flooded many low-lying parts of the city (Bristol Mercury, 6th February 1869).**	7.7m ODN at 09.34

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
24th October 1870	**A severe gale coinciding with a high spring tide caused storm-surge flooding on the Somerset coast. Further research might reveal if Bristol was adversely affected by the surge tide.**	7.6m ODN at 18.58
24th October 1882	**In Bristol, Baptist Mills, Stapleton Road, Bedminster and the St Agnes district flooded on 23rd October 1882. The following day, the Frome continued to rise, flooding Newfoundland Road, Paul Street and Portland Square to depths of several feet. Claims against the Council in Bristol for negligence amounted to £44,890, although it seems the claims did not proceed (Horton, 1995). Photographs of Bristol in the floods of 1882 show Merchant Street and Broadmead inundated (Harrison & Brooke, 1998).** **The Bristol Mercury of Wednesday 25th October 1882 reported that the tide did play a role in this flooding. Further research of predicted tide levels could indicate to what extent.**	
17th October 1883	**A severe gale on the evening of 17th October caused widespread tidal inundation on the Bristol Channel and Severn Estuary coasts.** **At Avonmouth, the coincident surge of 0.9m took the tide to the highest ever recorded (WWA, 1982). The Port and Pier Railway terminus at Avonmouth was badly damaged and there was severe flooding at Pill, St Georges, Portbury and at Portishead.** **At Bristol, the surge at the Cumberland Basin was estimated at more than 1m and much of Hotwells and Ashton were flooded. The Bristol Mercury of 19th October 1883 reported that at the Rownham Hotel, a man rowed a boat into the bar and was served with a glass of ale. The New Cut flooded and the dock gates at Bathurst Basin were overflowed and adjacent properties flooded.** **More detailed information on the weather, tide levels and extent of flooding is available.**	8.0m ODN at 19.54
9th March 1889	**48 hours of rain accompanying a rapid thaw, saw widespread flooding from Devon to the Midlands. Bristol experienced the worst floods for 200 years (Horton, 1995; Winstone, 1987). Further research of predicted tide levels could indicate whether the tide played a role.**	
October 1891	**The high tide caused flooding at Bristol (Bristol Mercury, 9th October 1896)**	

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
7th October 1896	**A strong gale affected the North of France, the Channel, England, Wales and Ireland, causing shipping losses, considerable structural damage and flooding (Bristol Mercury, 8th October 1896).** **Three consecutive high tides on the Avon from the evening of Wednesday 7th to the evening of Thursday 8th October 1896 caused widespread inundation. At high water there was extensive flooding at Pill and between Avonmouth and Portishead. Farmers in the area had anticipated the unusual rise on Wednesday, moving stock to higher ground. Fields were flooded to feet deep but no loss of animals was reported. However, properties were damaged in Pill and Shirehampton.** **At Bristol, the strong SW wind and an excessive amount of flood water after rains caused a rise at Cumberland Basin of 39 feet [12m] when the tide flowed over the top of the outer lock. Clifton Park Station was flooded and many houses were inundated at Ashton, St Phillips Marsh, Bedminster and other districts (Latimer, 1902; Stone, 1909).** **On 9th October 1896 the Bristol Mercury detailed the flooding experienced in areas of Bristol, where houses were inundated to depths of 3 or 4 feet. The 3 high tides in succession did much damage, more than that of 5 yrs before [probably 1891] although not as high as that of 13 yrs previously [1883].**	7.8m ODN at 19.25
12th February 1899	**On 12th February the Avon rose to its highest in 40 years on account of continual rain and the high spring tide. Many of the usual places in Bristol were flooded to several feet (Horton, 1995).**	8.1m ODN at 08.33
December 1900	**A severe gale caused great loss throughout the British Isles and France on Friday 28th December. The gale was felt severely in the Bristol Channel (The Times, 29th December 1900) and on the Somerset coast, the westerly gale wrought havoc; boats were wrecked and harbours damaged (The Times, 31st December 1900).** **No specific floods are recorded in conjunction with this storm, although Horton (1995) does suggest there was flooding in Bristol at the end of December 1900. Further research might reveal the extent to which Bristol was affected.**	
10th September 1903	**A severe gale caused widespread damage across Northern France, Southern Ireland, Wales and England on 10th September 1903. The storm hit the Bristol Channel and Severn Estuary at the time of the evening HW causing considerable structural damage. The coincident surge caused widespread sea-flooding.** **At Bristol, the gale caused damage to property across the city. St Philips Marsh was inundated and a large number of houses were flooded (The Times, 12th September 1903). Further research of Bristol newspapers would likely give more detail of this event.**	6.1m ODN at 21.14

