



Improving Public Services through better construction

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FOREWORD

Sir Michael Latham, DL

I was delighted to be able to write a foreword to the National Audit Office's excellent report "Modernising Construction" when it was published four years ago. I was also able to listen to the public hearing of the Committee of Public Accounts on the findings of that report. It is, therefore, a particular pleasure to welcome this further report by the National Audit Office, which traces the considerable progress made by some departments and agencies of central government in construction procurement practice, following valuable guidance from the Committee of Public Accounts, the National Audit Office itself and from the Office of Government Commerce.

For small and occasional clients, construction procurement can seem a complex and daunting project, but it need not be so if they have the benefit of proper advice before embarking upon it. Best practice starts from the basic principle that the client and its business needs should be at the core of the construction process. When I first made that sentiment a basic theme of "Constructing the Team" in 1994, I was surprised to discover that some industry people regarded it as a controversial recommendation. They did not think that the client should be at the core of the process. Indeed, some saw clients as "a nuisance", a word which was actually used at one meeting. Fortunately, following the Egan Report "Rethinking Construction" in 1998 and further procurement guidance from the Strategic Forum for Construction, in which Ministers have played a strong part, wiser counsels have prevailed. The role of the supply side is now seen as being there to understand, develop and deliver the wishes and intentions of the construction client, and to do so in a way which allows for high quality design and site performance through an efficient and cost effective process. That allows taxpayers, as the ultimate paymasters of public sector projects, to ensure that their money is all used on the construction projects themselves, rather than to finance litigation or disputes during or after the project, as has too often been the case in the past. In that regard, high quality guidance from the Office of Government Commerce, the Committee of Public Accounts and the National Audit Office, will be very valuable for infrequent clients and will give them added confidence and reassurance to go down the best practice route.

Best practice is about partnering, collaborative working and stripping out of the equation at the earliest possible stage those costs which add no value. To achieve that, it is vital to involve the whole supply chain. It is not enough for the partnering to be solely between the client and the first tier contractor, though that is a significant step forward. The vast majority of the work on site will be undertaken by specialist contractors. They also need to be involved on a partnering basis, particularly as many of them have significant detailed design responsibilities. The consultant and the contracting teams, including the manufacturing and component sectors, should be fully integrated from the earliest conceptual design stage, to ensure that the client's requirements are understood through an effective and iterative briefing process and that all are committed to the whole project, not just to their part of it. That also ensures that proper attention is given to sustainability and life cycle costing, and that facilities management planning is heavily involved at design stage, to avoid wasteful and abortive long-term expenditure on maintenance.

There is still a long way to go, and no room for complacency. Unfortunately, some poor practice does persist in both public and private sector construction projects. However, there is now a growing volume of evidence – including the encouraging findings of this National Audit Office report – that best practice delivers real value for all involved in the project. Effective leadership by Government and strong and authoritative procurement guidance from the Office of Government Commerce, supported by the critical and expert analysis of the Committee of Public Accounts and the National Audit Office, can ensure that this construction reform process continues to gain momentum throughout the public and private sectors, to the ultimate benefit of society as a whole. That is the fundamental message of this report, and indeed of the whole Egan process and the work of the Strategic Forum for Construction.

Sir Michael Latham was the author of "Constructing the Team" in 1994, Chairman of the Government's Review of the Construction Act 2004, and was a member of the Committee of Public Accounts from 1983 to 1992.

EXECUTIVE SUMMARY



1 UK construction activity makes a considerable contribution to the national economy and accounts for over 8 per cent of national gross domestic product. The value of built assets in the central government sector alone is estimated at just under £161 billion.¹ UK annual public sector construction output has grown by over a third between 1999 and 2003 from just under £24 billion per year to around £33.5 billion and capital investment is set to continue expanding over the next three years in key sectors such as schools, hospitals, roads and social housing.

2 Well managed and successfully delivered public sector construction provides departments and agencies with the opportunity to improve service delivery and efficiency. The quality of construction and the built environment shape the lives of UK citizens through their impact on (1) the delivery of improved public services such as health, education and transport (2) social cohesion; and (3) standards of living and the natural environment. It is essential therefore that departments and other public sector organisations achieve value for money through efficient construction processes that deliver buildings to time, cost and quality, that are cost effective to run over their whole operational life, and lead to better quality services and sustainable communities.

