

VII Three Overlooked Bridges in Newcastle

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SUMMARY

The expansion of Newcastle began during the eighteenth century when development took place beyond the town walls to the east. However, communication was hindered by two substantial denes, the Pandon Dene and that of the Ouseburn. The latter is still clearly visible, even though part of it was filled during the twentieth century. The former disappeared during the nineteenth century as a result of continuous land-fill, although part of it was virtually recreated in the 1970s as a result of the construction of Newcastle's Central Motorway. To cross the two denes, three major road bridges were built within the boundaries of Newcastle between 1812 and 1880, none of them ever fully recorded. Two of them crossed the Ouseburn and one the former Pandon Dene. Of these bridges, that over the Dene has been demolished while the Byker bridge has twice been modified, the last time as recently as 1985; only the new Glasshouse bridge remains as built.

INTRODUCTION

Much has been published on the bridges which span the river Tyne between Newcastle and Gateshead but, conversely, very little has been written on two major bridges spanning Pandon Dene and the Ouseburn, the 'New' bridge and Byker bridge respectively; similarly, nothing has been written on the new Glasshouse bridge, crossing the Ouseburn and connecting Newcastle with Walker. The two first-named structures were on the line of the North Shields Turnpike but only the Pandon bridge was built by the Turnpike Trust; by the time of the building of the Byker bridge the Trust had been

superseded. A further but perhaps more tenuous link between the two is the fact that in 1850 consideration was given to building the Ouseburn crossing using materials which would result from the proposed demolition of the Pandon bridge.

PANDON, OR NEW, BRIDGE

The first Act for the construction of the North Shields Turnpike was passed in 1747,¹ the western termination of the road subsequently formed being Newcastle's Quayside. As the town of Newcastle developed, however, it was considered that two further branches should be provided in Newcastle, one to give access to the higher parts of the town, where expansion was taking place, and the other to give improved access to the Quayside. The Trustees thereupon sought an Act of Parliament for this work and also for an extension into Tynemouth. A petition was presented in Parliament and, with the involvement of Sir Matthew White Ridley and Earl Percy,² the Bill received the Royal Assent in April 1810, noting that the upper road would cross 'over Pandon Dean . . . and communicate with and lead into the North End of a certain Street . . . called Pilgrim Street'.³

The plans deposited in connection with the Bill were produced by John and William Fryer, eminent Newcastle surveyors, and their proposals showed a line of road entering the town at the north eastern extremity of the defensive walls – a section of which would be demolished – forming what was to become New Bridge Street.⁴ No details were given of the actual crossing of Pandon Dene – immediately to the east of the walls – but the names of the affected landowners were provided: William Batson,



*Fig. 1 The Pandon, or New, Bridge seen behind the steeple of All Saints Church. In the foreground, below All Saints, is the Tyne Bridge. [T. Oliver, *A New Picture of Newcastle upon Tyne* . . . (Newcastle, 1831)]*

Nathaniel Ellison and Matthew White Ridley. Tenders for the work were sought by the 'Trustees of Shields Road'⁵ in June 1810, replies to be made to William Stokoe, Newcastle architect.

Despite William Stokoe's stated involvement, it has also been recorded that the bridge structure was designed by his son, John;⁶ he was also an architect and presumably took over the work following his father's death which is thought to have occurred in 1810. The contractor was John Reed,⁷ a stonemason who had been responsible for the completion of the northern section of the Tyne Bridge after the

death in 1780 of the original contractor, Edward Hutchinson. It is almost certain that the bridge had a central semicircular span of 50 ft with a flanking span of 45 ft at each side and was 78 ft high and 30 ft wide. There is some doubt as to its configuration because certain illustrations – one of them in Mackenzie's 1827 *Account*⁸ – show the deck as rising quite sharply to its mid-point while two others show it as level. It is assumed, however, that the latter version is what was built as, in this instance, a rising deck would have been unnecessary because of the valley's high sides. As supporting evidence it is surely significant that Oliver's

own illustration, *Newcastle upon Tyne from the South* – ‘drawn on the spot’⁹ by him and published in 1831 – indicates that the deck was level (fig. 1). His version is further confirmed by the lithograph by Walker, *Newcastle upon Tyne in the Reign of Queen Victoria*,¹⁰ which appeared in the mid-19th century.

