

**TRANSPORT CHARGES ETC.  
(MISCELLANEOUS PROVISIONS  
ACT 1954 SECTION 6 AND  
WHITCHURCH BRIDGE ACTS 1792 AND 1988.**

**APPLICATION BY  
THE COMPANY OF PROPRIETORS  
OF WHITCHURCH BRIDGE  
TO INCREASE THE TOLL CHARGES  
AT WHITCHURCH BRIDGE,  
PANGBOURNE, BERKSHIRE**

**Date Issued: 1st July 2004  
FINAL**

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## **APPENDICES**

- 1 Report and Statement of Accounts for the year ended 30<sup>th</sup> June 2003**  
**Report and Statement of Accounts for the year ended 30<sup>th</sup> June 2002**  
*(Note: these are available as separate documents)*
- 2 Structural Engineer's report prepared by Oxfordshire County Council Bridges Department – dated 5 May 2004**
- 3 Budget, Cash Flow and Balance Sheet Forecast 5 Years**
- 4 Vehicle Crossing Statistics**



**1 SUMMARY**

- 1.1 Under the Whitchurch Bridge Acts of 1792 and 1988 there is a legal obligation on the Company to provide and maintain a river crossing over the Thames between Whitchurch and Pangbourne.
- 1.2 The Acts allow the Company to collect tolls for the maintenance and eventual replacement of the bridge. Consequently each year a sum of money is set aside from revenue received from tolls for the formation and maintenance of a reserve fund. The present steel bridge is now over 100 years old, and the Company's consulting engineers have advised that major refurbishment or replacement will be required within a maximum of the next ten years. The cost of this work is estimated to be at least £970,000. At present the Bridge is already restricted to a weight limit of 7.5 tonnes mgw, and major work will be required within this time period in order to maintain even this limit.
- 1.3 The Transport Charges Act 1954, as amended by the Whitchurch Bridge Act 1988, allows the Company to apply to the Secretary of State for Transport at any time to revise the toll charges in order to meet its obligations, subject to certain clearly stated criteria.
- 1.4 At the same time the Company wishes to simplify and improve its methods of toll collection, as described below. As part of this strategy, the intention is to encourage a shift from cash tolls to prepaid discounted charges, and this toll application is intended to achieve this objective.
- 1.5 The Company hereby applies for revision of tolls as follows, to be effective from 1st November 2004. The proposed level of toll will in the opinion of the Company provide a level of revenue which will be neither substantially more nor substantially less than is required to meet its obligations as defined under the relevant Acts.

Standard toll - vehicle not exceeding 3.5 tonnes maximum gross weight (mgw)	£0.20
Discounted toll for all regular users (vehicles not exceeding 3.5 tonnes)	£0.09
Standard Toll - vehicle exceeding 3.5 tonnes mgw up to 7.5 tonnes mgw.	£2.00

## 2 INTRODUCTION

- 2.1 The purpose of this report is to support the application to increase the toll charges at Whitchurch Bridge. It also forms the basis for the continued management of the tolls for the next 20 years. The Company envisages that, for the reasons set out in this report, it may need to introduce further toll reviews as circumstances dictate. This report provides a basis for assessing and managing these increases.
- 2.2 The application is made under the provisions of Section 6 of the Transport Charges Etc. (Miscellaneous Provisions) Act 1954, in conjunction with the Whitchurch Bridge Acts of 1792 and 1988, and seeks the following increase in tolls:
- 2.3 Current level of toll charges:

Passenger vehicle constructed or adapted to carry not more than 8 seated passengers, excluding the driver; goods vehicle not exceeding 2 tonnes maximum gross weight. (Discounted tickets are available on a restricted basis to certain classes of users down to a minimum of 7p per crossing)	£0.10
Passenger vehicle constructed or adapted to carry more than 8 but not more than 16 seated passengers, excluding the driver; goods vehicle other than in Class 1, not exceeding 3.5 tonnes maximum gross weight.	£0.40
Passenger vehicle constructed or adapted to carry more than 16 seated passengers, excluding the driver; goods vehicle exceeding 3.5 tonnes maximum gross weight	£1.00

- 2.4 Proposed level of toll charges:

Standard toll - vehicle not exceeding 3.5 tonnes maximum gross weight	£0.20
Discounted toll for all regular users (vehicles not exceeding 3.5 tonnes)	£0.09
Standard Toll - vehicle exceeding 3.5 tonnes mgw up to 7.5 tonnes mgw	£2.00

- 2.5 The basis for the proposed increase in toll charges is set out within Sections 2 and 3 of this report with reference to the following technical reports contained within the attached Appendices:

**Appendix 1** - Report and Statement of Accounts for the years ended 30th June 2002 and 2003 by Harwood Hutton, Chartered Accountants of Maidenhead, as appointed Auditors to the Company of Proprietors of Whitchurch Bridge.

**Appendix 2** - Structural Engineer's report by way of letter dated 5 May 2004 prepared by Oxford County Council Bridges Department (OCC), Consultant Engineers to the Company of Proprietors of Whitchurch Bridge.