3 There are other pressures on departments to improve their construction performance. Departments are required to deliver 2.5 per cent annual improvements in efficiency from 2005-06 onwards, and will need to demonstrate that they can deliver construction cost efficiently, as well as ensuring that new infrastructure contributes to efficient public services. UK construction activity also has a major part to play in the achievement of the Government's Sustainable Development Strategy. Increasingly departments will need to demonstrate how their construction activity is addressing social and environmental concerns and encourage their suppliers to help the Government achieve its aims and targets for sustainable development, for example, in reducing carbon dioxide emissions.

4 Our 2001 report² set out how successive independent reviews of UK construction performance had identified the need to tackle the adversarial and inefficient working practices that have characterised the UK construction industry. Our report, and the report of the Committee of Public Accounts³, emphasised the need for further action to improve departments' construction performance and the scope for significant financial savings and wider value for money benefits.

¹ Aggregate figures for buildings and infrastructure assets (excluding railways) from departments' published resource accounts for 2002-03 based on current replacement value.

² *Modernising Construction*, (HC 87, 2000-01).

³ *Improving Construction Performance*, Committee of Public Accounts, (HC 337, 2001-02).

5 Since 2001 the Office of Government Commerce has implemented a range of construction improvement initiatives and support services. Some of these are aimed specifically at improving the construction delivery capability of departments, sometimes in conjunction with other government bodies, or as part of wider initiatives to improve departments’ programme and project delivery capability.

6 The Government has, from April 2005, extended the remit of the Office of Government Commerce, to include working with client organisations across the wider public sector covering, amongst others, local government and the National Health Service to help them improve their procurement capabilities. The Office has been given no extra resources for these activities emphasising the need for it to target its future efforts where they will have most impact.

7 In February 2003, The Chief Secretary to the Treasury launched two strategic targets to improve the cost and time predictability and quality of construction projects and reduce average timescales for procurement (Figure 1). Responsibility for delivery of the targets rests with departments. The Office of Government Commerce has defined how the targets are to be measured and is responsible for monitoring and reporting overall progress.

1 The Achieving Excellence in Construction strategic targets

- 1 By March 2005, 70%, by volume, of construction projects reaching the benefits evaluation stage (Gate 5 of the Gateway Review process) in the period 1 April 2003 – 31 March 2005 to be delivered:
 - On time
 - Within budget
 - To exceed customer and stakeholder expectations
 - With zero defects
- 2 By March 2005, for each key sector to reduce the average time period from start of procurement (Gate 2) to award of contract (Gate 3) by 25% for construction projects taking over a year between Gates 2 and 3, and 15% for all other construction projects

8 This report assesses the progress that departments and their agencies have made in improving their construction delivery performance since our 2001 report, in part by examining data on 142 construction projects⁴ delivered between April 2003 and December 2004, as well as the impact of relevant Office of Government Commerce initiatives. The report is intended to be forward looking by highlighting good construction practice drawn from across public and private clients and projects which other organisations can learn from. A separate volume published with the report sets out in more detail examples of good construction practice. We also commissioned George Martin, Director of Sustainability, Buildings Research Establishment, to produce a paper to analyse the issues involved in achieving whole life value and sustainability in construction.

Findings

9 **On progress towards improved cost and time predictability and the value for money savings from improved performance.** Completing projects within budget and on time avoids the need to divert funding towards paying for overruns, reduces the risk of adversarial situations and behaviours, and creates stability in the whole planning and delivery cycle. While departments still have some way to go to meet the Achieving Excellence targets of 70 per cent of central government construction projects to be delivered to time and budget by March 2005, performance has improved considerably compared with the 1999 baseline for the 142 projects included in our analysis:

- **55 per cent were delivered to budget compared with 25 per cent of projects in 1999.** If the level of cost overruns reported in 1999 had continued (6.5 per cent on average), this would have led to an estimated overspend of £77 million on the 142 central government construction projects completed between April 2003 and December 2004 (total budget of just under £1.2 billion). The actual overspend on the 89 projects in this time period was, however, only 4.1 per cent. If this improvement in the average overspend is scaled over the £33.5 billion⁵ spent on public sector construction in 2003, then we estimate that the post contract cost overruns which have been avoided when compared to the price expected at the time the contract was let would be in the order of £800 million.

4 The 142 construction projects had a combined budget of just under £1.2 billion, but exclude data on projects in the wider NHS, the schools sector and the Ministry of Defence.

5 Annual expenditure on central and local government construction (Department of Trade and Industry Annual Construction Statistics, 2004). The figure excludes expenditure on the construction elements of Private Finance Deals.

