Construction of Portcullis House, the new Parliamentary building

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Summary

Introduction and main findings

In this section

1 This report is about the construction of the new Parliamentary building known as Portcullis House, which was completed in August 2000. The building provides offices for 210 Members of Parliament (Members) and 400 staff, together with Select Committee and meeting rooms, a restaurant and a cafeteria. It largely completes a longstanding programme to increase the accommodation for Members and others working in the Palace of Westminster, and to provide an office for every Member who wants one. Before 1992 the project was overseen by the Department of the Environment. Since April 1992, the project has been overseen by officials of the House of Commons, reporting ultimately to the House of Commons Commission.

2 In line with our normal practice for major capital projects of this kind, we examined the management of the building's construction from initial approval through to completion, to see whether the building was completed to the time, cost and specification agreed or forecast at the outset of the project. Our main findings are:

- The start of construction was delayed by almost a year because of problems London Underground met in building the new Underground railway station which lies beneath Portcullis House. Once construction of Portcullis House started there was a small further delay, 6 weeks and two days, in a timetable of 30 months - a successful outcome compared to many other public sector construction projects.
- When the project was approved by the House of Commons Commission in 1993, the building was forecast to cost between £151 million and £164 million (at 1992 prices). The cost at outturn prices[1] was expected to be higher but this could not be estimated accurately at the time became of uncertainty over the timetable and the effects of inflation.
- In 1998, when construction started, the forecast cost of the building had increased to £187 million (at 1992 prices), reflecting cost increases approved by the Commission between 1993 and 1998 resulting mainly from higher than expected tender prices and the delay in starting construction. In view of the greater certainty over the project timetable and the effects of inflation, in 1998 the Commission approved a cost forecast of £245 million at outturn prices, consisting of a budgeted cost of £187 million at 1992 prices and estimated inflation of £58 million.
- The latest estimate of outturn cost is £179 million at 1992 prices - £28 million (18 per cent) more than the 1993 forecast. This equates to £234 million at outturn prices, some £8 million (4 per cent) less than the 1998 forecast. A further £13 million (at outturn prices) has been incurred in other costs, principally the cost of a legal action against the House for failure to follow procurement rules.

1 *Outturn prices means actual cash spent, without any adjustment for inflation.*

- By the time the House authorities took over the project, the specification and design of the building had largely been decided. The Department of the Environment had not undertaken a lifetime costing exercise to see the extent to which the higher capital cost of the building would be recouped, although it had considered other options for providing accommodation to meet the House's requirements.
- The building broadly provides the accommodation that was specified. It has been constructed to a high standard of architectural design, materials and workmanship, designed with a lifespan of 120 years and on a site over Westminster Underground station, which involved a complex structural engineering solution, with commensurately higher costs. House officials believe that this higher capital cost will in part be offset by lower costs of upkeep and maintenance over the building's life, although this lower cost has not been quantified or monitored.
- House officials used a technique known as "construction management[2]" to deliver the project. Experience elsewhere in the public sector with this technique had been mixed but the decision to use it has been vindicated by the outcome of the construction phase, which was delivered to time and specification. Risks arising during this phase were well managed. While House officials made full use of competitive tendering and post-tender negotiations to keep costs under control, they may have made more use of a technique called "value engineering[3]" to explore fully the scope for cost reduction whilst maintaining quality.

3 Overall, therefore, we found that the House obtained the high standard of architectural design, materials and workmanship that it had specified, and the building was completed broadly to time. While the 1993 forecast of costs was exceeded the 1998 construction budget approved by the House of Commons Commission was not. In these terms, therefore, the House achieved value for money in the project to construct Portcullis House. Our findings are set out in more detail below, together with our recommendations.

2 *Construction management is one of a range of techniques that can be used to manage a major construction project. Under construction management, an organisation, for a fee, manages the construction process with the work itself split into individual packages which are then put out to tender. More details can be found in paragraphs 5.2 and 5.3 and Figure 24.*

3 *Value engineering is a formal review of a project at one or more stages of the design and construction process aimed at eliminating unnecessary cost without loss of function. More details can be found in Figure 26 and paragraph 5.12.*

Was the building finished on time?

