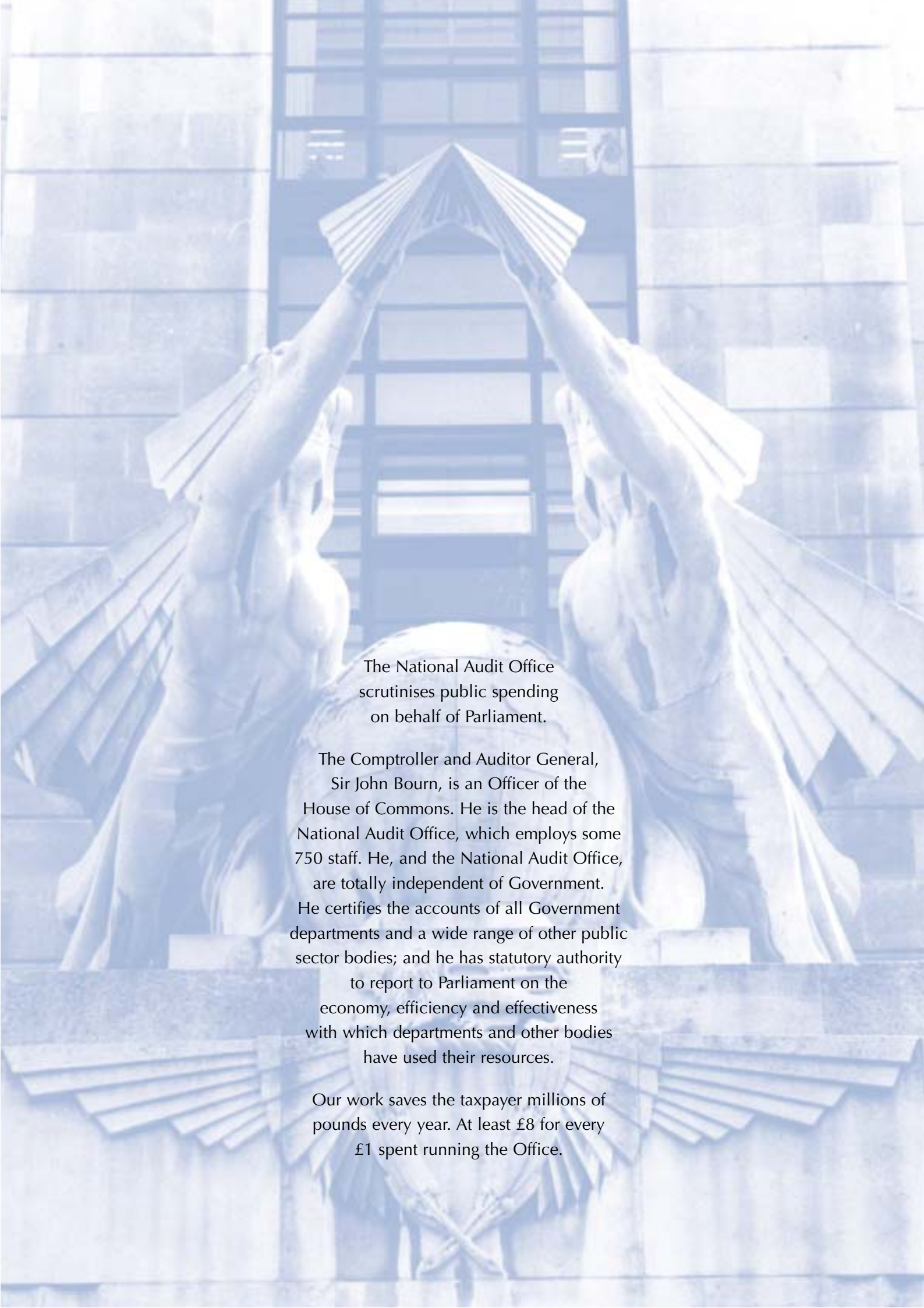
NATIONAL AUDIT OFFICE

Construction of Portcullis House, the new Parliamentary building

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL
HC 750 Session 2001-2002: 19 April 2002



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John Bourn
Comptroller and Auditor General

National Audit Office
2 April 2002

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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.

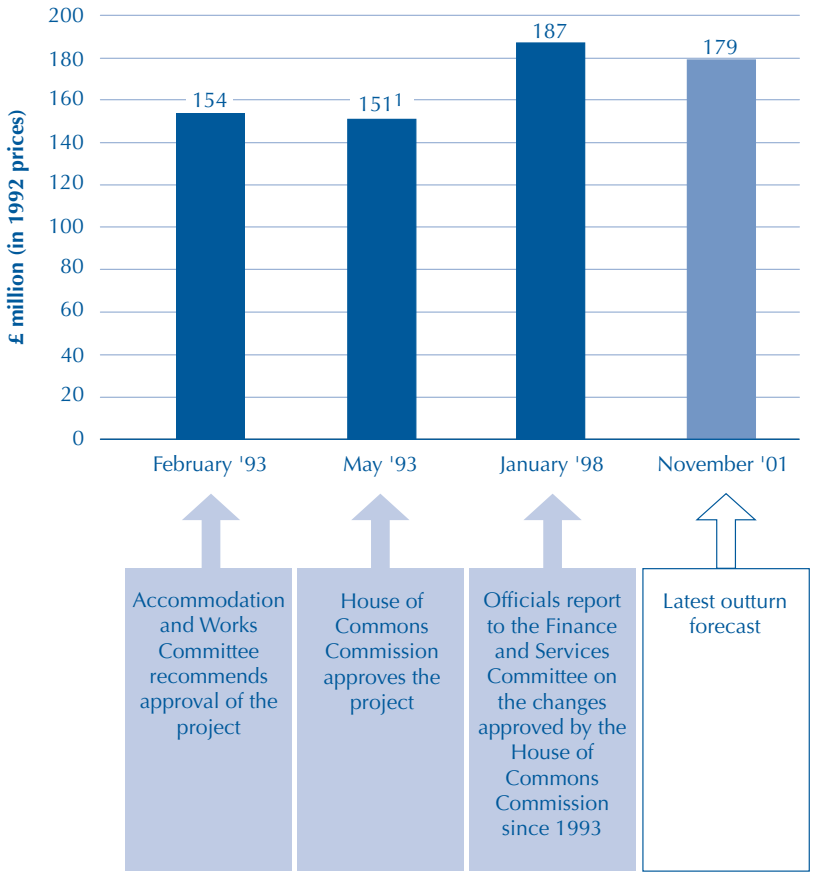
The forecasts of the building's likely cost received by the Select Committees in 1991 and 1992 were reported to the House of Commons, and published in the Committees' reports.

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.

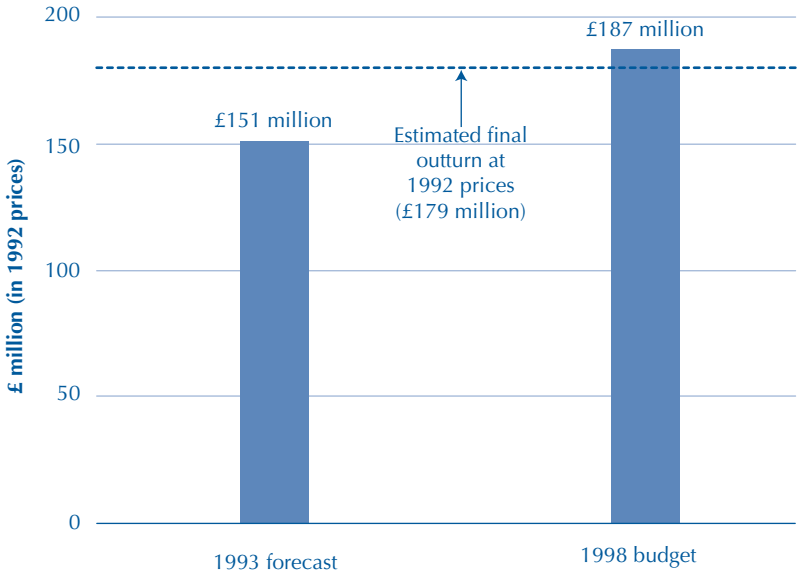
11 In approving the project in May 1993 the House of Commons Commission accepted that the costs would be commensurate with the high quality of materials and design that were thought appropriate to a site of such importance and a building that was intended to stand the test of time. In 1999, work by consultants 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.

Part 1

Introduction

1.1 This report is about the construction of the new Parliamentary building known as Portcullis House, which was completed in August 2000. The completed building is shown in the photograph opposite. This report is not about the building's architectural or aesthetic merits, or about the standards of accommodation that Parliament specified. Instead, in line with our normal practice for major capital projects of this kind, we have examined the management of the building's construction from the House of Commons Commission's approval in 1993 through to completion in 2000, to see whether the building was completed to the time, cost and the specification agreed or forecast at the outset.

Origins and purpose of the building

1.2 The present Palace of Westminster was first occupied in 1847, and largely completed in 1860, following the almost complete destruction of the previous Palace by fire in 1834. From the start there was dissatisfaction with the accommodation provided and in 1854 the architect, Sir Charles Barry, produced plans to build additional offices surrounding New Palace Yard.

1.3 Barry's plans were not proceeded with, but since the middle of the 20th century there has been mounting pressure to increase the amount of accommodation provided to Members of Parliament (Members) and others working in the Palace. Some of the required accommodation has been provided by adapting existing space within the Palace and by acquiring other buildings in the surrounding area. But as early as 1953 the Select Committee on House of Commons Accommodation, etc. concluded that no substantial progress could be made except by extensive building operations[5].

1.4 Attention focused mainly on the area across Bridge Street to the north of the Palace **(see Figure 3 behind page 12)**. A series of schemes were brought forward in the 1960s and early 1970s to clear this site and construct a new building on it, but none of these schemes came to fruition. And in 1978 the Select Committee on House of Commons (Services) proposed a phased approach to the site, with the better buildings retained and complete clearance limited to certain areas.

1.5 After further feasibility and planning work, the Committee recommended in 1983 that the first phase of work on the site should begin, with the ultimate objective of providing an office for all Members that wanted one. Phase 1, involving the reconstruction of the buildings between Canon Row and Parliament Street, now known as 1-3 Parliament Street and 1 Derby Gate, provided offices for around 90 Members, plus other accommodation **(see Figure 4 behind page 12)**. Design work started in 1984 and construction was completed in March 1991 at a cost of £40 million.

1.6 Phase 2 was originally envisaged to consist of a mixture of replacement and refurbishment of all the buildings to the east of Canon Row, including 1 Canon Row and the Norman Shaw South building (Figure 4), starting with the buildings on the south of the site. However, proposals announced in 1989 to extend the Jubilee Line, which required the rebuilding of Westminster Underground station, offered the opportunity to demolish all of the buildings south of 1 Canon Row and Norman Shaw South and to cover over the District and Circle Line tracks which ran through this area, thereby providing a larger rectangular site. This would enable the construction of a single building with more accommodation than would have been possible if the station and buildings remained in their original form. This is the building that was to become Portcullis House. Phase 2 of the development was redefined to concentrate on this building; design work started in 1991 and construction was completed in August 2000.

5 *HC 309 (1952-53) and HC 184 (1953-54).*

1.7 Phases 3 and 4 of the development of the site deal with the remaining two buildings, Norman Shaw South and 1 Canon Row. Refurbishment of Norman Shaw South is currently underway at a cost of some £15.2 million, with a planned completion date of December 2002. The refurbishment of 1 Canon Row is planned for 2007-08.

Special features affecting the design and construction of the building

1.8 The site and building of Portcullis House presented special challenges. First, the District and Circle Lines of the underground railway ran diagonally across the site at near surface level, from south-west to north-east. Much of the site at both ground and basement levels was occupied by Westminster Underground station, and London Underground Limited owned some of the airspace above the site. In addition, new sub-surface lines and a new station for the Jubilee Line Extension had to be built, requiring deep excavations, without disrupting train services. The project also faced problems common to many central London buildings, such as difficult access and the need to minimise disruption to traffic. These factors presented challenges of construction and co-ordination with London Underground Limited and other authorities.

1.9 There were also engineering challenges to be overcome. The presence of the underground railway meant that the building would need to span the underground lines and the new station ticket hall. The large spans required over the near-surface tracks limited the number of places where structural support could be positioned. This, together with the need for windows and natural light for all offices, dictated that the building should be built around a courtyard. The external walls would be supported by the substructure of the underground box excavated by the Jubilee Line Extension whilst the internal courtyard walls were to be supported on six concrete columns reaching down six storeys to the level of the Jubilee Line tracks (**see Figure 5 behind page 13**). Proximity to the river, the high water table and the depth of the excavations also meant that special account needed to be taken of ground conditions and drainage. Many of the difficulties facing the construction of Portcullis House also affected London Underground's construction of Westminster Underground station.

1.10 Architecturally, Portcullis House was to be sited in a position of exceptional importance. The nearby ensemble of Westminster Abbey, the Palace of Westminster and St Margaret's Church has been designated by the United Nations Educational, Scientific and Cultural Organisation as a World Heritage Site **(see Figure 6 behind page 13)**. The Palace is a Grade 1 listed building and Portcullis House itself was to be situated in a Conservation Area and surrounded by listed buildings. Portcullis House would also be on the banks of the River Thames and affect views towards the Palace from a considerable length of the South Bank of the river. These considerations required a building of sympathetic design and great architectural merit that would stand the test of time.

1.11 Finally, the building's status demanded very high levels of physical security, and thus the building had to be blast resistant in addition to all the usual fire and safety regulations applying to buildings of this type.

Management and responsibility for the project

Oversight and control of the project

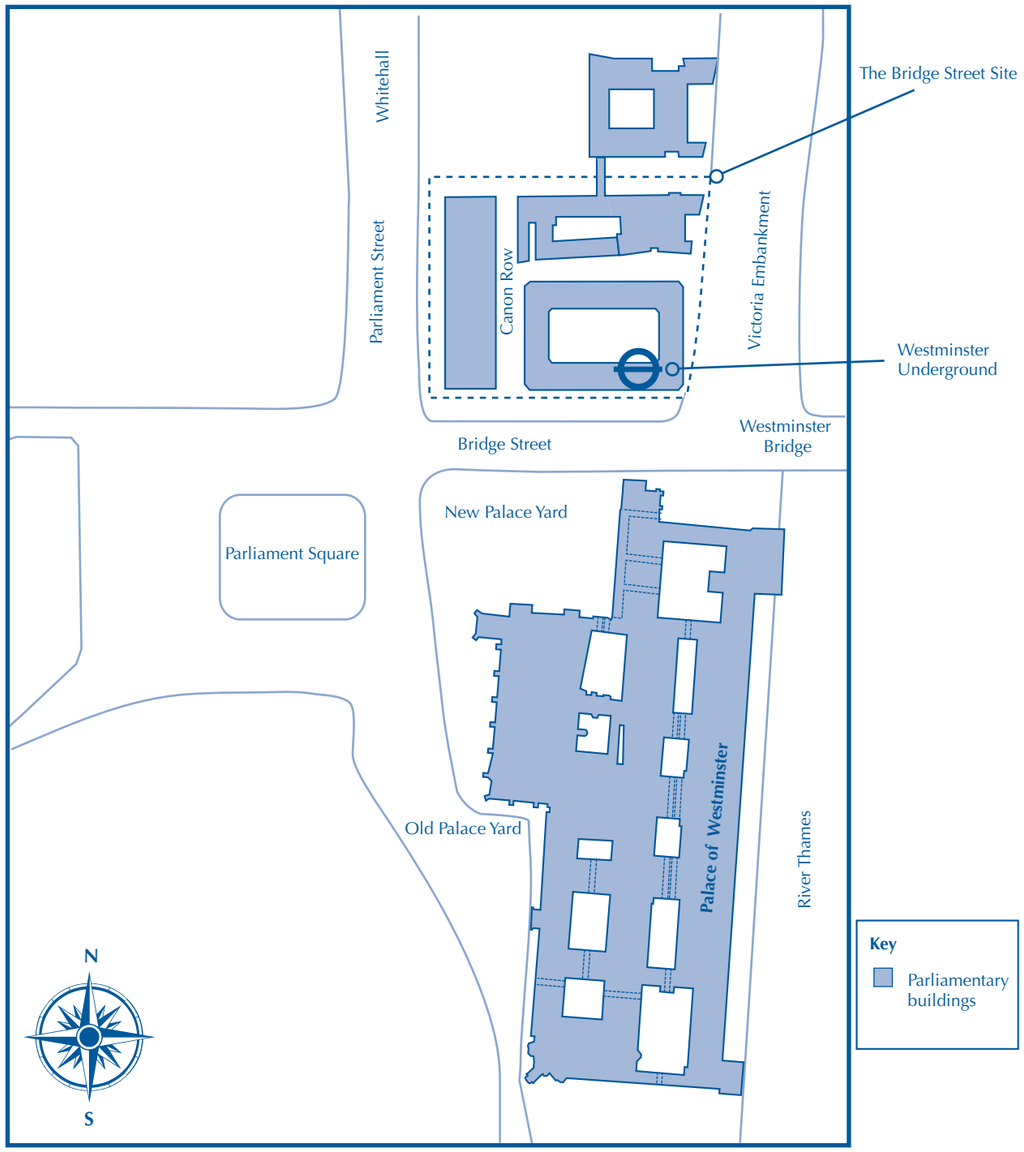
1.12 **Figure 7** sets out how administrative functions within the House of Commons are organised. Responsibility is split between Members of Parliament and House officials:

- **Members**: Since 1978, the House of Commons Commission has been the main policy-setting forum for the administration of the House. In 1992, it also took over from the Department of the Environment responsibility for the accommodation used by the House. The Commission is a statutory body chaired by the Speaker and supported by Select Committees. Since 1992 there have been six such Committees: the Finance and Services Committee and five advisory Domestic Committees, each dealing with different aspects of administration. Membership of all these bodies is drawn from Members of the House of Commons.