- **63 per cent were delivered to time compared with 34 per cent in 1999.** The more that departments can deliver projects on time, the greater the confidence of those making funding decisions will be in providing funding for longer-term programmes. In turn this should enable better planning, streamlined procurement and suppliers' investment in capacity.

The reasons for improved performance are varied, but it is clear from our examination that the guidance and support provided by the Office of Government Commerce under the Achieving Excellence in Construction initiative has made a considerable contribution.

10 On the further value for money savings that can be achieved through the continued implementation of the principles of Achieving Excellence in Construction. A range of value for money gains from partnering and the early development of integrated project teams are beginning to emerge from the improvement programmes of the case study organisations included in our 2001 report.⁶ These include streamlined procurement processes, innovative solutions to the design and delivery of construction projects, fewer legal claims, reduced environmental impacts, safer working and improved whole life costs and value as a result of more open and integrated team working between departments and contractors.

Terms commonly used throughout the report

An integrated project team

Comprises the client's team and the suppliers' teams, for example, consultants, contractors and specialist suppliers, including those involved in design. The integrated project team is often located together, shares the same management information systems and often jointly benefits from beating cost targets.

Integrated supply chains

A supply chain is made up of all the parties responsible for delivering a product or service. An integrated supply chain is responsible for delivering the whole project, and sometimes a whole programme of projects. Integrated supply chains often stay together from project to project, retaining learning, know-how, and mutual understanding, to the benefit of the client.

Collaborative working

Involves clients and integrated supply chains working closely together often under long-term framework arrangements using non-adversarial approaches and contract conditions to meet the project or programme objectives. A wide range of approaches can be adopted in collaborative working such as using project accounts, project-wide insurance, two-stage tendering, combined planning, joint risk assessments, early contractor involvement and integrated project teams.

Partnering

A structured management approach designed to promote collaborative working between contracting parties. The objective is to align and unite all the parties with a shared goal of completing the scope of the work in a cost-effective manner which is mutually beneficial. It can apply to a single construction project (project partnering) or it can be used by clients working together with suppliers on a series of construction projects with the aim of

promoting continuous improvement by deliberately applying the lessons from one project to the next (strategic partnering). One risk of partnering is that the absence of competitive and commercial tension results in the department not achieving a fair price. Where organisations adopt a partnering approach they will typically:

- work in a positive no blame whole team environment;
- provide early warning to each other of any matters that could affect the achievement of the project objectives;
- use common information systems and work on an open book basis including showing the elements of contingency and risk allowances added to costs, prices and timing of all future work; and
- have incentives for delivery based around pain/gain share arrangements.

Whole life costs

The whole life costs of a built asset facility include (1) the acquisition costs, including consultancy, design, construction and equipment, (2) the operating costs including utilities, renovation, and repairs and maintenance through to disposal, and (3) internal resources and overheads, risk allowances, predicted alterations for known changes in business requirements, refurbishment costs and the costs associated with sustainability and health and safety aspects.

Whole life value

The benefits and costs associated with a built asset over its whole life taking account of the interests of all stakeholders affected by its construction and existence, and its wider economic, social and environmental impact. There will be trade-offs between the various short term project constraints (such as time, costs and quality) and the conflicts in stakeholders' longer term interests and objectives.

6 Defence Estates, Environment Agency, Highways Agency and NHS Estates.

11 Despite the generally positive progress that is being made there are still many projects across the public sector as a whole which do not fully employ the good construction practice identified in this report and supporting case study volume. If these benefits, and those achieved through the good practices of leading public and private sector organisations, can be applied more widely then considerable value for money gains and service delivery improvements could be achieved in future public sector construction projects. Recognising that public sector bodies are already making improvements, but that others are not, we estimate that just under ten per cent of annual public sector construction capital costs and five per cent of building operating costs could be saved if these benefits were realised. On the basis of the simple extrapolation in **Figure 2**, further value for money savings of up to £2.6 billion in annual construction expenditure may be possible if good practice was applied across all of the public sector. Even the more conservative assumption that just 20 per cent of these improvements are practicable would still release some £500 million to be reinvested

in frontline public services or higher quality built assets to deliver better services. There may be circumstances where relatively small increases in the capital costs of construction will deliver significantly greater whole life value for example, through reduced energy costs and lower carbon dioxide emissions.

