

CHAPTER 6

THE INCEPTION OF THE PARRETT NAVIGATION COMPANY

6.1 Developments between 1830 and 1835

The enclosing Act for West Moor was passed in 1833, for a scheme which Michael Williams has described as 'probably the most advanced and comprehensive scheme of moorland reclamation ever attempted in the [Somerset] Levels.'¹ It comprised a 3½ mile long main drain across the centre of the moor, with a network of drainage rhynes leading into it; the main drain ended at an outfall clyse into the Isle close to its confluence with the Parrett. A catchwater drain was cut around the edge of the moor to intercept surface run-off water, which then made its way into the Isle and Parrett independently of the main drain; two supply drains ensured that the moor could be irrigated (Maps 6.1 and 6.2). The Enclosure Commissioner, Thomas Best, engaged Charles Chilcott as Surveyor for dividing, valuing and apportioning the moor, James Green as Engineer to the project, and William Summers as Surveyor of the Works.² During the run up to the passage of the enclosing Act two independent schemes were put forward in 1831 by promoters who had business interests linked to improving the Parrett navigation. One proposal was intended to overcome the obstacle caused by the sills of Langport Bridge, the other was to extend the navigation across West Moor by canalising the planned main drain.

The first scheme was put forward in July 1831 by Henry Lovibond, a Langport coal merchant, who applied to the Corporation for permission to remove the pitching under the 'Bayed' arch, 'to enable the Boats the better to pass, there being (as stated) another bed of pitching under it.'³ He submitted a statement of his proposals, with a

¹ 3&4 Will. IV, c.13: An Act for inclosing certain Moors or Commons called West Moor, East Moor and Middle Moor in the County of Somerset [10 Jun 1833]; Williams M., *Draining* (1970), p.157.

² SRO Q/RDe 101, enclosure award for West Moor, East Moor and Middle Moor, oath of impartiality signed by Charles Chilcott before Thomas Best, 1 Aug 1833; SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Nicholas Broadmead, 14 Jun 1836, p.100; *ibid*, William Summers, 15 Jun 1836, p.136; *ibid*, Isaac Cooke, 15 Jun 1836, p.142.

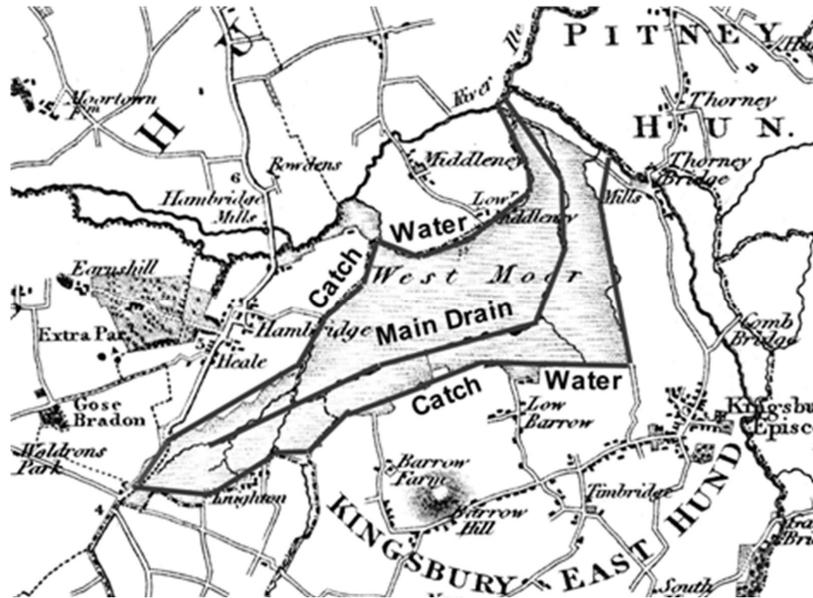
³ SRO D/B/la 8, 2 Jul, 18 Aug 1831; Henry Lovibond to Langport Corporation, 1 Aug 1831: SRO D/B/la 29/8. Lovibond's business as a coal merchant was established at Langport by 1830; he was subsequently listed in trade directories as a brewer, maltster and wine and spirit merchant: Greenfield D.J. & Murless B.J., 'Lovibond's Railway' *Bulletin Somerset Industrial Archaeological Society* No.57, August 1991, pp.22-26.

MAP 6.1 WEST MOOR BEFORE DRAINING



Base map: Greenwood C. & Greenwood J., Map of the County of Somerset, from Actual Survey made in the Years 1820 & 1821 (1822).

MAP 6.2 THE WEST MOOR ENCLOSURE SCHEME



Base map: Greenwood C. & Greenwood J., Map of the County of Somerset, from Actual Survey made in the Years 1820 & 1821 (1822).

sketched elevation of the upstream face of the arch which showed its abutments 10ft. apart at the 'floor,' widening to 12ft. at a height of 3ft. 1½ins. above the floor; from this level sprang a semicircular arch. Lovibond said the 'floor' was pitched, and sloped

10½ins. downstream; the pitching was bonded together by two 'wooden sills or pieces of timber reaching across the arch.' He intended to re-lay the pitching horizontally, level with the lower sill, and to put a movable piece of timber 10½ins. high across the upper side of the arch; the timber would be removed to allow boats to pass; in effect, a crude half-lock. In September 1833 he submitted a revised proposal, namely to lay a 'Rail' under the bayed arch and, soon after, a further alteration in the manner of laying the rail:

... in such a way as to fix it from six to nine inches under the soaling of the arch thereby leaving two grooves of about four or four and a half inches wide, and put therein moveable stops to prevent the water passing through them except in such times as the rail may be in actual use.

The Corporation sanctioned the alteration on condition that the rail should not be considered as his private property and that other traders would be free to use either his 'carriage' or their own.¹ A little more detail of the device is provided by Thomas Hutchings, the Bridgwater builder and surveyor who installed it: he wrote in 1838 that he had been:

... personally engaged in laying down a curve Rail below the bed of the Langport River in October 1833 through one of the arches of the said Langport Bridge and extending the same about seventy feet on each side for the purpose of taking the loaded Barges over the fall from the lower to the upper water.²

No satisfactory explanation has been found as to precisely how the 'rail road' worked.

The second scheme was put forward by William Hanning, an Ilminster businessman and entrepreneur, who proposed to canalise the planned West Moor main drain with a view to extending the Parrett navigation to the Langport-Ilminster turnpike road on the west side of West Moor; he did not intend to improve the Parrett itself.³ The B&TC initially considered backing the canalisation scheme and extending it towards Ilminster and Chard. However, James Green recommended that the B&TC would be

¹ SRO D/B/la 29, 24 Aug 1831, 1 Oct 1833; SRO D/B/la 8, 30 Aug, 7,11 Sep, 1 Oct 1833.

² Thomas Hutchings to Richard Pople Caines, 31 Oct 1838: SRO D/B/la 29. Among Hutchings' other building works were the Market House in Bridgwater (1826): Squibbs P., A Bridgwater Diary, 1800-1967 (Bridgwater, 1968).

³ SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Nicholas Broadmead, 14 Jun 1836, p.102; Hadfield E.C.R., SW England, p.66.

better off building a canal from Creech St. Michael to Chard and, in the event, Hanning and the B&TC dropped the proposal.¹

Green prepared drawings of the bridges and water control structures required for the West Moor enclosure in November 1834.² The following month contractors were invited to tender for forming the catchwater drain round the moor, 'being in length about 7 miles, 6 furlongs and 130 yards.'³ The details of the letting of the contracts have not been found; however, Thomas Best signed some of Green's drawings on 4 March 1835, perhaps an indication that he had authorised the start of work. Best's surviving accounts are far from complete, and the dating and details are often ambiguous, however payments to contractors for cutting drains and building bridges have been noted from the latter end of 1835 through to December 1837.⁴ The three bridge contractors were Job Bradford, Robert Mear and John Stone.⁵

In August 1835 the idea of cutting a canal across West Moor was revived at a meeting of Justices and other 'influential gentlemen,' including the MPs for Taunton and Wells; subsequently Nicholas Broadmead was engaged as solicitor to a group of promoters.⁶ Their first proposal was to canalise the recently completed catchwater drain, instead of Hanning's plan to canalise the main drain. Thomas Best invited Broadmead to meet him and William Summers at Thorney Bridge on 11 September to discuss an

¹ SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Isaac Cooke, 15 Jun 1836, p.142. Green subsequently prepared plans which formed the basis of the Chard Canal Company's parliamentary proposals in November 1833: SRO Q/RUp 119, 'Plan of proposed canal from the Bridgewater and Taunton Canal at Creech St. Michael to Chard,' deposited 30 Nov 1833.

² SRO D/RA 3/3/16a, PNC plans connected with West Moor enclosure, 14 Nov 1834.

³ SRO DD/SAS C/909/140, poster, 22 Dec 1834. The contracts were to be let by auction at the Ilford Bridges Inn, Stocklinch, on 14 January 1835; details of the lots could be seen at the Ilton offices of William Summers.

⁴ SRO DD/CN 33/2 Part 1, Enclosure Commissioner's Accounts, *passim*.

⁵ Job Bradford was a coal merchant based at Thorney: Green J., Ollerenshaw P. & Wardley P. (eds.), *op.cit.*, p.16. Nothing is known of Robert Mear of Ashill other than that he repaired some Somerset County Bridges: SRO Q/AB 59, Hort Bridge, 1840; SRO Q/AB 60, Cock's and Twinney Bridges, 1833. John Stone (1784-1856) was born in Holcombe Rogus, Devon, and by 1808 he was living in Yarcombe, Devon: SRO A/ABV 1, Needham-Hurst K., 'John Stone, Bridge Builder, and Stone Family Notes' (unpublished study, undated [c.1970]). Still based in Yarcombe, from 1816 he contracted for a considerable amount of masonry work on County Bridges in southern Somerset, and in 1826 he built Burrow Bridge: Bentley J.B. & Murless B.J., *op.cit.*, *passim*.

⁶ TPA HC/CL/PB/2/5/14, evidence taken before the Commons Committee on the Parrett Navigation Bill (further powers), Nicholas Broadmead, 14 Mar 1839, pp.61-62; SRO D/RA 3/3/5/3, evidence taken before the Lords Committee on the Parrett Navigation Bill (further powers), Nicholas Broadmead, 4 Jun 1839, p.1.

alternative plan that Summers had devised for a canal, which Best considered would be cheaper and more convenient for all parties.¹ It is not clear what Summers was proposing to do on West Moor; nor indeed is it known whether the meeting actually took place. Moreover, Summers later claimed he had never attempted to design a canal despite having surveyed a route for an inter-Channels canal under James Green's supervision in 1822.²

The following week Broadmead began canvassing the dozen or so principal land owners in and around West Moor in the hope that the navigation promoters could enlarge and canalise the whole length of the catchwater drain and improve the Parrett above Langport without opposition and thus without the need for an Act.³ Thomas Best, on behalf of the proprietors of the West Moor enclosure, objected to the proposal, as did some landowners, fearing the delicate balance between drainage and irrigation would be upset.⁴ Initially, further opposition came from the major commercial partnership of Stuckey & Bagehot who controlled two-thirds of the trade on the Parrett and who feared the proposal would damage their business; however, they consented on condition that the navigation would be improved below Langport.⁵

The promoters were forced to accept the fact that they needed parliamentary powers if they were to succeed. In early October 1835 Broadmead employed James

¹ Thomas Best to Nicholas Broadmead, 10 Sep 1835: SRO D/RA 3/3/10.

² SRO Q/RUp 68, 'Plan of Proposed Canal from Beer Harbour to the Taunton and Bridgwater Canal at Hyde Farm, West Monkton, surveyed under the direction of James Green by William Summers,' deposited 30 Sep 1822. Summers stated:

I do not profess to be an Engineer; I value; and I have been called in frequently in making roads, if you term that an engineering part of it; I have laid out levels; but I have never undertaken a canal or railroad, but drives, and gentlemen's seats, and things of that sort.

SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, William Summers, 15 Jun 1836, p.140.

³ Nicholas Broadmead to William Cely Trevilian, 19 Sep 1835: SRO DD/CTV 60, Midelney Farm and Westover Farm. Broadmead prepared draft forms of agreement between the landowners and himself, representing the promoters, 'in case the said Canal shall be made without an Act of Parliament.'

⁴ John Hancock to William Cely Trevilian, 2 Dec 1835: *ibid*; SRO D/RA 3/3/2, Resolutions of a meeting of Subscribers, 27 Apr 1836.

⁵ TPA HC/CL/PB/2/5/14, evidence taken before the Commons Committee on the Parrett Navigation Bill (further powers), Nicholas Broadmead, 14 Mar 1839, pp.60, 62; SRO D/RA 3/3/5/2, evidence taken before the Commons Committee on the Parrett Navigation Bill (further powers), Thomas Watson Bagehot, 15 Mar 1839, p.16; SRO D/RA 3/3/5/1, draft Brief for the Promoters of the Parrett Navigation Bill (further powers), undated [May 1839], p.11; SRO D/RA 3/3/5/3, evidence taken before the Lords Committee on the Parrett Navigation Bill (further powers), Nicholas Broadmead, 4 Jun 1839, p.1; *ibid*, Thomas Watson Bagehot, 5 Jun 1839, p.15.

