

Achieving Excellence in Construction Procurement Guide



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The Achieving Excellence Procurement Guides

The Achieving Excellence suite of procurement guides replaces the Construction Procurement Guidance Notes series.

The new series reflects developments in construction procurement over recent years and builds on government clients' experience of implementing the *Achieving Excellence in Construction* initiative.

High level guides





Core guides







Supporting guides

















It is essential to measure performance in construction projects to determine whether planned improvements in the efficiency and quality of facilities are being achieved, and to learn lessons for future projects. Improving performance requires more than learning from the client's own projects – it includes learning from the experiences of others.

Introduction

This guide explains the principles and practice of performance evaluation. Measuring the performance of construction projects is essential for ensuring that planned improvements in quality, cost and time are achieved, for comparing achieved performance with that of similar projects and identifying potential for doing things better, and for assessing how the integrated supply team compares with other potential suppliers. Clients also need to measure their own performance and benchmark with other clients to identify areas for improvement.

The guide describes the sequence of project performance reviews and provides techniques to help identify targets and measures that are tailored to individual clients and their projects.

Principles

Definitions

Performance measurement

Performance measurement is the activity of checking actual performance against targets throughout the life of the project, during construction and through the operational life of the completed facility. It includes:

- external benchmarking assessing the client's performance against other major purchasers of construction through participation in a number of benchmarking initiatives such as the Clients' Charter, the European Construction Institute, the Business Excellence Model and Construction Best Practice Programme
- a framework for performance measurement including primary core performance measures that compare performance of the client's projects with that of the construction industry as a whole, covering measures such as time predictability, cost predictability, number of defects, accident frequency and client satisfaction (service and product)
 - secondary measures that compare different projects in the client organisation, including the number of changes to project requirements, final cost against initial estimate and end-user satisfaction
 - tertiary measures that are project specific and relate to the achievement of targets to improve the performance of the project for example, reductions in construction cost, lower maintenance and operational costs.

To measure construction effectiveness, the client needs to accumulate reliable data on quality, cost (design, construction and in-use costs) and time taken to deliver, together with data on health and safety, sustainability and design quality.

Key Performance Indicators (KPIs)

Key Performance Indicators are indicators of the level of performance achieved relative to the original objective.

Examples of Key Performance Indicators

- Defects rated by client on the impact of defects in the project at handover on a scale of 1-10
- Safety (accident incidence rate and accident frequency rate, AIR and AFR) rate of reportable accidents per 100,000 employed
- Predictability of cost of construction actual outturn cost compared with the figure agreed before construction started.

[Source: Movement for Innovation]

Project evaluation

Project evaluation is an ongoing check of how well the project is performing. Formal reviews such as project evaluations and Gateway reviews are carried out at Gateways and other major decision points. Informal checks are carried out on a continuous basis as part of normal project and contract management procedures. These reviews include assessments of how well members of the integrated project team perform, how well the facility is performing in terms of realising identified benefits, progress against quality, cost and time, assessment of the client's capability and seeking opportunities to improve over time.

Post project review

A post project review is carried out after construction is completed and focuses on how well the project was managed. It must include the views of suppliers and specialists who are at the point of actual delivery. It considers how well the construction project performed against Clients' Charter KPIs such as cost and time predictability, safety, defects and client satisfaction (see Annex B). It also considers lessons learned from the teamworking/partnering approach taken; these lessons should be documented in a Lessons Learned Report and feel back into the client organisation's standards for managing projects.

Post implementation review

A post implementation review – PIR (also known as post occupancy evaluation – POE) should be carried out when the facility has been in use for long enough to determine whether the business benefits have been achieved (typically, twelve months after completion and while the change is still recent enough for users to be aware of the impact of the change). This review establishes:

- whether the expected business benefits have been achieved from the investment in the facility, as justified in the business case
- if lessons learned from the business-focused aspects of the project will lead to recommendations for improvements in performance on future projects.



As a minimum this review will assess:

- the achievement of business case objectives to date
- whole life costs and benefits to date against those forecast, and other benefits realised and expected
- continued alignment to the business strategy
- the effectiveness of improved business operations (which may include functions, processes and staff numbers)
- ways of maximising benefits and minimising whole-life cost and risk
- the sensitivity of the business service to expected business change
- business and user satisfaction.