12 On the impact of the Office of Government Commerce’s initiatives to improve departments’ performance. The Office has achieved a considerable amount since its inception in 2000, by promulgating good practice procurement and construction project management techniques, continuing to develop PFI procurement policy (until 2003 when this was transferred to HM Treasury), putting in place toolkits and support mechanisms for departments, and applying the Gateway Review scrutiny process to construction programmes and projects. Gateway Reviews in particular, have generally assisted clients and their professional advisers in identifying and addressing the risks to, and opportunities for, successful delivery.

2 The potential for further value for money savings from wider application of good practice including partnering and the early development of an integrated project team

Opportunity	Examples illustrating the potential savings, from the case studies, workshops and bi-lateral meetings covered by the NAO examination	Potential value for money savings if this performance is repeatable across public sector construction expenditure	
		Central Government	Local Government
Improved productivity based on more effective programmes and streamlined procurement	<p>Streamlining planning and procurement work, and starting sooner on site (up to 12 months) reduces administration effort and avoids inflation.</p> <p>Completing projects faster (by 3 months) cuts suppliers’ management costs and avoids inflation.</p> <p>Off-site fabrication reduces defects, improves the quality of work and cuts snagging time, reduces waste, and improves site safety and working conditions.</p> <p>Bundling work into larger programmes gives suppliers better work continuity, leading to savings.</p> <p>Reduced supplier numbers working on larger, more coherent programmes leads to savings.</p> <p>Better planning enables the use and management of built assets to be more closely aligned with the service improvement priorities, while also allowing surplus property to be identified and released.</p> <p><i>One or more of these points are illustrated in the following case examples in Parts 2 and 3 of the report: NHS ProCure21, Environment Agency, Royal Mail Property Group, BAA, and Stanhope.</i></p> <p>This equates to a saving in capital costs of 4% per year (extrapolated against annual capital expenditure on new build in 2003).</p>	£220m	£500m

2 The potential for further value for money savings from wider application of good practice including partnering and the early development of an integrated project team (*continued*)

Opportunity	Examples illustrating the potential savings, from the case studies, workshops and bi-lateral meetings covered by the NAO examination	Potential value for money savings if this performance is repeatable across public sector construction expenditure	
		Central Government	Local Government
Collaborative working approaches	<p>Integrated teams comprising clients, designers, contractors and specialist suppliers, co-located and with aligned objectives.</p> <p>Use of non-adversarial forms of contact such as the Engineering Construction Contract, embedding good project management practice and minimising claims or disputes.</p> <p>Earlier contractor involvement, either through long-term collaborative relationships or through two stage tendering; leading to practical simplifications and cost reductions.</p> <p>Project-wide insurance, to gain buying power and avoid divisive protective behaviour about faults and no claims records.</p> <p>Use of project accounts to ensure smooth supplier cash-flow arrangements.</p> <p><i>One or more of these points are illustrated in the following case examples in Parts 2 and 3 of the report: Environment Agency, BAA, Defence Logistics Organisation Offices, Thames Water.</i></p> <p>This equates to a saving in capital of 6% per year (extrapolated against annual capital expenditure on new build in 2003).</p>	£325m	£760m
Savings in the whole life costs of built assets	<p>Reduced energy, cleaning security, repairs, maintenance, replacement costs.</p> <p>Greater user satisfaction, productivity and staff retention rates.</p> <p>Better environmental sustainability, with policies and processes in place to encourage and measure achievement of the Government Sustainable Development Strategy through, for example, reduced carbon dioxide emissions.</p> <p><i>One or more of these points are illustrated in the following case examples in Parts 2 and 3 of the report: the Environment Agency, HM Treasury refurbishment, University of Cambridge, Dunston Innovation Centre, Kingsmead Primary School.</i></p> <p>This equates to a potentially significant saving of operating costs, conservatively put as 5% per annum (extrapolated against central and local government repairs and maintenance expenditure in 2003).</p>		£770m
Total Savings		£2.6 billion	

Source: National Audit Office examination

13 The impact on departments of the Office of Government Commerce’s initiatives, or departments’ engagement with the Office has, however, been variable. The guidance issued by the Office of Government Commerce is generally regarded as valuable and clear. It is, however, not always followed, in part because many public organisations do not have the appropriate skills and experience to implement it effectively, and many remain unaware of, or choose not to use, the support and advice that the Office can provide. For example, not all departments and their agencies conduct independent and complete Gateway Reviews of their significant construction activities. In particular, by not engaging with the Office early in the programme or project cycle or at the stage of evaluating whether the intended benefits to efficiency and improved public services have been delivered. The Office is starting to address these concerns through early intervention in high value and impact projects via its Centres of Excellence initiative.

