

Foxton Revisited

The Inclined Plane in Context

By David Turnock

Perhaps the most outstanding project of a short-lived canal renaissance, the Foxton inclined plane survived for only ten years, and there has always been an element of mystery as to the miscalculation that brought about the sudden demise of a facility that appears to have been perfectly satisfactory in engineering terms.¹ This paper will not repeat the technical details which have been amply discussed elsewhere^{2,3,4} but will attempt to set out a contextual approach, focusing on the Royal Commission on Canals & Inland Waterways (RCC&IW), which does not seem to have been considered to any extent in the past. It constitutes part of a wider survey of Leicestershire canals which appeared in 1996 as a discussion paper.⁵

Through canal traffic between the East Midlands and London was much reduced by the 1890s and the coal was down to 115 tons in 1890. Yet the amalgamation of the Grand Junction Canal (GJC), Grand Union Canal (GUC) and Old Union Canal companies in 1894 has been described as ‘a

preliminary to a last great effort to compete in the Nottinghamshire and Derbyshire coal trade’⁶, a reference to the inclined plane opened at Foxton in 1900. The Commission was told of the need for through tolls and larger forwarding companies, with ‘business in the hands of educated and organised concerns’⁷ and Foxton was to create a more efficient waterway that might attract a higher quality service. The Manchester Ship Canal, opened in 1894, provided a psychological boost at a time when the economy was performing well and waterway traffic was increasing, especially on the GJC: from 1.17 million tons in 1888 to 1.62 in 1898 and 1.79 in 1905. Higher toll revenue generated optimism; even the suggestion that if only capacity could be increased it would be possible to make toll reductions and compete effectively with the railways that were investing heavily in improved passenger services at the time; provided of course that the economy continued to boom and government remained wedded to the idea of free competition.

The Foxton inclined plane and its significance

The inclined plane at Foxton certainly constituted a dramatic start to the improvement process. A good deal of time was saved at one of the canal system's more notorious bottlenecks, but more important was effective sealing of the summit canal from the point of view of water loss which meant that the reservoirs supplying the Foxton summit were able to contribute more to ease problems at Braunston. Since the level at the top of the Braunston flight was some 50 feet below the Foxton level of 412 feet, the elimination of all losses at the latter's northern end would augment the southward flow and reduce the need for pumping at Braunston. Company records show that rainfall in the area fluctuated considerably from year to year and this affected the water level in the reservoirs in the winter time when they needed to be at virtually full capacity to cope with traffic during the following summer. The reservoirs held as many as 7,600 lockfulls of 56,000 gallons each in December 1886 and December 1891, but as few as 800 in December 1893. The Foxton level provided some water for the Braunston summit because water cascading through Watford locks helped to maintain the level at Norton Junction. But there was always the possibility that the reservoirs on the Foxton summit could be used entirely for the benefit of the Braunston summit if losses at the Foxton end were eliminated.

This was no doubt one reason why B W Cook, the company's engineer at Blisworth, suggested in 1894 that the entire 'Leicester Line' might be converted into a railway.⁸ This was rejected, but instead the old pumping equipment at Braunston was refurbished in 1897 and back-pumping on the Long Buckby flight continued, while the depth of water along the summit section was increased by one foot in order to hold more water. It is understandable that fuller use at Braunston of the Foxton level's reservoirs was seen as an attractive prospect and one that could more easily be realised as a result of the 1894 amalgamation (significantly occurring during the period of intensive pumping activity at Braunston just noted, which encouraged the GJC to increase its offer price for the GUC). The significance of the Foxton level is demonstrated by the canal company's records which show that even in the period 1910–1916 (when the Foxton lift was closed) only 35.1% (63,160 lockfulls) of the water supplied to the Braunston summit came from the reservoirs built along this

section; 6.0% (10,710 lockfulls) came from the Braunston pump and the remaining 59.0% (105,890 lockfulls) from the Foxton level.