Warren of Langport, who was both an attorney and a surveyor, to take levels along the various watercourses as a prelude to preparing a parliamentary plan.¹ The promoters purposely did not set out to improve the Parrett below its confluence with the Tone at Stanmoor:

It was never supposed that we should be enabled to make a constant navigation from Bridgwater to Langport, because the Tides sometimes do not reach Stanmoor ... The intention was to enable Barges which are brought up by the tide to [Stanmoor] to go almost immediately to Langport.²

At this stage they felt that any works they might carry out above Stanmoor would have a negligible effect on the navigation and land drainage below Stanmoor, so no attempt was made to obtain consents from parties with interests below Stanmoor.³ Broadmead recognised that a much more elaborate scheme than had been originally envisaged was required, and that there were no local precedents for a scheme of this scale. He appreciated that it would require more advanced technical proficiency than was available locally to design and construct the substantial river-works that were now being considered, if the conflicting interests of riparian owners, drainage authorities and river traders were to be resolved. He therefore recommended that the promoters should 'go to the North to get an eminent Engineer' to design a scheme and to prepare the parliamentary plans and supporting documents.⁴ However, a number of the promoters objected to the expense of engaging a 'first rate' engineer and at some time between mid-October and early November 1835 Broadmead was instructed to engage Joseph Jones, a Welshman who had been recommended to them by 'a Friend at Bristol.'⁵ Nothing is known about Jones' background or career before or after this period.

¹ James Frederick Horatio Warren had served a four year apprenticeship to Philip Ilett: SRO DD/LC 35/4, Indenture of Apprenticeship as a land surveyor, 7 Jan 1825; *ibid*, Will of John Warren, proved 10 Dec 1836; SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, James Frederick Horatio Warren, 13 Jun 1836, pp.62-66.

² SRO D/RA 3/3/5/1, draft Brief for the Promoters of the Parrett Navigation Bill (further powers), undated [May 1839], p.6.

³ According to Broadmead, 'We had not the least idea any objection could be conjured up at that time': SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Nicholas Broadmead, 14 Jun 1836, p.104.

⁴ SRO D/RA 3/3/5/3, evidence taken before the Lords Committee on the Parrett Navigation Bill (further powers), Nicholas Broadmead, 4 Jun 1839, p.1.

⁵ SRO D/RA 3/3/2, Resolutions of a meeting of Subscribers, 21 Nov 1835; SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, James Frederick Horatio Warren, 13 Jun 1836, p.64; *ibid*, Nicholas Broadmead, 14 Jun 1836,

The surviving documentary evidence relating to the next two months is sparse; this is regrettable as it was no doubt a period of hectic activity with major consequences for the prospects of the PNC, particularly in respect of the cost of the works. The earliest estimates appear in two undated and unsigned drafts of a report purporting to be by Jones, in which he is styled 'Engineer.' One draft, which is clearly the earlier of the two, was annotated with alterations and additions; the second draft incorporated these amendments and had a few additional minor annotations. Broadmead's hand can readily be identified in most, if not all, the annotations in both drafts.¹ The earlier draft proposed 'self acting weirs,' each with a lock alongside, at various points in the waterways. These weirs were to have:

... proper hatches and buoys, to be so constructed that when the water is above four feet in the river, the hatches should fly open, and when it subsides the hatches to hove to, by the aid of capstans.

There was to be one of these structures across the Parrett about 100yds. downstream of Langport Bridge ('A' on Map 6.3). As originally drafted, this was intended to render the Parrett navigable to a point near Muchelney, about half way between Langport and the Parrett/Isle confluence; at this half way point a similar weir and lock would be constructed ('B'). Unfortunately, the technical details of the self-acting mechanism were not given in the report, or in any of the later references to them. The navigation would continue up the Parrett and was then said to pass along the Isle for nearly a mile to the eastern corner of Middelney Farm (this should actually be the western corner, if a mile of the Isle was to be made navigable), where there would be a lock ('C') into a new navigable cut linking to the catchwater. The catchwater drain itself would be widened and canalised from its junction with the new cut to Park Gate. The canal would be 27ft. wide and 4ft. deep, which would 'render it unnecessary to shift the goods at Langport.' In view of reports that boats carrying 15 tons could not reach Langport for four to six days in every set of tides, there was a recommendation that a lock and weir should be constructed just above Stanmoor Bridge:

p.105; SRO D/RA 3/3/5/1, draft Brief for the Promoters of the Parrett Navigation Bill (further powers), undated [May 1839], p.5.

¹ SRO D/RA 3/3/10, two draft reports, undated [1835]. The earlier of the two is headed 'The Report and Estimate of J [blank] Jones Engineer on the line of the proposed Langport and Westmoor Canal.' The second is identically titled except that Jones' first name, Joseph, has been added later in a different hand. In view of the uncertainty over Jones' first name in both drafts, clearly neither was drawn up by Jones, and the original handwriting is certainly not that of Broadmead; most likely they were drawn up by a clerk and later amended by Broadmead.

... so as to render the navigation of the Parrett and also of the said proposed Canal at all times equal to any in Great Britain, both for the supply and quantity of its water and the simple mode of its structure.

This seems to be the first mention of a lock and weir in the Parrett near Stanmoor ('D').

This simplistic and poorly thought-out first draft report clearly did not satisfy Broadmead, who made three significant alterations to the text (see Map 6.4). Firstly, he altered the Stanmoor lock recommendation to read:

I propose to put in self acting hatches across the river immediately above Stanmoor Bridge with locks by the side for the purposes above mentioned.

Next, he relocated the Muchelney weir and lock to the Parrett/Isle confluence ('E'). Thirdly, he struck out the reference to a lock between the Isle and the catchwater. The scheme as altered was estimated to cost £8,549, including £1,000 for obtaining the Act and a further sum for contingencies. The second draft report incorporated the alterations and deletions, and the total estimate was again £8,549. It is almost certain that this second draft formed the basis of a report, now lost, that Jones presented to a meeting of the promoters on 21 November 1835. The minutes of the meeting record that it was resolved to adopt:

... so much of [the report] as recommends the putting locks & self acting hatches just below Langport & making a Canal by the river Isle and Westmoor to the entrance of Park Farm called Park Gate.

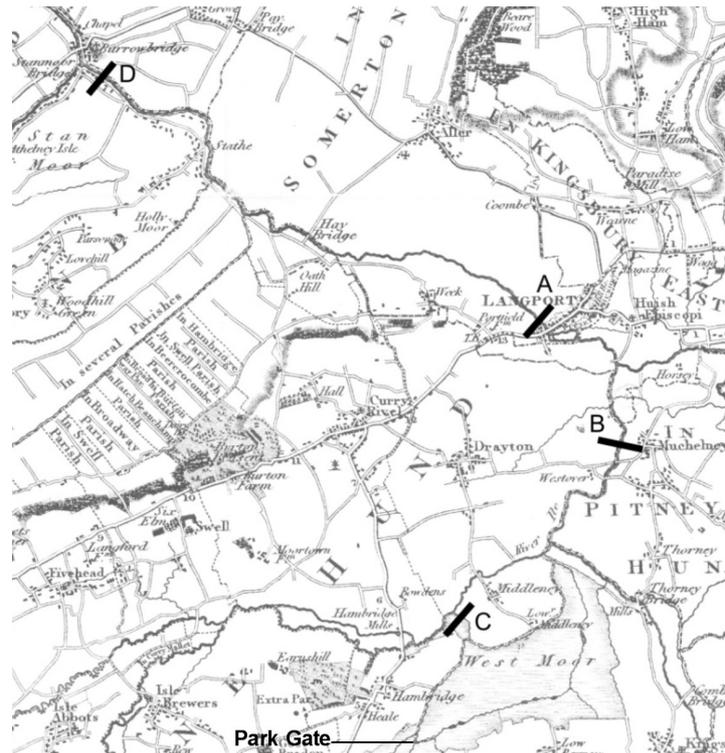
Oddly, this resolution appears to dispense with the locks and weirs at Stanmoor and the Parrett/Isle confluence, but the meeting then further resolved:

That an Act of Parliament be obtained for erecting the locks & self acting weirs & making the Canal on the plan recommended in Mr Jones's Report.