14 Given the size and diversity of the construction industry it is unsurprising that there are a wide range of improvement initiatives underway or available to clients. Our workshops, for example, were able to identify at least 70 significant construction improvement initiatives. The Office of Government Commerce and Constructing Excellence⁷ have made progress in rationalising some of these initiatives but there remains scope to improve the ease with which users can navigate through the initiatives and some of the initiatives could be targeted more effectively at those clients they are intended to benefit. To address these issues leadership and co-ordination of public sector construction needs to be strengthened in three respects:

- There should be a means for departments and agencies involved in construction to discuss at a senior (board) level strategies and standards, and to co-ordinate programmes. No forum currently exists to meet these needs although the Supervisory Board of the Office of Government Commerce does provide an opportunity for the sharing and discussion of key supplier information at senior level.
- There should be greater clarity about preferred ways of engaging with suppliers. Departments procure and manage construction through a variety of approaches including PFI/PPP and bespoke framework agreements with limited numbers of strategic partners in defence, flood protection, road construction and maintenance and the NHS. Suppliers find the different approaches confusing, which they consider increases their management and other overhead costs, for which departments ultimately pay.
- There should be improved co-ordination between those departments and agencies with lead responsibility for cross-government aspects of construction, ranging from training, health and safety⁸ to employment policy and design, to reduce unnecessary bureaucracy and improve efficiency. At least ten departments and agencies are involved and clients and suppliers have to monitor and interpret sometimes contradictory policies and regulations from a wide range of sources, all of which consumes time and resources.

15 What more departments need to do to make further progress. We identified six main aspects of construction performance which departments need to focus their efforts on improving. To help them to do this and realise the potential for significant financial value for money savings we have highlighted the good practice most likely to achieve better performance (**Figure 3**).

⁷ An industry-led and Department of Trade and Industry sponsored initiative which aims to deliver reform through combining the Re-thinking Construction agenda and the Construction Best Practice programme.

⁸ The National Audit Office reported on health and safety in the construction industry in May 2004, “Health and Safety Executive: improving health and safety in the construction industry” (HC 531, 2003-04).

3 Actions which departments need to take to improve their construction delivery performance further

Areas where departments need to make more progress

Reduce the volatility and uncertainty in work flow and funding. A major concern of the construction industry is the inability of public sector clients to provide the market with sufficiently early warning and confidence about future construction programmes and greater certainty about the flow of work and funding.

Improve construction project management capability. Many public sector clients have insufficient skills and expertise to manage construction projects, for example in determining what sustainable construction should involve, and the industry wide shortage of suitably skilled and experienced people (exacerbated by the upturn in construction demand) is hampering the ability of departments to improve their construction performance.

Introduce sufficient independent challenge to conceptual thinking and business cases, and overcome practical difficulties in procuring construction on the basis of sustainable whole life value. The lack of sufficiently rigorous challenge to departments and agencies in the early stages of projects could result in built assets that are not needed or that quickly become redundant. Departments are also finding it hard to design and procure construction on the basis of whole life value.

How departments can make progress

Departments need to establish effective construction programmes which will require them to:

- (i) plan and manage construction projects and programmes across the organisation as a whole
- (ii) produce timely and robust information on the value, condition and fitness for purpose of existing built assets
- (iii) provide certainty and stability in the profiling of work and funding
- (iv) provide certainty of payment from the department to all in the supply chain.

Departments need to develop and support well focused and capable public sector construction clients involving:

- (i) 'intelligent' central support especially where they do not deliver construction projects on a regular basis
- (ii) management boards that understand the role of construction projects as vehicles for improved public services, understand where and how the Government's sustainable construction strategy fits, have relevant commercial skills and provide commercial and professional leadership for project managers and effective and consistent leadership throughout the course of construction projects
- (iii) use or create 'best in class' teams, familiar and experienced with the required work and with a track record of successful delivery.

Departments need to design and make decisions based on whole life value by:

- (i) investing more time and resources in the early planning phase of construction
- (ii) developing business cases that assess whether the running costs of the proposed built asset are affordable over its whole life
- (iii) assessing the wider economic, social and environmental impact of the proposed built asset.