A further merit of the Foxton plane was to overcome the handicap imposed by narrow locks at a time when Fellows Morton & Clayton (FM&C) were interested in making more extensive use of wide boats. This company took over the London traffic of the London & Midland Counties Carrying Company in 1886. Their 'fly boat' services took three days for the journey from London to Leicester and their cargoes included chemicals for Boots at Nottingham. FM&C were also important as GJC shareholders after 1888 and so their call for widening at Foxton and Watford carried considerable weight. At this point it is relevant to recall that the GJC was having problems on the Braunston summit when the purchase of the Union Canals was completed. There was a considerable backlog of maintenance work which was rectified after the takeover by a dredging programme, based on surveys of the canals in the area carried out by T W Millner. However, with the prospect of outlays in purchase and maintenance in mind, FM&C were asked if they could make more use of the canal. Under these circumstances they undertook to modernise their fleet, subject to an increase in capacity, and presented a challenge that could hardly be ignored. Thus there appears to have been a gentleman's agreement over a modernisation programme.⁹ Certainly FM&C continued to press the company over improvements and in 1896–7 they complained about the lack of progress in widening the locks at Foxton and Watford.

And this is where the anomalies start to escalate. The improved water supply was significant, but not to the extent of £39,000 which the inclined plane cost to install between 1898 and 1900.¹⁰ Without another lift at Watford wide boats could not operate; saving time at Foxton for narrow boats would not of itself transform the company's fortunes. There was no way the Foxton inclined plane could generate a surge in traffic and it might be predicted that it would operate at a loss in the short term. No doubt a crucial point was the cyclical trend in the economy which generated increased traffic and toll revenue in the 1890s before going into reverse so that the business climate changed accordingly during the first decade of the new century. Total traffic transferred in Leicester from the GJC to the Leicester Navigation grew from 9,100 tons in 1895 to 14,700 in 1905 but in the other direction the trend was sharply downwards from 27,600 to 15,800: an overall decline

of 17%.¹¹ The incline engine had always been shut down at night and this had been a problem for the 'fly boat' services which were sometimes delayed. So in 1908 the locks were reinstated for night use, which meant water losses at Foxton and also higher maintenance costs that further eroded the viability of the lift. But the closure decision in 1910 seems remarkably precipitate considering the powerful imagination that launched the scheme in the first place. One wonders therefore what else the company had in mind?

The vision of Gordon Thomas

Thomas was the GJC's chief engineer and was heavily involved in the Foxton enterprise. He gave much careful thought to the canal business and his company's position in particular. His evidence to the Royal Commission (on 6–7 November 1906¹² and again on 12 May, 16–17 June and 14 July 1909¹³) amounted to a comprehensive though informal plan. He spent much of the time in June outlining his vision of an 'improved canal' with larger boats and fewer hold-ups, thanks to speedier loading/unloading, fewer closures and the elimination of lock flights by lifts. One of the commissioners, Lord Brassey, noted that Thomas had worked out 'a large scheme of canal improvement necessarily involving a heavy expenditure', but remarked that while the idea had been discussed with other engineers the plan had not been formally submitted for professional criticism.¹⁴

Thomas envisaged canals 45 feet wide and 7 feet deep, for although narrow boats drew only 4 feet 3 inches of water, levels were lower in summer, and water under the boat contributed to speed. He referred to width at bridges as 32 feet (currently 14–16 feet) with an average speed of three miles per hour for a loaded train and five miles per hour for empty boats. He saw boats of 80–100 tons as the optimum for both the needs of customers and efficient deployment on the canals.¹⁵ Such boats would be 77 feet long and 14 feet wide, drawing 4½ feet (5 feet in the case of 100 ton boats). He proposed locks 253 feet long, 16 feet wide and 6½ feet deep so that three boats could be accommodated together, that is, a steamer carrying 60 tons with two barges of 80–100 tons each. Three boats in a train would be the maximum because a larger number would be difficult to handle on curves and at locks. However, many flights of locks would be replaced by lifts, with the minimum height for a lift set at 21 feet (that is, three locks) unless there were special water supply

problems. He preferred an inclined lift to a vertical lift because there was greater choice of site, the weight was more widely distributed and it was cheaper to work. Money might come in the form of low interest loans to a specially-constituted corporation to which Thomas thought the companies and shareholders would have no objection.

On this basis Thomas envisaged a comprehensive modernisation of the canal from the Erewash to London. A total of 157 locks between Langley Mill and the capital 'would be reduced to 70 in number by the construction of twelve inclined lifts'. At the same time the length of the waterway would be reduced from 167¾ miles to 152½. The cost was estimated at £4.29 million or £28,100 per mile. Working in a north–south direction, the first lifts would be in the Wigston–Foxton area (three in all), followed by the existing Foxton lift and then Watford, Long Buckby, Stoke Bruerne, Grove, Leighton, Berkhamstead (two) and Hanwell. Running northwards from the Braunston summit to Birmingham there would be lifts at Braunston, three others on the descent to Leamington, with another three at Hatton and one at Knowle (making fifteen in all on the London–Birmingham route). On the Fradley route lifts were envisaged at Hillmorton with two more on the Coventry Canal. The lifts would reduce the amount of water needed to handle a great increase in traffic. But more water could be found above the Foxton summit: it was an 'excellent situation for reservoirs and the water impounded at Naseby would be available ... for distribution to almost any part of the canal system'.