4 The House of Commons approved a Select Committee report recommending the construction of Portcullis House in March 1992. After further design work the House of Commons Commission, which in April 1992 took over from the Department of the Environment responsibility for the accommodation of the House of Commons, gave its approval in early 1993 for construction to proceed.

5 Portcullis House is built on top of Westminster Underground station. The Underground station was completely rebuilt in the late 1990s as part of work to extend London Underground's Jubilee Line and the construction of Portcullis House could not begin until the reconstruction of the station was largely complete. When the House of Commons Commission approved the construction of Portcullis House, the precise start and end dates for its construction could not be fixed because London Underground did not have all the necessary legislation and Ministerial approvals for the Jubilee Line Extension. These were obtained later in 1993, and in early 1994 the House and London Underground agreed on a timetable for the two projects, which were to run broadly in sequence. On this timetable, construction of Portcullis House was scheduled to take 30 months from 2 February 1997 to 2 August 1999.

6 As a result of almost a year's slippage in the work to be carried out by London Underground, the construction of Portcullis House did not begin until 5 January 1998[4]. Once work began, construction took a further six weeks and two days longer than the planned 30 months. Certificates of practical completion for Portcullis House were issued by the architects and the firm responsible for managing the construction of the building on 18 August 2000, just over a year later than the timetable established in 1994. Some minor works were not finished for another two months and work on resolving some defects is still continuing.

7 The delay by London Underground provided the project team with an opportunity to resolve some difficulties that might otherwise have delayed the construction of Portcullis House. It also allowed the project team to increase the amount of off-site prefabrication of building components. Nonetheless, the House's achievement in avoiding serious delay on a complex building was creditable and compares well with experience in other major building projects.

4 London Underground disagree with the House on when the site was ready for work to begin and argue that it was available in December 1997.

How does the cost of Portcullis House compare with forecast?

The costs of construction

8 The forecast cost of the building changed several times between the development of the initial brief in 1991 and the transfer of responsibility from the Department of the Environment to the House in April 1992.

- In June 1991, when the House of Commons (Services) Committee was preparing the initial brief for the building, the Parliamentary Works Office of the Department of the Environment told it that the building would cost of the order of £60 million at 1991 prices (£57 million at 1992 prices).
- In March 1992 the House of Commons approved a report of the Accommodation and Works Select Committee recommending the construction of Portcullis House. The Committee reported that it had not received any official estimate of the cost of the building but the Parliamentary Works Office advised that the best current estimates were between £120 million and £130 million at 1991 prices (£114 million to £123 million at 1992 prices). The Committee reported that it expected more detailed advice on costs to be provided in the near future.