Broadmead was instructed to ask Best if he would suspend work on the bridges over the catchwater and pay to the promoters the sums he had agreed to pay his contractors. In return, the promoters would compensate the contractors and undertake to modify and complete the bridges.¹

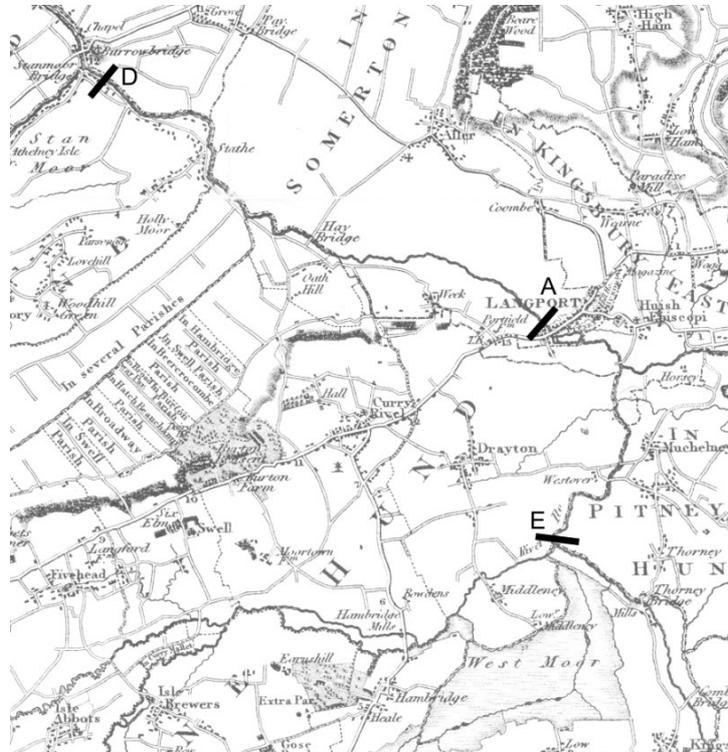
¹ SRO D/RA 3/3/2, Resolutions of a meeting of Subscribers, 21 Nov 1835.

MAP 6.3 LOCATIONS OF THE WEIRS AND LOCKS AS ORIGINALLY PROPOSED BY JOSEPH JONES



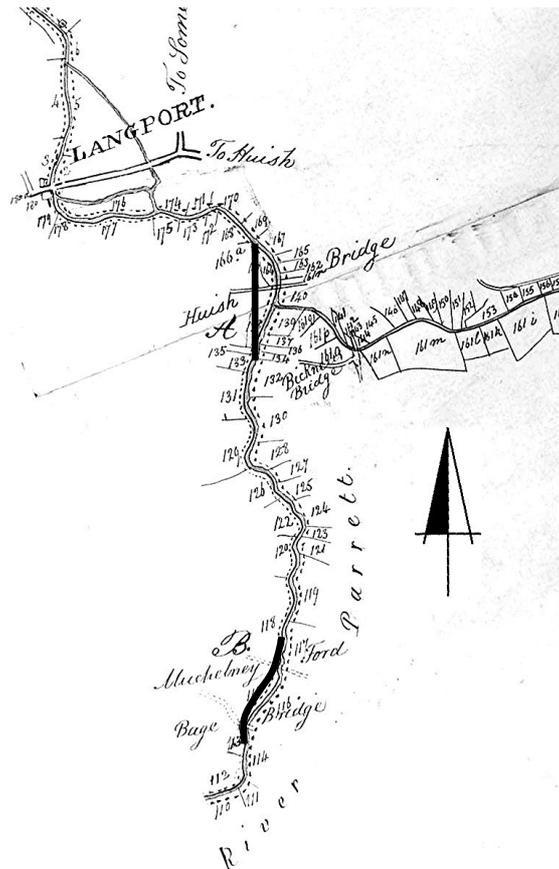
Base map: Greenwood C. & Greenwood J., Map of the County of Somerset, from Actual Survey made in the Years 1820 & 1821 (1822).

MAP 6.4 THE PROPOSALS AS AMENDED BY NICHOLAS BROADMEAD



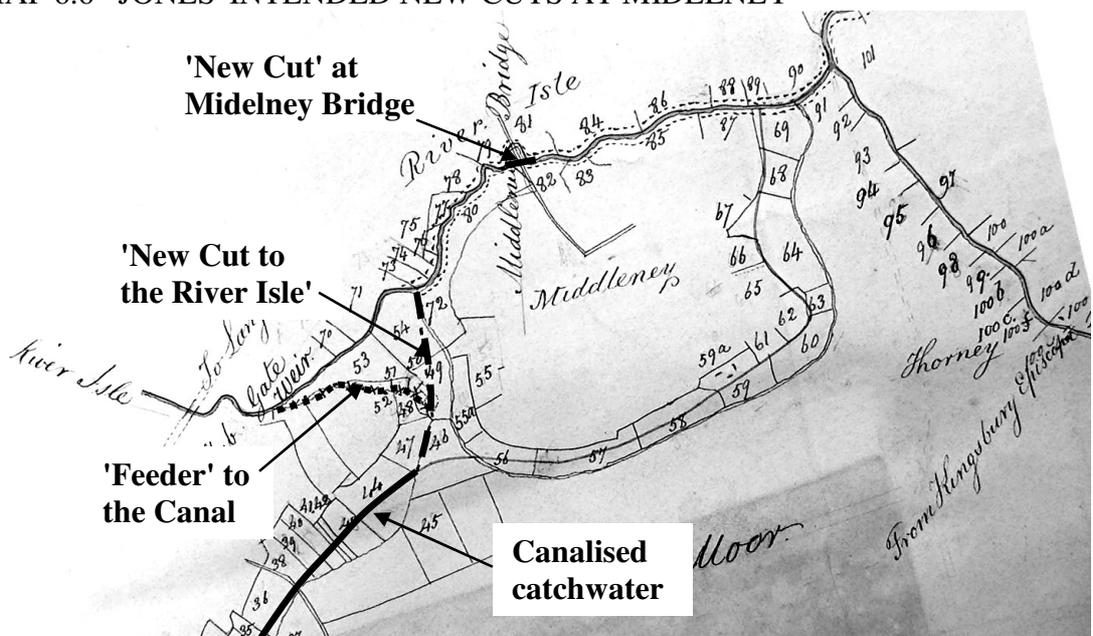
Base map: Greenwood C. & Greenwood J., Map of the County of Somerset, from Actual Survey made in the Years 1820 & 1821 (1822).