His calculations were based on an additional four million tons of freight passing the full length of GJC to generate £600,000 of toll revenue, calculated at 0.20 pence per ton-mile. Current canal costs at 0.40 pence per ton-mile could be brought down to only 0.10–0.20 pence. This traffic would be additional to existing traffic of some two million tons transported over an average distance of only 23½ miles. Such an income was deemed to be sufficient to maintain an improved waterway. He was confident that such traffic could be generated through coal moving south and general merchandise from the Port of London going north. The railways might well find it difficult to compete, for although they might have an advantage in speed this was not very effectively used. In fact, railway haulage of coal was quite slow: perhaps around five miles per hour. Figures were quoted for Measham Colliery for February–March indicating that rail transport took between one and

four days, that is, an average speeds of 1.2 to 4.8 miles per hour. So, rather than try and match the reduction, 'with their perfected organisation [they might] well utilise the improved waterway rather than carry their low-class merchandise on their rails at a loss'. Thus 'improved canals must bring prosperity to the railways'. It is not clear to what extent Thomas's plan was endorsed by the company. However, it seems that at one stage they were prepared to make a start, perhaps on an experimental basis, through the construction of a single inclined plane at Foxton.

The Royal Commission on Canals and Inland Waterways

At this point it is important to look more closely at the RCC&IW because, although this enquiry was not anticipated when the inclined plane decision was made, its findings and the government's reaction to them were crucial for the future of the venture. The Commission heard a great deal of evidence from all sections of the canal business and endorsed the view that railways had killed off most of the long-distance traffic. So the waterways 'have had no share in the enormous increase of internal transport business which has taken place between the middle of the nineteenth century and the present time'.¹⁶ However, canals in private ownership were increasing their traffic slightly, some companies were making vigorous efforts, and it was significant that more coal was being carried to London along the waterways in 1905 than in 1880 in both absolute and relative terms. But much of the coal moved to London by canal arose simply out of convenience when collieries and customers were situated on canal routes. Otherwise profits were very small and some canal-owned carrying companies gave up the trade because of difficulties with return cargoes and falling profits with dwindling traffic. The potential also seemed limited because of what the Commission referred to a 'vicious circle' whereby the authorities owning the canals were 'weak, divided and disorganised' so they could not 'raise the money necessary to improve them [and] inspire no confidence in the investing public'.¹⁷

The Royal Commission's aim was to find remedies for 'decline or stagnation'¹⁸ for the benefit of inland industrial locations like the Black Country which were experiencing difficulty in an era of increasing competition and trade dependence. Midland manufacturers had to compete in London with German producers enjoying the benefit of the Rhine

waterway: costs from Koln to London could be cheaper than from Birmingham.¹⁹ Hence the relocation of some Midland businesses in coastal areas. If only costs could be reduced by making more effective use of the potential advantages of water transport it would help the interior industrial regions and boost the canal business at the same time. What was wanted was an improvement in canal carrying with new companies coming into the business stimulated by the prospect of greater profits. The Royal Commission was much influenced by Gordon Thomas, for the GJC was described as an 'expert witness', being one of the few canal companies which had 'to a certain extent moved with the times'.²⁰

The Commission proposed²¹ a network of routes for development to either a 100 ton or 300 ton standard. Attention was concentrated on the 'cross' with links from the Humber, Mersey, Severn and Thames converging on a Midland system consisting of two loops: one serving the West Midlands and another to the east connecting Norton, Trent Lock, Fradley and Birmingham (within which the Ashby, Coventry and Oxford Canals would retain their existing dimensions). Outlining their strategy, the Royal Commission said that 'in estimating the new works required we have minimized the number of locks and have introduced lifts in all cases where long flights of locks now exist. By these means, which will not increase the cost, much time will be gained on the journey, while use of the lift will considerably reduce the expense of obtaining the necessary water for working the traffic.' The type of lift thought 'most suitable' was the Foxton lift, with some modification. Other types of lift were considered 'but none appear to have so many advantages or to be so economical in construction and working as the inclined system'.