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
16th December 1910	**A severe gale was caused by a deep cyclonic system crossing the British Isles on 16th December 1910. Although of relatively short duration, the gale caused widespread damage in the west and south of Britain. There had been widespread flooding in England following previous rains and the further heavy rains and rough weather associated with gale of 16th December exacerbated the situation.** **At Avonmouth, the docks were badly damaged in the storm. The Times newspaper of 19th December reported that in Bristol, the low lying streets are under water, and houses flooded to a depth of many inches. Further research of local newspapers will most likely identify the extent, and possibly depth, of flooding in Bristol.**	6.9m ODN at 19.04
1914	**After a series of depressions, on 16th March a gale of unusual severity affected the Bristol Channel on the morning of 16th March (The Times, 17th March 1914). Further research might reveal whether this was the same event that caused flooding in Bristol, illustrated in contemporary newspaper photographs (Harrison & Brooke, 1998)**	
10th October 1923	**A low pressure system affected the western coasts of Britain on 10th October (Zong & Tooley, 2003). The westerly gale coincided with a spring high tide, to raise the tide at Severn Beach to its highest in 15 years (The Times, 12th October 1923). Flooding was also experienced on the Somerset coast (Western Daily Press, 11th October 1923). Further research may reveal whether Bristol was affected by this event**	
26th December 1924	**An unusually deep depression with a central pressure of 925mb lay off Iceland at the end of December 1924. A terrific gale swept the whole of Britain on Friday 26th December and through Saturday, causing widespread damage, shipwrecks and loss of life. The SW gale was accompanied by torrential rain and floods (Bridgwater Mercury, 31st December 1924). The gale coincided with high tides on the Somerset coast to cause flooding. The heavy rain and high tides also caused flooding in Gloucestershire.** **Further research may reveal the extent to which Bristol was affected by this event**	
9th January 1936	**A very intense depression caused severe gales across Britain. A surge in the outer Severn Estuary of more than 2m coincided with an average spring HW to cause extreme levels and flooding.** **In Bristol, the water rose over the quay walls and the lock gates at the Cumberland Basin and poured into the harbour, raising it 2ft above the normal level. Tramway and omnibus traffic had to be suspended at Hotwells. There was flooding in the lower-lying parts of Bristol beside the Avon. Houses in the Albert Road district of St Philips were inundated to the tops of the kitchen stoves. At the Bristol Dogs' Home, 130 dogs were saved from drowning just in time by a member of staff, who, wearing a bathing costume, waded waist deep in water (The Times, 11th January 1936).** **The Bristol Evening Post newspaper of Friday 10th January 1936, explained that the storm-tide at Bristol was the highest since 1896. The tide level was over 8ft [2.4m] higher than predicted. At the height of the flood in Bristol, there was an uninterrupted stretch of water from Merchants Road to Avon Crescent.**	6.2m ODN at 19.50

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
September 1953	**High tides in excess of 14.5m ACD inundated Pill on the River Avon on 22nd and 23rd September and caused the worst flooding in 20 years (The Times, 25th September 1953). In Somerset, the Parrett overflowed on 24th September, flooding Bridgwater and District (Bridgwater Mercury, 29th September 1953).** **Further research may reveal whether Bristol was also affected by these high tides.**	
14th September 1954	**High tides in the River Avon caused the worst floods that Ashton Gate in Bristol had experienced for many years (The Times, 15th September 1954).**	
16th February 1957	**In Somerset, Bridgwater and surrounding areas experienced severe flooding on 16th February when the River Parrett rose to its highest in more than 20 years and overflowed its banks (The Times, 18th February 1957). Combwich had its worst flood since 1924 (Bridgwater Mercury, 19th February 1957). The high tide also caused flooding in Burnham and Highbridge. Despite a calm sea, the high tides overflowed the sea walls and caused damage at Ilfracombe. Highest astronomical tides were predicted (14.6m ACD at Avonmouth).** **Further research may reveal whether Bristol was also affected by this high tide event.**	
24th September 1957	**A depression over the Irish Sea, with central pressure below 980mb, brought heavy seas to the Bristol Channel and Severn Estuary (The Times, 25th September 1957). There was flooding at Barnstaple, Bideford and Ilfracombe as the storm-surge coincided with a high spring tide, predicted to be 14.6m ACD at Avonmouth.** **Further research may reveal whether Bristol was affected by this high tide event.**	
11th January 1962	**Strong gale force 9 winds, gusting up to 90mph, were recorded in the Bristol Channel and Severn Estuary on 11th January (The Times, 12th January 1962; Horton, 1995). The sea wall was breached at Weston-super-Mare (EA, 2009). At 7am, a surge peak of 2.4m, the 4th highest ever recorded at Avonmouth, occurred on the rising tide (Lennon, 1963). At 10.30, at HW, the coincident surge was lower but still produced a notable high tide exceeding 14m ACD at Avonmouth. Damage occurred to the lock gates at Avonmouth Docks. It was considered the worst gale since 1936 at Severn Beach where there was severe damage. Huge seas wrecked the sea wall and flooded properties to a depth of 3ft (Horton, 1995).** **Further research may reveal whether Bristol was affected by this event.**	
July 1968	**There were great floods in Somerset, causing severe damage and loss of life, following a prolonged thunderstorm and torrential rain on 10th July. More than 5 inches of rain fell in less than 24 hours (Staples, 1988). Many areas of Bristol and the surrounding district were inundated but there is little evidence that the tide played any role in the flooding.**	