Figures 3 and 4 overleaf

3 The area around the Palace of Westminster

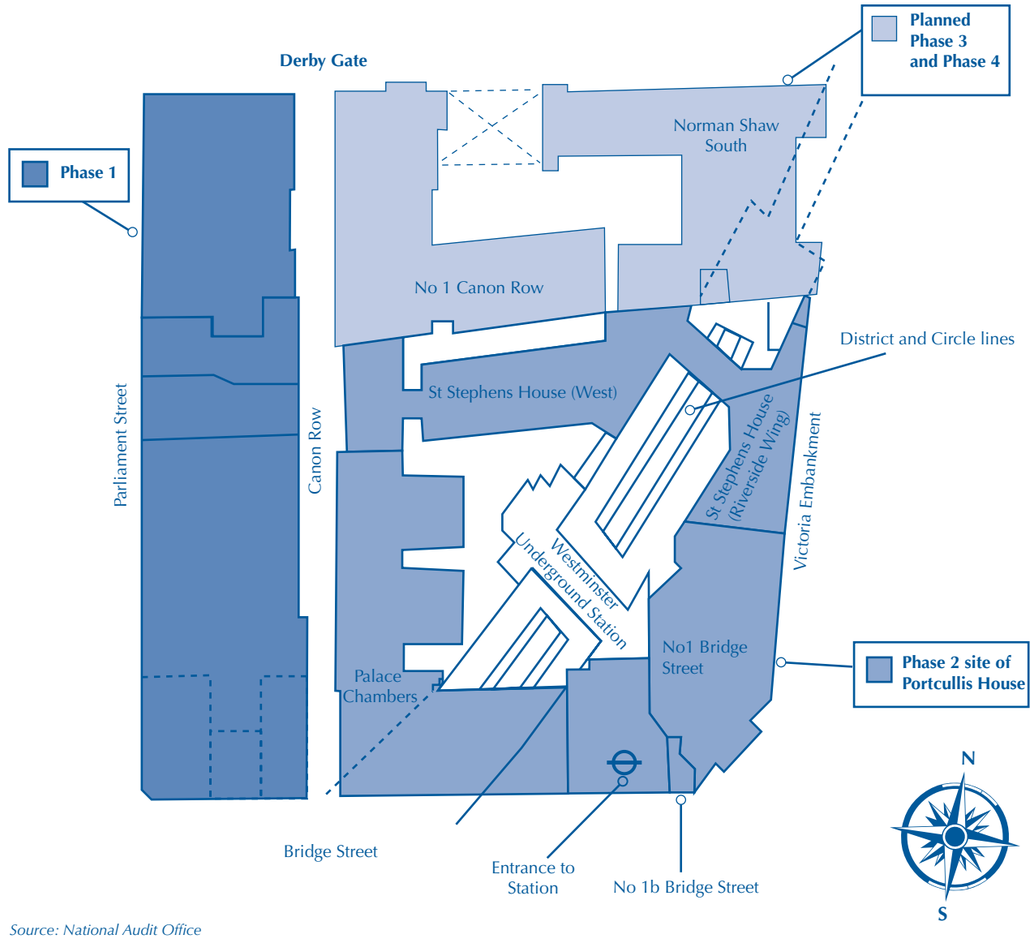
The Bridge Street site lies immediately to the north of the Palace of Westminster.



Source: National Audit Office

4 The Bridge Street site before redevelopment

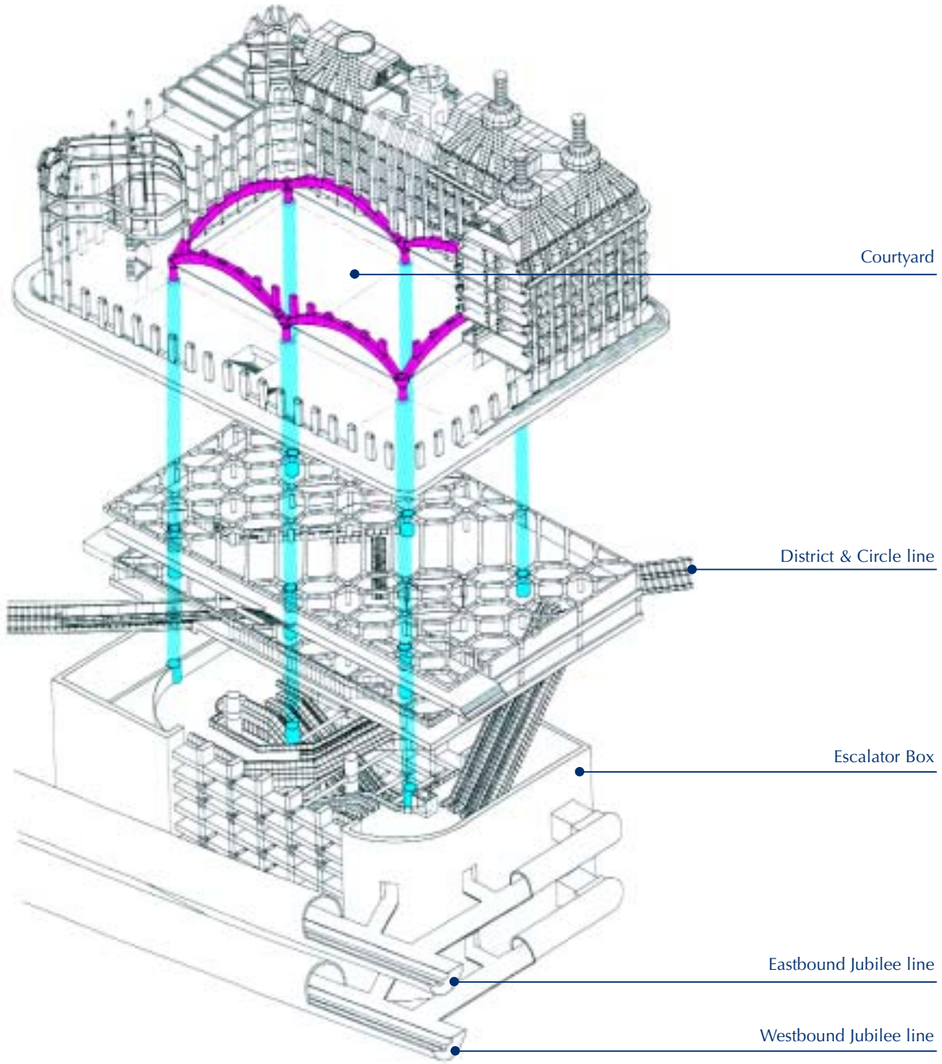
Portcullis House is the second phase of the development of the Bridge Street site.



Source: National Audit Office

5 The construction of Portcullis House

The construction of Portcullis House had to be integrated with the new underground station and surrounding buildings.



Source: Michael Hopkins and Partners

6 Buildings of particular architectural merit in the vicinity of Portcullis House

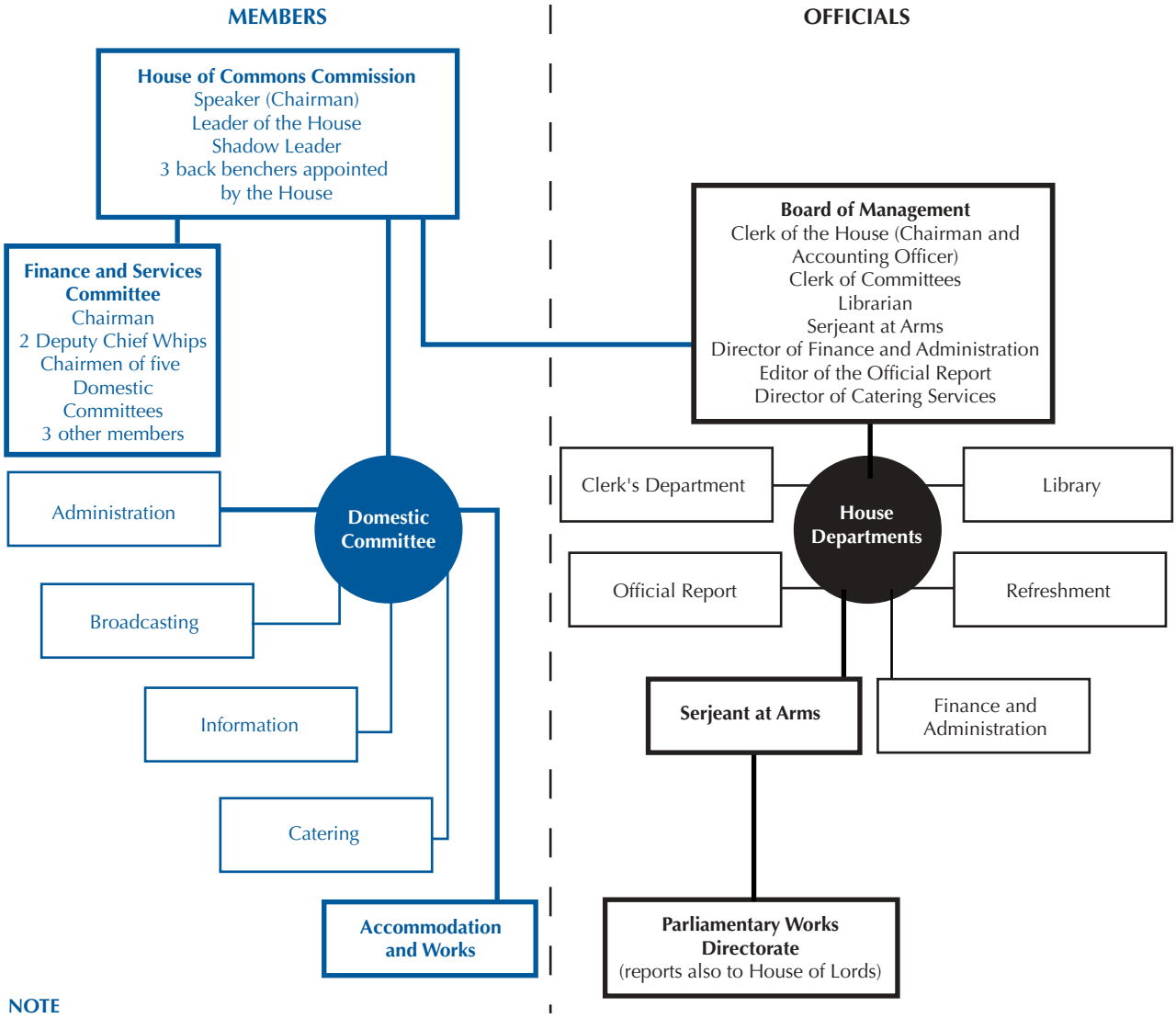
Portcullis House is sited in a position of exceptional architectual importance in central London.

- A Palace of Westminster (Grade 1 and World Heritage Site)
- B Westminster Bridge (Grade 2*)
- C Westminster Abbey (Grade 1 and World Heritage Site)
- D St. Margaret's Church (Grade 1 and World Heritage Site)
- E Portcullis House
- F Norman Shaw South (Grade 2*)
- G Norman Shaw North (Grade 2*)
- H HM Treasury (Grade 2*)

Source: National Audit Office

7 Administration of the House of Commons

The administrative functions of the House of Commons are split between Members of Parliament and House officials.



NOTE

Bodies mainly associated with the contruction of Portcullis House are shown in bold.

Source: National Audit Office

- **Officials**: Responsibility for management and operations rests with House officials organised in six Departments, the heads of which form a Board of Management. The Clerk of the House[6] chairs the Board of Management and is the Accounting Officer for all expenditure on House administration and works. He is also *ex officio* the Corporate Officer of the Commons, with authority on behalf of the House of Commons to own property, enter into contracts, sue others and be sued. On administrative matters, the Clerk is supported by the House's Director of Finance and Administration[7].

1.13 Within this structure, responsibility for new building works, including Portcullis House, has been as follows:

- Before 1992 new building work and the upkeep of the Parliamentary Estate, including early work on Portcullis House, was the responsibility of the Parliamentary Works Office, which before 1990 was part of the former Department of the Environment's Property Services Agency and between 1990 and 1992 was part of the Department's Property Holdings organisation. In November 1990 a report by Sir Robin Ibbs[8] recommended that responsibility for this spending should be transferred to Parliament.

Figures 5 and 6 overleaf

6 *Currently Sir William McKay KCB.*
7 *Currently Mr Andrew Walker.*
8 *House of Commons Services: Report to the House of Commons Commission (November 1990).*

- In April 1992 this transfer took place and day to day management of new building projects passed to the Parliamentary Works Directorate, part of the Serjeant at Arms Department. A new post of a Director of Works[9] was created.
- The current Members' committees were also established in 1992 following the Ibbs report. Of these committees, the Accommodation and Works Committee has had principal oversight of the development and construction of Portcullis House, taking over this responsibility from a Select Committee on House of Commons Services and the New Building Sub-Committee.

1.14 Within the Parliamentary Works Directorate, a nominated official acted as the **Project Sponsor** for Portcullis House[10], overseeing the whole project and liasing with the project team (see below). The Project Sponsor reported to the Director of Works. In addition, before 1998, the Project Sponsor advised a Project Steering Group chaired by the Serjeant at Arms[11]. Subsequently, he advised a **Project Advisory Board** (see Figure 27) chaired by the Clerk of the House.

Delivery of the project

1.15 In addition to the Project Sponsor, the main parties and members of the **project team** responsible for delivery of the project were as follows:

Project Management

- TBV Consult Ltd. (TBV), formerly part of PSA Projects, the project management arm of the Property Services Agency, and now part of Schal International Management Limited, co-ordinated and oversaw the overall project, including liaison with London Underground Limited. Although in most House projects the rôle of project manager is undertaken by an official from the Parliamentary Works Directorate, professional assistance was brought in for the new Parliamentary building because of the size and nature of the project. TBV prepared a monthly Project Report for the Project Sponsor, made up of contributions from all the project team members.

Architects

- Architects Michael Hopkins and Partners produced the design and were the design team leader. They also advised on details of the design and assisted with re-design and re-specification where necessary.

Engineers

- Ove Arup and Partners advised on the structure of the building, the design of the mechanical and electrical systems, the design of the façade, fire engineering, acoustics and vibration, traffic planning issues, and were the planning supervisors.

Quantity Surveyors/Cost Consultants

- Gardiner and Theobald acted as quantity surveyor and cost consultant for the Parliamentary Works Directorate. They were responsible for producing cost reports and verifying the monthly schedules for payments to contractors.

Construction Management

- Laing Management Limited provided construction management. They had responsibility for organising the construction of the building and managing the various contractors, materials and designs in order to fulfil this rôle. Laing in turn employed their own quantity surveyors to assist them.

Throughout the report, the term **project team** refers to the group comprising the project managers, architects, engineers, quantity surveyors, and construction managers. The term **design team,** a sub-set of the project team, comprises the architects and the engineers.

Development of the initial specification and budget

1.16 Final approval in May 1993 of the project to build Portcullis House was the culmination of a long period of development of the specification and design for the new building. In June 1989, with the agreement of the New Building Sub-Committee of the House, the Secretary of State for the Environment commissioned Michael Hopkins & Partners as consultant architects to carry out a feasibility study of refurbishing some of the buildings in Phase 2 of the Bridge Street site. The presumption was that in due course the same firm would be appointed as architect for this work. When later in 1989 London Underground announced their plans to rebuild Westminster Underground, Michael Hopkins and Partners saw the potential for a comprehensive redevelopment of the site and offered to conduct at no extra cost a feasibility study of redeveloping the whole of the Phase 2 site. In 1990, the Partnership was also commissioned to conduct a 'space audit' or complete survey of the areas occupied by the House of Commons (both in the Palace of Westminster and its outbuildings). The space audit was completed in January 1991 and recommended that the development of the Phase 2 site should provide offices for some 205-230 Members and a similar number of secretaries.

9 Since its inception, Henry Webber CEng, FICE.
10 For the life of the project, Mr Andrew Makepeace.
11 Currently Mr Michael Cummins.

1.17 In 1991, the Chairman of the New Building Sub-Committee wrote to all Members of Parliament inviting their comments on accommodation. The views of the 1922 Committee, the Parliamentary Labour Party and other political parties represented in the House were also invited. A poll of Members' attitudes to the provision of services in the House was taken account of, as well as responses from Members to an earlier survey. House officials were also asked to set out their departments' accommodation requirements. An exhibition of the preliminary proposals was also held.

1.18 Drawing on this evidence, the Select Committee on House of Commons (Services) produced an initial brief for the architects in June 1991 setting out the House's requirements for Phase 2[12]. These included:

- a dedicated subway for Members and staff across Bridge Street;
- about 230 Members' rooms between 15 and 20 square metres in floor area, with a variety of room types available;
- multi-purpose suites of meeting rooms, able to provide three select committee rooms;
- a reading room and a Vote Office issue point;
- a necessities shop, a post office, hairdresser and medical centre; and
- accommodation for an office services manager and staff, for maintenance staff, and a telephone communications centre.

1.19 In addition, the brief asked the architects to consider:

- a 200-seater cafeteria, a 60-seater dining area and bar, plus an open-air cafeteria and service stations on upper floors;
- broadcast interview studios; and
- further health and fitness facilities.