For Route 1 (Birmingham to London), which would be joined by the Leicester Line at Norton, the Royal Commission envisaged a large number of improvements. Lifts would be installed at fourteen places: Knowle, Hatton (Lower and Upper), Cape, Radford, Stockton, Braunston, Norton, Stoke Bruerne, Horton, Marsworth, Berkhamstead (Upper and Lower) and Nash Mills. New approach sections to the lifts on either side of the Braunston summit would allow the length of summit to be increased from three miles and 30 chains to four miles and 37 chains. Locks would be retained only at Bordesley (reducing the flight from six to three), at Calcutt west of Braunston, and at various places in the Leighton Buzzard area (single locks at Cosgrove, Stoke

Hammond, Leighton Buzzard and Grove). However, on the gradual descent from Tring summit the 21 locks would be reduced to only eighteen between Kings Langley and Cowley, followed by a single lift (at Norwood/Hanwell) with four locks retained thereafter at Osterley, Brentford (two) and the Thames. In all 14 lifts and 31 new locks would replace 160 locks at an estimated cost of £4.17 million for 100 ton barges and £7.44 million for the 300 ton variant.

On the Leicester Line the 100 ton variant involved replacement of all locks between Norton Junction and Aylestone with a total of six lifts. Crick and Husbands Bosworth tunnels were to be rebored with their length unchanged (1,528 yards and 1,166 yards respectively). There would be several short cuts to reduce the length of the canal between the two tunnels; also a Theddingworth deviation and the major alterations at Kibworth near of Foxton: 'an important deviation ... leaving the existing canal on the high level above Foxton Incline, following the high ground for a distance of nearly four miles until in the neighbourhood of Kibworth it drops almost 107 feet by means of two inclined lifts and joins the existing canal a little beyond Crane's Lock'. Saddington tunnel and the Foxton lift would be bypassed, although the latter would be retained to give access to Market Harborough. Further deviations were proposed at Wigston (with a further lift) and Glen Parva where the final lift was to be installed. Then the Commission noted that 'the River Soar, which is entered a little beyond King's Lock, is very tortuous for the next mile and a quarter. So a new cut about a mile in length is proposed with a single lock to replace the two existing locks at Aylestone and St Mary's Mills.' The total distance from Watford to Leicester would be reduced to 29 miles and 21 chains, with a somewhat shorter summit length of 20 miles and 2 chains.²² There would be widening and deepening through Leicester and it was thought appropriate to install locks 262 feet in length to accommodate three 120 ton Trent barges (measuring 83 feet by 14 feet 5 inches with a draught of 5 feet 4 inches) and not just to the standard 100 ton boats. New cuts would be made at Birstall, Cossington–Mountsorrel, Mountsorrel–Barrow and Loughborough (each about a mile in length except for Mountsorrel–Barrow) and a short cut at Kegworth. For the 300 ton variant an additional deviation was needed to get sufficient clearance under the railway between Norton Junction and Watford. The higher summit between Watford and

Crick was designed to get over the Northampton railway and replace Crick Tunnel with a cutting. Meanwhile, a lower level in Leicester was needed for clearance at bridges.

Sadly however the government refused to accept the Royal Commission's recommendation of financial assistance to modernise the canals; it is interesting to note that this disappointing outcome in 1910 coincided with the GJC's decision to close the Foxton inclined plane which had been kept working — at a loss — in order to demonstrate the model which the Commission so enthusiastically endorsed.

The lift was used occasionally in 1911 and maintained until the First World War broke out. It was then left derelict until 1928 when it was dismantled and all the metal was taken away. The upper access arm was blocked while the lower branch was used for moorings. The site became overgrown until improvements were undertaken after Leicestershire County Council provided a car park and picnic site. Two years later the local branch of the Council for the Preservation of Rural England made an agreement with British Waterways Board to clear part of the site and improve public access. Clearance was undertaken by youth groups during 1974 and the agreement was taken over by the Foxton Inclined Plane Trust in 1980 with preservation and restoration in mind.²³ A comprehensive restoration plan was approved in 1982 and the engine house was partially reconstructed and opened as a museum in 1988. More radical restoration does not appear to be an immediate possibility but at least this interesting facet of local canal history has been brought closer to the public's attention.