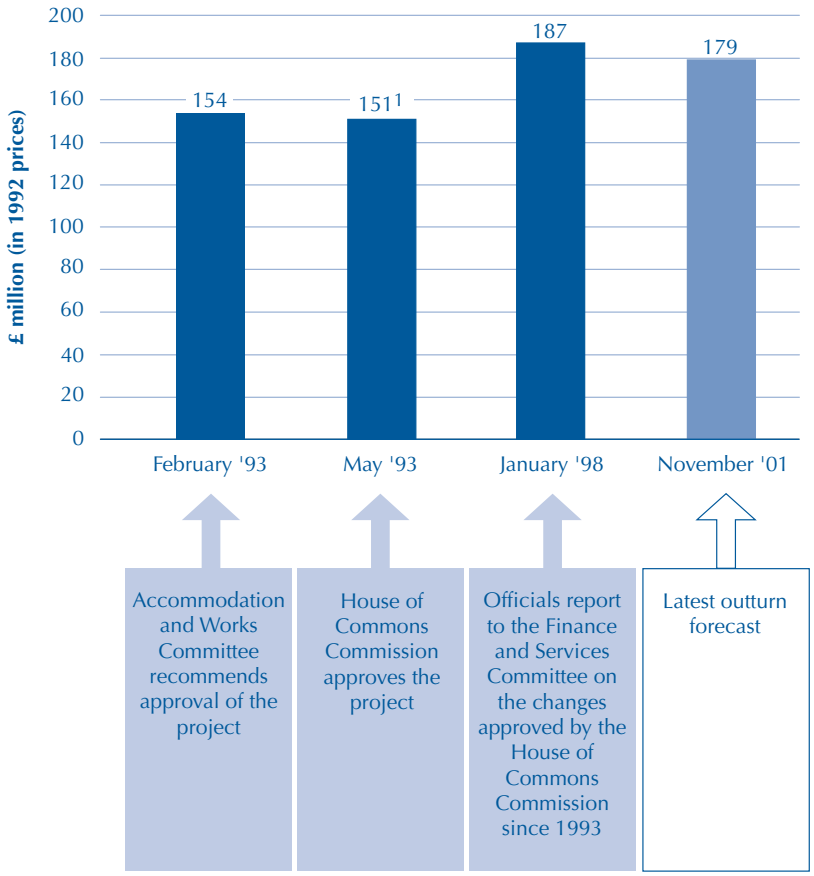
The forecasts of the building's likely cost received by the Select Committees in 1991 and 1992 were reported to the House of Commons, and published in the Committees' reports.

9 The forecast cost continued to evolve between April 1992 and the start of work on the site in 1998 **(Figure 1)**.

- In May 1993, the House of Commons Commission approved the project to construct Portcullis House. House officials advised that, at 1992 prices, the most likely cost of the building would be £151 million and that there was a 90 per cent probability that the building would cost no more than £164 million. At the same time, House officials estimated the possible effect of inflation, which suggested that the final cost of the building might be between £214 million and £227 million at outturn prices. But with the agreement of HM Treasury, the Commission did not set a firm budget for the project in terms of outturn prices because of the difficulty of accurately estimating inflation in view of the long and uncertain timetable of the project. Throughout the period since 1993 the project team (the architects and other professional firms working on the project) have used the 1993 forecast of £151 million at 1992 prices as the basis for monitoring and controlling the cost of the building.
- Between 1993 and 1998, the House of Commons Commission approved increases in the forecast cost of the building totalling £36 million at 1992 prices, establishing a budget for the project of £187 million at 1992 prices.
- In January 1998, work began on site. At that time, all the larger construction contracts had been let and £84 million of expenditure had been committed. House officials advised the Commission that it was possible to make a firmer estimate for inflation and that the budget of £187 million at 1992 prices was likely to be equivalent to a cost of £245 million at outturn prices. Subsequent reporting by officials to Members of Parliament and the public has focused on comparisons of the final cost of the building against a rounded figure of £250 million derived from the 1998 forecast of £245 million at outturn prices.

1 How forecasts of the building's costs changed under the House authorities' stewardship, at 1992 prices

Between 1993 and 1998, the forecast cost of Portcullis House increased from £151 million to £187 million, in 1992 prices. The project's forecast outturn is £179 million.



NOTE

1. When approving the project, the House of Commons Commission was advised by officials that the most likely cost of the building would be £151 million and that there was a 90 per cent probability that it would cost no more than £164 million.

Source: National Audit Office

10 A recommendation of the Accommodation and Works Committee in February 1993 that the project be approved at a forecast cost of £154 million (at 1992 prices) was also reported in the minutes of the Committee laid before the House in March 1993. The forecast of £151 million approved by the Commission when it approved the project in May 1993 was not published at the time, but the Chairman of the Finance and Services Committee reported to the House, some two and a half years later in November 1995, that the 'approved estimate' of the project was £154 million. Further forecasts were reported in written answers to Parliamentary Questions from 1996 onwards and in 1999-2000 the Commission included a forecast of the final cost of the building in its annual report.