1.20 The brief specified that the construction should be built of durable, high-quality materials which would be in keeping with the area and which would weather well. Materials and construction were expected be consistent with the requirements of a 'long-life building', which is taken as 120 years, the maximum life incorporated in the relevant British Standards. The building should come to be regarded as an example of the very finest late-twentieth century British architecture, and should set a good example in terms of energy efficiency and disabled access to all parts of the building.

1.21 In October 1991, Michael Hopkins and Partners submitted a Preliminary Sketch Plan Report, which was approved by the New Building Sub-Committee and was issued together with a report by the newly formed Accommodation and Works Committee in February 1992[13]. The Committee's report, recommending that the project should go ahead at an estimated total cost of between £120 and £130 million at 1991 prices, including professional fees, was debated by the House of Commons on 9 March 1992 and approved by the House.

1.22 By March 1992 the Department of the Environment (Property Holdings) had appointed Michael Hopkins and Partners as architects, Ove Arup and Partners as engineers, Gardiner and Theobald as quantity surveyors, and TBV (formerly part of PSA Projects) were in place as project managers.

1.23 In January 1993, Michael Hopkins and Partners produced a Final Sketch Plan Report together with a companion document by the engineers and a cost plan produced by the quantity surveyors. The proposed building would provide offices for 210 Members and a variety of other accommodation. The cost plan forecast a total cost of some £151 million at 1992 prices, including professional fees. Construction was scheduled to take 30 months following the completion of works by London Underground Limited. These documents were considered by the Accommodation and Works Committee and then approved by the House of Commons Commission in May 1993.

12 *HC 551 (1990-91).*
13 *HC 269-I (1991-92).*

Our scope and methods

1.24 We have taken the Final Sketch Plan and associated documents approved in May 1993 as the starting point for our examination. We examined:

- the outcome of the project, in terms of whether Portcullis House was delivered to the time, cost and quality specified or forecast in 1993 (Parts 2 to 4 of this report); and
- whether the processes used to manage the project helped or hindered the project's delivery (Part 5).

1.25 Appendix 1 describes our methodology. In brief, our analysis was based upon a review of papers held by House officials and discussions with staff and contractors involved in the project. We were assisted by Gleeds, consultants on quantity surveying and other aspects of project management. We made use of previous reviews and reports (detailed in Appendix 2) which had a bearing on administration of the House and the management of the Portcullis House project:

- November 1990: **The Ibbs report** - an investigation into the system of management and decision making responsibilities in the House.
- July 1998: **The Kappa report** - compared the project's management, organisation and procedures against best practice.
- May 1999: A mid-term review of the Portcullis House Project for the House of Commons Commission - **the Northcroft report** - assessed the costs and benefits of the project, commented on the effectiveness of the project management and cost control procedures, and appraised the project's key risks.
- July 1999: A review - **Braithwaite I** - examined the governance, control and systems of the Serjeant at Arms' Department.
- March 2000: A confidential inquiry into *Harmon v. Corporate Officer of the House of Commons* - the **Legg-Bosworth report** - investigated the circumstances leading to a major law suit against the House for poor procurement practices. The full report, which we have seen, is confidential, although a summary of the findings was presented to the House of Commons in a written answer to a Parliamentary Question on 19 April 2000.
- July 2000: A review of the governance, control and systems of the Serjeant at Arms' Department - **Braithwaite II** - examined the rôle and structure of the Parliamentary Works Directorate.
- July 2001: A review of the allocation of costs to the Project by the cost consultants Northcroft - the **Northcroft first stage review of costs**.

In relation to the work of the House of Commons Commission, we have based our report on information provided by its Secretary[14].

We also consulted the offices of the Auditor General for Wales, Audit Scotland and the German State Audit Office (the Bundesrechnungshof) about the costs of Parliamentary office buildings in those countries.

1.26 Appendix 3 provides a chronology of key events in the project.

14 *At the time we undertook our fieldwork, the Secretary to the House of Commons Commission was Dr Malcolm Jack.*

Part 2

The timetable for completion

2.1 In order to assess the achievements of the project with regard to time, we examined:

- the planned timetable for constructing Portcullis House;
- whether the building was completed in accordance with this timetable;
- the reasons for any departure from the planned timetable; and
- how the timetable for this project compares with those for similar buildings.

The planned timetable for constructing Portcullis House was 30 months, although the start date depended on prior work by London Underground

2.2 The key consideration in the timetable for the construction of Portcullis House was that the building would be built on top of the new Westminster Underground station planned for the Jubilee Line Extension. The House agreed that London Underground would have access to the whole of the site while it built the station structure. London Underground agreed to provide a concrete slab at ground floor level across the whole of the site, on which Portcullis House would be built. London Underground also provided some basement space in one corner of the site.

2.3 Once the external structure of the station and the ground floor slab had been completed, the construction of Portcullis House could proceed in parallel with work on the interior of the station. The timetable for Portcullis House was determined, therefore, not by the date of the completion of the station, but by the date at which the contractors working on the building could gain access to the ground floor level concrete slab.

2.4 At the time that the House of Commons debated and approved the report of the Accommodation and Works Committee on the Preliminary Sketch Plan for Portcullis House on 9 March 1992[15], there was uncertainty over when construction of the station could begin, and how long it would take. The main uncertainties were:

- Construction of the Jubilee Line Extension could not begin before two bills authorising construction had been enacted. At the time that the Committee's report was debated, the House of Commons had yet to consider Lords' Amendments on the first Bill while the second had yet to reach Second Reading. The Bills were finally passed in March 1992 and July 1993 respectively[16].
- Ministers had yet to approve funding for the Jubilee Line Extension. This approval was delayed by the financial problems of the company developing Canary Wharf, but was received in October 1993.
- London Underground had estimated that it would need 41 months from the start of work on the station to the handover of the ground floor slab. The Committee disputed this estimate and reported to the House of Commons that it had commissioned experts who had advised that the time required could be reduced to 27 months. In the debate on the Committee's report, the Chairman of the Committee told the House that a 41 month construction programme was unacceptable and the Committee expected London Underground not to start work until it had reached agreement with the Committee on this point.

2.5 By the time the Commission approved the Final Sketch Plan in May 1993, the legislation authorising the Jubilee Line Extension had been passed or was near completion but Ministers had not yet approved its funding. Accordingly, the Commission did not approve a precise date for the completion of the building. But it hoped to start work on the building as soon as possible, once the Secretary of State for Transport's approval had been given for work to start on the Jubilee Line Extension.

15 *HC 269 (1991-92).*
16 *London Underground Act 1992, London Underground (Jubilee) Act 1993.*

2.6 Ministers approved the Jubilee Line Extension in October 1993, by which time the House had appointed Laing Management Limited as its construction manager for the project. The Clerk to the House of Commons[17] agreed with London Underground a 36 month period from the start of the construction of the station to the handover of the areas required for the construction of Portcullis House. Laing then developed a detailed construction programme requiring 30 months for the construction of Portcullis House once London Underground had handed over the site. The Clerk to the House of Commons and London Underground therefore signed an agreement on 29 January 1994 setting out the key dates for their respective projects **(Figure 8)**. The agreement projected a date of 2 August 1999 for the issue of the certificate of practical completion[18] for Portcullis House. The building would then be occupied over the 1999 summer recess.

As a result of delays in London Underground's work, construction both began and finished around a year later than planned

2.7 **Figure 9** shows the planned and actual timetable for building Portcullis House. It shows that the major reason for the year's delay in completing the building was that London Underground's construction of the new Westminster station took nearly a year longer than planned. Once London Underground had handed over the site, the construction of Portcullis House took 6 weeks and 2 days longer than planned.

2.8 Certificates of practical completion for most parts of the building were issued by Michael Hopkins and Partners and Laing on 18 August 2000, 31½ months after construction started. Occupation of the building began in September 2000 and with minor exceptions the building was fully occupied by the end of that year[19].

2.9 The certificates of practical completion issued in August 2000 excluded nine contracts, covering principally some external works, broadcast and sound facilities, gantries and signage. In addition, numerous items of work were noted as outstanding under the contracts covered by the certificates. Most of the remaining work was completed by October 2000.

2.10 All contractors were liable to operate a one-year defects period after the date of practical completion to correct problems found over this time. Such defects periods are normal practice in the industry. The construction managers, Laing, begun a survey of the building in July 2001 to identify all the outstanding defects and work continues to rectify them.

8 Key dates established in 1994 for the construction of the new Westminster Underground station and Portcullis House

The first definite date set for the completion of the building was 2 August 1999.

Stage	Start	Duration	Finish
London Underground works	2 February 1994	36 months	2 February 1997[1]
Portcullis House	2 February 1997[1]	30 months	2 August 1999

NOTE

1. This was the planned date of handover of the areas required for the construction of Portcullis House; work on the remainder of the station was to continue after this date.

Source: National Audit Office analysis

London Underground's work on the station delayed the start of the construction of Portcullis House by 48 weeks

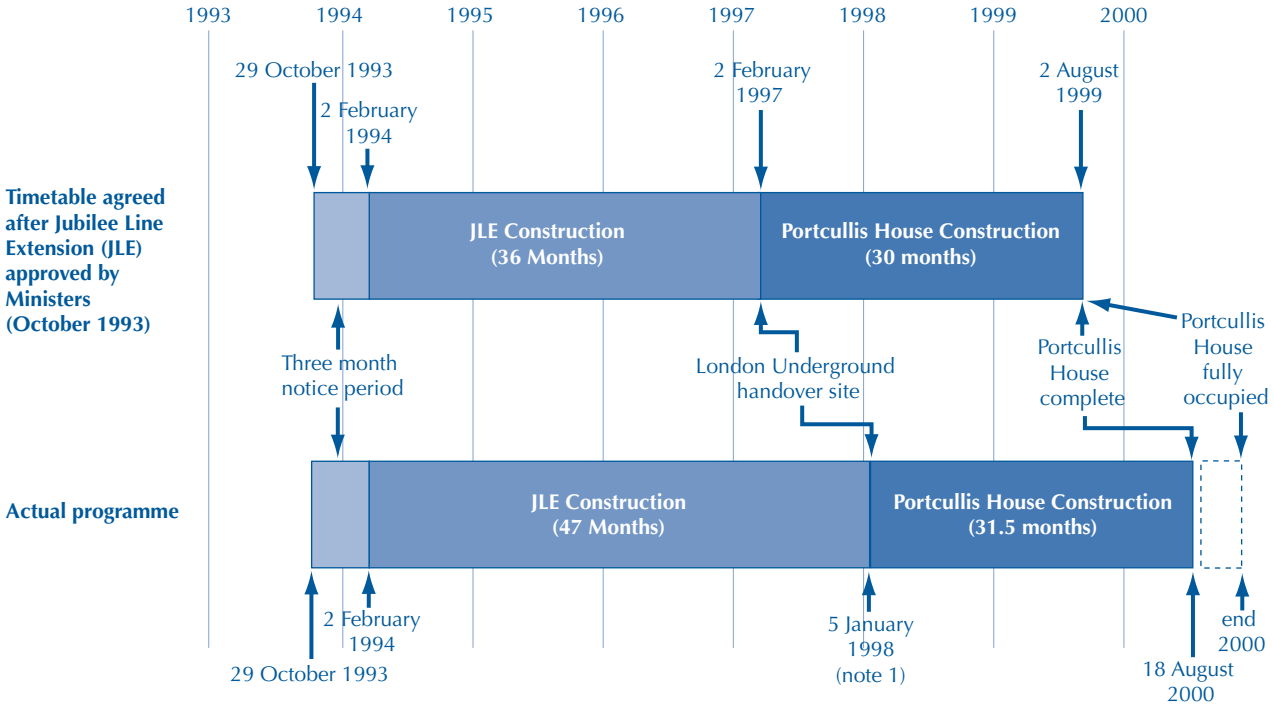
2.11 In the agreement signed with the House on 29 January 1994, London Underground undertook to start work on 2 February 1994 and to hand over the whole of the site on 2 February 1997 (Figure 9). A co-ordinating group[20] was set up by the House of Commons Accommodation and Works Committee to monitor progress and provide monthly reports to the House authorities and London Underground. Work on the station began on time and initially London Underground was confident that it would hand over the site on schedule. For example, on 22 February 1995 it told the House of Commons Accommodation and Works Committee that the planned handover date would be achieved and as late as February 1996 it told the working group and the Portcullis House project team that it expected to hand over the site on time.

2.12 In April 1996, however, London Underground told the project team that it would be making contingency plans to ensure that the construction of Portcullis House would not be compromised if their work was incomplete at the time of handover. On 19 June 1996, London Underground told the Portcullis House project team and the Accommodation and Works Committee that it would not be able to achieve the planned handover date of February 1997. In evidence to the Committee on 10 July 1996[21], London Underground said that its earlier statements had been made in good faith and that it deeply regretted that its objective of 2 February 1997 would not be possible. It agreed that the project had at no time been on time but said that it was examining proposals for a phased handover of the

17 *On both occasions, the Clerk was acting in his capacity as Corporate Officer of the House of Commons.*
18 *Practical completion signifies that the building is reasonably ready for occupation, although minor work may remain to be completed.*
19 *Two hundred and ten Members of Parliament and approximately 400 support staff, such as Members' secretaries and catering staff.*
20 *The group involved London Underground and, representing the House, the Serjeant at Arms, the Director of Works, the Project Sponsor, and the architects.*
21 *HC 591-I (1995-96).*

9 The planned and actual timetable for building Portcullis House

Portcullis House was completed late mainly because the construction of the new Westminster Underground station took longer than planned.



NOTE

1. The House and London Underground are in dispute over when the site was ready for work to begin; London Underground contend that it was available in December 1997 but the House do not consider that it was possible to start work until 5 January 1998.

Source: National Audit Office analysis

site between March and June 1997, instead of the handover of the whole of the site at once, as had previously been intended. It told the Committee that it intended to use every effort to deliver on these dates.

2.13 Further slippage occurred during the remainder of 1996 and 1997. In July 1997 London Underground offered part of the site for handover but this was rejected by the Portcullis House project team following inspection of the areas concerned on the grounds that they were not in a satisfactory condition. London Underground accepted the project team's decision and final handover of the site was achieved in stages between October 1997 and March 1998 **(Figure 10)**. The majority of the site was handed over on 5 January 1998, when permanent works on Portcullis House began, just over 48 weeks later than originally planned.

2.14 London Underground told us that the main reasons for its late handover of the site were delays in its own construction work caused by a variety of problems. These included design changes and unforeseen difficulties in clearing the site, including the discovery of asbestos in some buildings. London Underground's rate of progress was also constrained by concern at the possibility that their works might cause subsidence of the clock tower of the Palace of Westminster (Big Ben), which limited the scope to accelerate work to catch up for earlier delays. The collapse of a tunnel being built for the Heathrow Express railway also caused some disruption when work on parts of the Jubilee Line using the same tunnelling technique was temporarily suspended for safety checks.

2.15 The delay in the handover of the site by London Underground meant that the project team for Portcullis House had longer than expected to carry out the work needed before construction began. This work included, for example, completing the design of the building and placing contracts for the manufacture of building components and for the building's construction.

10 Planned dates for handover of site from London Underground

London Underground handed over the site in stages between October 1997 and March 1998.

Date of undertaking	Undertaking given
January 1994	Agreement with London Underground sets 2 February 1997 for London Underground to hand over the whole of the area required for the construction of Portcullis House.
September 1994	London Underground reports delays in work of up to 24 weeks, but reaffirms confidence that handover will be on time.
February 1995	London Underground tells Accommodation and Works Committee that date of handover will not be affected by the delays that have occurred.
July 1995	London Underground reports that it is 19 weeks behind schedule but that handover of the site will not be affected.
September 1995	London Underground agrees that contingency planning will be needed to assess a phased handover of the site.
October 1995	London Underground reports it has agreed a revised construction programme with its contractor, maintaining February 1997 handover.
February 1996	London Underground reaffirms that it believes planned February 1997 handover will be achieved.
April 1996	London Underground reports that it would be making contingency plans to ensure that the construction of Portcullis House would not be compromised if its work was incomplete at the time of handover.
June 1996	London Underground reports that February 1997 handover will not be achieved.
July 1996	London Underground gives evidence to Accommodation and Works Committee and proposes phased handover of site, with erection of Portcullis House starting on 4 May 1997 and full handover on 15 June.
September 1996	London Underground reports revised full handover date of 11 July 1997.
October 1996	London Underground reports revised full handover date of 29 July 1997.
May 1997	London Underground reaffirms full handover date of 29 July 1997.
June 1997	London Underground reports revised full handover date of September 1997.
July 1997	London Underground offers partial handover but this is rejected by Portcullis House team due to unsatisfactory condition of the site.
October 1997	Handover achieved of limited areas for preliminary works.
5 January 1998	Handover of most of site, allowing erection of Portcullis House to begin.
3 March 1998	Remainder of site handed over.

Source: National Audit Office

2.16 Several significant delays had occurred in this work, mainly linked to problems with the design of the joint between the building's sandstone piers and the pre-cast concrete panels that formed the main structure of each floor, which delayed production of both the piers and the floor panels. The late handover of the site was therefore helpful to the project team because it gave them valuable additional time to resolve these problems, which would otherwise have put the construction timetable under pressure. It also helped the team to accumulate bigger stockpiles of pre-fabricated building components before work began on site. Although this increased storage cost, it also helped to minimise the time taken to erect the building.

Once London Underground handed over the site, construction of Portcullis House took 6 weeks longer than planned

2.17 At the time of the handover of the bulk of the site on 5 January 1998, the Portcullis House project team continued to plan to complete Portcullis House within 30 months after this date. They planned, therefore, to complete the building by 5 July 2000. In the event, certificates of practical completion were issued by Michael Hopkins and Partners and Laing on 18 August 2000, 6 weeks and 2 days later than planned.