As Reed’s last sizeable work, ‘the stupendous bridge over Pandon Dean . . . [was] carried on and finished by him under difficulties which would have appalled any other man’.¹¹ Although the bridge was a major structure, the difficulties were mainly financial; Reed was never fully paid for his work which had entailed a partial rebuilding and the incorporation of cross-walls above each pier.¹² According to Sykes, the bridge was completed in 1812; in March 1813 the centring ‘of the best American White Pine Timber . . . easily altered to suit any smaller Arch’¹³ was offered for sale. The cost had been £7448.¹⁴

It was not until late in 1815 that ‘the improvement in the Shields road, connected with the new beautiful bridge lately erected over Pandon Dean’¹⁵ was completed but matters regarding land valuations were prolonged, until at least 1833 and perhaps beyond.¹⁶ In 1831 the Newcastle Corporation noted that the road’s Trustees were considering a Bill to regularise the future of the road where the turnpike ran through the town and it was then decided that ‘the Bridge, as a work of Art, and an Ornament to the Town, should belong to the Corporation’.¹⁷ It was subsequently inspected by John Dobson who reported that ‘it will stand for many centuries without incurring the least Expense in maintaining it . . . [He then went on to comment that Reed was] one of the most judicious and substantial builders [he] ever knew’.¹⁸

The subsequent history of the bridge is not completely clear but it would appear that from before 1850 – when its demolition was considered – the Pandon Dene had been systematically filled. This use of the dene as a tipping site is confirmed by Dobson, who, when speaking in 1859, noted that land being developed in 1850 immediately to the south of the bridge was ‘only town deposit, and of a depth of 50 or 60

feet, and that for the most part in a state of fermentation’.¹⁹ The masonry bridge structure, however, seemingly remained in place although it was described in 1885 as ‘only a roadway with almost level ground on each side’.²⁰ Further reference to the bridge was made in Council in 1890 when road widening was considered; increasing traffic had led to the north side of the structure being set back but further widening was now needed to the south.²¹ It is, in fact, possible that some parts of the structure survived until the construction of the Central Motorway which took place between 1973 and 1975.

BYKER BRIDGE

The construction of the Pandon, or ‘New’, Bridge left unresolved the problem of another of the road’s major obstacles, the crossing of the Ouseburn, approximately 1000 yds to the east where the steep banks down to an existing bridge caused major difficulties. A new crossing had been considered as early as 1830 when a projected bridge was shown on a plan by Oliver²² but it was not until 1850 that the matter was taken further by the Newcastle Town Improvement Committee. This committee had taken over responsibility for the road from the Turnpike Trust and it put forward a proposal for a new high level bridge to cross the Ouseburn. The matter was discussed in May 1850 and the plans envisaged using the materials from the Pandon Dene bridge to build the new Ouseburn structure.²³ The proposal was dropped three weeks later, however, when it was found to be too late to obtain the necessary Act of Parliament.²⁴

The project was then taken up by the Ouseburn Bridge Company, initiated by Matthew Plummer and Addison Langhorn Potter, the latter said to have ‘purchased the [Heaton] estate cheaply’.²⁵ A notice, stating that the ‘Eastern Approaches to Newcastle upon Tyne have been the subject of complaint for many years’,²⁶ was published preparatory to seeking an Act to enable work to begin. Capital of