Examples of where this has been achieved

The Royal Mail Group has brought the management of its estate and facilities management under the control of a single in-house organisation which can now plan and deliver a programme of work focused on the priorities and targets of the Group as a whole. **The savings of some £81.5 million (13 per cent) on an annual expenditure on property and facilities of £650 million achieved by the Royal Mail Group as a result of doing this provides an indication of the level of savings that departments could expect to make by adopting a similar approach.**

The establishment of the National Capital Project Management Service by the Environment Agency provides commercial leadership and a clear focus for the implementation of good construction practice throughout the entire Agency and its strategic partners. Through ProCure21 NHS Trusts are able to access previously competitively tendered supply chains allowing them to move more speedily to the start of construction incurring only low procurement costs, knowing they will not have to pay more than a guaranteed maximum price for the work. **Value for money gains of around ten per cent against the costs of projects have been achieved using ProCure21 compared to the costs for conventionally procured schemes.**

Dunston Innovation Centre was designed by Chesterfield Borough Council to achieve low running costs, minimal environmental impact and secure future flexibility of use. **A geothermal heating and cooling system was installed for the Centre which uses around a quarter of the energy compared to a typical air conditioned office building, and releases only around 40% of the carbon dioxide. It costs about £10,000 to run per year, compared to around £43,000 for similar sized air conditioned offices.**

3 Actions which departments need to take to improve their construction delivery performance further (*continued*)

Areas where departments need to make more progress

Maximise the benefits from good practice in construction procurement and contracting strategies and in managing project risks, opportunities and performance incentives.

Departments do not make the best use of their commercial leverage in terms of driving behaviour change in the industry towards Achieving Excellence principles. Departments are also poor at putting risk management at the heart of their construction programmes and identifying the opportunities for improved performance and whole life value.

Ensure that supply chains are appointed at the earliest opportunity, fully integrated and that there is sufficient competitive tension in framework agreements.

Departments have yet to integrate supply chain teams to include specialist contractors as fully and early as they should. There may be a disconnect between those responsible for taking decisions on, for example, design, and the labourers and crafts people responsible for delivery of quality workmanship. Departments also need to involve those who will maintain or can advise on maintenance aspects at the earliest stage of the project. The main risk of longer-term framework contracts and partnering arrangements is that the absence of competitive and commercial tension means that the department may not achieve a fair price.

How departments can make progress

Departments need to use the most appropriate procurement and contracting strategies which requires:

- (i) a clear understanding about which procurement route best fits their circumstances, capabilities and the programme or project risk profile
- (ii) the use of their considerable leverage and influence to select only suppliers who have a proven track record in, and commitment to, collaborative working, health and safety and sustainable development
- (iii) clear communication from the outset of the tender evaluation criteria and relative weightings
- (iv) the use of contracts that support collaborative working
- (v) a well developed capability to identify and manage the construction project risks.

Departments need to work collaboratively through fully integrated teams which requires:

- (i) a cultural change to be embedded across the whole of their organisation and the entire supply chain
- (ii) contractor and specialist supplier involvement at the earliest stages of projects, preferably appointed as an integrated team from the outset
- (iii) the maintenance of an element of competitive tension in partnering arrangements.

Examples of where this has been achieved

On transparent tender evaluation criteria: the University of Cambridge, to maximise their chances of engaging a contractor who will deliver the required service delivery improvements and efficiency savings, communicates the criteria for tender evaluation from the outset setting out the relative weights it assigns to financial, whole life costs, user-impact and time criteria.

On risk management: BAA has taken the view that, regardless of how contracts are set up with suppliers, it bears the risk of the project failing and it is therefore the only party that is positioned to take the ownership of the risk. BAA therefore uses a reimbursable form of contract, supported by a large, well resourced and highly skilled internal team.

Through ProCure21 NHS Trusts use the Design and Risk Tool, holding workshops with the contractor at the beginning of the project. This encourages all parties to identify risks and allocate each one to be managed by those best placed to do so rather than contractors being asked to price for risks outside of their control.

On performance incentives: A gain-share mechanism used by successful commercial organisations such as Thames Water, where suppliers get to keep a percentage of any cost savings, provides an important stimulus to innovation for suppliers as it becomes the main route for them to generate valid and transparent increases in their profits.

The Environment Agency implemented a cultural change programme jointly involving their staff and contractors to embed the partnering approach. Contractors' early involvement in projects is driving value management savings, while competitive tension is maintained through measurement of key performance indicators (including environmental impacts) with more contracts awarded to the better performers.