**Appendix 3** - Budget, Cash Flow and Balance Sheet Forecast 5 Years with current and proposed toll charges

**Appendix 4** – Vehicle Crossing Statistics

### 3 THE BASIS OF THE APPLICATION

- 3.1 The Company of Proprietors of Whitchurch Bridge (the Company) was constituted by an Act of Parliament in 1792 which authorised the Company, at its own cost, to construct a bridge over the River Thames between Whitchurch and Pangbourne, in return for which it could collect tolls, but with the commitment to maintain and replace the bridge when necessary. The current bridge, built in 1902, is the third which the Company has had built. The Act was amended in 1988 by the Whitchurch Bridge Act to bring the original Act of 1792 in line with the Transport Charges Etc. Act of 1954. The 1988 Act also amended the Company's legal liability to provide a ferry crossing during closure of the bridge 'for travellers, cattle and carriages' to a 'convenient means of transport for pedestrians and cyclists'. The Company has an ongoing legal responsibility to keep the bridge maintained and, when necessary, replace it.
- 3.2 Section 4 of the Whitchurch Bridge Act 1988 sets out fully how the tolls which are collected are to be used by the Company:
- 3.2.1 in meeting all expenses incurred in, and in connection with, taking of tolls and other administrative expenses of the Company in connection with the bridge;
  - 3.2.2 (Not applicable to a toll review);
  - 3.2.3 in payment of taxes (if any);
  - 3.2.4 in defraying the cost of providing, maintaining and renewing toll houses, toll-gates, signals, offices, equipment or other conveniences held or used by the Company in connection with the bridge;
  - 3.2.5 in meeting any expenditure incurred by the Company in, or in connection with, the maintenance, repair or alteration of the bridge;
  - 3.2.6 in paying interest on any monies borrowed under Section 6 of this Act;
  - 3.2.7 in setting apart contributions to a reserve fund under Section 7 of this Act;
  - 3.2.8 and any balance remaining may be applied by the Company in payment of dividends on its paid up share capital
- 3.3 The purpose of the reserve fund identified in sub-paragraph 3.2.7 above is to make provision for the future maintenance and renewal of the bridge. A sum of money is set apart each year from revenue received from tolls for the formation and maintenance of the fund. This fund is not distributable to shareholders.
- 3.4 The final reference in Section 4 of the 1988 Act relates to the payment of dividends to shareholders in the Company. In Section 2 and 3(1) of the 1988 Act, which in turn refer back to the Transport Charges act etc., (Miscellaneous Provisions) Act of 1954. The appropriate level of return to shareholders is related to the investment of the Company in its assets, including the Whitchurch Bridge and all the lands, easements, toll houses, toll-gates, signals, offices and other assets of whatever description for the time being held or used by the Company in connection with that bridge. Currently a dividend of 2.2% before tax, is maintained based on asset value as defined in the Act, at 30<sup>th</sup> June 2003), and is paid out to Whitchurch Bridge (Holdings) Limited, which has held all the shares of the 1792 Whitchurch Bridge Company since May 1996.
- 3.5 Annually a Committee of Management is elected from the shareholders of the Holding Company. The Committee Members were unpaid until December 2003. They now receive a nominal payment of £1000 per annum. The Company employs 2 permanent staff plus a number of part time toll collectors.
- 3.6 Section 6 (2) of the Transport Charges Etc. (Miscellaneous Provisions) Act 1954 permits the Company to submit an application to the Secretary of State for Transport at any time to revise the toll charges.
- 3.7 Section 6 (3) of the Transport Charges Etc. (Miscellaneous Provisions) Act 1954 as modified by Section 3 of the Whitchurch Bridge Act 1988 sets out the considerations against which all applications to increase the tolls will be judged by the Secretary of State. It states:

- 3.8 “In making any order on an application under this Section, the Minister shall have regard to the financial position and future prospects of the undertaking and shall not make any revision of charges which in his opinion would be likely to result in the undertaking receiving an annual revenue either substantially less or substantially more than adequate to meet such expenditure on the working, management and maintenance of the undertaking and such other costs, charges and expenses of the undertaking as are properly chargeable to revenue, including reasonable contributions to any reserve, contingency or other fund and, where appropriate, a reasonable return upon the investment of the Company of Proprietors of Whitchurch Bridge in the bridge as defined in Section 2 of the Whitchurch Bridge Act 1988”.
- 3.9 Since the time of the last application several conditions have changed. These affect the annual revenue and expenditure of the undertaking and therefore the cost of maintenance and replacement of the bridge in the future.
- 3.9.1 Significant increases in staff costs due to both changes in employment legislation and increased competition from other local sources of employment
- 3.9.2 Significant increases in maintenance costs and capital expenditure for the Company in order to meet the highest standards of operation and safety expected
- 3.9.3 No increases in traffic volume (as measured by our traffic counter). Thus as we have already fully realised all possible efficiency gains in toll collection the income of the Company is effectively capped subject only to approved increases in tolls
- 3.9.4 Poor performance of stock markets over the last few years, resulting in lower investment income and lower expectations of future returns
- 3.9.5 Advice from our consulting engineers on future maintenance indicates the need to build up substantial funds for major refurbishment of the bridge in the period 2010 – 2015 (see Appendix 2), as a result of which the Company is planning a major refurbishment in 2010.
- 3.10 These changes plus normal cost increases over the last 6 years, result in the need to seek a further increase.