£12,000 in £10 shares was sought and the promoters enlisted the services of Robert Nicholson, a Newcastle engineer, to undertake design work.²⁷ Drawings were deposited in Parliament; they showed the location of the bridge, slightly to the north of the then existing structure, but gave no details. A note, however, stated that the earlier Pandon bridge was to be removed because of projected railway works and an embankment was to be substituted for it.²⁸

A prospectus was published in 1851 and it showed the bridge to be a masonry or brick structure with eight spans of 58 ft and the roadway some 72 ft above the stream (fig. 2). It noted that tenders had been received from 'experienced and respectable contractors',²⁹ the cost was expected to be some £15,000 and the bridge would be completed within 18 months. The enabling Act, which had been presented in the House of Commons by George Hudson, Member for Whitby,³⁰ named the provisional committee and authorised the raising of £12,000 capital with additional borrowing powers of £4000; the materials from the Pandon bridge demolition were to be provided free of charge.³¹ Comments made many years later by Richard Cail, a Newcastle contractor, indicate that he had been awarded the contract. After a start had been made, however, the project was abandoned due to 'the death of one of the parties',³² presumably Potter.

No further progress was made until April 1871 when the matter of the bridging of the Ouseburn was brought to the attention of the Newcastle Council. It was then reported that, under the powers of the Corporation's Act of 1865, it was stipulated that the Corporation would provide a bridge at a high level to cross the Ouseburn. Before his death in the Town Moor explosion of 1867, Thomas Bryson, the Town Surveyor, had drawn up a plan for the new bridge but his proposals were subsequently modified by his successor, John Fulton, who had provided three schemes, two for iron bridges and one 'a combination of stone and brick'.³³ The view of the 1871 Town Improvement Committee was that the last-named, to

cost £10,658, was to be preferred as maintenance costs would be much less than for an iron structure. In spite of considerable debate the Council chose not to proceed, whereupon the matter lapsed until August 1873.

In that month a public meeting was held again to discuss the formation of a bridge on the same site. Cail, then Mayor of Newcastle, was elected chairman of the inaugural meeting and was amongst those elected to the provisional committee; his participation in the venture, however, then lapsed. A report was submitted to the promoters³⁴ of the bridge by Thomas Parker, an architect, together with an estimate of £34,000. The total length of the proposed structure was 1450 ft, considerably more than the earlier version as a result of its increased height.³⁵ Thomas Elliot Harrison, Engineer-in-Chief to the North Eastern Railway (NER), was asked to report on the proposals but, in the event, it was Robert Hodgson, his brother-in-law, who did so and it was he who was later appointed as Engineer to the Byker Bridge Company.³⁶