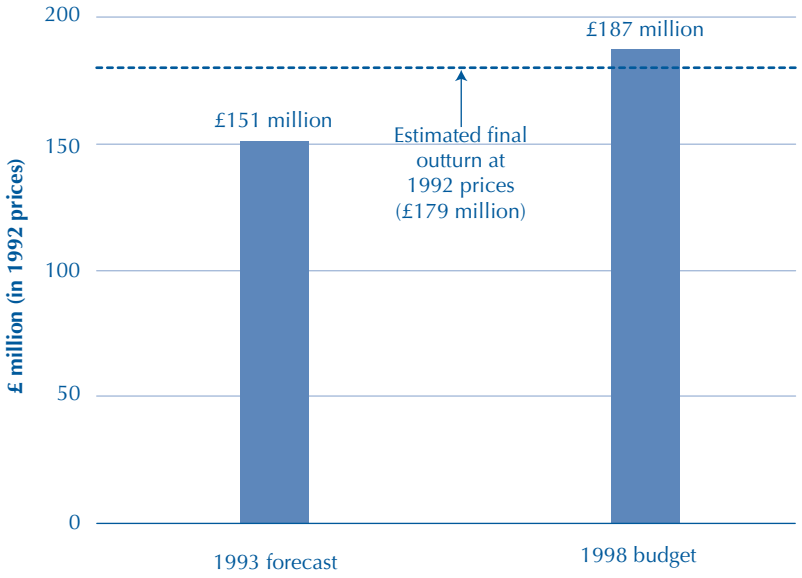
11 In approving the project in May 1993 the House of Commons Commission accepted that the costs would be commensurate with the high quality of materials and design that were thought appropriate to a site of such importance and a building that was intended to stand the test of time. In 1999, work by consultants employed by House officials estimated that the 1993 forecast construction cost of the building was around 19 per cent more than that of a

benchmark based on the consultant's knowledge of the cost of other buildings providing accommodation of a similar type and standard, equivalent to around £29 million of the building's final cost in 1992 prices, or £37 million at outturn prices. The consultants attributed the extra cost mainly to the cost of the building's superstructure and façade, and the engineering challenges of the site.

12 Although there are some final accounts still to be resolved, the latest estimate of the cost of Portcullis House is £179 million at 1992 prices, equivalent to £234 million at outturn prices. At 1992 prices the cost of the building is £28 million (18 per cent) higher than was forecast when the Commission approved the project in 1993 **(Figure 2)** but it is £8 million (4 per cent) lower than the forecast made in 1998.

2 Estimated final outturn cost and forecasts

The estimated final outturn cost of Portcullis House is more than was forecast when it was approved in 1993, but less than the budget when construction started in 1998.



Source: National Audit Office

13 The building cost more than forecast in 1993 for a number of reasons:

- House officials estimate that the delays by London Underground cost the House £9.1 million, or £6.8 million at 1992 prices, for example because of the extended storage of pre-fabricated items. Under the terms of its agreement with London Underground the House cannot recover most of this cost but officials hope to recover some.
- Some elements of the building's construction, for example the roof and external walls, cost a total of £29 million more than forecast, because the innovative nature of the design meant that forecasts could not be based on experience from previous buildings. However, savings of some £7 million were made on other parts of the construction. For example, the contracts for both the courtyard roof and for those windows not included in the fenestration contract were let at prices below the original forecasts. Some £5 million was also released from the contingency allowance.

- Professional fees were higher than forecast. Originally forecast in 1993 to be £21 million at 1992 prices, additional work and new commissions accounted for another £11 million at 1992 prices - a 52 per cent increase - and together with inflation of £8 million brought the total cost of professional fees to £40 million. Professional fees represented some 18 per cent of the total building cost compared to the 14 per cent forecast in 1993.

Other costs of the project

14 The House incurred other expenditure related to the project, which has not been included in the forecasts or the outturn cost of £234 million (£179 million at 1992 prices) in the comparisons above. Not all of this expenditure can be separately identified, but the main components are:

- £3.3 million on some associated works and removals, and the lease of additional accommodation for the project team; and
- some £10 million in legal and other costs following a breach of statutory procurement rules.