#### **4 PROPOSED TOLL CHARGES**

- 4.1 The last increase in tolls took place on 1 July 1998, with an increase approved by the Department of Transport from 8 pence to 10 pence.
- 4.2 Since that date inflation as measured by the RPI has been at a relatively low level. On the basis of estimated inflation in the current year of 2.5%, the total increase based solely on inflation grounds would be 16% (following RPI indexing statistics). However as outlined above specific conditions affecting the Bridge operations have resulted in more significant cost increases. For example, the minimum pay per hour for a toll collector has risen from £4.00 to £5.00. The Company has developed a predictive funding model which is based both on historical records going back many years and on future trends in income and costs over the next 25 years. It is this funding model that has been used for some years now in preparing proposals for future toll increases. In addition, Appendix 3 shows a detailed cash flow forecast over the next five years to show the income and expenditure expected at both the current and proposed levels of toll.
- 4.3 An application to increase tolls must show to the Secretary of State that the proposed revision would not "result in the undertaking receiving an annual revenue either substantially less or substantially more than adequate to meet such expenditure on the working, management and maintenance of the undertaking and such other costs, charges and expenses of the undertaking as are properly chargeable to revenue, including reasonable contributions to any reserve, contingency or other fund and, where appropriate, a reasonable return upon the investment of the Company of Proprietors of Whitchurch Bridge in the bridge as defined in Section 2 of the Whitchurch Bridge Act 1988."
- 4.4 The first step in the application is therefore to show that the existing level of tolls is below the level required to meet this standard. This is shown in the attached evaluation (Fig. 1), which demonstrates that at the current level funds available for replacement or refurbishment will be insufficient to meet the obligations of the undertaking, as indicated by the rapid decline in profit and in replacement funds at the time of the projected major refurbishment in 2010, such that the replacement fund is eliminated and the company would require to borrow or plan a very large toll increase:

**Whitchurch Bridge - Forecast Model**

**2004 Version**

**Assumptions**                      **Version: CURRENT**

Forecast Traffic Volume Growth per year                     

		<b>Cash</b>	<b>Tickets</b>	<b>Local</b>	<b>Van</b>	<b>Lorry</b>
Vehicle Toll per car pence	1996	8	7.2	5.6	20	50
	1998	10	9	7	40	100
	2004	10	9	7	40	100
	2010	10	9	7	40	100
	2016	10	9	7	40	100
	2022	10	9	7	40	100

Discounts	Tickets	Current	<input type="text" value="10.0%"/>	Planned	<input type="text" value="10.0%"/>
	Local	Current	<input type="text" value="30.0%"/>	Planned	<input type="text" value="30.0%"/>

Percentage of total tolls	Cash	Current	<input type="text" value="70.0%"/>	Planned	<input type="text" value="70.0%"/>
	Tickets	Current	<input type="text" value="14.0%"/>	Planned	<input type="text" value="14.0%"/>
	Local	Current	<input type="text" value="15.0%"/>	Planned	<input type="text" value="15.0%"/>
	Vans & Lorries	Current	<input type="text" value="1.0%"/>	Planned	<input type="text" value="1.0%"/>

Average Actual Toll                      Current  pence                      Planned

Assumed Inflation Rate per year                       %

Return on Investments per year                       % no tax

Return to shareholders on total assets (COPW)                       % per year

Major Refurbishment at current prices                       Year                     

Full replacement cost                       £

<b>RESULTS</b>	Funds % replacement cost	Toll Revenue	Operating Profit
1997/8	34%	£133,721	£39,567
1999/00	45%	£168,785	£73,529
2003/4	47%	£180,000	£16,825
2005/6	45%	£180,800	£6,494
2009/10	44%	£182,200	-£8,213
2014/5	-18%	£183,700	-£24,492
2019/20	-34%	£185,900	-£47,534
2024/5	-50%	£187,800	-£79,390

***This worksheet is based on the existing toll levels with no change***

Fig 1

- 4.5 The key assumptions used in this projection include
- 4.5.1 the objective of building funds up to at least 80% of replacement cost by the end of 2009/10, in anticipation of a major refurbishment at least, or conceivably replacement, in 2011/12. This is in line with Oxfordshire County Council Highways Department expectations, as confirmed in recent discussions. The Company therefore has a clear target approximately 5 years away, but currently funds total less than 50% of this target.
  - 4.5.2 Inflation is assumed to average 2.5% per year, with an assumed return on the investment portfolio of 5% (before tax deduction). This target is realistic in the current climate for investment. It is higher than the yield on Government bonds, so it should be acceptable as an assumption
  - 4.5.3 The long term analysis of vehicle crossing statistics shown in Appendix 4 indicates a very slow increase in volume, of the order of 0.2% per year, and this has been incorporated into the evaluation model
  - 4.5.4 Operational costs will increase with inflation, although the current year shows a slightly higher increase as the Company continues to put new toll management structures in place.
  - 4.5.5 The Company will continue with its policy of maintaining the bridge assets to a high standard of quality and safety, requiring ongoing expenditure on property and equipment in line with our consulting engineer's recommendations
  - 4.5.6 Return to shareholders on total assets is currently forecast at 2.2% for 2003, and this is maintained as an assumption in the model
- 4.6 In proposing a new structure for toll charges in order to respond to this situation, the Company plans to develop an approach that has clear benefits to local and regular users and simplifies operational procedure. The present system suffers from several significant operational disadvantages in this respect:
- 4.6.1 The current discounts available to regular users provide no incentive for moving significantly away from the present situation where 70% of tolls are still received in cash. This is labour intensive and involves ever increasing security risks for the Company and its work force
  - 4.6.2 There is therefore no incentive for further improvement in the systems of toll collection to improve the management and control of the operation
  - 4.6.3 The current practice of issuing special books of tickets to local residents has proved to be difficult to manage for both the Company and the local councils, resulting in administrative overheads and limited take up of this system
- 4.7 Therefore the Company wishes to propose the alternative option shown in the application, which is intended specifically to address these issues. We are seeking to both simplify and part automate the operation, providing a long term stable pattern for toll charges which will enable us to take advantage of the possibilities of improved toll collection processes using currently available and proven technology The attached analysis ( Fig. 2) shows that this approach meets but does not exceed the Company's obligations