Defence Estates used a single project account on the Andover North project which allowed the entire supply chain to own the project monies, rather than the main contractor. This provided greater certainty of payment to specialist suppliers and provided a strong incentive for improved performance and investment in innovation and building capacity.

3 Actions which departments need to take to improve their construction delivery performance further *(continued)*

Areas where departments need to make more progress

Evaluate performance and embed project learning. Departments do not always establish the right measures to allow them to assess longer term impacts of built assets including improvements to service delivery and wider social and environmental impacts such as reductions in carbon dioxide emissions. Departments have not engaged in Gateway Five evaluations of whether construction projects have delivered the intended benefits to service delivery and efficiency so departments are not routinely capturing learning from completed projects.

How departments can make progress

Departments need to evaluate performance and embed project learning by:

- (i) establishing the appropriate measures and targets for improvements in whole life value from the outset of the construction project
- (ii) undertaking repeat evaluations of the achievement of all the key targets and benefits including the lessons from what has and has not worked well
- (iii) assessing the level of performance that was delivered by all parties during the project.

Examples of where this has been achieved

Stanhope places great store on the learning it achieves at the end of each project, and makes sure that not only is it written down, but that the teams share the knowledge actively. BAA adopts a similar approach, involving members of its own team and supplier teams in assessing the learning points. In both instances the lessons are used to drive through continuous improvements in performance on the next project, and every effort is made to keep successful teams together to maximise the opportunity for concentrated learning and the application of lessons.

Source: National Audit Office examination



RECOMMENDATIONS

16 Part 3 of this report and the supporting volume of case studies set out examples of good practice which have enabled organisations in both the public and private sectors to improve their construction delivery performance. The good construction practices have allowed completed projects to be delivered on time and to cost and have helped to improve the quality of the final built asset. Where projects are on-going, such as BAA's construction of Terminal 5, the good practice has placed organisations in a strong position to meet their time, cost and quality targets. We encourage all public sector organisations to adopt the good practice set out in this report and the supporting volume.

17 In addition, we make the following recommendations. Departments need to:

a **Create more certainty in the market, with longer-term funding and programme planning.** Greater certainty of work and funding enable economies of scale, streamlined processes and early integrated team working. On major construction programmes, three-year planning horizons are rarely sufficient. Five year programmes represent good practice. Where departments have reduced volatility in demand and supply through longer-term arrangements, they should avoid abrupt changes in funding patterns as these undermine the entire approach. However, departments should also retain sufficient flexibility within programmes so that should change become necessary, for example in response to the Gershon efficiency and Lyons relocation reviews, programmes can be quickly reformulated and communicated to the market. Departments should also engage with the Office of Government Commerce's 'Kelly programme' which is seeking to manage the construction market

at a pan-government level including providing greater workflow certainty and visibility to the construction industry.

b **Strengthen their leadership of construction programmes and projects and put in place strategies for developing construction project management capabilities.** Departments have made progress since 2001 in building in-house capability but staff continuity, executive leadership, and clarity of roles are lacking or weak on many construction projects. Departments with longer on-going building or significant maintenance programmes should allocate responsibility for property management and construction to a Management Board member with appropriate commercial skills and experience. They should also ensure that project roles and decision-making processes are clear and consistent, and develop comprehensive joint training strategies for their own staff and those of their key partners; including improving awareness and management capability in issues of sustainability. Wherever possible departments should ensure that programmes are run and managed by experienced teams, familiar with the work in hand. Departments should also strengthen the support given to their smaller agencies and non-departmental public bodies that only commission construction projects infrequently. Departments can do this by providing access to pre-tendered chains of suppliers (similar to the NHS ProCure21 arrangement), to expert advice and support, and to cost benchmarking data. Where appropriate, departments should also provide support in contract negotiations and in managing risks that arise during the course of the project.