2.18 The delay of just over six weeks was primarily the result of defects in the connections between the segments of the pre-cast concrete arches that support the interior courtyard walls of Portcullis House. Testing of the concrete used in initial casts of the joints (known as "stitches") indicated that the concrete was not strong enough. Difficulties were also encountered with joints between the pre-cast concrete floor panels in the corners of the first floor. These problems threatened to delay completion of the building by 20 weeks, and in October 1998 the project manager, TBV Consult Ltd., instructed Laing to bring in additional planning staff to review the options for rescheduling work so as to recover some of this delay. However, all of the options were expected to increase both costs and the risk of further delay. The Project Advisory Board therefore agreed to continue with the original work plans and to accept some slippage in the completion of the building, while still looking for opportunities to recover some time where possible.

2.19 In order to recover time, the contractor responsible for constructing the stitches agreed to start night-time working at its own expense. This allowed three weeks to be recovered by the time that work began on erecting the roof on 7 December 1998. However, further minor delays occurred during 1999 in fitting out the building and installing the joinery, which lost another two weeks. The net total of these delays, when taken together with the delay caused by the problem with the courtyard arches, was just over 19 weeks. Since the original plans included a contingency allowance of 13 weeks, the effect of these delays was to use up all of the contingency allowance and in addition to put back the final completion date by just over 6 weeks to 18 August 2000.

The timetable for Portcullis House compares well with those for similar buildings

2.20 There is a long history of public sector building projects taking longer, sometimes very much longer, than planned. In our January 2001 report, Modernising Construction[22], for example, we reported the finding from the University of Bath's Agile Construction Initiative that around 70 per cent of such projects were completed later than planned. And the completion of the first phase of the new British Library, albeit a much larger building than Portcullis House, took some 13 years. Completing the construction of Portcullis House in just 44 days more than the planned time was therefore a creditable achievement.

2.21 The time taken to construct Portcullis House compares well with the time taken to build other Parliamentary buildings. For example, the new buildings being constructed for the German Parliament in Berlin include two buildings (Paul-Löbe-Haus and Jakob-Kaiser-Haus) to provide offices for Members, Committee rooms and other facilities similar to those of Portcullis House, which were completed in 51 months and 60 months respectively from the start of work on site, much later than planned because of difficulties encountered in constructing the foundations for the buildings.

22 *HC 87 (2000-01).*

Part 3

Forecast and outturn cost

3.1 In this part of the report, we examine how the final estimated cost of Portcullis House compares to the forecasts prepared when the House of Commons Commission approved the project in 1993 and when construction started in January 1998. Specifically, we examine:

- how the forecast cost of the building evolved over the life of the project;
- the latest estimated outturn cost of the building;
- why the estimated outturn differs from the forecasts prepared when the Commission approved the project;
- the forecast and outturn cost compared with other public sector buildings; and
- other costs involved with the project.

The forecast cost of the building changed several times over the life of the project

3.2 Budgetary control of the project was complicated by the uncertainty over when work on Portcullis House could begin. There was an extended period between the approval of the project in 1993 and the likely start of construction in 1997, making it impractical to estimate at the outset an accurate provision for inflation. Budgetary control has therefore been carried out against two bases:

- **costs expressed in terms of constant prices, with the effect of inflation excluded**; following consultation with HM Treasury, the House of Commons Commission approved the project in May 1993 on the basis of a forecast cost of £151 million at constant 1992 prices; between 1993 and 1998 the Commission approved changes to the building and increases in its forecast cost and set a budget of £187 million at 1992 prices; subsequent cost control by the project team has focused mainly on the 1993 baseline of £151 million at 1992 prices;
- **costs expressed in outturn cash prices, that is the actual cash expenditure incurred**; House officials provided updated forecasts on this basis to the Commission in 1998, when construction began and the timetable and the likely effect on costs of inflation became more certain; officials estimated that the forecast cost of £187 million at 1992 prices agreed by the Commission to that point was equivalent to expenditure at outturn prices of £245 million (rounded to £250 million in published reports of costs); since then reporting by officials to Members and the public has focused mainly on this baseline.

The evolution of cost forecasts is explored in the following sections.

Before April 1992, when the project was the responsibility of the Department of the Environment, the forecast cost of the building changed several times

3.3 In preparing its report on the initial brief for the building in June 1991[23], the Select Committee on House of Commons (Services) Committee asked the Parliamentary Works Office of the Department of the Environment for an indication of the cost of the building. The Department told the Committee that at that stage of the project it was only possible to provide an estimate of the order of the building's cost, at about £60 million at 1991 prices (equivalent to £57 million at 1992 prices).

3.4 In February 1992 the Accommodation and Works Committee, presented the architect's Preliminary Sketch Plan for Portcullis House to the House of Commons and reported on the building's timetable, design and likely cost[24]. The Committee reported that it had not yet received any official estimate of cost based on the Sketch Plan. On the basis of advice from the Parliamentary Works Office, the Committee said that the best current estimates of the total cost were, however, in the region of £120 million to £130 million (including value added tax where not recoverable and at 1991 prices, equivalent to £114 million to £123 million

23 *HC 551 (1990-91).*
24 *HC 269-I (1992-93).*

at 1992 prices). The Committee said that it expected its successors to be provided with detailed advice on costs in the near future. On 9 March 1992, the Committee's report was approved by the House of Commons.

In 1993, when the project was approved, the building was forecast to cost around £151 million at 1992 prices

3.5 Responsibility for the project was transferred from the Department of the Environment to the House of Commons in April 1992. In January 1993, the project architects completed the Final Sketch Plan, supported by design documents prepared by the project's engineers and a cost plan prepared by its quantity surveyors. The quantity surveyor estimated the construction cost of the building as £124 million (including value added tax and at 1992 prices). In addition:

- House officials in consultation with the project manager forecast a cost of £21 million - again in 1992 prices and but exclusive of value added tax (which is recoverable for expenditure of this nature) - for the fees of consultants such as architects, engineers, quantity surveyors, solicitors and kitchen designers. An allowance of £1 million was also included for works of art.
- The project's quantity surveyor estimated the likelihood that the project's outturn cost would exceed the estimated cost. The quantity surveyor assessed the effect on costs of each of 26 risks identified - such as a delay to the handover of the site and the complex nature of the building's design - for two alternative timetables for the handover of the site by London Underground (27 months and 36 months). For the 36 month handover period, the quantity surveyor forecast additional costs of £6 million for average risk[25] and £19 million for maximum risk. For the 27 month handover period the estimated additional costs were slightly higher - £7 million and £22 million respectively.

In February 1993, following a recommendation by the Accommodation and Works Committee that the project be approved, the Parliamentary Works Directorate presented a report to the Finance and Services Committee inviting it to make an investment decision based on these figures. The figures for the 36 month handover (the timetable finally approved) are summarised in **Figure 11**.

11 The cost forecasts presented to the Finance and Services Committee, at 1992 prices, for a 36 month handover period

Officials presented cost forecasts based on two estimates of the project's risks.

	£m at 1992 prices	
Construction costs	124	
Professional fees	21	
Works of art	1	
Basic estimate	146	
Add average risk provision	6	-
Or maximum risk provision	-	19
Total forecast	152	165

Source: Parliamentary Works Directorate

3.6 The report also provided illustrative estimates of the possible effect of inflation over the life of the project. Two estimates were given. One of £37 million assumed a steady rate of inflation in the construction industry of five or six per cent. The other, of £63 million, assumed a steep initial rise in construction prices in 1994-95, as the industry moved out of recession, followed by inflation at five or six per cent over the remaining life of the project. The inflation estimates were provided for illustrative purposes - because the project's timescale and the difficulty of predicting the start date of the construction of the Jubilee Line Extension meant that there were considerable uncertainties surrounding the calculation - and as such the Commission was not asked to approve them. Most subsequent cost monitoring reports presented the forecast cost of the building in 1992 prices rather than in outturn prices.

3.7 The Finance and Services Committee supported the Parliamentary Works Directorate's proposal. In May 1993, the House of Commons Commission turned down the proposed £1 million works of art budget but approved the remainder of the project on the basis of a 36 month handover period and the following estimated costs:

- construction costs of £124 million at 1992 prices;
- consultants' fees of £21 million at 1992 prices; and
- average and maximum risk of £6 million and £19 million respectively at 1992 prices.

The total approved cost of the building at 1992 prices was therefore forecast as £151 million at average risk and £164 million at maximum risk.

25 *The average risk estimate represents the total financial commitment most likely to be required to complete the project to time, and the maximum risk estimate represents the figure which could be exceeded with a ten per cent probability (i.e. the project team were 90 per cent certain this figure would not be exceeded).*

In January 1998, when construction started, House officials forecast that the outturn cost of the building would be £187 million in 1992 prices

3.8 Between its approval of the project in May 1993 and the start of construction in January 1998, the House of Commons Commission approved a number of changes affecting the cost of the building. There were two main elements to the changes:

- The initial tenders for the bronze roof and the fenestration elements of the building were significantly in excess of their budgets. Specifically (in 1992 prices):
  - the budget for the bronze roof was £8 million, and the lowest tender received was £16 million; and
  - the budget for the fenestration was £23 million, and the lowest bid received was £39 million.

  Overall, therefore, the tenders for these two elements of the building exceeded their budgets by £24 million, in 1992 prices.

  While savings were achieved through negotiations with the suppliers and some redesign work was undertaken to reduce costs, the Commission decided to retain the long life design of the building and not change to less expensive materials. In order to meet the higher than expected cost of the building, the Commission therefore agreed to draw down the £13 million difference between the average risk forecast and the maximum risk forecast and in addition agreed to provide a further £10.5 million on top of the maximum risk forecast.
- An extra £3.2 million at 1992 prices was provided for construction costs to take account of new statutory requirements, to reflect new facilities across the Parliamentary estate (approved after the Final Sketch Plan had been approved), and to pay for a change in the planned use of the building's first floor from accommodation for Select Committee staff to Select Committee rooms and meeting rooms.

3.9 In addition, the Commission was advised by officials that delays to the construction of the Jubilee Line Extension were imposing costs on the project, for example for the storage off-site of pre-fabricated building components. Officials estimated that the effect of this delay, when taken together with the changes approved by the Commission, was to increase the forecast cost of the building at 1992 prices from £151 million to £187 million **(Figure 12)**.

3.10 Throughout the life of the project, the effects of inflation were calculated by using construction price indices published by the Royal Institute of Chartered Surveyors, an approach that was agreed with HM Treasury when the project was approved in 1993. In January 1998, as construction started, House officials drew together the changes in costs to that point. In doing so they were able to make more accurate estimates of inflation than would have been possible in 1993, not least because the level of inflation for the years 1993-97 was now known. In addition, they were able to predict costs with greater confidence because all the larger construction contracts had been let and expenditure of £84 million had already been committed.

12 Changes in the forecast cost of the building at the beginning of 1998

Cost changes between 1993 and 1998 increased the forecast cost of the building at 1992 prices from £151 million to £187 million.

	£m (1992 prices)	£m (1992 prices)
Total cost forecast when project approved by Commission in 1993 (average risk forecast)		**151**
Cost changes approved by the Commission between 1993 and January 1998		
■ Higher than expected cost of fenestration and roof (partly paid for by switch from average risk to maximum risk forecast)	**24**	
■ Other changes (new statutory requirements, estate-wide changes and change in use of first floor)	**3**	
Estimated extra cost resulting from delay in Jubilee Line Extension and increased risk provision	**9**	
Budget approved by Commission in January 1998		**187**

Source: National Audit Office

3.11 Taking all these factors into account, a submission, in January 1998, from the Parliamentary Works Directorate to the House of Commons' Finance and Services Committee, and to the Commission, forecast that the cost of the building would be £245 million in outturn cash terms. This total was made up of costs of £187 million in 1992 prices, plus £58 million in inflation. The total of £245 million, rounded to £250 million, has been the basis of subsequent budgetary control of the project and has been used by officials as the baseline against which to compare costs when reporting to Members and the public on whether the building has been within budget.

Forecasts of the building's likely cost were reported to the House of Commons at several stages over the life of the project

3.12 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. 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 recorded in the minutes of the former Committee when they were laid before the House in March 1993.

3.13 The forecast of £151 million approved by the Commission when it approved the project in May 1993 was not published at the time. However, the Chairman of the Finance and Services Committee reported to the House in an answer to a written question in November 1995 that the 'approved estimate' for the project was £154 million. In January 1996, a forecast of £165 million at 1992 prices was reported and in December 1997 a forecast of £250 million at outturn prices was reported. Further forecasts were reported in answers to written questions from 1996 onwards and in 1999-2000 the Commission included a forecast of the final cost of the building in its annual report **(Figure 13)**.

Overall, the cost of the building exceeded the 1993 forecast, but is less than the 1998 budget

3.14 In November 2001, the latest estimated outturn cost of the building in outturn prices was £234 million, or £179 million in 1992 prices. **Figure 14** shows that the estimated outturn exceeds the 1993 forecast but is less than the 1998 budget.

3.15 The reasons for the estimated building cost (at 1992 prices) exceeding the 1993 forecast are discussed in the next section. These extra costs were offset to a degree by inflation proving to be less than was estimated in 1998 - £55 million compared with the estimate of £58 million made when construction started in 1998.

3.16 The outturn shown in Figure 14 is based on the latest firm information. The very final outturn may be more or less than this because the House has some final accounts to be settled amounting to £2.6 million (£1.8 million in 1992 prices), notably with the suppliers of the fenestration (pre-fabricated wall and window units) and with the architects and engineers.

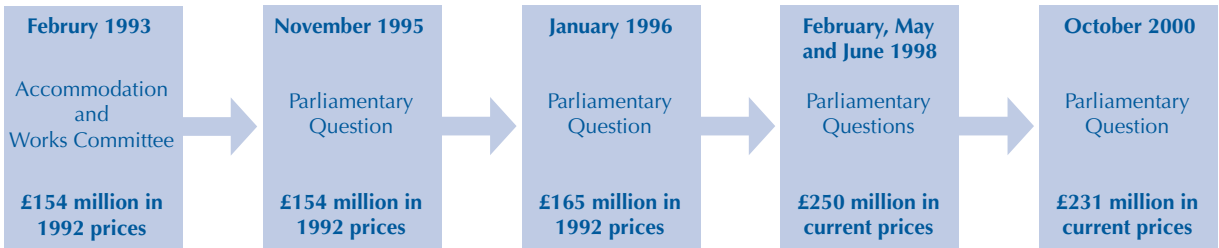
Control over the outturn against forecast cost for Portcullis House compares well with other Parliamentary buildings

3.17 For a number of other Parliamentary buildings, we looked at whether the estimated final outturn was within the original estimate or budget.

- In September 2000, the Auditor General for Scotland reported that, at that time, the estimated outturn cost of the new Scottish Parliament building was £144 million, in 1992 prices, compared with a budget, in 1992 prices of £67 million, an increase of 115 per cent. Since then the expected total cost of the new Scottish Parliament has increased further, but the expected cost of the new block containing the planned offices for Members of the Scottish Parliament has remained around the level expected at the time the Auditor General's report was published.

13 Forecasts of the cost of the building reported to the House of Commons

Forecasts of the building's cost were reported to the House of Commons at several stages.



Source: National Audit Office

14 Costs of the building - outturn compared to the forecast and the 1998 budget

The estimated outturn exceeds both of the 1993 cost forecasts, but is less than the 1998 budget.

	Forecast (£million)[1]			Outturn (£million)[1], [2]	Difference between forecast and outturn (£million and %)		
	1993 (average risk)	1993 (maximum risk)	1998 budget (£million)[1]		1993 forecast (average risk)	1993 forecast (maximum risk)	1998 budget
Cost at 1992 prices	151	164	187	179	+28 (+18%)	+15 (+9%)	-8 (-4%)
Cost at outturn prices	-[3]	-[3]	245[4]	234	-	-	-11 (-4%)

NOTES

1. All figures are inclusive of value added tax where this is not recoverable.
2. Outturn figures have been adjusted to reflect receipts and are subject to adjustment as final accounts are settled.
3. Due to the length of and uncertainty surrounding the timetable in 1993, no estimate of inflation was approved as part of the 1993 forecast.
4. Rounded to £250 million in published reports of costs.

Source: National Audit Office analysis of House of Commons' financial information

- In November 2000, the Auditor General for Wales reported that the estimated cost of the new building for the National Assembly for Wales could be as much as £23 million (£16 million in 1992 prices) compared to the original estimate of £12 million (£8 million in 1992 prices), an increase of approximately 100 per cent. The increase was due primarily to the omission of key elements of the design from the original budget, design changes requested by the Assembly, and increases in fees, including the architect's fees. In July 2001, following a further increase in the estimated cost of the building, the Assembly decided to terminate the employment of the design team, to seek tenders for a developer to complete the building and to suspend works pending the acceptance of such a tender.
- The new buildings being constructed for the German Parliament in Berlin include two buildings (Paul-Löbe-Haus and Jakob-Kaiser-Haus) to provide offices for Members, Committee rooms and other facilities similar to those of Portcullis House. The budget for the two buildings was 911 million Deutschmarks (£302 million) in 1992 prices but by August 2001, when these buildings were largely complete, their expected final cost had increased by 16 per cent to 1,061 million Deutschmarks (£351 million).

Costs exceeded the 1993 forecast for several reasons

3.18 The main reasons for the outturn cost exceeding the 1993 forecast were the higher cost of some parts of the construction, higher than forecast consultants' fees, and additional costs caused by the delay to the Jubilee Line Extension works. These cost increases were largely reflected in the budget established in 1998, and the main reason for the outturn being lower than the 1998 forecast is that the risk provision of £8 million included in the forecast has not been required. The breakdown of building costs is shown in **Figure 15** and each of the main reasons for higher costs compared to the 1993 forecast is discussed below.