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
9th February 1974	**In early February, storms crossed the region at the time of high spring tides. A surge coinciding with HW on 9th February, caused tidal inundation in the Severn Estuary. Gloucestershire saw some of the worst tidal flooding for many years (The Times, 11th February 1974).** **The storm tide was listed as one of the ten highest tides ever recorded at Avonmouth by NTSLF to 2015.** **The Bristol Evening Post of 9th February reported that the Avon (already swollen after 72 hours of continuous rain) overflowed at Bristol as levels reached their highest since 1962.** **Further research of local newspapers may identify the extent, and possibly depth, of flooding in Bristol.**	8.0m ODN at 08.49
2nd January 1976	**A severe gale affected Britain on the evening of 2nd January causing widespread damage and disruption (Bridgwater Mercury, 6th January 1976; Met Office 2010). Coastal flooding ensued on the Somerset coast as the spring tides were raised by a coincident surge, recorded as 0.8m at Clevedon and 2.0m at Severn Beach. At Severn Beach, 200 homes were flooded, some up to 5ft deep (Horton, 1995).** **Further research may reveal whether Bristol was affected by this event.**	
11th November 1977	**A vigorous secondary depression brought damaging westerly winds to the Somerset coast at the time of high spring tides. Localised flooding was recorded on the Somerset coast.** **Further research may reveal whether Bristol was affected by this event.**	
9th February 1978	**In Somerset, the River Parrett overflowed on a high spring tide on 9th February (Bridgwater Mercury, 14th February 1978). The previous day, thousands of acres of Gloucestershire were flooded from the high tide in the Severn (The Times, 9th February 1978).** **Further research may reveal whether Bristol was affected by these high tides.**	
13th December 1981	**An intense secondary depression crossing South Wales on the evening of 13th December developed a storm surge that coincided with high water in the Bristol Channel and Severn Estuary. Widespread flooding ensued on the Somerset and Gloucestershire coasts.** **The Avonmouth tidal gauge failed at the peak of the tide, recording 15.4m ACD at 21.00 and indicating a surge of 1.6 - 1.8m. Williams et al (2012) consider this to be the highest water level recorded in the Bristol Channel in a century. Pill and Sea Mills on the lower River Avon were badly flooded.** **In Bristol, the Portway and Cumberland Road were submerged. The City docks overflowed, flooding Cattle Market Road and Albert Road (Western Daily Press, 14th December 1981). Further research of local newspapers may identify the full extent, and possibly depth, of flooding in Bristol.**	7.3m ODN at 20.45

Date of flood	Record of Tidal Inundation	Predicted HW tide level at Avonmouth (HAT: 8.1m ODN)
23rd November 1984	**Violent storms and high tides swept the Bristol Channel coast on 23rd November (Burnham & Highbridge Gazette, 27th November 1984). A surge of 1.1m coincided with a high spring tide on the Somerset coast to cause damage to the sea defences and localized flooding. Further research may reveal whether Bristol was affected by this high tide.**	
26th February 1990	**An intense secondary depression crossed England and Wales on the morning of 26th February. Strong westerly winds had been blowing for over 12 hours. A storm surge coincided with HW to produce a tide of 15.0m ACD at Avonmouth. The extreme tide led to tidal inundation at many points along the Somerset coast (NRA, 1990).** **Pill flooded to a depth of 3ft and a powerboat is reported as having sped down the High Street (Western Daily Press, 27th February 1990).** **Further research may reveal whether Bristol City was affected by this high tide.**	7.0m ODN at 07.54

Avonmouth Tidal Predictions come from the United Kingdom Hydrographic Office (UKHO) Admiralty Easy Tide Service at http://www.ukho.gov.uk/Easytide/easytide/RecentPredictions.aspx