There should be regular post implementation reviews over the operational life of the facility. These reviews are essential inputs to Gate 5: Benefits Evaluation.

Benchmarking

Benchmarking is a management tool that can help supplier organisations to understand how their performance measures up to their peers and drive improvement up to 'world class' standards. It is also an important aid to clients, helping them to compare their own internal processes with those of similar organisations, in order to identify priorities for improvement.

Why government needs to improve as a client

In 1999, a benchmarking study of 66 central government departments' construction projects with a total value of £500 million showed that three quarters of the projects exceeded their budgets by up to 50% and two thirds had exceeded their original completion date by 63%.

[Source: Benchmarking the Government Client Stage 2 Study 1999]

Central initiatives

OGC, the Department of Trade and Industry, the former Department of the Environment, Transport and the Regions (now the Office of the Deputy Prime Minister and Department for Transport), the Department for Culture, Media and Sport and HM Treasury have introduced a number of initiatives to promote the use of performance measurement by departments and the construction industry. These include:

- Key Performance Indicators to compare performance of construction firms across the industry developed by the CCC Clients' Charter (www.clientsuccess.org/home.html)
- establishment of a Key Performance Indicators' working group with representatives from industry, which published its report in January 2000 recommending a series of indicators that clients should use to measure construction performance
- promotion of the use of Design Quality Indicators developed by the Construction Industry Council to assess the quality of design at four stages of the project – the brief, mid-design, readiness for occupation and in-use.

What clients have to be able to do

Clients should evaluate their construction projects in the following ways:

- formal reviews of the project at key stages before the Gateway reviews are carried out by the project team, reporting to the senior responsible owner, as the project's owner accountable for its success, and ultimately to the investment decision maker. These reviews highlight any issues that need to be resolved by senior management and check that the project is proceeding according to plan. The decision to move on to the next stage is further informed by Gateway reviews (see below)
- independent formal reviews at project Gates provide the rigorous evaluation necessary to confirm that the stage of the project just completed has met its objectives and that everything is in place to begin the next stage. Depending on the project's level of risk, Gateway reviews are carried out by an internal or external team; the important point to note is that the Gateway review team is always independent of the project team
- informal evaluation and reporting should be ongoing throughout the project, particularly during the development and construction stages. This ongoing evaluation aims to provide the key learning mechanism to identify what has worked well, where opportunities for improvement have been missed and what has not gone well. Input from all team members and key stakeholders should be sought
- evaluation of specific activities such as design or value management aims to provide knowledge and understanding – for example, an assessment of design quality or about how to approach a new way of doing something, perhaps an innovative technique for construction – or how to solve a particular problem.

As the general trend in procurement moves towards longer term relationships and framework agreements, it is likely that more than one project will be incorporated into each agreement. It is important to evaluate each project as well as the overall performance of the framework supplier.

The fundamental part of post project review and feedback is to make sure that lessons learned on one project are transferred effectively to other projects, not just within the same organisation, but to other projects across government.

Project evaluation and feedback apply to all projects, including routine and capital maintenance projects and refurbishment projects. They are an essential aspect of control and drive continuous improvement.



Good practice

Clients should:

- aspire to be outward looking, recognising that there is much to gain from sharing experiences, comparing performances or taking an innovative approach to a problem
- carry out a post project review using KPIs
- carry out a post implementation review of projects, which should review the extent to which the project meets the objectives and the business needs, lessons of good and poor practice, as well as review of whole life cost
- wherever possible, seek firm quantitative information with which to evaluate the success or otherwise of comparable construction projects, to demonstrate whether completed projects have achieved planned improvements in performance – for example, meeting a 10% reduction in construction costs, and to set reliable targets and estimates for future projects
- tell their supply teams how well they are meeting requirements, both generally and in relation to specific projects, so that they can see how to improve their performance and increase their chances of being given opportunities to bid for further work. Any feedback should take into account how well (or not) the client carried out its responsibilities.



The NHS as best practice client

NHS Estates will improve the client performance of NHS Trusts by providing them with training, guidance and help through its specialist procurement teams. Benchmarking and performance management will be done externally with other government bodies with similar roles and internally between regions and trusts.

NHS Procure 21 will identify and appoint regional integrated project team partners with whom the NHS will place work between certain value thresholds. Industry will be expected to improve its performance, as NHS Estates will be a better informed and more highly skilled client, with regional and national benchmarks.