MAP 6.5 JONES' INTENDED NEW CUTS FOR THE PARRETT UPSTREAM OF LANGPORT



Source: SRO Q/RUp 124, 'Plan and Section of the intended Langport and Westmoor Canal', deposited 30 Nov 1835.

MAP 6.6 JONES' INTENDED NEW CUTS AT MIDELNEY



Source: SRO Q/RUp 124, 'Plan and Section of the intended Langport and Westmoor Canal', deposited 30 Nov 1835.

Jones signed the sketchy hand-drawn parliamentary plan and longitudinal section that were deposited on 30 November 1835.¹ The plan showed two new cuts across bends in the Parrett upstream of Langport – near Huish Bridge and from Muchelney Ford to Bage Bridge – and one in the Isle at Midelney Bridge. There were another two cuts to the west of Midelney Farm – one was a navigable link between the Isle and the 'canal', and the other was a 'feeder.' There was no sign of the proposed locks in the Parrett and Isle; according to Broadmead, Jones considered it unnecessary to show them.²

In early December Broadmead and Walter Long's agent provisionally agreed a series of flood prevention measures with a view to introducing protective clauses into the Parrett Navigation Bill.³ Long was by now Lord of the Manor of Muchelney and he had an extensive estate along the right bank of the Parrett there.⁴ Four of the measures were of a general nature and would apply to all the riparian owners: one of these dictated the level at which the PNC could 'pond' the river at various points, and another specified the water level at which the self-acting 'hatches' were to open. Thirdly, if it became necessary to raise water levels higher than permitted, then the 'Canal Company' would make the land drainage and irrigation functions independent of the navigation by excavating 'collateral cuts' close to the river banks, to carry the land drainage to a point downstream of the next lock; this is the first mention of a principle that was to have expensive repercussions for the PNC. Fourthly, the riparian owners above Langport would contribute £1,500 towards the expense of rebuilding Langport Bridge and removing the shoals at various points; this is the earliest mention to have been found of an intention to rebuild Langport Bridge as part of the scheme. Another two measures were included for Long's particular benefit. The first provided that the towing path as far up as the Parrett/Isle confluence was to be formed on the opposite side of the river from Long's estate. Long was responsible *ratione tenurae* for maintaining half of the old

¹ SRO Q/RUp 124, 'Plan and Section of the intended Langport and Westmoor Canal', deposited 30 Nov 1835. According to Warren's later evidence, the plan exhibited to the Lords Committee was a lithographic copy of Jones' deposited plan; at SRO there are two slightly differing lithographed plans which are clearly based on Jones' plan and section, one of which may be the version exhibited to the Lords Committee: SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, James Frederick Horatio Warren, 13 Jun 1836, p.64; SRO D/RA 3/3/7, printed 'Plan of the Parrett Navigation' 1836, two versions.

² SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Nicholas Broadmead, 14 Jun 1836, p.105.

³ SRO D/RA 3/3/2, minutes of meeting between Mr. Attwood (Walter Long's agent) and Nicholas Broadmead, 3 Dec 1835.

⁴ VCH3, p.41.

timber bridge known as Bage or Barge Bridge over the Parrett between Westover Farm and Muchelney; William Cely Trevilian was responsible for the other half of the bridge.¹ The second measure provided that that the PNC would rebuild the bridge in stone and maintain it in perpetuity 'except the County can be prevailed upon.'² Intriguingly, at that time Trevilian's agent expressed what were probably popularly-held doubts about the viability of the project:

I should think ... the proposed Rail Road from Bristol to Exeter, and the other Canal coming from the Tone River near Taunton to Ilminster and on to Chard would make this proposed Cut in my Opinion almost useless for them to proceed.³

There are three more estimates, all dated 18 December 1835 and all signed by Jones. The first estimated the cost of demolishing and replacing Langport Bridge with three new arches of 35ft. span and a width of 24ft. between parapets at £2,350; two temporary bridges were estimated at an additional £430.⁴ A second estimate of £1,207 was for forming a canal alongside the West Moor catchwater around the south side of Midelney Farm, as an alternative to canalsing the Isle.⁵ The works covered in the third estimate were broadly for the route of the parliamentary line, but with some minor amendments to the scope of the works and significant reductions in the estimates for the locks and weirs, which were described as being 'on the plan adopted on the River Tone.' The lock and weir at the Parrett/Isle confluence were relocated to the cut between the Isle and the West Moor catchwater drain, with an additional lock to prevent floods from the Isle entering the catchwater. There was no mention of the collateral drains that

¹ In December 1837 Trevilian's agent wrote to Trevilian's son:

The annual expence of Repairing this wooden Bridge (your share) is about one pound ... and once in every Fifteen or Twenty years from 10 to 15 pounds worth of Timber is consumed for the Repairs of this Bridge (that is your share):

John Hancock to Maurice Cely Trevilian, 28 Dec 1837: SRO DD/CTV 54.

² SRO D/RA 3/3/2, minutes of meeting between Mr. Attwood (Walter Long's agent) and Nicholas Broadmead, 3 Dec 1835. In August 1836 the PNC's Management Committee paid £153 to Long's solicitors for their work in getting protective clauses into the Bill: SRO D/RA 3/1/2, PNC Committee Accounts, 30 Aug 1836. Broadmead no doubt anticipated that the Justices would agree to adopt the new stone bridge as a County Bridge if it could be shown to meet the relevant criteria.

³ John Hancock to William Cely Trevilian, 2 Dec 1835: SRO DD/CTV 60.

⁴ SRO D/RA 3/3/11/3, 'Estimate of the costs of taking down & rebuilding Langport Bridge,' Joseph Jones, 18 Dec 1835.

⁵ SRO D/RA 3/3/10, 'An Estimate of the Costs of making that portion of the Langport and Westmoor Canal which ... is intended to pass on the Southern side of Middeney Farm', Joseph Jones, 18 Dec 1835.

Broadmead had earlier agreed would be provided if necessary, although it is possible that Jones felt that their cost could be contained within the 10% contingency sum included in the total estimated cost of £7,630.¹ It was on the basis of this figure of £7,630 that the promoters decided to proceed towards a Bill. There are clear indications throughout this episode that Broadmead supplanted Jones' proposals with his own, while at the same time retaining Jones' estimates and naming Jones himself as 'Engineer.'