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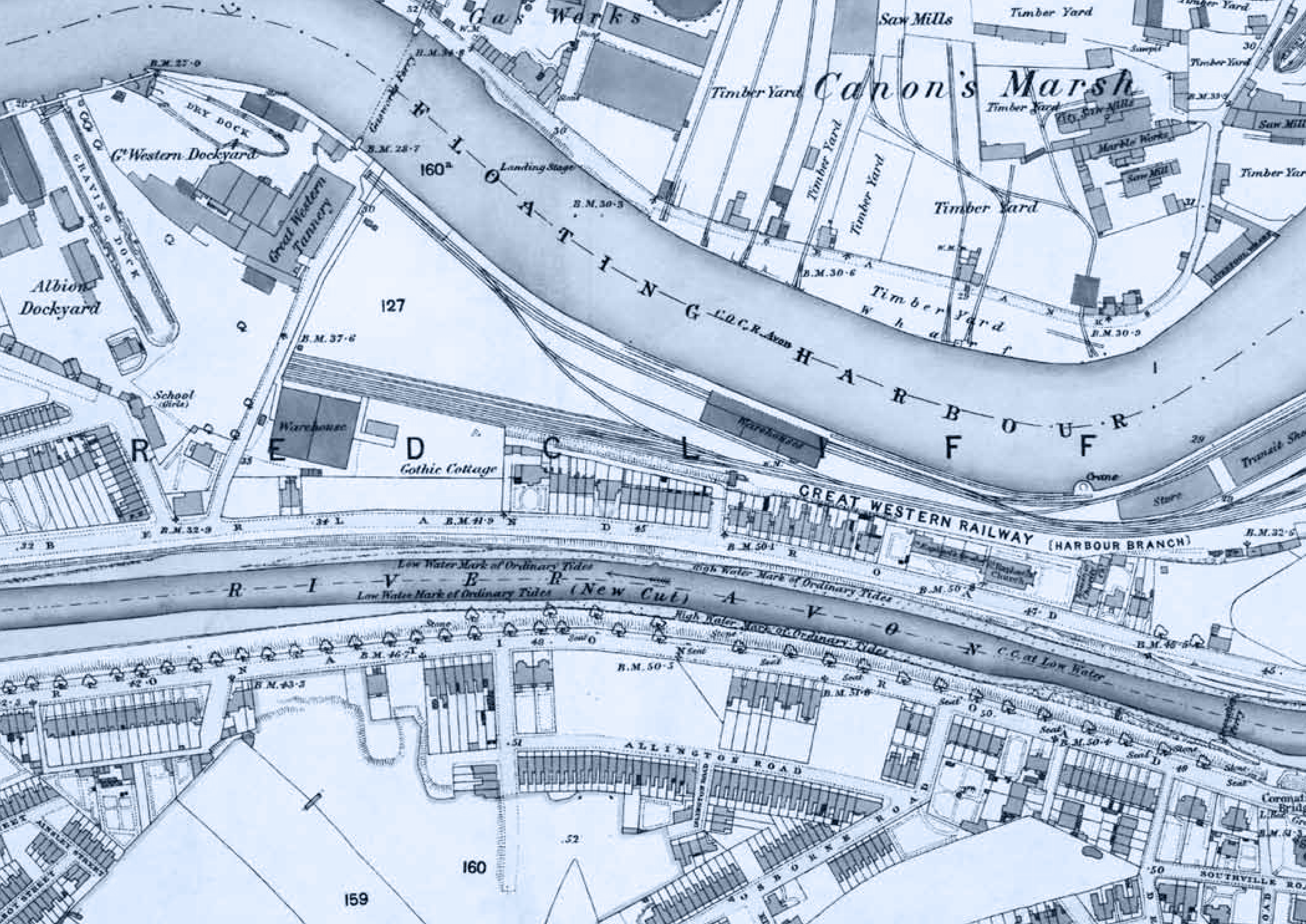
Gas Works
Saw Mills
Timber Yard
Canon's Marsh
Marble Works
Saw Mill
Timber Yard Wharf
Gt Western Dockyard
Dry Dock
Graving Dock
Great Western Tannery
Albion Dockyard
Landing Stage
FLOATING HARBOUR
160a
127
B.M. 37·6
B.M. 30·5
B.M. 30·6
B.M. 30·9
School (Girls)
Warehouse
Gothic Cottage
REDCLIFF
Crane
Store
Transit Shed
GREAT WESTERN RAILWAY (HARBOUR BRANCH)
Low Water Mark of Ordinary Tides
High Water Mark of Ordinary Tides
RIVER AVON (New Cut)
C.C. at Low Water
Seat
ALLINGTON ROAD
SOUTHVILLE ROAD
Coronation Bridge
160
159
.52