For more information, see www.nhs-procure21.gov.uk/content/home/home.asp

Process

Project evaluation

Project evaluation and feedback are part of the project sponsor's role. In carrying out their duties, project sponsors may wish to appoint an individual specifically responsible for the day-to-day tasks relating to project evaluation and feedback. This will help to ensure that all information is maintained and handled in an appropriate manner and any reports produced and distributed to the appropriate parties.

Formal reviews at key decision points

AE3:Procurement project lifecycle describes a series of key decision points, aligned to OGC's Gateway process, and the project reviews that should be carried out at each decision point. The Gateway process is a major OGC initiative applicable to all procurement projects in central civil government involving the acquisition of third-party goods, works and/or services.

For construction projects there are two additional major review points between Gates 3 and 4, when outline design is agreed and when detailed design is fixed before proceeding to the construction phase (see AE9:Design quality for more detailed guidance). See the companion document Achieving Excellence in Construction: A Manager's Checklist. Further information on the OGC Gateway™ Review process in its entirety can be found on the OGC Website at www.ogc.gov.uk/what_is_ogc_gateway_review.asp

The 'manage contract' stage after Gate 4 applies to the Private Finance Initiative (PFI), Design Build Operate (DBO) or similar contracts. However, once the construction phase is complete, the facility will still need to be managed and maintained, whatever the contractual arrangements. A Gateway review will be needed whether or not the same supplier is responsible for construction and ongoing operation of the facility. Gateway reviews apply equally to refurbishment and maintenance projects as questions will need to be asked about readiness for service (at Gate 4) and the business benefits achieved from the investment (at Gate 5).

Ongoing design and construction phase performance review

In addition to the formal Gateway reviews carried out at each decision point, evaluation and reporting of the project should be undertaken as an ongoing part of normal project management. It should include regular briefing sessions with key stakeholders to ensure that their needs continue to be met.

The ongoing evaluation process should be thought about and built in from the earliest point in the project. It should capture key information about the overall procurement and project management processes, as well as information on the constructed facility.



It is important to obtain views from members of the team, including all suppliers. This is a two-way process that requires input from suppliers on improvements that the client could usefully make to allow the team to make further performance improvements. The use of participative workshops can help to obtain consensus views that are more reliable and wide ranging than could be obtained from separate individuals.

Using the DQI process at the outset and at key stages throughout the project can help in obtaining this consensus. It enables the integrated project teams to set out their design quality intentions specifically, along with other key issues such as health and safety, sustainability, cost and time. In addition, because it captures the views of potential users, the DQI process will help to develop a more effective design for the long-term use of the facility.

Case Study

Ministry of Defence: Building Down Barriers – an example of measurement and performance review

Prime Contracting and improved project management have contributed to the success of construction – including a reduction in construction time of 20% compared to previous experience; materials wastage close to zero compared with industry best practice of 10%; and labour productivity of 65-70% compared with best industry rates of 54%.

A good reason for carrying out performance review as an ongoing process during the project, rather than as a single post project review at the end, is to ensure that important information and lessons are neither lost nor forgotten. It should also be of benefit to improving work in progress. This is particularly relevant on larger projects where numerous parties become involved at various stages of the project. Key personnel who were involved in earlier stages of the project may move on to other projects and may no longer be available to impart their knowledge.

Any post project review should identify those aspects and project processes that have been particularly successful and those where difficulty arose, and to do so in a blame-free environment.

The post project review should be completed relatively soon after the main construction element has been completed to ensure that views are collected from all members of the project team before they disperse.

Annex A provides a list of some of the aspects that could usefully be addressed during post project review. This list should not be seen as either prescriptive or exhaustive.

Feedback

Feedback from complex or innovative projects, or those with useful lessons learned, should be shared wherever possible for the benefit of all clients. Information about such projects is welcomed and should be sent to the Movement for Innovation – M4i – now part of Constructing Excellence (www.constructingexcellence.org.uk//resources/az/view.jsp?id=290).