Construction costs

3.19 As at June 2001, the estimated final cost of the construction element of the building was £141 million in 1992 prices compared with the 1993 forecast, on which the approval of the project was based, of £124 million, an increase of 14 per cent. The net overspend of £17 million was made up of an overspend of £29 million on some elements and savings of £7 million on others and from release of a contingency allowance of £5 million. Comparison with the 1998 budget is not possible because it was not broken down to the level of individual elements.

15 Costs - outturn compared to 1993 and 1998 forecasts, at 1992 prices

Outturn construction costs and professional fees both exceeded the 1993 forecast, but only professional fees exceeded the revised 1998 forecast

	Forecast (£million)[1]			Outturn (£million)[1],[2]	Difference between forecast and outturn (£million and %)		
	1993 (average risk)	1993 (maximum risk)	1998 budget (£million)[1]		1993 forecast (average risk)	1993 forecast (maximum risk)	1998 budget
Construction costs	124	124	142	141	+17(+14%)	+17(+14%)	-1(-1%)
Professional fees	21	21	30	32	+11(+52%)	+11(+52%)	+2(+7%)
Estimated additional costs of delays to the Jubilee Line Extension[3]	6	19	7	6[4]	0(0%)	-13(-68%)	-1(-14%)
Risk provision[4]			8	0			- 8(-100%)
Total	**151**	**164**	**187**	**179**	**+28 (+18%)**	**+15 (+9%)**	**-8 (-4%)**

NOTES

1. All figures are inclusive of value added tax, where not recoverable, and in 1992 prices.
2. Outturn figures have been adjusted to reflect receipts. Outturn construction costs include £4 million in professional fees for design work that it was originally expected would be carried out by contractors as part of the construction costs.
3. Not separately identified in the 1993 forecasts - delays to the Jubilee Line Extension were one of the risks provided for by the risk provision.
4. Over the life of the project, House officials used the risk provision as a general contingency for overspends against the construction and the professional fees budget.

Source: National Audit Office

3.20 Over 60 per cent of the overspend of £29 million was accounted for by five elements of construction (**Figure 16**). Examples of savings achieved include £1.3 million (35 per cent of the Final Sketch Plan budget) on the courtyard roof and £1.8 million (35 per cent) on those windows not in the fenestration contract.

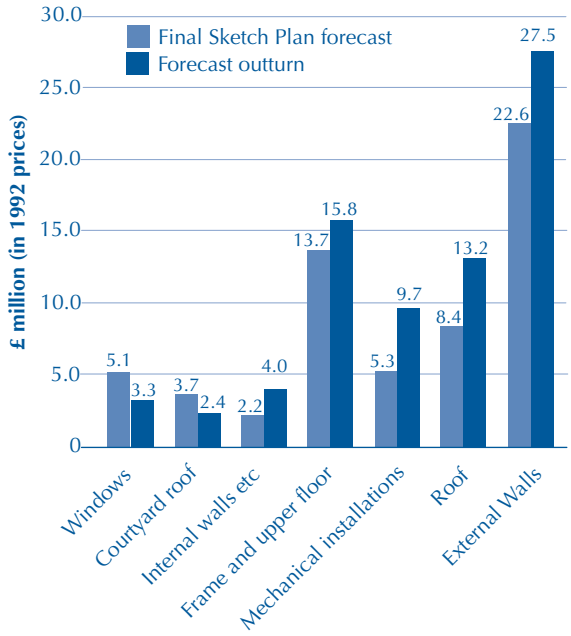
3.21 For the five elements over forecast highlighted in Figure 16, we examined the reasons for the estimated outturn exceeding the 1993 forecast. We selected the key package in each element. In each case, we found that the initial lowest bid exceeded the forecast by a considerable amount (**Figure 17**). The innovative nature of the design made it difficult to produce an accurate forecast because there were no previous examples on which to draw. Changing legal requirements for health and safety also increased the cost of the mechanical installations. In each case, the project team worked with the successful contractor to identify savings - for instance, savings of £1.4 million were identified on the cost of the roof.

3.22 Once prices had been agreed with contractors, outturn costs were close to the levels agreed. In January 2001 our report *Modernising Construction*[26] reported that in 1999, 73 per cent of public sector construction projects exceeded their tender price (the budget once the trade contractors had been selected), 14 per cent were delivered to tender price, and the remaining 13 per cent were under tender price[27]. For Portcullis House, the estimated final outturn cost for construction exceeds tender prices by one per cent after allowing for inflation and taking into account the cost of the delays to the Jubilee Line Extension, a creditable performance.

26 *HC 87 (2000-01).*
27 *Drawing on the findings of the University of Bath's Agile Construction Initiative.*

16 Outturn against forecast, at 1992 prices, for the seven elements of the construction differing most from the forecast

Five construction elements accounted for cost overruns of £18.0 million, although these were partly offset by savings on other elements.



Source: National Audit Office analysis of cost data

17 The five construction elements where costs most exceeded the 1993 forecast

Tender prices were well in excess of forecast for the five construction elements which had the highest cost overruns.

Element	Excess of lowest tender over forecast
Mechanical installations	49%
Internal walls	18%
Frame and upper floor	39%
Roof	83%
External walls (fenestration)	70%

Source: National Audit Office analysis of the House's tender reports

Professional fees

3.23 The estimated final outturn for professional fees is £40 million, or £32 million in 1992 prices. Compared with the 1993 forecast this represents an overspend of 52 per cent against the original forecast of £21 million. The estimated outturn for professional fees for Portcullis House represents 18 per cent of the building's estimated final cost, compared to the 14 per cent included in the 1993 forecast. The outturn is also higher than the 1998 budget, although by a much smaller amount. The key reasons for the overrun compared to the 1993 forecast are summarised in **Figure 18**.

18 Reasons why the outturn for consultants' fees exceeded forecast made in 1993

The estimated final outturn for professional fees was £32 million at 1992 prices, some 52 per cent more than forecast in 1993.

	£ million
Original forecast (in 1992 prices)	**21**
Additions to existing commissions, prolongations and time charges	10
New commissions not budgeted for	1
Estimated final outturn (in 1992 prices)	**32**
Inflation	8
Estimated final outturn (in outturn prices)	**40**

Source: National Audit Office analysis of cost reports produced by Schal

3.24 After deducting inflation of £8 million, the difference between the 1993 forecast and the estimated final outturn for professional fees amounted to £11 million. New commissions - that is, for items not budgeted for at the Final Sketch Plan stage - amounted to £1 million. Most of these arose from developments on the Parliamentary estate after the Final Sketch Plan budget was approved in 1993 - for instance, the introduction of the Parliamentary Data and Video Network. The impact of extensions to contracts (most of which assumed a completion date for the building of January 1997), additional time charges - for example, Laing Management Limited required more staff than originally planned - and additions to existing commissions, resulted in additional fees of £10 million.

3.25 In our report *Modernising Construction*[28], we established that a number of government departments and agencies were either using or developing different forms of contracting to remunerate suppliers in order to provide them with incentives to perform well - for instance, setting a target price for the contract, with any efficiency gains shared between the department and the contractor. The fee structure for the members of the project team, the fees for which accounted for over three-quarters of the estimated outturn for all consultants' fees, was based mainly on a percentage of construction costs rather than a fixed rate, a fee structure which provided little incentive for them to minimise construction costs. In March 1989, HM Treasury's Central Unit on Purchasing (CUP) issued guidance on professional fees - *The Selection and Appointment of Works Consultants* - which highlighted four commonly used fee structures: time charges; lump sums; *ad valorem*[29] payments; and target fees. The guidance stated that while the fee structure adopted on a particular project depends on a number of criteria - such as the project's size and complexity - generally, a lump sum fee is preferable to an *ad valorem* fee provided

28 *HC 87 (2000-01).*

29 *This structure makes automatic adjustments for changes to the scope and complexity of the project. There is no incentive for consultants to reduce construction costs as this will reduce their fees.*

that there is sufficient certainty about the work to be done and abililty to ensure it is done properly. And since the 1980s fixed fees have been increasingly used in the construction industry[30].

3.26 When a new project manager started work on the project, in 1996, he suggested a move from percentage to fixed fees. However, the Parliamentary Works Directorate did not attempt to renegotiate the contracts. And, in 1999, the Northcroft report (Appendix 2) recommended that, amongst other things, all fee agreements that involved percentage fees, reimbursable expenses, time charges, and prime cost staff recovery should be converted into fixed sums in order to ensure greater certainty of outturn costs.

3.27 House officials accepted the recommendation in the Northcroft report in principle, although they stated that a detailed study would be needed to assess the cost benefit implications for each commission resulting from the change in fees basis. The Parliamentary Works Directorate did manage to negotiate a move from percentage to fixed fees with its project manager and with its quantity surveyor - for example, the quantity surveyor's fee was converted to a lump sum for work completed up until December 2000 with staff costs being paid until the building was completed. However, the House did not make a formal offer of a fixed fee to the architects, or enter into negotiations to change the fee basis with the other members of the project management team.

3.28 We also looked at the arrangements for paying consultants' expenses. The original forecast for professional fees included an amount of £0.6 million for expenses, at 1992 prices. The final outturn for consultants' expenses was £1.8 million (£1.5 million in 1992 prices), an increase of 150 per cent after allowing for inflation. The increase was, in part, due to the impact of the delays to the construction of the Jubilee Line Extension. The contracts placed in early 1990s with, for instance, the architects and with the engineers were for fees plus expenses, in line with common practice at that time. More recent practice in the construction industry has been to include most expenses within fee rates, an approach which might have benefited the House had it been used in 1992.

The construction of the Jubilee Line Extension

3.29 The 1993 forecasts of building costs included provisions of £6 million and £19 million at 1992 prices for average and maximum risk. In the event, the main anticipated risk which materialised was the delay caused by London Underground. This risk was costed at £3 million in the 1993 forecast, but the House has calculated that the actual cost to the project of the delays was £9.1 million in outturn prices (including value added tax) - £6.8 million in 1992 prices. The 1998 budget included £7 million at 1992 prices for the cost of the delay.

3.30 This total consisted of higher construction costs of £6.0 million and increased professional fees of £3.1 million. Included in the figure for higher construction costs is £3.7 million[31], in outturn prices, paid in compensation to contractors, including the cost of prolonged storage of pre-fabricated items such as the concrete arches that support the courtyard walls. In addition, the House incurred extra costs of £1 million of additional construction costs because some contracts were placed one year later than originally planned.

3.31 In 1992, the House agreed with London Underground that if there was a delay to the site being handed over, London Underground would compensate the House for the costs of renting temporary accommodation only. On entering into the agreement with London Underground Limited, the House sought the advice of its solicitors who concluded that liquidated damages could only be established for future events that could reasonably be anticipated at that time, rather than all conceivable events. A rate of £8,000 a day was agreed, regardless of the stage the Portcullis House project had reached.

3.32 In the event, the late handover of the site has resulted in the House incurring other costs that might also have been reasonably anticipated, such as compensation to contractors for storing pre-fabricated items, but under its agreement with London Underground the House will be unable to recover these additional costs. The amount of liquidated damages due to the House from London Underground is still being negotiated. Counsel has advised House officials that, having made provision for liquidated damages, the agreement restricts the compensation due from London Underground to the amount originally agreed and for the reason stated. There can be no additional compensation payable and officials estimate that the amount of liquidated damages will be significantly less than the costs incurred by the House because of the delayed handover.

30 The 1989 CUP guidance has been superseded by HM Treasury/Office of Government Commerce, Procurement Guidance No 3: Appointment of Consultants and Contractors.

31 In January 2001, the Comptroller and Auditor General reported to the House of Commons on the Work Services Account Class XVIII A, Vote 2 for 1999-2000, which includes expenditure on the construction of Portcullis House (HC 25-XVIII). The report stated that up to the end of 2000 the House had incurred losses of £3.2 million, excluding value added tax, compensating contractors for the delays caused by the construction of the Jubilee Line Extension.

The forecast cost of Portcullis House was high compared to some other buildings and a small number of items have attracted attention

The forecast cost was high compared with some other buildings

3.33 At the time the House approved the project in 1993, the Parliamentary Works Directorate identified a number of reasons why the building's forecast cost was high.

- The building would have architectural and heritage significance (the building is adjacent to a World Heritage site), and was to be designed to last for a minimum of 120 years. As such, the major components of the building needed to be designed to last for the life of the building and materials should be of a high quality.
- The building was expected to be energy efficient. While there would be a high capital cost associated with this, there should be offsetting savings in running costs over the life of the building. Ove Arup and Partners estimated a saving of almost two thirds in annual energy cost compared with a prestige air conditioned office.
- The building's central London location, the engineering difficulties of the site, such as the Underground station, and the limited access to the site would add to the building's construction costs.

While the extra cost associated with these features was not identified, the Parliamentary Works Directorate asked the Finance and Services Committee to consider whether the proposed forecast reflected the intention to build 'an attractive and dignified building using high quality materials … which will do justice to the needs of the House'. The Finance and Services Committee supported the proposed forecast (see paragraph 3.7).

3.34 In the Northcroft mid-term review of the project in 1999, the 1993 forecast of the construction cost of Portcullis House was compared with a benchmark based on the firm's knowledge of the cost of other buildings. The benchmark was for a building providing similar accommodation to a standard equivalent to that of a corporate headquarters. The forecast was also compared to the cost of other buildings of similar status.

3.35 The Northcroft review estimated that the 1993 forecast construction cost for Portcullis House was 19 per cent higher than the benchmark cost. This percentage represents approximately £29 million of the building's estimated final cost in 1992 prices, or £37 million at outturn prices[32]. The review attributed the difference mainly to the cost of the building's superstructure and façade, and the engineering challenges of the site. The review also concluded that the building would provide value for the House if:

- the building delivers a life span in excess of 120 years;
- the promised lower costs of running and maintaining the building are achieved; and
- moneys due from London Underground and any defaulting contractors are recovered.

3.36 The review concluded that the House would obtain value from Portcullis House because:

- Portcullis House adhered closely to the scheme design and brief approved by the House of Commons; and
- the higher capital costs of the building had been incurred with a view to reducing the running and maintenance costs of the building during its life; the review expected this to provide an overall saving in the long term on maintenance costs and avoid the cost of accommodating the building's occupants elsewhere during major maintenance and repairs activities.

3.37 Direct comparisons of costs with those of other buildings are complicated by a number of the special features of Portcullis House which do not apply elsewhere - such as its construction above Westminster Underground station and the high quality of its overall design required by its location. However, the Northcroft mid-term review found that Portcullis House cost more per square metre to construct than other special buildings such as Lloyds of London and the New Parliament House in Sydney. The review attributed this higher cost to the smaller floor area of Portcullis House, resulting in lost economies of scale. Like for like comparisons with the planned new buildings for the Scottish Parliament and the National Assembly for Wales are at present impractical, since in neither case is the final cost of the building known, the accommodation for Members of the Scottish Parliament is being built as part of a larger complex, and the nature of the accommodation being provided for the National Assembly for Wales is different.

The building's fitting out costs amounted to approximately £24 million in 1992 prices

3.38 The cost of constructing Portcullis House includes £24 million, in 1992 prices, for fitting out costs - for example, £11 million for joinery and £3 million for fittings and furnishings. We looked at a number of areas where the media had suggested that costs were out of

32 *Based on a final cost of £179 million at 1992 prices and £234 million at outturn prices.*

control, or money had been wasted and found that reasonable procedures had been followed to prevent waste. Specifically we examined:

- the joinery;
- the entrance and reception area;
- the trees used in the building's courtyard; and
- the cost of Members' furniture.

The joinery

3.39 The Final Sketch Plan forecast the cost of the building's joinery at £8.4 million. The project team, however, felt that this was too large to ask one contractor to take on and it was therefore split into four separate packages. We examined the largest of these, for the joinery for the second, third and fourth floors, which had forecast costs (at Final Sketch Plan stage) of £3.9 million in 1992 prices.

3.40 The package's tender documentation - for the design, manufacture, supply and installation - was sent to seven companies, five of whom sent tenders in by the due date (one declined because of the quality requirements, the second because of a change in the company's structure). Of the five that submitted tenders, one was considered of insufficient quality to pursue. The lowest bid (after making adjustments for additions and for savings required meeting the specification) exceeded the budget by 23 per cent. The project team interviewed the remaining four tenderers and reviewed alternative details or specifications which offered potential savings. The project team visited the two favoured tenderers. Based on this work, the team selected the tenderer that had provided the most competitive bid and which had, at the same time, addressed a number of issues raised by the project team. The order was finally placed at £3.5 million in 1992 prices; and the final estimated cost of the package is £4.4 million in 1992 prices (£5.8 million in outturn prices).

The entrance and reception area

3.41 The Final Sketch Plan includes a forecast cost for furniture and fittings in the entrance and reception area. This forecast included a reception desk in the main entrance, a desk by the Serjeant at Arms' office, security equipment, and an enclosure for security guards behind the desk itself and in the main entrance. Five firms were invited to tender and four submitted bids. All four bids failed to meet the requirements of the specification. The project team therefore entered into negotiations with each bidder to select the bidder best able to meet the project's requirements and to establish the terms of the contract. Following post-tender negotiations, a contract was signed for £51,000 in 1992 prices, a saving of £31,600 against the budgeted price. The estimated final cost of this package is £59,000 in 1992 prices (£82,000 in outturn prices).