Does Portcullis House meet the agreed specification?

15 The plans approved by the House of Commons Commission in 1993 were for office accommodation for 210 Members of Parliament and their staff, together with committee and meeting rooms, catering and other support facilities. The completed Portcullis House provides the accommodation that was specified with some minor variations, the principal difference being an increase in the number of meeting rooms at the expense of accommodation for House officials, who have been accommodated elsewhere in the Parliamentary Estate.

16 The plans for Portcullis House specified a high quality of materials, architectural design and workmanship consistent with the building's status and the requirement for the building to last at least 120 years. These standards were generally upheld during construction. The building was also designed to be energy efficient, but it is too early to say whether it is delivering the savings that were forecast. The House has yet to survey Members' views on the accommodation and facilities provided by Portcullis House.

Was the construction of Portcullis House well managed?

17 House officials chose a technique known as "construction management" to manage the Portcullis House project, after taking professional advice. Experience elsewhere in the public sector with the technique at that time had been mixed - but it offered scope for closer control of the effect on costs of potential risks external to the project, such as the possibility of problems with the construction of Westminster Underground station. And its use, together with other action to ensure good project management, such as the commissioning of several reviews of the project, enabled the building to be completed broadly to time and specification. The Project Sponsor made monthly reports on the progress of the project to the Accommodation and Works Committee. In addition, a Steering Group of House officials oversaw the project before 1998, but met infrequently between 1992 and 1998. In 1998 the Steering Group was replaced by a Project Advisory Board, chaired by the Clerk of the House, which met every month.

18 The House of Commons Commission approved a building which required a high quality of design and materials. Charged with this requirement, House officials made little use of a technique called "whole-life costing" to examine options to see how the requirement could be delivered at less cost. Nor did they undertake an investment appraisal to explore the costs and benefits of the project. During the project's life, some use was made of "value engineering" to redesign elements of the building to reduce costs when tender prices exceeded forecasts; this saved, for example, some £1.4 million on the cost of the roof. In addition, following a three day value engineering workshop in January 1994, reviews were carried out of the design of the courtyard roof and the plant rooms. But more use could have been made of this technique to explore thoroughly the scope for delivering the specification at less cost.

19 All the main construction contracts were let after competitive tendering. However, the House incurred legal and other costs totalling some £10 million after it was successfully sued by an unsuccessful tenderer for unfair treatment and contravention of procurement regulations in relation to the contract for the fenestration (pre-fabricated wall and window units). Competition was limited for some professional appointments made by the Department of the Environment before the House of Commons Commission took over responsibility for the House's accommodation, and thus for the project, in 1992. The architect's association with the building, for example, dates from a £25,000 appointment made in 1989 for work on refurbishing some of the buildings that stood on the site before Portcullis House was built. This initial appointment was made following a competition and fee bid, run by the Department of the Environment; but the subsequent extension of the architect's work for the lifetime of the project, at a total fee of £13.1 million in outturn prices (£10 million in 1992 prices) was not.

20 At the outset the project team appraised what it saw as the key risks, for example that London Underground would be late in completing Westminster Underground station, and that the innovative structure of the building would be difficult to construct. They informed the House of Commons Commission about the likely and possible cost implications of these risks. Most of these risks did not materialise. However, some unanticipated risks did materialise and the team underestimated the potential impact on costs of some of the anticipated risks that did materialise. For example, the possibility that tenders for fenestration and the roof would substantially exceed the original forecasts was not identified as a risk, and the cost to the project of the delay in completing the Underground station was underestimated. During the project's life, however, the project team maintained generally good control over and responded to risks as they occurred, and this helped ensure delivery to specification and broadly within the planned timescale.