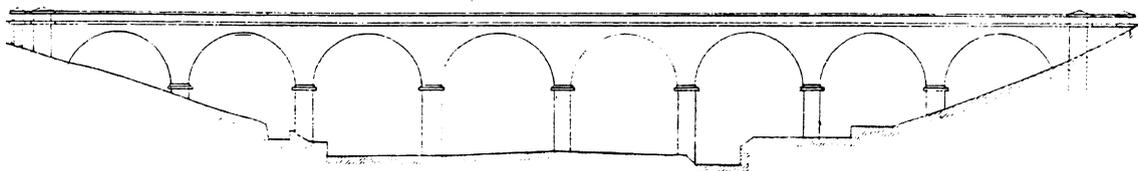
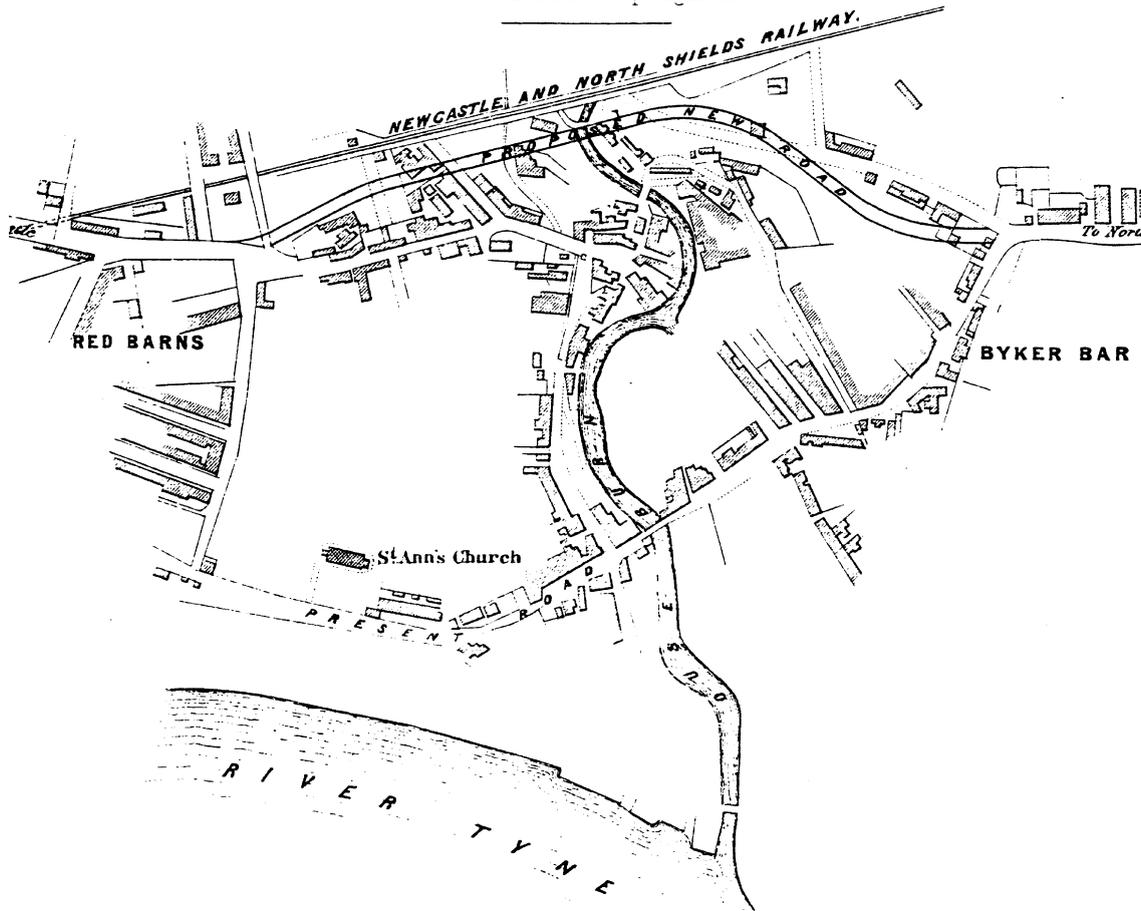
Drawings were eventually submitted to Parliament for a similar bridge which combined a span of 62 ft over the waterway with 18 further spans of 60 ft; the height above the burn was to be 106 ft.³⁷ The Act³⁸ authorising construction was given Royal Assent in June 1874 but it was then decided to change the design and the height of the bridge deck was lowered by 13 ft to reduce its cost. Hodgson's original estimate of cost had been £36,349 and the successful tender of £36,212 was submitted by (Sir) Walter Scott, of Newcastle, then engaged on nearby railway construction works; the highest tender was £58,517.³⁹

Initially it had been planned to found the brickwork piers on concrete bases but the presence of waterlogged ground resulted in iron cylinders being used as piled footings to several of the piers, involving an additional cost of £9290. At the end of 1876 Hodgson left the contract to work in Algiers and his position was taken by Edmund Forbes. By this time the provision of adequate foundations was proving difficult, a result of poor ground and colliery workings, both resulting in additional work,

OUSEBURN BRIDGE AND APPROACHES.

1851.

Robt Nicholson Esq. Engineer.



Elevation of Intended Bridge.