Improving performance as a client

NHS Estates, Defence Estates, the Highways Agency and the Environment Agency have all taken initiatives to improve their performance as clients and managers of construction. Each organisation has broadly the same objectives, to:

- improve the quality of completed construction projects with much more emphasis on getting designs right so that construction projects better meet the needs of the end-users, have fewer defects, and are more cost-effective to operate and maintain over their whole operational life
- adopt contract strategies that are more likely to promote improvements in integrated project teams' performance to provide more predictable final costs and completion dates
- improve the professionalism of all those involved in purchasing and managing construction so that good practice is more widely accepted and applied in each organisation's dealings with the construction industry
- adopt more innovative approaches, such as prefabrication of construction and greater standardisation of building components, to improve value for money and speed of construction.

[Source: NAO]



Techniques

A performance management framework

A performance management framework is useful throughout a construction project for helping to decide which aspects of performance need to be measured and how to measure them. Performance measures need to be linked to key objectives (why are we doing this?) and targets (what do we want to achieve and when?).

Whatever needs to be measured – from the organisation's overall performance as a client to the performance of a single construction project or a series of projects with the same project team – the elements of managing performance are broadly similar. The elements, and the questions that each one involves, are:

- the starting point (the key objectives)
 - defining what constitutes success: 'what are we trying to achieve?' and 'how will we know when we've achieved it?'
- building a performance framework and choosing measures
 - creating a performance framework that will produce useful information: 'what do we need to measure?'
 - choosing performance measurements that will fill the framework with actual information: 'what will the measurements be?'
 - setting targets for all measurements: 'what is the minimum acceptable performance level for this measurement?'
 - deciding on requirements for continuous improvement, where appropriate: 'what will our targets be in the next month/year/five years?'
- defining processes for measuring and tracking performance
- establishing procedures: 'how will measurements be taken?'
 - establishing responsibilities: 'who will do what?'
 - considering time and resource implications: 'will it be too expensive to measure this using this particular procedure?' A different method might demonstrate better value for money by producing similar results for a lower whole-life cost
- performance monitoring and measurement
 - gathering and verifying information: 'what's happening now?' and 'are we sure of these results?'
- using performance information
 - analysing and reporting results: 'have we met our targets?'
 - taking corrective action: 'how can we improve?'
 - comparing the performance of other organisations or clients (benchmarking): 'how are we doing?'
- review and evaluation
 - were the performance targets realistic?
 - setting new performance targets: 'should we redefine success?'
 - evaluating the performance framework: 'did we find out what we needed to know?' and 'was it worth the cost of finding out?'
 - learning (at different levels within the client organisation): 'what can we learn from this?'
 - feeding performance information back into strategic thought: 'did we realise the benefits we wanted?' (review targets in light of outcome).

1 Performance management as a cycle of activities, or series of questions to be asked

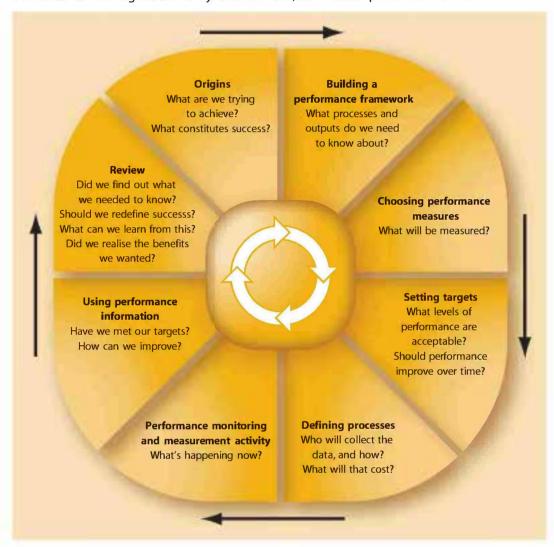


Figure 1 shows performance management as a cycle of activities, proceeding from a consideration of strategic aims through performance management and on to the review stage. While this cycle indicates the order in which some activities will be undertaken, in practice they may not be successive stages but iterative loops; for example, the stage of performance monitoring and measuring is an ongoing process. See Annex 8 for details of established performance measurement and evaluation guidance and methods.



Key Performance Indicators

OGC and the former Government Construction Clients' Panel have developed the Clients' Charter, a series of six input and twelve output Key Performance Indicators to measure performance during the life of the project. A software system for collating and analysing the data is available to government clients.