Recommendations

21 Portcullis House was built broadly to the timetable and specification approved at the outset by the House of Commons Commission, although, after allowing for inflation, the cost of the building was 18 per cent higher than forecast at the time of the approval. There are lessons to be learnt from this project both in the management of future Parliamentary works projects and for other public bodies undertaking large construction projects. These are that, where relevant, such organisations should:

1 **Recognise the importance of managing the risks associated with innovative design**. In general, House officials and the project team did well to recognise and manage many risks associated with the project. They also recognised that innovative features of the design of the building, such as the extensive use of bronze in the fenestration and roof, were likely to increase construction costs. But these parts of the building cost even more than expected, indicating the greater difficulty in estimating costs that can result when innovative design is used, and the need to allow for this when assessing project risks.

2 **Establish at an early stage a board of senior officials, chaired for larger projects at the highest level, to oversee the project.** Such a Board was established for Portcullis House in 1998, replacing a Steering Group chaired by the then Serjeant at Arms. Earlier establishment of that Board, which was chaired by the Clerk and included independent professional advisors, would have strengthened control over the project.

3 **Provide appropriate training, advice and support to key decision maker**s, to ensure, for example, that the correct public procurement procedures are used in accordance with regulations. Also, public bodies, when employing private sector consultants on large construction projects, should ensure that the consultants have sufficient experience of public sector procurement rules and regulations.

4 **Carry out investment appraisals or lifetime costing exercises prior to approval**. This was not done by the Department of the Environment for Portcullis House, and as a result it is difficult to establish whether full consideration was given to both costs and benefits, or alternative ways of meeting the requirement; nor is it possible to assess whether the anticipated benefits have been achieved.

5 **Use value engineering to explore the scope to meet the requirement at lower cost**. Some use was made of value engineering in the project, but the project team did not make a concerted effort at an early stage to explore thoroughly the scope to meet the agreed specification at a lower cost.

6 **When monitoring and reporting the likely outturn cost of projects against forecasts, maintain a clear distinction between forecasts made at the time of the initial decision to undertake the project, and later forecasts incorporating agreed changes in costs**. It is essential to monitor costs against the latest agreed forecast of expenditure in order to ensure that all expenditure is authorised. However, monitoring against the initial forecast is also necessary to provide clarity on whether the outcomes expected by decision makers when approving the project are being achieved.

7 **Consider regularly publishing information on the cost of major projects**. Over the life of the project information on the likely cost of the building was reported to the House of Commons, and published, many times. There may also be value, however, in providing such information on a regular basis, for example in association with the annual report of the House of Commons Commission. The reports on major projects included in the annual reports of Whitehall departments may provide a suitable format for such a report.

8 **Ensure that liquidated damages clauses are based on sound estimates of likely costs**. House officials took professional advice before entering into an agreement with London Underground for the development of the site. However, the actual losses suffered by the House because of the delay by London Underground have been significantly greater than the compensation likely to be recoverable from London Underground under the liquidated damages clauses in the agreement. This is an area of complexity and risk, and in drafting such clauses care should be taken to ensure that the entitlement fairly reflects the costs that might be incurred.

9 **Ensure that there is adequate control of professional fees and expenses when selecting and appointing professional advisors**. All consultants should be appointed and remunerated in such a way as to provide incentives for them to deliver a good quality service to time and within budget. The appointments made by the Department of the Environment, before the House of Commons Commission became responsible for the project in 1992, set fees on a percentage basis. Following recommendations by consultants in 1999 House officials agreed fixed fees for professional fees with some of its advisors, but not all. It is rarely desirable to change key professional advisors midway through a project, so it is particularly important to ensure at the outset that the terms on which professional advisors are appointed exert downward pressure on professional fees and expenses. Contracts with professional advisors should include provision for a change to fixed fees when the scope of the work to be done has become sufficiently defined for such a change to be practicable.

10 **Undertake a review of the operation of the building in use.** For example, now that the building has been in use for more than a year, House officials should consider conducting a review of the extent to which it is operating as intended, including assessing the energy consumption being achieved in practice. In addition, although officials sought the views of Members moving into Portcullis House in 2000, now that the building has been occupied for some time, House officials should also consider carrying out a survey to obtain Members' and other users' views about the facilities provided by the new building.