8 Arches, 58 Feet Span each.

Fig. 2 The projected Ouseburn Bridge of 1851; the earlier Ouseburn Bridge can be seen immediately to the south of the new crossing. The old Glasshouse Bridge is located near the confluence of the Ouseburn with the river Tyne. [Ouseburn Bridge Company: Prospectus, 1851]

extra costs and delays. To expedite matters it was decided in September 1877 that all the arches should be built together and, as a result, the bridge was structurally complete by July 1878, opened to foot traffic on 14 October 1878 and finished – other than the eastern approach – by 31 July 1879. Final completion was achieved during 1880.⁴⁰

It is not surprising that the bridge has the appearance of a railway viaduct because Hodgson had ‘adopted the standard brick viaduct, of which ten or a dozen at least were built by . . . Thomas Harrison on the North Eastern Railway . . . without a sign of failure’.⁴¹ As built, it has 14 spans of 60 ft with eight spans of 25 ft at its western end. The piers are entirely of brick and taper slightly to the semi-elliptical brick arches with seven-brick rings. The bridge deck is 95 ft above the stream and the 30 ft-wide deck carried a roadway and footpaths, protected by brick parapets. The bridge was first used to carry horse-drawn trams in 1887.⁴²

In 1880 the revenue from the tolls on the bridge amounted to some £2000; by 1886 this had risen to £5200. The position regarding the bridge tolls was complicated by the fact that the adjacent rail bridge of the NER carried a pedestrian way, also subject to tolls, and in 1887 it was proposed in Council that the Corporation should pay the NER to free its bridge. The Byker Bridge Company had not been involved in the discussions but, nevertheless, it was resolved to proceed without its acquiescence and the rail bridge was freed from pedestrian tolls in the following year. So far as the Byker bridge was concerned, in 1885 the Corporation offered to purchase it from the Company for £100,000, an offer which was countered by the Company demanding £112,000 for its sale; in turn, this too was refused. Sporadic negotiations ensued over a decade and, finally, on the last day of 1894 the bridge was purchased by the Corporation for £112,000 and was freed from tolls on 12 April 1895;⁴³ the last meeting of the Bridge Company took place in July of the same year.

As soon as the bridge became the property of the Corporation, plans were put in hand for its widening under the aegis of the City Engineer,

William George Laws, who had been appointed in 1882. Drawings⁴⁴ were deposited with the intention of obtaining an Act which would permit the running of a double line of tram tracks, part of the city’s planned electrified system, across the bridge. No Act resulted and in 1899, to cope with ‘the great amount of traffic which now passes along the bridge, and to the intention to lay a double line of tramway’,⁴⁵ the Corporation again sought to widen the bridge. Powers to do so were obtained by an Act of Parliament⁴⁶ of that year and in April 1901 the matter was brought to Council by the Town Improvement Committee. It recommended the construction of cantilevered footpaths 10 ft wide on each side of the bridge, together with the laying of tramways and the paving of the deck with Jarrah wood. Eight tenders for the work were received, varying from £17,500 to £39,000, and a contract was arranged with the Tees Side Bridge and Engineering Works Ltd of Middlesbrough, who undertook to complete the work within nine months at a cost of £22,280; sub-contractors were W & J Lant, of Newcastle.⁴⁷ Doubts were expressed as to the ability of the bridge to withstand the extra loading but it was pointed out that the new steel girders would weigh no more than the brick parapets which were to be removed. It was also stated that the several similar brick viaducts of the NER had ‘for 40 years or so been practically tested . . . without a sign of failure’.⁴⁸ In addition, it was noted that Hodgson had made provision for widening at the time of the bridge’s construction.