The Key Performance Indicators have been particularly useful to organisations with unsophisticated performance measurement systems. Some organisations have used the indicators selectively to measure aspects that are important to their business and to their clients, and to supplement their own performance measurement systems. The Key Performance Indicators are not a substitute for more comprehensive performance measurement systems and benchmarking, which can provide more rigorous assessments. They do, however, enable organisations to gauge their performance in relation to other organisations. The indicators are less suitable as tools to manage projects, suppliers or companies, or as criteria for evaluating tenders or in evaluating the success of a construction project in reducing the operational costs of a building.

There are also a range of Construction Industry KPIs, which provide an effective method of making a comparison with how an organisation performs against the rest of that sector of the industry. This again is a tool for allowing internal improvement within an organisation and should not be used as a means of evaluating suppliers during the selection and award processes. Further information is available from the Construction Best Practice Programme website at www.bre.co.uk and KPI zone at www.brizone.com

Design Quality Indicators (DQIs)

Design Quality Indicators (DQIs) are assessment tools to evaluate the design quality of buildings. The development of DQIs has been led by the Construction Industry Council, with sponsorship from DTI, CABE and Rethinking Construction. They have been developed for stakeholders (including end-users) and practitioners engaged in the commissioning, design, planning, production and management of the built environment. DQIs focus specifically on assessing and measuring the value of the completed facility and are tools for everyone involved in the production and use of the facilities to gain more value from design. They have been developed to complement the Construction Industry KPIs from Rethinking Construction mentioned above. Further information is available from the Constructing Excellence website at http://www.constructingexcellence.org.uk/ and the KPI Zone at www.kpizone.com.

Benchmarking

Benchmarking is a management technique to improve business performance. It can be used to compare the performance of the organisation as a client with that of similar organisations, or the performance of different suppliers in the same industry. For construction projects it can be used to:

- assess performance objectively
- expose areas where improvement is needed
- identify other organisations with processes resulting in superior performance, with a view to their adoption
- test whether improvement programmes have been successful.

Benchmarking comprises four basic stages: planning, analysis, action and review.

Planning

Planning includes:

- selecting the broad business process or function to benchmark
- within that process, defining the activity to be benchmarked
- confirming the key performance measures or indicators to measure the performance in carrying out the activity
- documenting the existing way in which the activity is carried out
- drawing up a preliminary list of potential benchmarking partners with whom to exchange information
- identifying possible sources of information and methods of collection to confirm the suitability of potential partners.

Analysis

Analysis includes:

- collecting information to identify the most likely potential benchmarking partner to contact
- confirming the best potential benchmarking partner and making a preliminary assessment of the performance gap
- contacting and visiting them, if appropriate, to validate and substantiate the information
- comparing the existing process with that of the benchmarking partner to identify differences and innovations
- agreeing targets for improvements that are expected as a result of adopting the benchmarking partner's way of doing things.

Action

Action includes:

- communicating the results of the study throughout the relevant parts of the organisation and to the benchmarking partner
- planning how to achieve the improvements
- implementing the improvement plan, monitoring progress and reviewing as necessary.



Review

Review includes:

- reviewing performance when the changes have been 'bedded in'
- identifying and rectifying anything which may have caused the organisation to fall short of its target
- communicating the results of the changes implemented to the organisation and the benchmarking partner
- considering benchmarking again to continue the improvement process.

See Annex B for details of established benchmarking systems.



NHS Estates is participating in external benchmarking with Defence Estates and the Valuation Agency so that they can all learn from each other's experiences by benchmarking key processes. There will be internal procurement learning sets at a national and regional level, so that each organisation can:

- learn from each other's performance
- test out innovative ideas to improve performance
- share best practice and innovation
- benchmark performance in the NHS Estates and other sectors
- carry out process benchmarking with other industries.

Annex A: Key questions for clients to consider in quantifying improvements in construction performance

Assessing the need for construction

- Is there a need for the project at all? If so, does it require construction?
- How should the need be fulfilled for example, a new construction, refurbishment of an existing structure or renting?
- How does the cost of the proposed building compare with the cost of other buildings constructed for a similar purpose?
- If the cost of the proposal is more, how is this justified?

Assessing the procurement route

■ Has the most appropriate procurement route been chosen -PFI, Design & Build or Prime Contracting?