Disillusioned by Jones' evident lack of technical skill and judgement, the promoters dismissed him; according to Broadmead, they had belatedly found him to be:

... a very incompetent man, and that we could not ask Parliament to proceed upon his judgment; I advised therefore to call in Mr. Brunel, as being the first authority.²

The promoters accepted Broadmead's advice, and:

Mr. Brunel being in the neighbourhood upon the Bristol & Exeter Railway, they prevailed upon him to devote a couple of days to an inspection of the River and site of the proposed Canal.³

6.2 Developments up to the passage of the Parrett Navigation Act

Brunel's engagement by the promoters was an opportunist initiative that would certainly bolster public confidence in the viability of the project. The precise terms of his engagement with the promoters are not known; ostensibly he was brought in as a consulting engineer, to appraise 'the practicability of a plan for improving the navigation of the Parrett.' However, when he was later asked whether he had perhaps done more than just appraise Jones' scheme he gave confusing and somewhat evasive answers:

¹ SRO D/RA 3/3/10, 'An Estimate of the Costs of improving the navigation of the River Parrett from Langport Bridge to the Junction of the River Isle therewith and for making a Canal from such junction ... and also for improving the navigation of the River Parrett from the said Langport Bridge to Stanmoor Bridge', Joseph Jones, 18 Dec 1835.

² SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Nicholas Broadmead, 14 Jun 1836, p.102. Recalling the episode, the PNC Management Committee reported in 1838:

It is much to be lamented that a competent Engineer had not been appointed in the first instance ... When it was afterwards decided to enlarge the scheme, you were unfortunate in having a Mr. Jones recommended to you, whose estimate for the whole line was only £7,630 and it was upon this estimate that you proceeded to Parliament:

SRO D/RA 3/3/10/30, PNC Committee report to the Annual General Meeting, 29 Aug 1838.

³ SRO D/RA 3/3/5/1, draft Brief for the Promoters of the Parrett Navigation Bill (further powers), undated [May 1839], p.5.

Q: Am I to understand you from your great reputation on this subject that you are the responsible Engineer upon whose reputation the present scheme is submitted to parliament?

Brunel: Upon my word I don't know – I am responsible for what I state here that is all.

Q: You understand when a scheme is submitted to parliament there is an Engineer of eminence who advises this scheme of improvement of the navigation and laying out the canal and he is the individual who may be said to be responsible for the general scheme of improving the navigation – is not that so?

Brunel: It is so sometimes.

Q: I ask whether you consider yourself that your reputation is staked to the propriety of the present scheme for the improvement of the Navigation – whether it is your scheme and you are responsible to parliament & the public for this scheme?

Brunel: I told you exactly how I stood & you are as competent to judge as any one how far I am responsible for this scheme – I have told you exactly how the scheme is laid before me and for every thing I state here I am perfectly responsible and no further.¹

Of interest in relation to his apparent reluctance to precisely define his role is a statement he is said to have made 'in later life':

The term 'Consulting Engineer' is a very vague one and in practice has been too much used to mean a man who for a consideration sells his name but nothing more.²

He later stated that the plans were submitted to him around Christmas 1835 and that he had been in the Langport area several times, 'I suppose not above four or five days altogether,' during December 1835 and/or January 1836, accompanied by only one principal assistant, checking Jones' survey and proposals.³ Unfortunately Brunel's office diary for the year 1835 has not been located, but his 1836 diary records several visits to

¹ SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, I.K. Brunel, 10 May 1836, pp.1, 24-25; SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, I.K. Brunel, 14 Jun 1836, p.76.

² Unreferenced quotation in Rolt L.T.C., op.cit., p.144.

³ SRO D/RA 3/3/2, draft Proof of I.K. Brunel, undated [1836]; SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, I.K. Brunel, 10 May 1836, p.21. Under examination by the Lords Committee Brunel was initially less precise about when the promoters first approached him, stating it was 'in December, I think', but he was later more positive: 'In the month of December I was applied to by the party requesting me to look at certain plans which were proposed for the improvement of the river': SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, I.K. Brunel, 14 Jun 1836, pp.76, 87.

the area, although there is no mention of an assistant accompanying him.¹ He travelled to Bridgwater on 29 January 1836 for an early meeting the next morning to discuss B&ER business; he spent the rest of the day and evening of 30 January examining the line of the proposed navigation upstream of Langport Bridge. He immediately warned Broadmead that the absence of proper sections on the parliamentary plans could cause the promoters a problem at the Bill stage: 'I think an opposing Landowner might certainly go very near to throw [the Bill] out in the standing orders.'² Broadmead was with him in London on 15 February, working on estimates.³ By that time Broadmead was vigorously canvassing support from the landowners, but the promoters were facing opposition from both the B&TC and Bridgwater Corporation, each claiming to be Conservators of the Parrett, despite Broadmead's assertion that:

... we did not conceive either the Taunton and Bridgwater Company or the Bridgwater Corporation had a right to interfere with us in the slightest degree.⁴

The B&TC made their claim jointly with the Chard Canal Company, on the basis of the Tone Conservators' rights and duties which had transferred to them in 1832.⁵ At no time did the promoters of the Parrett navigation give formal notice to the B&TC, believing

¹ In the BUL catalogue the 1835 diary is listed as one of the missing volumes: Hannah Lowery, BUL Archivist, pers.comm.

² BUL DD 1836, Brunel's Office Diary, 29,30 Jan 1836; Brunel to Nicholas Broadmead, 31 Jan 1836: BUL PLB 1. He asked Broadmead if he should consult the promoters' Parliamentary Agent, or 'run the risk and saying nothing about it - the less said about it the better certainly.' He added in a postscript:

An Observation upon the deficiency escaped from me in the presence of your brother and a young Man belonging to your Office – but not beyond that.

Broadmead's response is not known, but in 1839 it was said that the PNC obtained legal advice to the effect that they ought not to have been allowed to carry out the works on the basis of the plans, 'but the Parliament of that day authorised the Co. to do so': SRO D/RA 3/3/5/1, draft Brief for the Promoters of the Parrett Navigation Bill (further powers), undated [May 1839], annotation, p.5.

³ BUL DD 1836, Brunel's Office Diary, 15 Feb 1836.

⁴ SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Nicholas Broadmead, 14 Jun 1836, p.104.

⁵ The B&TC claimed that:

... the Conservancy of the [Parrett] is vested in them as a trust for the general benefit & advantage of the whole of the parties interested in the Rivers Parrett & Tone & not merely for their own advantage:

SRO DD/FD 17, 'The humble petition of the several Companies of proprietors of the Bridgwater and Taunton and of the Chard Canal Navigation,' undated [1836].

that in reality the B&TC was a front for the Chard Canal Company and that the objection was 'chiefly done for rivalry.'¹

The Corporation claimed to be Conservators 'under Charters granted by former Kings of England ... and by immemorial prescription' and stated they had constantly acted to keep the river free from 'annoyances' and protect the navigation.² However, they were later unable to substantiate their claim or to put up a convincing case that they had ever carried out any work in the Parrett above Bridgwater Bridge.³ Nevertheless, Broadmead agreed to meet the Borough Clerk who had expressed concerns that the navigation might be injured; the Corporation's objective was that 'nothing should be done that could in any way injure any portion of the trade of Bridgwater.' Believing that the additional costs of mollifying the Corporation would be inconsequential, the promoters agreed to pay the expence of getting Henry Haberley Price to advise the Corporation; in return, the Corporation resolved not to oppose the Bill, providing protective clauses were introduced.⁴ Brunel met the Corporation in the evening of 2 March 1836, having spent the day inspecting the navigation.⁵ The following day he toured the lower reaches of the Parrett and inspected the Long Sutton estate of Lord Burlington, who would later chair the Lords Committee considering the Parrett

¹ SRO D/RA 3/3/5/2, evidence taken before the Commons Committee on the Parrett Navigation Bill (further powers), Nicholas Broadmead, 14 Mar 1839, p.6.