Work on the reconstruction of the bridge began in April 1901⁴⁹ and took the form of inserting steel cross-beams through the brick structure so as to project 10 ft on each face, enabling new and wider footpaths to be provided. The beams were located in brickwork tunnels, some 6 ft 6 in high, formed in the bridge structure and the footpaths were carried by longitudinal beams spanning from the cantilevered crossbeams. Voids under each footpath enabled water and gas mains to be laid, together with electricity and telephone wires. Lattice-type parapets with teak handrails replaced the former brick parapets.⁵⁰ On 25 August 1902 it

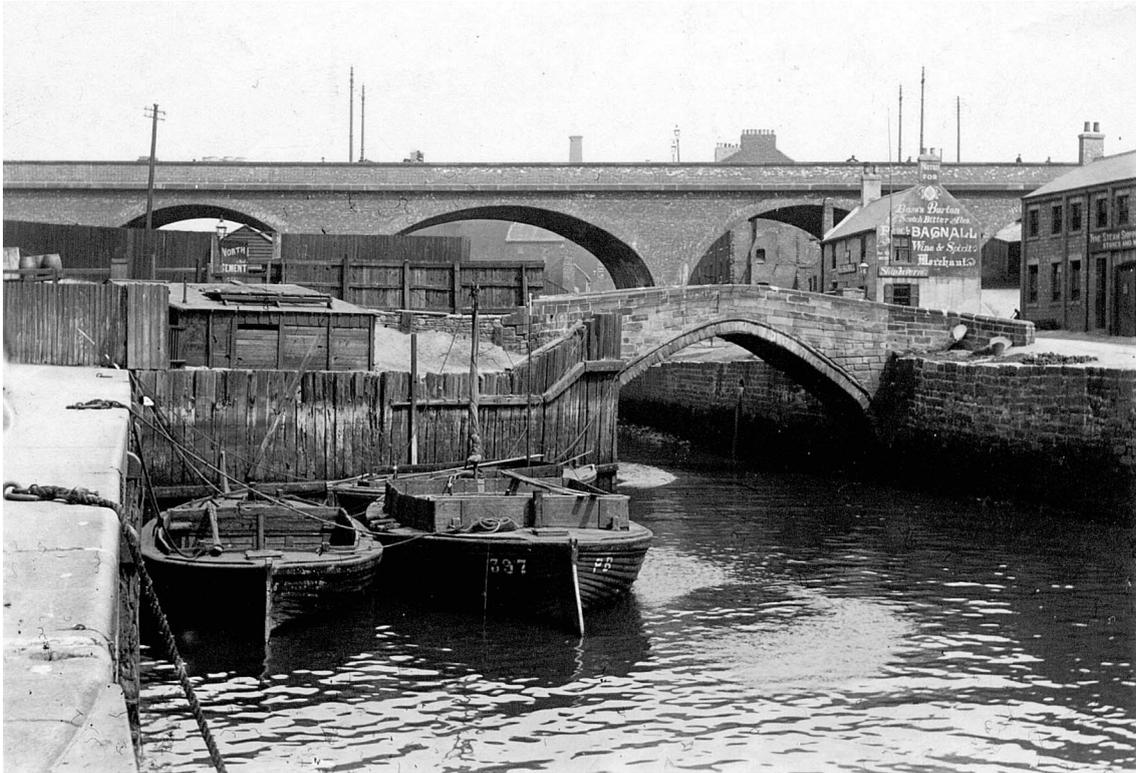


Fig. 3 The old and new Glasshouse Bridges. The new bridge is located in the background, to the north of the earlier structure. [Newcastle City Library]

was reported that 'Byker Bridge was entirely opened today, both for passengers and vehicular traffic . . .'⁵¹ although the laying of a water main was still incomplete.

The final phase of work on Byker bridge took place in 1985 when the cantilever support beams of the 1901/2 widening were replaced by beams of post-tensioned concrete. The 1901 beams, recorded as being of wrought iron rather than steel,⁵² had corroded over the years and in places there had been a 30% loss in section. The new beams, 4 ft deep, were installed mid-way between the old girders and were in two parts, joined together on the centre line of the bridge by *in situ* concrete, following which the complete beams were tensioned. The planning of the work was much influenced by the need to maintain all services as work continued; the opportunity was also taken of

installing crash barriers, hitherto not provided. Reconstruction work was undertaken by Edmund Nuttall Ltd. to the designs of Tyne and Wear Metropolitan County Council, successor for road works to Newcastle Corporation. The contract extended over the greater part of 1985 and the cost amounted to £1.5 million.