Assessing the likely operational running operating costs of the proposed construction

- What are the likely whole-life costs of operating the proposed facility, including disposal costs (a quantified estimate should be prepared)?
- costs, including business How do the proposed running costs compare with costs for existing facilities and other comparable constructions? If costs are higher, how are they justified?
 - Has the whole project team (including design, construction, maintenance and operation) been brought together and integrated before the design is well developed?
 - Have users been involved in the design process?
 - Has the design given sufficient consideration to optimising the operational efficiency and effectiveness of the completed construction and can these improvements be measured (quantitatively or qualitatively, i.e. financial or non-financial)?

Assessing the contract terms and conditions/ clauses

- Have efficiency and cost improvement targets been agreed with the supply team and quantified?
- Have incentives been included in the contract to encourage the supply team to perform well?
- Have the benefits to be delivered been quantified before incentive payments will be paid?

Assessing the proposed method of construction

- Have appropriate techniques been used, such as value management and value engineering to determine whether the potential for waste and inefficiency has been minimised in the method of construction?
- Have efficiency improvements to be delivered by the construction process been quantified?

Based on NAO source



Annex B: Established performance evaluation and benchmarking systems

Clients' Charter

The Confederation of Construction Clients (now the Construction Clients' Group) launched the Clients' Charter in December 2000. A major aspect of success will be the willingness of client organisations to benchmark the effectiveness of their procurement programmes against standard criteria. Further information is available at www.clientsuccess.org/home.html

Design Quality Indicators

DQIs are described earlier in this guide. They are a tool for aligning design requirements and then assessing and measuring the quality of constructed facilities. See www.dqi.org.uk/DQI/default.htm for more information.

Movement for Innovation

The Movement for Innovation – M4i, now part of Constructing Excellence – aims to lead radical improvement in construction in value for money, profitability, reliability and respect for people, through demonstration and dissemination of best practice and innovation. M4i has been closely involved, through its KPI and Benchmarking working group, in the development of Key Performance Indicators to provide the necessary tools for industry to benchmark its performance and develop a culture of measurement and continuous improvement.

A core feature of the structure of the Movement is the library of demonstration projects, which seek to develop innovation in the manner in which they conduct their relationships and refine construction techniques and/or processes and through the development of components. Projects have an obligation to benchmark performance, be open and honest, share in the learning measurement culture, set high standards in safety and respect for people, and disseminate the results of their work through case histories, toolkits and so on to the rest of the industry. For more information see www.constructingexcellence.org.uk//resources/az/view.jsp?id=290

CBI PROBE

The Confederation of British Industry (CBI) has a number of benchmarking systems under the brand name PROBE (Promoting Business Excellence), which focus on specific activities and fit within the framework of the Excellence Model.

- Service PROBE promoting world-class service
- Contour promoting world-class environment, health and safety
- Headstart promoting world-class people management.

Service PROBE has been adopted by a number of public sector organisations. Its strengths lie in the way it is applied and in allowing comparisons against a large international database comprising both public and private sector organisations. It is simple to use and rapidly provides a clear picture of the strengths of an organisation in terms of service delivery.

Further information is available from the CBI website, www.cbi.org.uk

PROBE (Post-Occupancy Review of Buildings and their Engineering)

PROBE is a research project, which ran from 1995-2002 under the Partners in Innovation scheme (jointly funded by the DTI and The Builder Group, publishers of *Building Services Journal*). It was carried out by Energy for Sustainable Development, William Bordass Associates, Building Use Studies and Target Energy Services. See *www.usablebuildings.co.uk*

BRE Digest - learning about building performance

Building Research Establishment (BRE) publishes post occupancy evaluation guidance and methodology. Part-funded by DTI's Partners in Innovation scheme, BRE and industry collaborators have developed an early-stage post occupancy evaluation method and associated guidance, specifically tailored to the early stages of a building's occupancy. It uses a pro forma to guide investigations into eight key issues that, if provided correctly, contribute greatly to the successful operation of the facility. This is currently in the final stages of development and due to be published shortly. For further information, see www.bre.co.uk

Inside UK enterprise

Inside UK Enterprise (IUKE) is an initiative that allows visits to a range of organisations which are exemplars of best practice in particular fields. For further information visit the IUKE website at www.accountingweb.co.uk/vertical_network/iuke.html

Further information

Choosing the right FABRIC: A Framework for Performance Information produced by HM Treasury, the Cabinet Office, the National Audit Office, the Audit Commission and the Office for National Statistics (available online at www.hm-treasury.gov.uk).









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