**Whitchurch Bridge - Forecast Model**

**2004 Version**

**Assumptions**      Version:      Proposed - 20 p cash plus 55% discount for regular users

Forecast Traffic Volume Growth per year     

		<b>Cash</b>	<b>Tickets</b>	<b>Local</b>	<b>Van</b>	<b>Lorry</b>
Vehicle Toll per car pence	1996	8	7.2	5.6	20	50
	1998	10	9	7	40	100
	2004	20	9	9	20	200
	2010	20	9	9	20	200
	2016	20	9	9	20	200
	2022	20	9	9	20	200

Discounts	Tickets	Current	<input type="text" value="10.0%"/>	Planned	<input type="text" value="55.0%"/>
	Local	Current	<input type="text" value="30.0%"/>	Planned	<input type="text" value="55.0%"/>

Percentage of total tolls	Cash	Current	<input type="text" value="70.0%"/>	Planned	<input type="text" value="34.5%"/>
	Tickets	Current	<input type="text" value="14.0%"/>	Planned	<input type="text" value="50.0%"/>
	Local	Current	<input type="text" value="15.0%"/>	Planned	<input type="text" value="15.0%"/>
	Vans & Lorries	Current	<input type="text" value="1.0%"/>	Planned	<input type="text" value="0.5%"/>

Average Actual Toll      Current       pence      Planned     

Assumed Inflation Rate per year       %

Return on Investments per year       % no tax

Return to shareholders on total assets (COPW)       % per year

Major Refurbishment at current prices       Year     

Full replacement cost       £

<b>RESULTS</b>	Funds % replacement cost	Toll Revenue	Operating Profit
1997/8	34%	£133,721	£39,567
1999/00	45%	£168,785	£73,529
2003/4	47%	£180,000	£16,825
2005/6	49%	£239,900	£65,594
2009/10	59%	£241,800	£51,387
2014/5	4%	£243,700	£35,508
2019/20	2%	£246,700	£13,166
2024/5	-5%	£249,100	-£18,090

*This worksheet is based on the existing toll levels with no change*

Fig. 2

- 4.8 This proposal represents a major change in approach, showing a headline increase in cash tolls from 10 pence to 20 pence but with very substantial discounts for regular users. It is proposed with clear and specific objectives:

4.8.1 The cash increase is combined with a major policy shift away from cash and towards the use of cards or tickets. This is in line with the policy and systems of many other similar operations across the UK. In the case of cash tolls, 20 p is the next single coin up from 10 p, and therefore represents a logical step from an operational standpoint. In the case of cards and tickets, the proposal to introduce a standard heavily discounted rate means that regular users will see either no increase at all or an increase of only 2 pence, depending on the level of discretionary concession already available to them.

4.8.2 The objective and expectation assumed is to reduce cash tolls from 70% to 35% of the total. This means that some users will pay more and some will pay less. The table below shows the impact on various classes of users, as summarised in Fig 2 above, indicating that 50% of users will actually pay the same or less than at present, and that the increase will primarily affect casual rather than regular users:

<i>Class of User</i>	<i>Expected % of total</i>	<i>Current toll paid</i>	<i>Proposed toll paid</i>	<i>Impact on user</i>
Cash payment	35.0%	10 pence	20 pence	+ 100%
Transfer from cash to tickets	36.0%	10 pence	9 pence	- 10%
Continue to use tickets (other than local)	14.0%	9 pence	9 pence	0%
Continue to use tickets (local)	15.0%	7 pence	9 pence	+ 29%
Heavy goods vehicle 3.5 to 7.5 tonnes	0.5%	£1.00	£2.00	+ 100%

4.8.3 A major simplification in this proposal is to propose to offer the same discount to all regular users, whether resident in the neighbouring parishes or otherwise. This at a stroke removes a significant burden of administration from the parishes, simplifies the toll operation, and corrects certain anomalies whereby local businesses or local people living just outside the boundaries do not qualify for the same discount as those who happen to reside in a certain location.

4.8.4 By proposing that the new discounted toll of 9 pence becomes available to all through the use of cards or tickets it means that anyone crossing on other than casual basis will be incentivised to move away from cash. Therefore the bridge fulfils its primary purpose of acting as a convenient crossing for those who need to use it, while not encouraging casual traffic through the village streets. Importantly, local people are not disadvantaged and the general public can access the discounts by using the cards.

4.8.5 The proposal when combined with improved collection systems will make crossings more convenient for users and also enable a significant improvement in operational control, process and accountability. The suggested use of prepaid electronic charge cards, programmed on a decrementing basis to allow a variable number of crossings for a given sum, enable us to offer say 56 crossings for £5 or 112 crossings for £10.

4.8.6 The tolls for cars and light vans are brought into line with European vehicle weights, i.e. the toll of 20 pence applies to all vehicles of less than 3.5 tonnes mgw, who can also now take advantage of the discounted cards or tickets. However tolls for heavier vehicles 3.5 tonnes – 7.5 tonnes are however increased in recognition of the significant additional weight and structural impact these vehicles have upon the bridge structure

4.8.7 Tolls will be permitted to be charged for motorcycles, and disabled users

4.8.8 The model suggests that, other things being equal (e.g. no disproportionate increase in bridge rebuilding costs, no unusual increases in inflation, etc) the 20 pence toll can remain unchanged for a reasonable period of time, using the discount structure to vary the revenue received. Further, the proposal clearly permits us to achieve our objective of full funding without breaching the guidelines, due to the shift to prepay. This is the only realistic and practical approach that enables us to achieve this objective while still providing excellent service to all local and regular users.

4.8.9 An important factor will be the actual vs predicted take up of the new discounts – a significant variation either way will have a major effect on the outcome – but we can undertake to monitor the position over a period of 1-2 years and apply for an adjustment to this discount rate as necessary. As we are formally building the discount in to the application now for the first time, on the basis that it is available to all users, any change to the discount structure will require further approval from the Secretary of State.