GLASSHOUSE BRIDGE

A post-script to the building of the Byker bridge is provided by the contemporaneous construction by the Corporation of the new Glasshouse Bridge, also crossing the Ouseburn and forming part of Walker Road. Although a bridge to serve the same purpose – access to the Quayside – had been considered when the Pandon (or

New) bridge had been first planned,⁵³ and had again been debated in Council in 1867,⁵⁴ it was not until 1874 that preparations began for its construction. As Fulton was heavily engaged on other works for the Corporation, Hodgson was approached as one 'who has had great experience in the erection of bridges of this description'⁵⁵ and was already supervising the construction of the Byker bridge. In the Council debate, doubts were expressed as to Hodgson's relationship with the NER but it was pointed out that he and Harrison 'undertook upon certain terms to do the engineering of the new portions for the Railway Company'⁵⁶ and were therefore free to undertake other consultancy work. As a result he was appointed Engineer for the construction of the bridge.

The contract was awarded to Walter Scott, about whom there was some unease as a result of delays in other work he had carried out for the Corporation, but nevertheless he obtained the contract for the sum of £12,960 and work would seem to have begun immediately (fig. 3). The bridge is of the same form as Byker bridge and comprises five semi-elliptical slightly skewed spans, four of them of 52 ft and one 65 ft. The rise of each span is 20 ft and 'the height of the causeway above the bed of the stream is 56 ft and is 37 ft 6 in above high water mark';⁵⁷ it measures 40 ft between parapets and provides a 26 ft-wide carriageway. Forming a much-improved access to Walker and St. Lawrence it was opened by the Mayor with some ceremony on 21 May 1878 in the presence, amongst many others, of Forbes – successor to Hodgson – and Scott, together with Cail, who had been first involved in bridge work in the area in 1850; the final cost was some £14,000. As is common, the commemorative tablet records the names of the Corporation's officials but makes no mention of the engineer and contractor!

ACKNOWLEDGEMENTS

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Archive Services; the Literary and Philosophical Society of Newcastle upon Tyne; and the Newcastle City Library, the last-named especially for permitting the reproduction of material in its possession.

NOTES

Abbreviations:

HLRO House of Lords Record Office
L&P Literary and Philosophical Society, Newcastle upon Tyne
NRO Northumberland County Record Office
NCL Newcastle City Library
Proc. N.C. Proceedings of the Council of the Borough of Newcastle upon Tyne
TWAS Tyne and Wear Archive Services

¹ *22 Geo. II* (10 November 1747).

² *House of Commons Journal: Session 1810*, 65, 14 March 1810.

³ *50 Geo. III cap xlix* (18 April 1810).

⁴ *Plan of the proposed additional Branches of the Turnpike leading from North Shields . . . to . . . Newcastle upon Tyne*. [NRO: QRUp 4/3].

⁵ *Tyne Mercury*, 5 June 1810.

⁶ T. Oliver, *A New Picture of Newcastle upon Tyne*, Newcastle (1831), 105.

⁷ E. Mackenzie, *A Descriptive and Historical Account of . . . Newcastle upon Tyne . . .*, Newcastle (1827), 1, 215.

⁸ *Ibid.* 186.

⁹ T. Oliver, *New Picture*, 72.

¹⁰ John Storey (Lithographed by E. Walker) *Newcastle upon Tyne in the Reign of Queen Victoria*, Newcastle (1862?) [NCL].

¹¹ *Newcastle Courant*, 20 December 1817.