² SRO D/B/bw 2/1/3, Bridgwater Borough Council Minutes, 11,18 Mar 1836.

³ Evidence given by Robert Ford, a Bridgwater Alderman, throws doubt on their claim that they had 'constantly acted.' He answered 'No' to each of the questions:

Do you know any act whatever that they have ever done in the River Parrett as Conservators?

Did you ever know the Corporation of Bridgwater above Bridgwater Bridge ever cleanse out the bed of that river on any one occasion?

Did you ever know the Corporation of Bridgwater to pass above Bridgwater even to survey the state of the river?:

SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, Robert Ford, 13 Jun 1836, p.5.

⁴ SRO D/B/bw 2/1/3, Bridgwater Borough Council Minutes, 29 Feb 1836; SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, H.H. Price, 14 Jun 1836, p.90; *ibid*, Nicholas Broadmead, 14 Jun 1836, p.104. For biographical details of Henry Habberley Price (1794-1839) see BDCE1, pp.536-537.

⁵ BUL DD 1836, Brunel's Office Diary, 2 Mar 1836; SRO D/B/bw 2/1/3, Bridgwater Borough Council Minutes, 28 Feb, 18 Mar 1836. Brunel's pocket notebook for 1836 has the entry 'Langport Nav' and a dimensioned sketch of three of the five spans of 'Lode Bridge', with the date '4 3/2 36,' suggesting that on Wednesday 3 February 1836 he was examining the Yeo: BUL DM 1758/2, Brunel's Pocket Notebook, 1836, unpaginated. However, his office diary is blank for that date, and it is probable he intended to write the date '4 2/3 36' (ie. Wednesday 2 March) in the note book.

Navigation Bill. He talked to some of Burlington's tenants who were also landowners in their own right, and reported to Broadmead:

I found it necessary to make great allowances for the effects of the fears which such persons entertain of any change in that which is to them so important a point as drainage.

In his view the Long Sutton properties could be protected against flooding either by limiting the height to which the PNC would be permitted to pound the river or, more effectively, by cutting a collateral drain on the right bank of the Yeo and Parrett to an outfall below the proposed Langport lock:

I think that in the first case Lord Burlington's land would not be injuriously affected but in the second case it would I conceive be benefitted.

This seems to be Brunel's first mention of a collateral drain; of course, he would already be aware that Broadmead had agreed to provide such drains for other landowners, although he later stated he did not know the exact arrangements that had been agreed to.¹

Brunel approved five clauses drawn up by Price – the 'Bridgwater Clauses,' – that were intended to ensure the works improved the navigation and drainage all the way from Langport to Bridgwater.² Three of the clauses were of a general nature, empowering the Corporation to take appropriate action to protect their existing rights and to prevent injury to the river and the navigation. A fourth clause regulated the operation of Stanmoor lock with a view to preventing sedimentation. Every tide that was high enough to flow above the lock would be allowed to pass unobstructed up through the lock. The lock would be kept open during the whole of the ebb of the eight highest tides of each set of springs, and for at least eight hours out of every 12 hours during the remainder of the tides.³ The fifth clause regulated the operation of Stanmoor lock when

¹ BUL DD 1836, Brunel's Office Diary, 3,5 Mar 1836; Brunel to Nicholas Broadmead, 7 Mar 1836: SRO D/RA 3/3/18, PNC Case over Long Sutton drainage; SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, I.K. Brunel, 10 May 1836, p.36. In Brunel's letter book the Long Sutton report is dated 3 March 1836; it is probable that he had written it on his return to Bristol that evening but had delayed sending it until he had discussed its contents with Broadmead, who visited him in London on 5 March.

² SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, I.K. Brunel, 10 May 1836, pp.39-40; *ibid.*, H.H. Price, 10 May 1836, pp.95-96, 108; SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, I.K. Brunel, 14 Jun 1836, p.84.

³ Price said later of this clause:

I consider it is necessary that there should be certain portions of time particularly of spring tides and fresh when the whole navigation should

the depth of water on the Burrow Stones shoal was less than 3ft. during neaps. In that case the PNC would be permitted to close the lock 2½ hours before the tide was calculated to reach Stanmoor Bridge and keep it closed for 2 hours, after which it would be opened, 'and thus increase the depth of water from Stanmoor Bridge ... to Bridgwater'.

Elsewhere in the Bill another clause authorised the PNC to levy a toll on all goods passing over or under Langport Bridge for a period of up to two years, provided they rebuilt Langport Bridge and the cost exceeded £1,000. Broadmead negotiated a deal with the Langport Corporation whereby the PNC would rebuild the bridge to an agreed standard, and maintain it in perpetuity, if the Corporation contributed £500 towards the costs.¹ However, the County authorities turned down Broadmead's offer to forego the toll if the County also contributed to the rebuilding costs or took on the new bridge as a County Bridge.² In the event, no change was made to the clause.

At a site meeting on West Moor on 5 April Brunel and Broadmead agreed with James Green, who had been re-engaged to protect the landowners' interests, that Brunel's recommended principle of making the land drainage and irrigation independent of the navigation would be better achieved by cutting the canal alongside, and independent of, the catchwater, but still within the deviation limit on the deposited plan.³ Subsequently Broadmead and Thomas Clarke, solicitor to the West Moor interests, negotiated protective clauses which inter alia effectively implemented Brunel's recommended principle by incorporating Green's suggested alteration, by permitting the West Moor interests to take two thirds of the water flowing in the Isle, and by culverting the West Moor main drain under the Isle and linking it to a new collateral drain running to a point below Langport lock.⁴ Broadmead could now report to the promoters that all the objections to the Bill had been met with the exception of the B&TC; Broadmead

be thrown open ... all danger of silt and sediment is perfectly avoided inasmuch as they must be swept off by the current during those portions of the tide when the locks must of necessity be left open:

SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, H.H. Price, 10 May 1836, pp.95-96.

¹ SRO D/B/la 8, 31 Mar 1836.

² SRO Q/AO 6, Spring Quarter Sessions, 28 Mar 1836.

³ John Hancock to James Randolph, 19 Mar 1836; SRO DD/CTV 54; BUL DD 1836, Brunel's Office Diary, 5 Apr 1836; SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, James Warren, 13 Jun 1836, p.67; SRO DD/CN 33/2 Part 1, Enclosure Commissioner's Accounts, payments fair copied 3 Sep 1836, for the previous quarter; George A.B., James Green: Canal Builder and County Surveyor (Tiverton, 1997), p.105.