- 4.9 This proposal for planned change is designed to achieve a significant shift from cash tolls to prepaid, and therefore proposes a substantial increase in the cash toll combined with a much more generous discount to all regular users. We believe that this is the fairest and most acceptable approach to meeting our obligations

## 5 CONCLUSIONS

- 5.1 Whitchurch Bridge is a privately owned bridge across the Thames. The Whitchurch Bridge Acts of 1792 and 1988, which require the Company of Proprietors of Whitchurch Bridge to provide and maintain a river crossing. The Company has been given the right to collect a toll in exchange for the continued maintenance and replacement of that bridge. Therefore there is a legal obligation on the Company to provide and maintain a river crossing over the Thames between Whitchurch and Pangbourne. The Company is also entitled to apply for an increase in the toll rate if it can be demonstrated that existing tolls are not adequate in accordance with the considerations defined in the Acts.
- 5.2 The Company's consulting engineers are the Oxfordshire County Council Bridges Department (OCC) who have considerable experience in maintaining all types of bridges, both old and new. They have presented the Company with a maintenance strategy covering the next 20 years, including a major restructure and strengthening project for 2010. This advice now presents the Company with a clear and relatively imminent prospect of substantial expense, currently estimated at more than £970,000. The costs of this strategy have been incorporated in the assumptions for this proposal.
- 5.3 Without an increase in toll revenue the income for the next five years will remain unchanged on the basis of the most realistic assumptions, whereas expenditure will suffer from the effects of at least normal inflation. Toll revenue has now been maximised at a practical level. If left unchanged, the present situation can only deteriorate. The present level of funding is not adequate to meet future requirements.
- 5.4 The Funding Model developed by the Company assesses the toll income required to finance the expenditure and operational costs, as ascertained from past experience and the bridge consultant's advice, so that the bridge can be maintained and replaced in accordance with its legal liability. The plan covers a span of 20 years. This enables less frequent large costs to be covered over intervening years. It is anticipated that there would be regular 5 year reviews, following this review. This will ensure that assumptions can be modified as circumstances or events arise to change them in order to ensure that the bridge can operate safely and effectively. On current assumptions, the proposed increase will not result in the Company receiving revenue which is above that necessary to meet its proper expenditure as defined in the Acts, including necessary contributions to reserve funds and a reasonable return to shareholders, and it is anticipated that this level of tolls may be able to be sustained for more than the five year period. Any proposal to change the discount rate for vehicles up to 3.5 tonnes maximum gross weight would be referred by the Company to the Secretary of State for Transport for agreement.
- 5.5 Regular meetings with the 4 local Parish Councils have been in place for over the last 10 years to exchange ideas, obtain comments from local bridge users, and keep them informed about the Company's plans and ideas. These meetings have proved very informative and beneficial to both parties. The Company will continue to pursue an open strategy to inform, consult with and involve local communities.
- 5.6 The Secretary of State for Transport is respectfully requested to approve the proposal to increase the toll rate for motor cars crossing Whitchurch Bridge from £0.10 to £0.20 per crossing with effect from 1st November 2004, together with the discounted rate of £0.09 for regular users and the toll rate of £2.00 proposed for heavier vehicles (over 3.5 tonnes and up to the maximum weight limit of 7.5 tonnes).



Mr. G. Weir  
Whitchurch Bridge Company  
Wells House  
Eastfield Lane  
Whitchurch-on-Thames  
Reading  
RG8 7EJ

Speedwell House  
Speedwell Street, Oxford OX1 1NE  
Tel: 01865 815700  
Fax: 01865 815085

5 May 2004

My ref: MJB/3.1.0.148

Your ref:

**Direct line: 01865 815832**

**Please ask for: Martin Brain**

e-mail: [martin.brain@oxfordshire.gov.uk](mailto:martin.brain@oxfordshire.gov.uk)

Dear Sir,

### **Whitchurch Bridge**

The County Council was appointed by the Whitchurch Bridge Company in 1997 to act as its consultant in engineering matters relating to the toll bridge. Upon appointment, a Maintenance Strategy was prepared to cover the 25 year period up to 2022. This considered 3 different options for managing the bridge and it was concluded that the optimum strategy was to programme for the strengthening and upgrading of the bridge in 2015, by which time the bridge would be 114 years old. The purpose of this letter is therefore to review and update that decision.

The bridge has 4 spans, each approximately 20.5m in length, and carries the B 471 over the River Thames linking Whitchurch-on-Thames to Pangbourne. Each span comprises a pair of longitudinal wrought iron lattice girder trusses with transverse beams and buckle plates. The bridge is supported by brickwork abutments on each bank and by 3 intermediate piers in the river, each of which consists of a pair of piled, cast iron columns and associated cross bracing. The overall width of the bridge is 7.2m, with a 5.2m wide single carriageway carrying 2 way traffic and a narrow footway on one side only. The bridge has a 7.5t structural weight limit and carries a typical daily flow of 6000 vehicles.

Prior to the County Council's appointment, Howard Humphreys and Partners had acted as the Bridge Company's consultant. In 1993 they had carried out an assessment of the bridge's load carrying capacity to the Department of Transport Standard then applicable BD 21/84. This showed that, strictly in accordance with the Standard, the capacity should be 3t, although it was only marginally below the 7.5t limit. In view of the local conditions pertaining to the toll bridge, including slow speed traffic and an environmental weight restriction in the area of 7.5t, it was decided to maintain the bridge's structural weight limit at that time of 10t (which had been in force since 1956).