The trees used in the building's courtyard

3.42 The Final Sketch Plan approved by the Commission specified that the courtyard would be a 'well planted winter garden' - the sketches show two large and 21 small trees at an estimated one-off cost of £125,000 at 1992 prices. In addition to their aesthetic value, the trees would also help control temperatures within the courtyard by limiting the amount of sunlight reaching floor level. In 1996, the project team replaced the requirement for two large trees with a water feature, and in July 1998, the architect recommended the use of 16 Holm oak[33] trees instead of the 21 small trees. Seven companies were invited to tender to supply the trees on hire for five years, including providing containers, watering and maintenance. Only one of the seven companies invited to tender was able to provide Holm oak, at a cost of £86,000 on hire over five years, the other companies offering a variety of other types of tree instead at prices which ranged from £150,000 to £258,000. This company was awarded the contract but the Holm oak trees then offered were in poor condition and did not meet the specification.

3.43 The supplier offered a second set of trees but, again, these were not suitable. The Parliamentary Works Directorate terminated the contract in April 2000 at the cost of £5,000 and was contacted by another company which offered to supply fig trees[34] as a replacement. In view of the short time before the planned completion and opening of Portcullis House, the Parliamentary Works Directorate decided not to re-tender the contract and opted for a single tender action. The project team visited the Belgian nursery used by the company, and agreed to lease 12 fig trees at a cost of £148,000 over five years (approximately £94,000 in 1992 prices), including containers, watering and maintenance, and replacement of unhealthy trees if required. The decision to lease, rather than buy, the trees was not referred to the House of Commons Commission. The agreed price was lower than those quoted by any of the unsuccessful tenderers in the original tendering exercise and although fewer trees were procured they were larger than those specified in the original exercise - around 7 metres high compared to 5 metres. The trees were installed in September 2000. As the trees are evergreen, there is continuous leaf drop. The trees have now acclimatised to their new environment.

3.44 Because the trees were leased rather than purchased outright, the cost of the trees is not included in the House official's calculations for the cost of constructing Portcullis House.

33 *Quercus ilex.*
34 *Ficus nitida.*

The cost of furnishing Members' offices

3.45 The Final Sketch Plan included a forecast cost of £1.1 million for furniture and equipment. This was subsequently divided into separate packages covering, amongst other items, furniture for Members' offices - a chair, a desk, three desk pedestals, and a coffee table and two easy chairs (or a conference table and four chairs), illustrated in **Figure 19**.

3.46 The project team used competitive tendering procedures to select suppliers. We assessed the price paid for the furniture against the prices quoted in the 2001 Guilbert furniture catalogue, a standard source of furniture for government departments and other public bodies. We found that the cost of furnishing Members' offices was broadly comparable with that available to other public sector organisations (**Figure 20**).

19 The interior of a Member's office

Interior of typical office

Corridor

Source: The House of Commons

20 The cost of furniture for a Member's office compared to furniture available to other public bodies

The cost of Members' furniture was in line with the prices available to other public bodies.

Item of furniture £	Cost per item (Portcullis House) £	Prices quoted in the 2001 Guilbert catalogue for similar items £
Desk	453	240 - 1,000
Meeting table	286	328
Coffee table	190	315
Desk pedestal	245	275
Chair	474	280 - 502
Easy chairs	440	650

Source: National Audit Office analysis of tender documents and the 2001 Guilbert furniture catalogue

The House incurred another £13 million on other expenditure associated with the project

3.47 In addition to the costs of the building itself, the House has incurred other costs totalling £13 million in outturn costs (£8 million at 1992 prices) associated with the project. If these costs are included, the estimated total cost of the project is £247 million in outturn prices, or £187 million at 1992 prices.

3.48 The largest additional cost was a total of around £10 million in legal costs and an out of court settlement after a company which had been unfairly treated in a competition to supply the fenestration (pre-fabricated wall and window units) for the new building successfully sued the House. The circumstances which led to this case (the Harmon case) are explored in more detail in Part 5 of this report.

3.49 Not all the other additional costs can be separately identified, but the main components totalled some £3.3 million to December 2000, and included:

- £997,000 in renting accommodation at 30 Great George Street for the on-site members of the project team;
- the cost of time spent by the staff (the Project Sponsor and his secretary) of the Parliamentary Works Department is not included in the building's cost; we estimate this cost, over the life of the project, to be around £700,000[35];
- £592,000 for the building's SVC connection, which links Portcullis House to the Parliamentary network;
- £287,000 on removals relating to Portcullis House; and
- £253,000 for the Parliamentary Data and Video Network.

35 *This calculation is based on the mid-point of a Grade 5's salary and a secretary's salary in 1995-96.*

Part 4

Delivery of the agreed specification

4.1 In order to assess how the building compares to the agreed specification, we examined whether the building provides the accommodation expected and the desired quality of materials, design and workmanship, and how well the building has been received by Members and others.

Portcullis House provides the accommodation that was specified, with some minor variations

4.2 The Final Sketch Plan, which formed the basis of the Commission's approval of the project in May 1993, proposed 210 offices for Members and a variety of other accommodation. **Figure 21** compares the accommodation specified in the Final Sketch Plan with that provided by Portcullis House as built. It shows that the accommodation provided was largely that specified in the Final Sketch Plan, but there were some changes.

4.3 The main change from the specification was an increase in the number of conference and meeting rooms at the expense of the space originally intended for use of staff of the Clerk's department (for example, Select Committee staff). This change was made after reconsideration of the Parliamentary estate, and resulted in extra costs of £1 million. The displaced staff were accommodated in No 7 Millbank.

21 Provision of the accommodation specified in the Final Sketch Plan

The accommodation provided was largely that specified in the Final Sketch Plan, but there were some changes.

Accommodation specified	Accommodation provided?
Gross internal floor area: 22,700 square metres	Yes
210 Members' offices, average size of 20 square metres	Yes
198 offices for Members' staff	Yes
Dedicated subway link to the Palace of Westminster	Yes
Four Select Committee rooms and three smaller meeting rooms	Additional space provided, allowing for a total of four Select Committee rooms, two large conference rooms and nine smaller meeting rooms
1,454 square metres of offices for staff of the Clerk's department (sufficient for around 120 staff)	Not provided - this space used for the additional conference and meeting rooms
200 seat cafeteria and 58 seat restaurant	Yes
Ground floor library	Yes
Vote Office issue point	Yes
"Daily necessities" shop, hairdresser and post office for use of Members and staff, plus public shops on Bridge Street frontage	"Necessities" provided by public shops on Bridge Street frontage; internal space released used to install cash machines for use of Members and staff; post office provided; hairdresser not provided, but available in main Palace; coffee stall additionally provided
Accommodation for medical centre, BT communications centre and office services and maintenance staff	Yes

Source: National Audit Office

A high quality of materials, design and workmanship was specified and delivered

4.4 In order to assess how far the building has achieved the desired quality of materials, design and workmanship, we examined:

- the quality requirements that were specified; and
- how these were delivered.

The quality requirements of the House

4.5 The quality requirements of the House were developed primarily in the initial brief produced by the Select Committee on House of Commons (Services) in June 1991, and in the subsequent Preliminary and Final Sketch Plans. These specified that the construction should be of durable, high-quality materials which would be in keeping with the area and which would weather well. It should also come to be regarded as an example of the very finest late-twentieth century British architecture, and should set an example in terms of its energy efficiency.

4.6 One of the purposes of employing Michael Hopkins and Partners as architect for Portcullis House was to help in ensuring that the building was of the required architectural standard. The firm was originally selected by the then Department of the Environment in 1988 on the basis of their design skills and technical expertise, in competition with over 30 other firms. Sir Michael Hopkins is one of the leading British architects of his generation, has been knighted and awarded a CBE for his services to architecture and was awarded the 1994 Royal Gold Medal for Architecture of the Royal Institute of British Architects. His past work has included the Mound Stand at Lord's cricket ground, the remodelling of Bracken House in the City of London and the 1989-1994 reconstruction of Glyndebourne Opera House.

4.7 The Final Sketch Plan developed by Michael Hopkins and Partners and the project engineers, Ove Arup sought to meet the House's requirements in several ways:

- Materials were selected for their durability. For example, bronze was specified instead of steel for external metalwork because of its expected resistance to corrosion. Similarly, solid stone instead of concrete faced with stone was specified for the external frame of the building, mainly to avoid the risk of stone facings coming loose with age. The use of these materials added some £12 million and £3 million respectively to the construction cost of the building forecast in the Final Sketch Plan but was expected to result in long term savings in maintenance and repair.
- Building components not expected to last 120 years (such as electrical and ventilation equipment) were designed so that they could be maintained or replaced during the life of the building. Most modern office buildings are designed in the expectation that they will need to close for major refurbishment every 20-40 years but this would not be possible if Portcullis House is to be permanently available for Parliamentary use. Accordingly, Portcullis House was designed to make access to these components sufficiently easy to enable renewals to be carried out during the Parliamentary recess, thereby allowing the building to be used for its intended purpose without interruption.
- The design had to harmonise with adjoining buildings. For example, the colour of the stone and the bronze was intended to harmonise with the stone walls and black cast iron roof of the Palace of Westminster to the south. And the height of the building and the roof top towers were selected to harmonise with the design of the adjoining Norman Shaw buildings to the north.
- Because of the sensitivity of the site, the architectural design of the building was scrutinised extensively by English Heritage and Westminster City Council. The Royal Fine Art Commission also offered advice on the design.

4.8 The design also incorporated several features to provide a high standard of energy efficiency:

- The building is not conventionally air-conditioned. It uses innovative design features instead of refrigeration equipment to provide cooling in the summer, including using water taken at a temperature of 13 degrees centigrade from two boreholes sunk 150 metres into the ground beneath the building.
- To minimise the use of artificial lighting, light shelves with reflective top surfaces, three quarters of the way up each window, reflect outside light into the depth of rooms and provide shade from low level sun.
- To conserve water, borehole water recycled from the cooling system is used for lavatory flushing.

4.9 Ove Arup estimated the total energy consumption of the building would be around 90 kilowatt hours a year per square metre, less than half the energy consumption reported by the Building Research Establishment of a good practice air-conditioned building (212 kilowatt hours a year per square metre) and less even than a good practice naturally ventilated building (124 kilowatt hours a year per square metre). However, it is not possible to assess whether the building is yet delivering this performance. In the first twelve months since Portcullis House opened in September 2000, the total energy consumption of Portcullis House was equivalent

to 413 kilowatt hours a year per square metre, but this included energy used for non-building uses, such as occupants' computers. The building has only a limited number of gas and electricity meters (two of each) and a special review will be needed to assess its energy performance fully.

How the specified quality requirements were delivered

4.10 Following the Commission's approval of the Final Sketch Plan, further development of the design took place, both by the design team prior to the placing of contracts for construction and by contractors after contracts had been placed. The main purpose of this work was to fill in details of the design but it also resulted in some further changes, including:

- the granite intended to be used for the courtyard columns and arches was replaced by reinforced concrete, because of difficulty in obtaining stone of the strength required in the necessary sizes;
- the plaster finishes intended for internal walls were replaced with precast concrete panels, for aesthetic reasons, ease of construction and as part of the energy efficiency strategy; and
- the frame supporting the courtyard roof was constructed mainly in wood rather than the stainless steel originally intended, for aesthetic reasons.

4.11 In order to ensure that the specified standards of materials and workmanship were achieved once contracts had been placed, trade contractors were required to operate quality systems certified to the international quality standard ISO 9001. Design work by contractors was subject to approval by the design team and construction work was subject to inspection by the construction manager and architect at contractors' works and on site. The extensive use of prefabrication in construction helped maintain the quality of workmanship because manufacture of building components could take place under factory conditions, rather than on site.

4.12 The design of the building as constructed largely preserved the appearance, features and materials planned in the Final Sketch Plan **(Figure 22)**. However, quality issues have arisen in a number of areas:

- The colour of the roof. Sir Michael Hopkins told us that he was generally satisfied with the standards that had been achieved in the completed building. The colour of the aluminium-bronze[36] roof was, however, darker than he had expected, although it was within the tolerance specified. To address this concern the House of Commons Commission has considered renewing the surface coating of the roof to lighten its colour, but has not been satisfied that the estimated cost of around £1 million would represent value for money.
- Some of the precast concrete wall and ceiling panels in the building show signs of fine cracking, and this has led to complaints from some occupants of the building. The project engineers, Ove Arup, have advised that the cracks are the result of the concrete drying out and are of no structural significance. And the architects, Michael Hopkins and Partners, have advised that filling the cracks would be more unsightly than leaving them as they are.
- Some of the window glass in the building shows a "bottle" effect, with some distortion of images seen through it. This problem was identified in August 1999, during construction. The makers of the windows, Seele/Alvis, argued that the glass was within the contract specification but agreed to replace 60 glass panels by January 2000. This reduced but did not eliminate the "bottle" effect, which Seele/Alvis contended was the result of the high security layered glass specified for the windows. Ove Arup disagreed, but the project team decided to take no further action on this issue.
- The courtyard roof. This is made of double glazed glass panels bolted to a frame made of stainless steel and wood. During the summer of 2001, three of the glass panels developed cracks and some of the bolts securing the glass to the frame became loose. The project team have not yet established the cause of these problems, except that in one panel the manufacturer found that the cracking was caused by a defect in the glass. The House is paying for the repairs for the moment but the project team intend to recover repair costs from the firm or firms responsible once the cause of the problems has been identified. So far, the repairs have cost some £60,000, excluding the cost of replacing the defective panel, which was paid for by the makers.

36 *An alloy consisting mainly of bronze (an alloy of copper and tin) and aluminium.*

22 The planned and final appearance of Portcullis House

The building as constructed preserves the appearance of the Final Sketch Plan design.

Source: Michael Hopkins and Partners and the House of Commons

- At the time of the National Audit Office examination it was not possible to assess fully the energy efficiency of the building in practice. This is because insufficient time had passed to adjust fully the heating and cooling systems - the building had been occupied for less than a full year. But in April 2001, Buro Happold, under licence from the Building Research Establishment, carried out a review of the new Parliamentary Building under the Building Research Establishment Environmental Assessment Method (BREEAM)[37] which rated the design as 'excellent'. In particular, the report concluded that in many respects the building set standards, particularly in the use of ground water for cooling, avoiding the use of more material and energy intensive forms of air conditioning in a central London location. Problems were encountered with the cooling system during very hot weather in June 2001 which required the use of portable air-conditioning units in some parts of the building. These problems were the result of a malfunction of the borehole water supply to the cooling system, which was resolved in five days and has not subsequently recurred.

4.13 Although the certificate of practical completion was issued on 18 August 2000, work remained outstanding under a number of contracts at this time. In addition, contractors are required to remedy any defects appearing within twelve months of completion and in July 2001 Laing began a full survey of the building to catalogue any remaining defects or new defects requiring attention. The survey of the building interior was completed in September 2001. It logged some 7,500 defects, most of them individually minor, but including, for example, nuts shearing and falling off the roof. Nearly 70 per cent of the defects involved the joinery packages, including, for example, some 300 loose door handles. The defects found are being pursued with contractors. The survey of defects in the exterior and the mechanical and electrical equipment is still under way.

Members' views have not yet been sought on the accommodation and facilities in Portcullis House now that it is occupied

4.14 The new building has received some plaudits, although it has also been criticised. In June 2001, Portcullis House and Westminster Underground station (also designed by Michael Hopkins and Partners) won one of the 2001 Royal Institute of British Architecture (RIBA) Awards for Architecture. They were also nominated for both the Stirling Prize and the RIBA Journal Sustainability Award, and although they did not win these competitions, they attracted favourable comment from the judges (**Figure 23**). The building has won awards from the Concrete Society, the Copper Development Association and the Carpenters Company.

4.15 Sir Sydney Chapman, the Chairman of the Accommodation and Works Committee between 1997 and 2001, told us that he believed colleagues' views about the building were generally favourable, and that the accommodation it provided was much needed. However, Members have not been consulted on their views of the building now that it is finished and occupied. The last major consultation exercise of this type was carried out when the initial brief for Portcullis House was being drawn up in 1990. The House may wish to consider, therefore, whether there would be value in carrying out a further such exercise in the near future, especially in view of the substantial changes that have occurred in the Membership of the House as a result of the three General Elections that have taken place since the last exercise was carried out in 1990.

23 Comments made about Portcullis House by the judges of the Stirling Prize

Although Portcullis House did not win the Stirling Prize, it attracted favourable comment from the judges.

The Architect's Journal summarised the views of the judges as follows:

"Although the regional judges were unanimous in praising the underground station, they had reservations about the Parliamentary Building. A second jury of national judges, whose job it is to ensure consistent national standards, were most impressed on their visit by the way the Parliamentary Building makes sense of a disparate collection of buildings that make up the Westminster campus.

The judges said, 'To descend from the inner courtyard via escalators and a former pedestrian subway into the colonnade of New Palace Yard, produces a thrill of recognition and surprise. The courtyard itself, with its much lambasted but flourishing trees, works supremely well as a place for MPs and their guests to meet and conduct informal business. The constant references to the Commons in the omnipresent oak (a by-product of the Great Storm) and the green leather in the committee rooms and offices, are a visual reminder that one is not in a superior office block but in the Mother of Parliaments. The office spaces are generous, even those in the attic space borrowed from the service areas, and the views, naturally, unparalleled. The simple plan is highly effective and by all accounts the elegant cantilevered staircases provide more than adequate circulation when the division bell rings and MPs need to converge on the Chamber of the House."

Source: The Architect's Journal

37 *BREEAM is a tool for analysing and improving the environmental performance of buildings.*

Part 5

Was the construction of Portcullis House well managed?