¹² E. Mackenzie, *Newcastle*, 1, 215.

¹³ *Newcastle Courant*, 13 March 1813.

¹⁴ T. Oliver, *New Picture*, 105.

¹⁵ *Newcastle Chronicle*, 21 October 1815.

¹⁶ *North Shields to Newcastle Road*. [NRO: 404/262].

¹⁷ *Calendar of Common Council Book, Newcastle, 1824–1835*, 5 August 1831 [TWAS].

¹⁸ *Ibid.*

¹⁹ *Newcastle Courant*, 29 April 1859.

²⁰ R. J. Charleton, *Newcastle Town*, Newcastle (1885), 369.

²¹ *Proc. N.C.*, 2 July 1890.

²² *Plan of Newcastle upon Tyne and the Borough of Gateshead, T. Oliver, 1830* [L&P: N.912/9a].

²³ *Proc. N.C.*, 1 May 1850.

- ²⁴ *Proc. N. C.*, 22 May 1850.
- ²⁵ *Proc. N. C.*, 7 December 1887.
- ²⁶ *Newcastle Courant*, 7 February 1851.
- ²⁷ The promoters were Matthew Plummer, Addison Langhorn Potter, William (and later) Stephen Lowrey, George Cruddas, Henry Turner and Joseph Grey.
- ²⁸ *Plan and Section of Ouseburn Bridge and Approaches... 1851* [HLRO: 1851 O 1].
- ²⁹ *Ouseburn Bridge Company: Prospectus, 1851* [NCL: N536 O].
- ³⁰ *House of Commons Journal: Session 1851*, 106, 6 February 1851.
- ³¹ *14 Vict. cap 3* (20 May 1851).
- ³² *Proc. N. C.*, 8 July 1885.
- ³³ *Proc. N. C.*, 12 April 1871.
- ³⁴ The first directors were Addison Potter, Andrew Leslie, Nathaniel Grace, John Gibson, Ralph Cook and W. B. Leighton.
- ³⁵ *Byker Bridge Company: Minutes*, 14 August 1873 [TWAS: 561/45].
- ³⁶ *Ibid.* 6 January 1874.
- ³⁷ *Byker Bridge and Approaches: Plan and Section: Session 1873–1874* [NRO: QRUp 135].
- ³⁸ *37/38 Vict. cap xlii* (30 June 1874).
- ³⁹ *Byker Bridge Company: Minutes*, 18 September 1875.
- ⁴⁰ *Ibid.* 1876–1880, *passim*.
- ⁴¹ *Proc. N. C.*, 3 April 1901.
- ⁴² S. Middlebrook, *Newcastle upon Tyne: its Growth and Achievement*, Newcastle (1950), 270.
- ⁴³ *Proc. N. C.: Record*, 1894–1895.
- ⁴⁴ *Newcastle Tramways and Improvements, 1895* [NRO: QRUp 187].
- ⁴⁵ *Proc. N. C.*, 6 September 1899.
- ⁴⁶ *62/63 Vict. cap cclxv* (1899).
- ⁴⁷ *Weekly Chronicle*, 24 August 1901.
- ⁴⁸ *Proc. N. C.*, 3 April 1901.
- ⁴⁹ *Proc. N. C.: Record*, 25 April 1901.
- ⁵⁰ *Weekly Chronicle*, 25 May 1901.
- ⁵¹ *Local Newspaper Cuttings*, 23, 1902 [NCL: L029.3].
- ⁵² D. Hayward, 'Byker beamed back from the brink'. *New Civil Engineer*, 25 April 1985, 32–3.
- ⁵³ *50 Geo. III cap xlix* (18 April 1810).
- ⁵⁴ *Proc. N. C.*, 18 February 1874.
- ⁵⁵ *Proc. N. C.*, 6 October 1875.
- ⁵⁶ *Ibid.*
- ⁵⁷ *Proc. N. C.: Record*, 21 May 1878.