⁴ SRO D/RA 3/3/2, Agreement between Nicholas Broadmead and Thomas Clarke as to the West Moor clauses, 28 Apr 1836.

considered that the 'Bridgwater Clauses' would be sufficient to remove the B&TC objections.¹

Broadmead met Brunel in London on 6 May to finalise the proofs for the Commons Committee considering the Parrett Navigation Bill, which sat on 6, 9, 10 and 11 May under the chairmanship of E.A. Sanford.² Coal merchants, traders and boatmen testified to the poor general state of the Parrett navigation and the potential benefits that the proposed scheme offered both to the Parrett and the Tone. Brunel was examined on 10 May,³ and like the other witnesses he was examined and cross-examined in detail about the operation of Stanmoor lock. The structure, he said, would be 6ft. deep and sited at Hancock's shoal, just above the confluence of the Parrett and the Tone. More accurately, it would comprise flood gates with a half lock:

... flood gates for the purpose of allowing the freshes of the river to flow freely in times of fresh, and a half lock pounding back the water of the river at other times.

The lock would not be needed at springs because the tide generally ran up to Langport at those times. However, whenever there was a low neap tide or a drought, the gates would be closed at two states of the tide. The first pounding would be two and a half hours before the flow of the tide at Hancock's, and letting it go half an hour before the flow. This 'flash' would produce an increased swell to meet the rising tide below Hancock's and assist boats to reach the lock. The second pounding would be at high water at Hancock's, and letting it go two hours after. This would maintain a navigable water depth above Stanmoor for sufficient time that boats could reach Langport. He estimated £600 for the cost of the half-lock and floodgates.⁴ The opposition homed in on the proposed use of the antiquated half-lock system, and Brunel was forced to admit that he had never improved a navigation of this kind before, and he could not name a single navigation which had been improved in recent times by the 'very old system of flashing water at locks.' He placed the next floodgates and a full lock above Langport Bridge, at an

¹ SRO D/RA 3/3/2, Resolutions of a meeting of Subscribers, 27 Apr 1836. The B&TC had refused to specify the grounds of their opposition, other than to 'pronounce the evils of the measure to be quite incurable.'

² BUL DD 1836, Brunel's Office Diary, 6 May 1836; SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, 6,8,10,11 May 1836.

³ SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, I.K. Brunel, 10 May 1836, pp.1-72.

⁴ In one of Brunel's calculation books there is an undated sketch, titled 'Langport Navigation – to be included in the estimate – Half lock above Stanmore Bridge,' which almost certainly relates to this period: BUL DM 162/25, Brunel's 'General Calculation Book,' undated [1836], p.86.

estimated cost of £1,300. The third and final lock, 4ft. deep, would be at the entrance to the West Moor canal at the junction of the Parrett and the Isle at Middelney, estimated to cost £750. He considered that no intermediate lock was necessary between the floodgates at Hancock's and Langport, both of which would be 'self acting'. He made it clear there was no intention at this stage to rebuild Langport Bridge, although the channel through the main arch would be deepened. His revised estimate for the scheme was £10,500, which did not include for cutting the collateral drains or for obtaining the Act, two omissions that were to have almost ruinous consequences for the PNC. As he had foreseen, the lack of a proper section and details of the proposed locks on the deposited plan was raised during his cross examination, but the challenge he had anticipated did not ensue. Price, who was examined next, corroborated Brunel's evidence regarding the effectiveness of Stanmoor lock.¹

The Lords Committee sat from 10-15 June 1836.² Price and many of the boatmen and coal merchants were recalled, and they again testified as to the advantages of the flushing effect of the Stanmoor lock. William Hankins' opinion was typical:

Q: In low neap tides would that operation ... enable you to get from Bridgwater to Langport at times when now you cannot get up?

Hankins: It would, by the flushing the lock.

Q: That would lift you up to the lock, and enable you to get up?

Hankins: Many times I have been obliged to wait there for a week ...

Q: In your judgement, would that be a great improvement to the navigation of the Parrett?

Hankins: It would, indeed.³

During his examination on 14 June Brunel stated he now felt that the lock at Langport would be better sited below Langport Bridge, but its location above or below was purely a question of property acquisition. He reiterated that he did not see the need for putting a lock between Stanmoor and Langport locks. The drainage and irrigation of the land upstream of Langport were to be protected by cutting three cutwaters or drains: the Long Sutton drain would be 10ft. wide at the bottom, the Muchelney drain 12ft., and the West Moor drain 8ft. These would unite in a drain at least 25ft. wide that would run into the Parrett below Langport lock at a level of 1ft. below the sill of Langport Bridge. Brunel was again examined and cross-examined in great detail about the effect of

¹ SRO D/RA 3/3/3, evidence taken before the Commons Committee on the Parrett Navigation Bill, H.H. Price, 10 May 1836, pp.72-148.

² SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, 10,13,14,15 Jun 1836.

³ *Ibid*, William Hankins, 13 Jun 1836, p.41.

pounding the water at Stanmoor at various states of the tide. At last, in an apparent state of exasperation, he declared:

I should merely wish to observe, with respect to calculations as to the exact effect of the tides, and as to the exact amount of rise in the different cases, I have not made them, and do not pretend to have made them; not from not having given up time to the subject, or attending to it, but because I really believe it is impossible to make such a minute and correct calculation. I think, looking at the place, and giving it attention, one is more likely to come to a correct opinion than by making a minute calculation on the point.¹

Henry Robinson Palmer appeared as a witness for the opposition the following day. When questioned about the general advisability of constructing half locks in rivers he replied:

I do not call that improving a navigable river – adding obstructions ... I certainly would not undertake to improve a river by the application of flushing ... I should say, if you have not got money to make a canal, wait till you have, rather than interfere [with a river].²

The Parrett Navigation Act received the Royal Assent on 4 July 1836.³ The 25 subscribers named in the Act included all five of the magistrates residing in the neighbourhood, together with an assortment of local individuals with interests connected to the river and river trade, such as Vincent Stuckey and Thomas Watson Bagehot of the Langport banking and merchant firm of Stuckey & Bagehot, two members of the Broadmead legal family, and several landowners and farmers. At about that time Brunel reaffirmed his estimate of £10,500⁴ and thereafter he played no further direct role in the undertaking. According to Broadmead:

Mr. Brunel told me it was impossible for him to undertake the works but that Mr. Gravatt the Engineer for the Bristol and Exeter Railway was perfectly competent.⁵

¹ SRO D/RA 3/3/4, evidence taken before the Lords Committee on the Parrett Navigation Bill, I.K. Brunel, 14 Jun 1836, pp.76-89.

² Ibid, H.R. Palmer, 15 Jun 1836, pp.128-133.

³ 6&7 Will. IV, c.101: An Act for improving the Navigation of a Portion of the River Parrett, and for making a Navigable Canal from the said River to Barrington [4 Jul 1836].

⁴ Brunel to unnamed recipient, undated but bracketed between letters dated 30 Jun and 2 Jul 1836: BUL PLB 1.

⁵ TPA HC/CL/PB/2/5/14, evidence taken before the Commons Committee on the Parrett Navigation Bill (further powers), Nicholas Broadmead, 14 Mar 1839, p.92.