The assessment found that the critical bridge elements are the longitudinal girders and the transverse beams. Approximately 75% of the girder capacity is accounted for by the self weight of the superstructure and, since these girders also act as the bridge parapets, there is also the risk that they may be subject to vehicle impacts, particularly on the eastern side where the effective verge width is less than 0.2m.

In the year 2000 the assessment was reviewed by the County Council following a request from the Whitchurch Bridge Company for advice concerning an increase in the number of overweight vehicles approaching the bridge. This review took into account the slight amendments arising from the publication of BD 21/97 but reaffirmed the previous restricted capacity. It showed that by taking into account the lack of high speed, high impact effects and the absence of vehicle convoys, it would be possible, by exception, for an isolated 2 axle vehicle up to 17t to cross the bridge. However, any individual heavier vehicle with 3 or more axles would cause damage to the bridge, due to the closely spaced transverse girders being overstressed.

Based on this assessment work and following amendments to the Road Traffic Signs Regulations it was decided to update the original 1956 weight restriction and in November 2003 a new structural weight limit of 7.5t was imposed. Whilst this can be justified at present, long term corrosion within the metal superstructure would almost certainly require a lower 3t weight limit to be imposed within the next 10-15 years. This would cause considerable inconvenience to the local communities including prohibition of school buses. Accordingly the bridge's Maintenance Strategy needs to make provision for the strengthening and upgrading of the structure within that timescale.

To minimize corrosion of the metal components within the bridge, regular maintenance painting is essential. As part of the Strategy adopted in 1997 a full repaint of the superstructure and substructure was commissioned and this was carried out in 1998. The paint system has a life expectancy of approximately 12 years, beyond which a further full repaint would be likely. Construction of the lattice girders makes surface preparation by abrading or grinding particularly difficult and this, combined with the build up of previous coatings, means that on the next occasion blast cleaning back to bare metal will almost certainly be required. To take into account the environmental considerations, this will require significant restrictions on traffic and pedestrians using the bridge and would therefore best be carried out at the same time as the overall strengthening and upgrading.

A contributory factor to the corrosion is water penetration through the carriageway surfacing to the lower flanges of the main longitudinal girders and the remainder of the bridge soffit. The current deck waterproofing membrane is believed to date back to the mid 1970's and trial holes opened up during the Howard Humphries Principal Inspection in 1992 showed the fill material above the buckle plates to be damp. Weep holes installed through the buckle plates during the 1998 maintenance painting continue to show the presence of trapped water. Renewal of the waterproofing membrane was considered as part of the 1997 Maintenance Strategy options but, due to the narrow carriageway width, is another operation which is best carried out as part of the general refurbishment of the bridge.

Previous inspections have also highlighted a potential problem with the intermediate piers in the river. As far back as the 1940's cracks had been observed in the pier column heads immediately below the longitudinal girder support. It is believed that these have occurred due to the lack of any provision for thermal movement in the original bridge design and the

absence of any bearings at the piers. Although some strengthening was added to the supports and the abutment bearings were modified in 1941 and 1973, a Principal Inspection commissioned by the County Council in 2003 indicated that these cracks may still be “live”, although unfortunately there are no records from the previous inspections to compare accurate crack lengths. To rectify the problem permanently, bearings should be introduced to separate movement of the superstructure from the piers. However, due to the complexity and cost of this operation it has been recommended that this work may be deferred, but only providing there is a programmed date for the bridge upgrading and that special inspections will be carried out at regular intervals in the meantime to monitor the condition of the cracks.

The current intermediate pier arrangement, with each longitudinal girder supported by a single column, is also potentially vulnerable to a boat impact as identified in previous risk assessments. Works are planned this year to improve the fenders, but the programmed upgrading of the bridge will also allow the piers to be strengthened by installing new piled columns, thereby mitigating the risk still further.

In summary therefore, the 1997 Maintenance Strategy identified the need to plan for a general strengthening and upgrading of the bridge to be carried out around the year 2015. This is consistent with the assessed load carrying capacity which could be justified at the time as being 7.5t, but which may well need to be reduced to 3t in the next 10-15 years to take account of continuing corrosion.

The current paint system will have reached the end of its useful life by around 2010 and blast cleaning back to bare metal is likely to be required. The deck waterproofing will also need to be replaced at that time. Both of these activities will have environmental implications and will cause serious disruption to the normal operation of the toll bridge. Consequently, they should be programmed to take place in conjunction with the strengthening. Similarly pier improvements, including installation of new bearings, should also be carried out at that time.

In the light of the above the County Council, in its role as consultant, would advise that the toll bridge can be expected to require substantial maintenance works in the next 5-10 years to maintain the bridge in its current form, but that these would not improve the load carrying capacity. Accordingly, it is recommended that the Whitchurch Bridge Company make financial provision to allow for the design and construction of strengthening and upgrading works to the bridge, to take place at some point during the period 2010 – 2015. We would not recommend deferral of the work beyond that period.

It is recognised that the design of the works, including the upgrading to current design standards, will be influenced by the planning regulations in force at the time and, in particular, by the bridge’s location within a Conservation Area. However, in principle the strengthening should be designed to provide an unrestricted crossing for current 44t vehicles, even if the local environmental weight limit restricts the passage of through traffic.