5.1 We assessed the methods and processes used by House officials and the project team to manage the construction of Portcullis House. Specifically, we examined:

- project management;
- scrutiny of cost and budget;
- use of competition; and
- risk management.

The choice of construction management was well considered and vindicated by the outcome

5.2 Organisations embarking on major construction projects can choose from a number of contracting techniques[38] - for example, a traditional route, design and build and construction management. **Figure 24** provides a brief analysis of the rôles and responsibilities associated with each technique.

24 The rôles and responsibilities associated with different project management techniques

The variety of different project management techniques available result in the rôles and responsibilities for aspects of the project being distributed in different ways between, for example, the client, the design team, the construction manager, and contractors.

Rôles and responsibilities	Traditional	Design and build	Construction management
Responsible for oversight of the project	Client	Client	Client
Responsible for design	Design team, appointed by the client	A single contractor, appointed by the client, responsible for both the building's design and construction	Design team, appointed by the client
Responsible for the construction process	A single contractor, appointed by the client, responsible for the building's construction		A number of trade contractors
Responsible for managing risk	Contractor	Depends on type of design and build used	Client
Responsible for contracting	Client or project manager	Depends on type of design and build used	Construction manager
Responsible for resolving problems	Client and design team	Design and build contractor	Project manager

Source: National Audit Office

38 *Such techniques are known as procurement strategies. A procurement strategy determines the allocation of the project's responsibilities and risks for design and construction between the client, professionals, and contractors.*

5.3 Each approach has a number of inherent advantages and disadvantages, and no strategy can be considered superior to another in all circumstances. The client should therefore consider the appropriateness of each strategy, and should pay due regard to issues of time, cost, and quality as well as the risks associated with the project.

5.4 In May 1992, PSA Projects recommended to the Project Sponsor that construction management was the most appropriate technique to use, after considering a range of factors such as the building's quality, the time constraints for its completion and the project's cost control requirements. Construction management was also seen as offering 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. The House's Finance and Services Committee endorsed the use of construction management as the procurement strategy. And in July 1993, the Accommodation and Works Committee endorsed the appointment of Laing Management Limited as the project's construction manager. **Figure 25** shows the main factors considered by PSA Projects and our assessment of the appropriateness of each procurement strategy in achieving these. Construction management scores better than the other strategies for this project, and the project's outcome has reflected its anticipated strengths and weaknesses.

5.5 At the time of the House's decision, construction management had been used for large, fast track office projects in the City of London, but experience in its use for public sector building projects was limited until the construction of the New British Library, where it encountered a number of problems. In October 1990 and in May 1996, we published reports on the construction of the New British Library[39], which found that construction management had been considered to be the most appropriate contractual method but not all the potential benefits had been fully obtained, primarily because of deficiencies in defining the rôles and responsibilities of all those involved.

25 The appropriateness of construction management as the procurement strategy for Portcullis House

The decision to use construction management was justified at the outset and in retrospect.

Main factors considered by PSA Projects	National Audit Office assessment of the appropriateness of each strategy in meeting the factors considered by PSA Projects			National Audit Office assessment of the project's outcome
	Traditional	Design and build	Construction management	
Complexity and innovative nature of the building's design	✔	✔	✔	✔
Certainty of the delivery date	✗	✔	✗	✔
Tight control over cost	✔	✔	✔	✔
Client control over the design	✔	✗	✔	✔
Limiting the client's risk	✗	✔	✗	✗
Co-ordination with London Underground	✔	✗	✔	✔
Flexibility to accommodate changes over the life of the project	✔	✗	✔	✔

Source: National Audit Office analysis of PSA Project report and of the project's outcome

39 *New Building for the British Library HC 650 (1989-90); Progress in Completing the New British Library HC 362 (1996-97).*

5.6 Some problems with the use of construction management were encountered in the construction of Portcullis House. In 1998, the Kappa report recommended a review of the then existing arrangements to establish a more consistent set of rôles and responsibilities. And, a year later, the Northcroft report identified some doubts as to whether the construction manager 'had fully grasped the philosophy of construction management'. However, action was taken to ensure that strong project management was exercised, and at different points during the project House officials required both the project management and construction management firms to change key members of their teams. In addition, House officials required the construction manager to bring in additional planning staff following the delay to the erection of the building caused by the problems with the arch stitches (paragraphs 2.18 and 2.19).

5.7 As a result of these actions, these early problems with the use of construction management did not impact on the eventual success of the project, and the problems associated with its use on the New British Library project did not arise during the construction of Portcullis House. As the last column of Figure 25 shows, the project's outcome reflected the strengths and weaknesses expected from the use of construction management.

5.8 We discussed the operation of construction management with the firms making up the project team. They told us that, while they were conscious of the difficulties encountered during the construction of the New British Library, construction management was, overall, applied successfully to the construction of Portcullis House. The key advantages of using construction management they identified were:

- contractors were expected to bear only those risks that they could control;
- the design team were able to work closely with contractors on high risk packages; and
- work with London Underground was better co-ordinated (which was also assisted by having a common architect).

The scrutiny of cost and budget could have been stronger

5.9 There are a number of techniques available to project managers to help them achieve value for money on building projects. Two such techniques are whole-life costing (which is applied principally at the start of the project) and value engineering (which can be applied throughout the project's life) - both are described in **Figure 26**. In addition, investment appraisal - assessment of the likely costs and benefits of a project and of options for achieving its objectives - is also of value. In this part of the report, we assess the extent to which House officials used these techniques to ensure that the construction of the building achieved value for money and consider their general oversight of the project's progress and costs.

26 The rôle of whole-life costing and value engineering in construction projects

Value engineering and whole-life costing are techniques that can be used to help achieve value for money from a construction project. Both can be applied throughout the project's life.

Whole-life costing

A means of bringing a project's lifetime costs (both initial capital and recurrent operational costs) to a single figure. The technique allows comparisons between alternative options - for example, between a high capital cost, low maintenance option and a low capital cost, high maintenance option. Whole-life costing is sometimes known as life cycle costing.

Value engineering

A planned, formal review of the project at one or more stages of the design and construction process, with the aim of eliminating unnecessary cost without loss of function. The technique aims primarily to enhance value, not cut costs (although this is often a by-product of the process).

Source: National Audit Office

Little use was made of investment appraisal or whole-life costing to examine options at the start of the project

5.10 In March 1992 the House approved an architecturally prestigious building that would last for more than 120 years and the Final Sketch Plan was drawn up on this basis. The House of Commons Commission, when it was asked to approve the project in May 1993, was therefore not provided with different options for the new building's design and life or for different types and quality of materials, and the project team did not undertake a whole-life costing exercise based on a comparison with a building with a shorter life. However, within the constraints of the specification approved by the Commission there would have been scope for certain aspects of the building's design and construction - for example, an examination of the whole-life costs of some of the key elements of the project such as the fenestration and the roof - to have been subject to such an exercise.

5.11 One way to establish whether a major project represents value for money is to use a technique called investment appraisal. This technique rehearses and quantifies or values both the costs and the benefits of the project. Both are adjusted for the passage of time and then compared to see whether the benefits outweigh the costs. No such appraisal was carried out because the project brief had been approved by the Department of

the Environment before House officials took over responsibility for Parliamentary works in April 1992. The absence of an investment appraisal means, however, that there is no statement of expected benefits against which the project's outcome can be compared.

While few of the recommendations for action produced by a three-day value engineering workshop were implemented, tender prices were reviewed where they exceeded the budget

5.12 Value engineering is a technique for reviewing the design and planned construction methods of buildings in order to improve value for money whilst continuing to meet the buildings' design objectives. Value engineering has been used on numerous projects in the private sector and has identified considerable scope for reducing project costs. The technique can be of particular use when applied to complex and innovative buildings.

5.13 In December 1992, PSA Projects wrote to the Project Sponsor indicating that while a value engineering exercise would be useful in providing an independent judgement on the House's proposals, there were some difficulties in undertaking the exercise in relation to Portcullis House. In particular, PSA Projects argued that the nature of the building restricted the sources of comparable material upon which judgements could be made. PSA Projects did not, however, consider these difficulties to be insurmountable. In March 1993, the project team agreed that a value engineering review would be carried out once the construction manager had been appointed.

5.14 In October 1993, Laing Technology Group, an affiliate of the construction manager, Laing Management Limited, proposed a systematic approach to value engineering. In January 1994, Laing Technology Group ran a three-day value engineering workshop, attended by members of the project team. The workshop produced a series of recommendations for further action (across eleven of the project's elements) and included a list of items which might benefit from value engineering, including the:

- structure of the building, floors, stone columns, and the arch transfer structure;
- external walls, the duct work, the balcony and panel units, and glazing; and
- main roof, the tolerances, jointing and bronze finish.

5.15 Following on from the proposal and the workshop, in June 1994 the Parliamentary Works Directorate agreed a value engineering package which would focus on two of the project's elements - the courtyard roof (which, at that stage, was still at a relatively early stage of its design and development) and the plant rooms. Also, two other reviews - one of the building's specifications, and another of the choice of materials for the concrete office partitions - were commissioned. We were unable to find evidence that the remaining recommendations from the workshop were acted upon; nor were we able to identify the rationale for not acting upon them.

5.16 In addition to the work carried out by Laing Technology Group, the project team undertook an internal review to identify potential cost savings when a number of the tender bids, such as for the main roof and the fenestration, exceeded the budget by a considerable amount. For example, a value engineering exercise was undertaken on the roof package because the lowest bid exceeded the budget by 83 per cent. The project team worked with the preferred bidder to identify savings of approximately £1.4 million by, for instance, reducing the amount of aluminium-bronze used, and using an alternative means of fabrication.

5.17 The project team also examined the scope to identify cost savings on the fenestration package, where the lowest original bid exceeded the budget of £22 million by 70 per cent. The project team established a working group, consisting of representatives from the project team, to review options for reducing the package's costs. The group's remit, established by the Parliamentary Works Directorate, was to reduce the cost of the fenestration package while 'preserving [its] fundamental design principles'. The group decided to re-tender the package to establish, amongst other things, whether the design changes identified would lead to cost savings. The package was finally let for £34 million, some £6 million less than the lowest original bid.

5.18 There was, however, scope for making greater use of value engineering across the whole project. For example, while the value engineering workshop recommended the application of the technique to more than ten of the building's construction elements, it was only applied in two cases. Also, the technique was applied to some, but not all, of the packages where bids had exceeded the budget - for instance, the mechanical installations package, where the lowest bid exceeded that in the Final Sketch Plan budget by 49 per cent, was not subject to these techniques. The Northcroft review in 1999 also found that value engineering on the project had been limited. And while the design of the building and its budget had been agreed by the Commission, there was scope for applying this technique across a wider range of the project's elements. The complex and innovative nature of some of the packages - such as the roof and the fenestration - should have reinforced the need for the application of this technique.

Members and officials received regular reports on the costs of the project, and all cost increases were approved

5.19 The project team, which met on a monthly basis, dealt with issues such as the construction programme, quality control and inspection, and procurement. The minutes of these meetings were incorporated into the project manager's monthly report to the Project Sponsor. This report also included commentaries on, amongst other things, costs and package approvals, reports from the construction manager, the architect and the engineer, and a one-page cost summary based on the full monthly report supplied by the quantity surveyors.

5.20 The Project Sponsor acted as the interface between the project team and senior House officials. His monthly report to the Project Advisory Board, which was established in 1998 and which replaced the Project Steering Group, contained a summary of the project manager's monthly report and extracts from the quantity surveyor's monthly cost reports and was the key document used by the Project Advisory Board to monitor the project's progress and to request action from the project team. The Project Sponsor, through the Parliamentary Works Directorate, also provided the Accommodation and Works Committee with a monthly report from the commencement of detailed planning in 1994. In addition to receiving these regular reports, the Accommodation and Works Committee, from time to time, requested other reports from the Parliamentary Works Directorate - for instance, on professional fees and on a comparison of the building with other office buildings.

5.21 The replacement of the Project Steering Group with the Project Advisory Board in 1998 led to a number of improvements in House officials' oversight and monitoring of the project. For example, a change in its composition enhanced the Project Advisory Board's professionalism and the appointment of the Clerk of the House of Commons as the chair of the Project Advisory Board strengthened control over the project (**Figure 27** shows the composition of the Project Steering Group and the Project Advisory Board). Also, in meeting on a monthly basis, the Project Advisory Board met far more frequently than the Project Steering Group, again increasing control over the project as the construction work progressed.

5.22 Following its approval of the project in 1993, the House of Commons Commission approved the arrangements for House officials to monitor the project, with overall monitoring of the project being carried out by the Accommodation and Works Committee. Changes in the forecast cost of the building, for example when it became clear that the fenestration would cost considerably more than originally forecast, were also subject to review by the Finance and Services Committee and approved by the Commission. The Commission was also kept informed of the likely impact on the cost of the project of the delays in London Underground's handover of the site.

27 Membership of the Project Steering Group and the Project Advisory Board

In 1998, the Project Advisory Board replaced the Project Steering Group, leading to an improvement in House officials' oversight of the project.

Project Steering Group (up to 1998)	Project Advisory Board (from 1998)
Serjeant at Arms	Clerk of the House
Director of Finance and Administration	Serjeant-at-Arms
Deputy Serjeant-at-Arms	Director of Finance and Administration
Clerk of Domestic Committees	Director of Parliamentary Works
Clerk of the Accommodation and Works Committee	Project Sponsor
Treasury official	Member seconded from the Inland Revenue (1)
Director of Parliamentary Works	Member seconded from Northcroft
Project Sponsor	

NOTE

1. The External Member was co-opted because of his previous experience related to the construction of the Inland Revenue's building in Nottingham, for which Michael Hopkins and Partners had been the architects, Ove Arup and Partners the structural, mechanical and electrical engineers, and Laing Management Limited, the construction managers.

Source: National Audit Office

Almost all contracts were placed competitively, but in one case procurement regulations were incorrectly applied

5.23 Over the life of the project, the project team let over 100 contracts. The existence and application of sound competitive procurement procedures was therefore vitally important if the project was going to achieve value for money. In this section, we assess the application of competitive procurement procedures and assess how these were applied in practice.

Almost all of the project's contracts were let using competitive tendering techniques

5.24 All the main construction contracts for the project were let using competitive tendering. Competitive tendering was also used to select the majority of the professional advisors, such as the construction manager. However, competition was limited in the selection of the project's architect and engineer, both of whom were initially appointed by the Department of the Environment before the House of Commons Commission assumed responsibility for the House's accommodation, and thus for the project, in April 1992.

The selection of the project's architect

5.25 Following a competition in 1989, run by the Department of the Environment, for a feasibility study and a full fee bid, Michael Hopkins and Partners were awarded a £25,000 appointment to conduct a feasibility study on the refurbishment of Palace Chambers, Numbers 1 and 2 Bridge Street and the Subway. At their own request, Michael Hopkins and Partners also examined the re-development of the whole of the Phase 2 site and produced a feasibility study without charge but without competition. The study became the preferred way to proceed and Michael Hopkins and Partners were appointed as architect for the project as whole. The architect's fee was revised in line with that recommended by the Royal Institute of British Architects for prestige developments. Fees paid to the architect to date amount to £13.1 million (£10.0 million in 1992 prices) compared with the Final Sketch Plan budget of £7.2 million.

The project's engineer

5.26 The project's engineer, Ove Arup and Partners, employed by Michael Hopkins and Partners, during the project's initial studies, was appointed by the Department of the Environment without recourse to competitive tendering. Ove Arup's initial appointment was transferred from the Department of the Environment in 1992. During later phases, Ove Arup was appointed to undertake a variety of other tasks, including the engineering of the fenestration. House officials decided to use Ove Arup for the structural work on the fenestration through a supplementary contract without competition after considering legal advice after the project team had been unable to identify other suitable firms. Fees paid to Ove Arup for its commission as structural engineer are £3.2 million (£2.7 million in 1992 prices) compared with the cost forecast in the Final Sketch Plan of £2.0 million.

The Harmon case highlighted weaknesses in contracting procedures

5.27 In paragraph 3.48, we explained that the House had spent around £10 million on legal costs and an out of court settlement in a case relating to the tendering exercise to place the contract for the fenestration (the Harmon case). The expected contract value was £22 million at 1992 prices[40] and the House was required, under European law (as implemented in the United Kingdom by the Public Works Contracts Regulations 1991), to place the contract in a way that treated all tenderers fairly and which did not discriminate on the grounds of nationality. The High Court judge considering the Harmon case found that the House had breached procurement regulations. Appendix 4 summarises the key points arising relating to the Harmon case.

5.28 The rôle and structure of the Parliamentary Works Directorate and its relationship with the Serjeant at Arms' office were examined in a review undertaken by Mr Michael Braithwaite and completed in July 2000. The review recommended, amongst other things, that there should be a clear separation between client and provider in the Parliamentary Works Directorate and that an Estates Director should be appointed to take over the client side of the Parliamentary Works Directorate's operations, leaving it as the supplier of works services. The Commission has established separate Works and Estates directorates and the respective directors have been appointed.

40 The final outturn cost is still being negotiated but is expected to be around £27 million at 1992 prices (£37 million at outturn prices).

5.29 In addition, House officials asked the project's construction manager to ensure that its relevant staff received training in European Union public procurement procedures and strengthened the procurement guidelines in the Parliamentary Works Directorate. We asked House officials what steps they had taken to assess whether any other contracts may have been subject to the same deficiencies. They told us that no such assessment had been undertaken, but they had not received similar complaints from other contractors. In addition, the Commission has since appointed a Director of Procurement, partly to ensure that high standards of procurement are observed in all the Departments of the House.

House officials and the project team identified the majority of the project's risks and managed these well over the life of the project

5.30 In this section of the report, we assess House officials' approach to identifying and managing the project's key risks.