Discussion

There were obviously grandiose plans based on the Foxton model, although it cannot be proved that Thomas's evidence, which the Royal Commission enthusiastically endorsed, reflects the thinking of his company a decade earlier when work at Foxton was approved. But it seems likely that there was, at least for short time, a resolve to create a modernised canal route. And it certainly makes much more sense to see the Foxton inclined plane as one of a set — the first of a rolling programme — rather than an isolated venture. If the company had intended to install inclines all the way along the route from Leicester to London there would have been very good reasons for starting the process at Foxton: as already

indicated, water would be saved for the Braunston summit, FM&C could introduce their wide boats (given appropriate measures at Watford) and the delays at the locks would be eliminated. One lift in isolation could not be expected to boost traffic significantly, but the company would at least have hoped for the continuance of the favourable climate of the late 1890s.

It may be surmised that the Watford flight was the intended site of the second lift, had the programme continued. In 1897 the engineer at Kilby Bridge mentioned, in a reply to a complaint about low water at Welford, that the company intended to remedy matters, for it was 'just commencing putting in patent lifts at Foxton and Welford and doing away with the antiquated locks', enabling three quarters of the water to be saved.²⁴ However it is curious that Thomas was evasive about Watford when questioned later by the Royal Commission. He would not concede that there was any anomaly in having only the one inclined plane at Foxton. Yet the Commission clearly thought otherwise because they say in their report²⁵ that the 41 mile section of canal from Norton Junction to Leicester included the barrier of seven 7 feet 3 inch locks at Watford and that 'if it were not for these locks at Watford a barge 14 feet in width could pass from London to the Nottinghamshire colliery district'. They also say that 'the throttling at this point [Watford] of the barge traffic ... would certainly have been remedied long ago if the whole route from London to the Humber had been in one strong hand and a single authority had a strong interest in developing communication within the coalfield'. They also say quite pointedly that it was 'not made clear' why the GJC had not been able to carry out improvements at this critical point.

However, Thomas stated ambiguously that narrow boats (carrying 20 tons of general cargo or 30 tons of coal) would always be the mainstay — in contradiction of his advocacy of 40 ton loads — and so the Watford conversion was considered inappropriate. An incline or wide locks at Watford would only be advantageous if boats came along in pairs.²⁶ Movement would be slower where narrow locks occurred, but the canal was by no means being used to full capacity and investment would make little sense until that situation arose. After all, there would not have been the same water-saving justification for the lift at Watford since it was always intended that water would cascade from the Foxton summit to

maintain the lower Braunston level. And wide locks at Watford (authorised in 1900) would only make sense if there was room along the summit pound for wide boats to pass. Gordon Thomas also made other excuses, such as the poor state of the navigations north of the Trent — like the Erewash Canal and the Nutbrook Canal — which were much involved in the coal trade.²⁷

It may well be that Thomas felt he had to defend a company that was getting cold feet after 1900. The fact that the first inclined plane cost much more than was expected might well have led the company to curtail its development plans after this 'last ditch stand' over canal modernisation at Foxton.²⁸ The company would also have been disappointed over the stagnation of traffic after 1900. The atmosphere of disenchantment is demonstrated when the company allowed its options to purchase the Erewash Canal and the Leicester and Loughborough Navigations to lapse in 1900. The decision was confirmed in 1901 and 1902 when the two companies offered themselves to the GJC. There was clearly a feeling of disappointment that their investment in the purchase and refurbishment of the Union Canals had not paid off and that acquisition of further canal companies would merely add to the financial burden.

This sense of gloom, with substantially lowered perspectives, was then reflected by the decision to rebuild Watford Locks as narrow locks in 1901–2.²⁹ Certainly the interest in accommodating wide boats was very much on the ebb after 1900. In 1911, the company decided that wide boats should not operate north of Stoke Bruerne because of the trouble caused in the tunnels where wide boats could not pass each other. However, this mood of despondency, punctuated by Thomas's recommendation that a second lift should not be built, contrasts with his forward-looking approach in evidence to the Royal Commission. But there must have been a big difference between what was commercially feasible in 1900 and what may have been considered the ultimate objective in 1894 (and was still seen as the ideal by Gordon Thomas in 1906, given satisfactory financial arrangements). Presumably, Thomas had to avoid communicating a sense of disappointment over the commercial failure of the Foxton lift in the hope that the Commission would support his vision and that government would then help the company to secure investment capital.

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