Yours faithfully,

Martin Brain  
Principal Engineer - Bridges

**THE COMPANY OF PROPRIETORS OF WHITCHURCH BRIDGE**

**TOLL APPLICATION JUNE 2004 - APPENDIX 3**

**SUMMARY INCOME & EXPENDITURE, CASH FLOW AND BALANCE SHEETS - CURRENT TOLLS**

<b>Year</b>	<b>2002 -03</b>	<b>2003 - 04</b>	<b>2004 - 05</b>	<b>2005 - 06</b>	<b>2006 - 07</b>	<b>2007 - 08</b>	<b>2008 - 09</b>
<b>Traffic Volume</b>	1861000	1873000	1877000	1881000	1885000	1889000	1893000
<b>Toll Revenue</b>	178889	180000	181000	181360	181720	182080	182440
<b>Cost of Sales</b>							
Wages & Salaries	52125	56000	60000	63000	66150	69458	72930
Utilities	1628	2500	2600	2665	2732	2800	2870
Bridge Maintenance	31094	27776	28875	29597	30337	31095	31873
Other Costs	11516	14591	9650	9891	10139	10392	10652
Depreciation	19150	19150	19150	19150	19150	19150	19150
<b>Total</b>	<b>115513</b>	<b>120017</b>	<b>120275</b>	<b>124303</b>	<b>128507</b>	<b>132895</b>	<b>137475</b>
<b>Gross Profit</b>	<b>63376</b>	<b>59983</b>	<b>60725</b>	<b>57057</b>	<b>53213</b>	<b>49185</b>	<b>44965</b>
<b>Administrative Expenses</b>							
Wages & Salaries	12492	18504	21100	21733	22385	23057	23748
Directors & Committee	5362	6617	8700	8918	9140	9369	9603
Audit Fees	4480	5000	5250	5381	5516	5654	5795
Legal & Professional	6052	3697	3750	3844	3940	4038	4139
Other Costs	12601	9340	7300	7483	7670	7861	8058
<b>Total</b>	<b>40987</b>	<b>43158</b>	<b>46100</b>	<b>47358</b>	<b>48651</b>	<b>49979</b>	<b>51344</b>
<b>Operating Profit</b>	<b>22389</b>	<b>16825</b>	<b>14625</b>	<b>9699</b>	<b>4562</b>	<b>-793</b>	<b>-6378</b>
<b>Investment Income etc</b>	<b>38125</b>	<b>40000</b>	<b>49238</b>	<b>50258</b>	<b>52059</b>	<b>53692</b>	<b>55140</b>
<b>Profit on ordinary activities</b>	<b>60514</b>	<b>56825</b>	<b>63863</b>	<b>59957</b>	<b>56621</b>	<b>52899</b>	<b>48761</b>
<b>Dividends</b>	<b>37600</b>	<b>37600</b>	<b>37600</b>	<b>37600</b>	<b>37600</b>	<b>37600</b>	<b>37600</b>
<b>Retained Profit</b>	<b>22914</b>	<b>19225</b>	<b>26263</b>	<b>22357</b>	<b>19021</b>	<b>15299</b>	<b>11161</b>
<b>Cash Flow Adjustments</b>							
Depreciation	19150	19150	19150	19150	19150	19150	19150
Fixed Assets	-6064	-3500	-25000	-5500	-5500	-5500	-5500
Investments	5470	-34875	-20413	-36007	-32671	-28949	-24811
Current Assets	-42041	0	0	0	0	0	0
<b>Net Cash Flow</b>	<b>-571</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Balance Sheet End of Year</b>							
<b>Fixed Assets</b>							
Bridge	184778	175822	166866	157910	148954	139998	131042
Toll House	475000	472000	469000	466000	463000	460000	457000
Equipment	118121	114427	132233	130539	128845	127151	125457
Investments	870513	905388	925801	961808	994479	1023427	1048239
	<b>1648412</b>	<b>1667637</b>	<b>1693900</b>	<b>1716257</b>	<b>1735278</b>	<b>1750576</b>	<b>1761738</b>
<b>Current Assets</b>							
Stocks & Debtors	85283	85283	85283	85283	85283	85283	85283
Cash & Deposit	106657	106657	106657	106657	106657	106657	106657
Creditors	-112576	-112576	-112576	-112576	-112576	-112576	-112576
<b>Net Current Assets</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>
<b>Total Assets</b>	<b>1727776</b>	<b>1747001</b>	<b>1773264</b>	<b>1795621</b>	<b>1814642</b>	<b>1829940</b>	<b>1841102</b>
Share capital / share premium	9713	9713	9713	9713	9713	9713	9713
Revaluation Reserve	264000	264000	264000	264000	264000	264000	264000
Replacement & Reserve Fund	1454063	1473288	1499551	1521908	1540929	1556227	1567389
<b>Total Shareholders Funds</b>	<b>1727776</b>	<b>1747001</b>	<b>1773264</b>	<b>1795621</b>	<b>1814642</b>	<b>1829940</b>	<b>1841102</b>
<b>Replacement Cost of Bridge</b>	<b>2090000</b>	<b>2142250</b>	<b>2195806</b>	<b>2250701</b>	<b>2306969</b>	<b>2364643</b>	<b>2423759</b>
<b>Investments % Replacement Cost</b>	<b>42%</b>	<b>42%</b>	<b>42%</b>	<b>43%</b>	<b>43%</b>	<b>43%</b>	<b>43%</b>