There was a high level of attention to risk at the outset, although this work did not capture the full extent of risk

5.31 At the Final Sketch Plan phase of the project, when the Commission gave its approval, the quantity surveyors established a monetary value for 26 risks to the project that had been identified. These risks ranged from the complexity of the structure to changes in building regulations. This exercise was useful in identifying key risks, a number of which did materialise. For example, the risk that London Underground would hand the site over late was identified, although the actual cost of the late handover exceeded the maximum risk provision of this item (£3 million) by approximately £3 million. The complex nature of the design was also identified as a risk. However, some other risks were not identified, most notably the risk that the innovative nature of some of the packages, such as that for the roof, could lead to the tender bids exceeding forecasts - a risk that did materialise and which cost the House approximately £18 million on five packages alone.

Subsequent management of risk, through the project's life, was very good

5.32 Having identified risks at the Final Sketch Plan stage, House officials and the project team managed them throughout the life of the project using risk registers. From June 1997, the project manager maintained risk registers listing the project's significant risks together with their associated costs and benefits and the 1998 report by Kappa emphasised the importance of regular risk reviews. For example, the register included the risks that the building's innovative structure would be difficult to construct or that the erection of the roof would be problematic. For the roof, the project team trialled its erection in the contractor's yard to ensure that the erection on site would be successful. In addition, the register identified other risks, such as sub-contractors' bankruptcy, and health and safety issues. As well as listing each risk, the registers identified an individual or individuals responsible for responding to each risk. The project team held risk management meetings on a regular basis. As the project developed, new risks were added to the register, and risks that were no longer relevant were removed.

Appendix 1 Study Methodology

The main components of our methodology were:

- **Interviews.** We conducted a range of semi-structured interviews with House officials and senior Members of the House's professional advisors. Those interviewed included principals and senior staff of Schal Limited, Michael Hopkins and Partners, Ove Arup and Partners, Gardiner and Theobald, and Laing Management Limited. We also discussed the project with the Chairman and Clerk of the Accommodation and Works Committee in the 1997 - 2001 Parliament and with the Secretary of the House of Commons Commission.

- **Document examination.** Our document examination focused primarily on the project documentation held by the Parliamentary Works Directorate, supplemented in some areas by information from the House's professional advisors. We also made use of previous reviews and reports summarised in Appendix 2.

- We received **professional advice** from Gleeds, consultants on quantity surveying and other aspects of project management.

- We obtained **information on other Parliamentary buildings** from Audit Scotland and the Corporate Body of the Scottish Parliament regarding the construction of the new building for the Scottish Parliament in Edinburgh, the Auditor General for Wales about the costs of the office accommodation for the National Assembly for Wales in Cardiff, and from the Bundesrechnungshof and the Bundesbaugesellschaft regarding the new building for members of the Bundestag in Berlin.

Appendix 2 Reports on Portcullis House

Throughout the life of the project to construct Portcullis House, a number of reports were produced which had a bearing on the administration of the House and the management of the project itself. This appendix provides a summary of these, in chronological order.

House of Commons Services: Report to the House of Commons Commission (November 1990) — The Ibbs report

An investigation by Sir Robin Ibbs, a former chairman of Lloyds TSB Group plc, into whether the responsibilities for management of the House and its facilities could be brought together so as to ensure a system of co-ordinated management and decision making. The report found that arrangements for financing and controlling works and accommodation were not satisfactory. Also, responsibility for this service rested outside the House, with Property Holdings, part of the (then) Department of the Environment, resulting in minimal involvement in decision making from the House and its Members.

The main recommendations with regard to Parliamentary works were that

- the House of Commons Commission assumes responsibility for all expenditure related to the House of Commons, including Parliamentary Works;
- the post of Director of Works be created to act as the House's professional adviser on all works and accommodation matters; and
- there should be a clear distinction between the client and supplier function of the Parliamentary Works Directorate.

Review of the New Parliamentary Building (July 1998) — The Kappa report

The report by Kappa Consulting Ltd., a firm of chartered quantity surveyors and construction consultants, examined the (then) current status of the project and compared its management, organisation, and procedures with best practice. It concluded that the design team's response time to design queries was too long, and that the project team lacked leadership and the construction manager lacked expertise. The report found that, while the quantity surveyors cost reports appeared to be comprehensive and were produced in sufficient detail to enable analysis, the cost reports could take more account of unknown but highly probable future construction problems.

The main recommendations were that

- the arrangements for the project team should be revisited to ensure consistency and provide agreement on the rôles and responsibilities;
- the construction manager should establish a clear, unequivocal, realistic and agreed overall programme for the completion of the programme;
- project risks should be prioritised according to likely impact and regular risk management reviews carried out; and
- milestones should be identified and tracked and included in regular risk management reviews.

Mid-term Review of the Portcullis House Project for the House of Commons Commission — The Northcroft report

(May 1999)

An assessment by Northcroft, a firm of chartered quantity surveyors and construction consultants, of the costs, benefits, management and risks of the Portcullis House project. The report concluded that the building was specified to a high standard which was commensurate with the standards of the brief for the project approved by the House of Commons; as a result the costs were higher than other high quality buildings. Control over the project was, generally, adequate although some recommendations for improvement were made. Also, the project team could have undertaken more value engineering. Overall, the report concluded that the building should deliver value for money if, amongst other things, the building delivers or exceeds its life span, achieves the forecast lower costs of running and maintenance, and the House is able to recover sums due from London Underground Limited and any defaulting contractors.

The main recommendations were

- that professional fees should be converted from a percentage to a fixed fee basis;
- that there was a need to appoint a further person to the Project Advisory Board with experience of major construction projects; and
- those differences in opinions on quality between the design team and the construction manager should be resolved by the project manager.

Review of Management Services: a Report to the House of Commons Commission — The Braithwaite I report

(July 1999)

An investigation by Mr Michael Braithwaite, a former partner at Deloitte and Touche, into the implementation of the Ibbs report, and a review of current management and decision making responsibilities. The Braithwaite I report concluded that while the ten-year rolling programme for the Parliamentary estate should become self-fulfilling once Portcullis House was completed, the current arrangements for its scrutiny and approval were not satisfactory. The report also concluded that a review of the Parliamentary Works Directorate should be undertaken.

The main recommendations were that

- the House of Commons Commission should have a more strategic rôle; and
- the Parliamentary works programme should be an integral part of service provision planning and a review should be made of the rôle and structure of the Parliamentary Works Directorate.

Report of the inquiry into Harmon v the Corporate Officer of the House of Commons — The Legg-Bosworth report

(March 2000)

The report, by Sir Thomas Legg KCB QC, a former Permanent Secretary of the Lord Chancellor's Department, and Mr Peter Bosworth, a consultant specialising in project management, investigated the conduct of the Project Sponsor and the circumstances leading to the major lawsuit against the House for poor procurement practices. It concluded that serious mistakes were made in the handling of the fenestration contract for which the Project Sponsor, while acting in good faith, must bear a share of the responsibility of the blame.

The main recommendations were

- that the Parliamentary Works Directorate establishes more clearly the rôles and responsibilities of the project team;
- that guidelines and control systems be included in line management processes; and
- the implementation of lines of governance for senior staff.

(The recommendations were to be taken into account in the current review of the Parliamentary Works Directorate).

Management Report of a Review of the Governance, Control and Systems of the Serjeant at Arms' Department

The Braithwaite II report

(July 2000)

The report, by Mr Michael Braithwaite, a former partner at Deloitte and Touche, of an examination of, amongst other things, the rôle and structure of the Parliamentary Works Directorate. The report concluded that the Parliamentary Works Directorate generally provides a high quality of service to both Houses of Parliament. However, serious concerns were raised about the quality of governance and financial controls. And the Parliamentary Works Directorate is acting as both the informed client for and the provider of works services, contrary to the established models of good practice.

The main recommendations were that

- the Parliamentary Works Directorate must resolve the ambiguity about the status of the Parliamentary works budget;
- the Director of Works should be accountable to the Serjeant at Arms and the Black Rod; and
- the Parliamentary Works Directorate should establish two clear branches - an informed client branch and a provider branch.

First Stage Review of Costs

Northcroft First Stage Review

(July 2001)

The report, by Northcroft, was commissioned by the Department of Finance and Administration of the House of Commons. It reviewed which items of expenditure should be included in the base cost of the project and prepared a reconciliation of the costings included in the various reports produced over the project's life.

Appendix 3 Chronology

1978		The House's Services Committee recommend that Casson Conder Partnership draw up a scheme to redevelop the Bridge Street site.
1979		Feasibility study submitted by Casson Conder Partnership, but not proceeded with.
1982		Casson Conder Partnership commissioned to prepare detailed plans for site. Phase 1 was the refurbishment of the buildings to the west of Canon Row; Phase 2 was the remainder of the site.
1988	February/ March	Phase 2 Design Study by Casson Conder Partnership and an alternative strategy by Property Services Agency.
1988	July	Report to House of Commons Commission recommended Property Services Agency scheme.
1988	December	Report approved by House of Commons Commission.
1989	June	Michael Hopkins and Partners appointed by Department of the Environment to carry out feasibility study of part of Phase 2, on presumption they would be appointed architects in due course.
1989	July	London Underground Limited announce proposals to rebuild and enlarge Westminster Underground station and construct Jubilee Line interchange, requiring the demolition of some buildings on Phase 2 site.
1989	November	Michael Hopkins and Partners present initial report proposals to develop the whole site.
1990	February	Michael Hopkins and Partners submit Phase 2 proposals.
1991	March	House of Commons exhibition on Michael Hopkins and Partners proposals for "Buildings and Jubilee Line Extension" report.
1991	June	The House's Services Committee reports on the initial brief for Phase 2.
1991	July	Initial Brief issued to Michael Hopkins and Partners.
1991	October	Preliminary Sketch Plan Report submitted by Michael Hopkins and Partners. Approved by New Building Sub-Committee.
1992	February/ March	Michael Hopkins and Partners appointed as architects, TBV as project managers, Ove Arup and Partners as engineers, and Gardiner and Theobald as quantity surveyors.
1992	April	Responsibility for Parliamentary Works transferred from Department of the Environment to Parliamentary Works Directorate.
1992	April	Report of Accommodation and Works Committee on Preliminary Sketch Plan debated by the House and approved.

1993	January	Final Sketch Plan Report submitted by Michael Hopkins and Partners together with companion document by engineers and a cost plan document by the quantity surveyors.
1993	May	House of Commons Commission approves Final Sketch Plan.
1993	July	Laing Management Limited appointed as construction managers.
1993	October	Ministers approve funding of Jubilee Line Extension.
1994	January	Official agreement signed between House of Commons Commission and London Underground Limited to develop site.
1994	February	London Underground Limited commence work on site.
1995	June / July	Cost check on roof construction requires approach to House of Commons Commission for £3,000,000 extra funds.
1995	November	Cost check on fenestration (pre-fabricated wall and window units) requires further approach to House of Commons Commission for £9,808,000 extra funds.
1996	May	Contract for fenestration awarded; Harmon informed that they have not been successful.
1996	June	Harmon begins action for unfair awarding of fenestration contract.
1996	June	London Underground Limited inform that site will not be handed over on 2 February 1997 as forecast after previous delays.
1998	January	Main part of site handed over. Work on Portcullis House commences with completion planned for 30 June 2000.
1998	March	Harmon placed in liquidation; legal action regarding award of fenestration contract continued by Harmon's liquidators.
1998	May to October	Problems with joining the courtyard arches causes 20 week delay (7 weeks after deduction of 13 week contingency allowance).
1999	May	Northcroft report, "Mid-term Review of the Portcullis House Project", completed.
1999	October	Judgement is given against House of Commons in Harmon case. Final cost of case just under £10 million.
2000	March	Legg-Bosworth report on the Harmon case made available to the House of Commons Commission.
2000	18 August	Handover of the building to the House of Commons.
2000	September	MPs move in.
2001	February	Official opening of the building by Her Majesty The Queen.
2001	July	Northcroft report "First Stage Review of Costs" completed.

Appendix 4 The key features of the Harmon case

1 This case concerned the supply of the fenestration, that is the greater part of the exterior walls of the building including the windows, for Portcullis House. Pending the final settlement of accounts, the total cost of the fenestration is estimated at nearly £37 million which, at over 27 per cent of the estimated construction costs of the building, makes it the largest single contract associated with the building.

2 European Union law, implemented in the United Kingdom by the Public Works Contracts Regulations 1991, requires contracts for public works to be placed in a manner that treats all tenderers from within the European Union fairly and equally, and does not discriminate on grounds of nationality. The Regulations apply to the House of Commons, and to the fenestration contract.

3 The main stages in the award of the fenestration contract were as follows:

- In December 1993, a first invitation for potential tenderers to apply to pre-qualify and to be invited at a later date to tender for the contract was advertised in the Official Journal. The advertisement stated that the award for the contract would be 'overall value for money' without further qualification.
- The December 1993 advertisement generated little interest, and only one British firm applied. In order to obtain greater competition for the contract, and to make it easier for United Kingdom firms to compete, the project team decided in March 1994 to split the contract into five smaller packages. These were re-advertised in the Official Journal a month later, again using the wording 'overall value for money' without further qualification.
- Towards the end of 1994, a number of firms returned pre-qualification enquiry documents, including Harmon CFEM Façades UK Limited (a French member of an American owned group), Seele (an Austrian steel firm) and Alvis (a British defence company). Soon after, Seele and Alvis formed a joint venture to bid for the contract.
- In May 1995, Seele/Alvis, Harmon, and three other companies were invited to tender. The resultant bids, received in July 1995, amounted to more than double the budget of £20 million. A task force was therefore established to identify cost reductions. In September 1995, a modified design developed by the taskforce was issued for re-tender.
- As well as submitting a bid based on the revised design, Seele/Alvis submitted a bid based on a variant design. This decision was considered technically superior to the other designs by the task force. In October 1995 Harmon and the third bidder were asked to bid against the task force's revised design, while Seele/Alvis was asked to bid for their variant design.
- In November 1995, the task force submitted a report recommending acceptance of the Seele/Alvis variant bid because, although more expensive than Harmon's bid in terms of the tender price by around £2.8 million, it was considered to be technically superior and to offer better value for money after adjustment for items not included in the tenders and in terms of performance and lower long-term maintenance costs. The project team entered into negotiations with Seele/ preparatory to awarding them the contract.
- In January 1996, Harmon wrote to the construction manager offering further savings on its original bid. These were declined.
- In April 1996 the Parliamentary Works Directorate sent letters of intent to Seele/Alvis and in May the then Clerk of the House, in his capacity as Corporate Officer of the House and acting on the advice of the project team, signed a contract with Seele/Alvis. Harmon was informed that its tender was unsuccessful.
- In July 1996, Seele/Alvis proposed modifications to its design of the fenestration because trials had shown there to be difficulties in constructing the contracted design, offering a price reduction of around £0.6 million. These changes were agreed by the project team in August. The result of the changes was that the design constructed by Seele/Alvis was virtually identical to the design on which Harmon had based its bid.

- In August 1996, Harmon issued a writ against the Corporate Office of the House claiming damages for breach of European Union law and the Public Works Regulations. In March 1998, Harmon went into liquidation but the legal action was continued by the liquidator.

4 In October 1999 judgement was given against the House in the High Court, the judge finding that the House:

- had failed from the outset to give an adequate statement of the criteria on which the contract would be awarded (as required by law);
- had made material changes to the original scheme in post-tender negotiations with the successful tenderer but did not afford Harmon the same opportunity;
- was not entitled to accept the successful variant bid;
- had, by encouraging, or permitting to continue, a policy of buying British, materially affected the tendering procedure; and
- was guilty of misfeasance[41] in public office, because it had been obvious to officials when awarding the contract to Seele / Alvis that to do so would not comply with European Union law and the Public Works Regulations.

5 The House of Commons decided not to appeal against the High Court ruling. In June 2000 the High Court made an interim award for damages of £1.85 million, plus legal costs, for the costs incurred by Harmon in submitting its tender and the profit it might have recovered from the House of Commons on the basis of its tender. The award was made pending a full trial of the issues affecting the amount of damages due. The House appealed against the interim award but subsequently reached an out of court settlement in August 2000 for £5.3 million inclusive of Harmon's costs. Taking into account the House's legal costs of £4.8 million, interest received, and value added tax recovered on legal fees, the total costs incurred to date by the House of Commons in connection with the Harmon case amounted to some £9.8 million.

6 In response to the outcome of the Harmon case, in January 2000, the House of Commons Commission appointed Sir Thomas Legg KCB QC, a former Permanent Secretary of the Lord Chancellor's Department, and Mr Peter Bosworth, a consultant specialising in project management, to consider the judgement of the case, to inquire into the circumstances that led to it and whether the judgement pointed to defects in the structure and practices of the Parliamentary Works Directorate (and, if so, what changes were necessary).

7 The Commission announced the outcome of the inquiry to the House of Commons in a written answer to a Parliamentary Question on 19 April 2000[42]. This told the House that the inquiry had concluded that serious mistakes had been made in the handling of the fenestration contract, which exposed the House to liability; and that in future major projects the Parliamentary Works Directorate should establish more clearly: (a) the rôles and responsibilities of key members of the project team; (b) a project management process to include guidelines and control systems; and (c) lines of governance within a culture of professional and technical support; and that these recommendations should be taken into account in a review then underway of the Parliamentary Works Directorate. The Commission said that it had considered the report of the inquiry on 10 April and accepted its conclusions.

41 A civil offence of the dishonest abuse of the powers given to a public officer.
42 Official Report 19 April 2000, Column 502W.