**THE COMPANY OF PROPRIETORS OF WHITCHURCH BRIDGE**

**SUMMARY INCOME & EXPENDITURE, CASH FLOW AND BALANCE SHEETS - PROPOSED TOLLS**

<b>Year</b>	<b>2002 -03</b>	<b>2003 - 04</b>	<b>2004 - 05</b>	<b>2005 - 06</b>	<b>2006 - 07</b>	<b>2007 - 08</b>	<b>2008 - 09</b>
<b>Traffic Volume</b>	1861000	1873000	1877000	1881000	1885000	1889000	1893000
<b>Toll Revenue</b>	178889	180000	209170	238640	239100	239570	240050
<b>Cost of Sales</b>							
Wages & Salaries	52125	56000	60000	63000	66150	69458	72930
Utilities	1628	2500	2600	2665	2732	2800	2870
Bridge Maintenance	31094	27776	28875	29597	30337	31095	31873
Other Costs	11516	14591	9650	9891	10139	10392	10652
Depreciation	19150	19150	19150	19150	19150	19150	19150
<b>Total</b>	<b>115513</b>	<b>120017</b>	<b>120275</b>	<b>124303</b>	<b>128507</b>	<b>132895</b>	<b>137475</b>
<b>Gross Profit</b>	<b>63376</b>	<b>59983</b>	<b>88895</b>	<b>114337</b>	<b>110593</b>	<b>106675</b>	<b>102575</b>
<b>Administrative Expenses</b>							
Wages & Salaries	12492	18504	21100	21733	22385	23057	23748
Directors & Committee	5362	6617	8700	8918	9140	9369	9603
Audit Fees	4480	5000	5250	5381	5516	5654	5795
Legal & Professional	6052	3697	3750	3844	3940	4038	4139
Other Costs	12601	9340	7300	7483	7670	7861	8058
<b>Total</b>	<b>40987</b>	<b>43158</b>	<b>46100</b>	<b>47358</b>	<b>48651</b>	<b>49979</b>	<b>51344</b>
<b>Operating Profit</b>	<b>22389</b>	<b>16825</b>	<b>42795</b>	<b>66979</b>	<b>61942</b>	<b>56697</b>	<b>51232</b>
<b>Investment Income etc</b>	<b>38125</b>	<b>40000</b>	<b>49238</b>	<b>51667</b>	<b>56366</b>	<b>61014</b>	<b>65596</b>
<b>Profit on ordinary activities</b>	<b>60514</b>	<b>56825</b>	<b>92033</b>	<b>118646</b>	<b>118309</b>	<b>117710</b>	<b>116828</b>
<b>Dividends</b>	<b>37600</b>	<b>37600</b>	<b>37600</b>	<b>38305</b>	<b>39010</b>	<b>39715</b>	<b>39950</b>
<b>Retained Profit</b>	<b>22914</b>	<b>19225</b>	<b>54433</b>	<b>80341</b>	<b>79299</b>	<b>77995</b>	<b>76878</b>
<b>Cash Flow Adjustments</b>							
Depreciation	19150	19150	19150	19150	19150	19150	19150
Fixed Assets	-6064	-3500	-25000	-5500	-5500	-5500	-5500
Investments	5470	-34875	-48583	-93991	-92949	-91645	-90528
Current Assets	-42041	0	0	0	0	0	0
<b>Net Cash Flow</b>	<b>-571</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Balance Sheet End of Year</b>							
<b>Fixed Assets</b>							
Bridge	184778	175822	166866	157910	148954	139998	131042
Toll House	475000	472000	469000	466000	463000	460000	457000
Equipment	118121	114427	132233	130539	128845	127151	125457
Investments	870513	905388	953971	1047961	1140910	1232555	1323083
	<b>1648412</b>	<b>1667637</b>	<b>1722070</b>	<b>1802410</b>	<b>1881709</b>	<b>1959704</b>	<b>2036582</b>
<b>Current Assets</b>							
Stocks & Debtors	85283	85283	85283	85283	85283	85283	85283
Cash & Deposit	106657	106657	106657	106657	106657	106657	106657
Creditors	-112576	-112576	-112576	-112576	-112576	-112576	-112576
<b>Net Current Assets</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>	<b>79364</b>
<b>Total Assets</b>	<b>1727776</b>	<b>1747001</b>	<b>1801434</b>	<b>1881774</b>	<b>1961073</b>	<b>2039068</b>	<b>2115946</b>
Share capital / share premium	9713	9713	9713	9713	9713	9713	9713
Revaluation Reserve	264000	264000	264000	264000	264000	264000	264000
Replacement & Reserve Fund	1454063	1473288	1527721	1608061	1687360	1765355	1842233
<b>Total Shareholders Funds</b>	<b>1727776</b>	<b>1747001</b>	<b>1801434</b>	<b>1881774</b>	<b>1961073</b>	<b>2039068</b>	<b>2115946</b>
<b>Replacement Cost of Bridge</b>	<b>2090000</b>	<b>2142250</b>	<b>2195806</b>	<b>2250701</b>	<b>2306969</b>	<b>2364643</b>	<b>2423759</b>
<b>Investments % Replacement Cost</b>	<b>42%</b>	<b>42%</b>	<b>43%</b>	<b>47%</b>	<b>49%</b>	<b>52%</b>	<b>55%</b>

**COMPANY of PROPRIETORS of WHITCHURCH BRIDGE**

**Appendix 4 to Whitchurch Bridge Toll Application July 2004**

**TOLL NUMBERS STATISTICS**

Calendar Year	Over 24 hours	Collecting / Hours	
1994	2062917	1843451	
1995	2030512	1809524	
1996	2037600	1814861	
1997	2024598	1828038	
1998	2038583	1822529	
1999	2018470	1812336	
2000	2052597	1859272	
2001	2063394	1865042	
2002	2056898	1860573	
2003	2070666	1865355	
2004	2060533	1854806	<i>Estimated (Trend increase 0.16% per year)</i>
2005	2063244	1857844	<i>Estimated (Trend increase 0.16% per year)</i>
2006	2065955	1860882	<i>Estimated (Trend increase 0.16% per year)</i>