- c Engage fully with the Gateway process and obtain independent advice and challenge at the concept and business case stages when considering potential construction projects.** Departments, through their Centres of Excellence, should make sure that a robust challenge mechanism applies to all projects from the outset. Departments' Centres of Excellence should track risk assessments and Gateway performance for their entire portfolios and ensure they are monitoring all construction activities, including those of their agencies and non-departmental public bodies. It is very important that the design brief is clear, has the appropriate level of detail, and lends itself to efficient construction practices. Where suppliers are involved at an early stage the quality of designs is better, leading to efficient and higher quality construction that delivers lower whole life costs and the required service delivery outcomes. Departments should involve construction suppliers early on in the design process, where appropriate paying for their time on a fee basis.
- d Consider the development of a sustainability action plan to cover all aspects of their construction activity.** It is vitally important for client departments and agencies to take the lead in considering how all aspects of their construction activity can create built assets that contribute to the Government's objectives for sustainable development. The use of a sustainability action plan, where organisations consider from the outset with their suppliers how all aspects of their construction activity can be more sustainable and contribute to any wider strategy and targets for sustainability, may be a useful approach. As part of this departments should develop appropriate project specific key performance indicators (for example, reduced carbon dioxide emissions and reduced waste to landfill) and monitor their achievement. Where departments and agencies already have sustainability action plans in place they should review and build on progress by taking account of the Department for Environment, Food and Rural Affairs Framework for Sustainable Development on the Government Estate to assist in covering all aspects of their construction activity.
- e Make decisions about construction projects based on sustainable whole life value.** Although departments understand and appreciate the importance of making construction decisions on the basis of the implications for all costs over the full operational life of the building, they have difficulty in converting theory into practice when making trade-offs between capital costs and other factors such as complex running costs, social impacts and environmental considerations. All public sector construction clients need to use a structured and defensible decision making process from the outset, making full use of the various practical tools that exist, such as Design Quality Indicators and the Building Research Establishment's Environmental Assessment Method. This will demonstrate they have considered and understand the issues of whole life value involved in a construction project and the opportunities they have to maximise its economic, social and environmental impact.
- f Make more transparent to suppliers the criteria for tender evaluation and make the most of their funding and purchasing power to influence suppliers' behaviour.** If Departments are not clear from the outset of procurement about their whole life value criteria for awarding a contract and the performance they expect of suppliers, they risk receiving poorly-focused proposals. In deciding on their criteria for awarding contracts departments should be clear about their requirements and through a combination of their buying power, and appropriate incentives, seek to secure the commitment of suppliers to collaborative working, innovative methods of construction, high standards of health and safety and construction that is sustainable in the long term.

g Keep competitive tension in framework and partnering arrangements to provide greater assurance that construction costs represent fair value, and improve the effectiveness of contract strategies to manage better risk and maximise the opportunities for improved performance.

While partnering is important to the delivery of better construction performance there is a risk that partnering arrangements, through the absence of competition, other than at the outset when they are established, can lead to reduced commercial pressure to achieve savings and improve performance in terms of, for example, better services or reductions in carbon dioxide emissions. Poor performers should always face the risk of dropping out of a framework altogether. Thames Water maintains both the benefits of partnering and competitive tension by having two tiers of suppliers in each of its four operational areas which, by introducing the possibility of work passing to another contractor, brings commercial pressure into the whole process. Other approaches to maintaining the performance of single suppliers include using benchmarks to identify target costs, monitoring key performance indicators and introducing continuous improvement programmes. Departments should also ensure that their contract strategies align fully with the programme and project risks and opportunities, making sure that these are managed by those best placed to do so.

h Encourage collaborative working through collaborative forms of contract and fair payment practices, and seek opportunities to pursue the case for project-wide insurance where appropriate and in agreement with their suppliers:

- Departments should use forms of contract that embed the principles of collaborative working and good project management. For example, the Engineering and Construction Contract is being widely used in many successful partnership arrangements in both the private and public sectors.

- Unfair payment practices such as unduly prolonged or inappropriate cash retention undermine the principle of integrated team working and the ability and motivation of specialist suppliers to invest in innovation and capacity. Departments should have the appropriate visibility of the entire supply chain. Understanding how specialist contractors, and particularly small and medium sized enterprises, are engaged, evaluated and managed can contribute considerably to the achievement of value for money. For example, Departments should ensure they have in place effective and fair payment mechanisms, such as project accounts⁹, to provide more certainty to suppliers' payments dependent on delivery to time, cost and quality.
- Departments should recognise that a new market may emerge in project-wide insurance. Where appropriate, and in agreement with their suppliers, they should consider the case for taking on insurance responsibilities for all parties working on the construction project, to encourage integrated team behaviour and realise bulk purchasing opportunities.

i Evaluate the post completion and occupancy performance of projects in terms of the Achieving Excellence strategic targets, whole life value, including the financial performance and the delivery of better services and sustainable development, and embed the lessons in future activity. Many departments are losing learning opportunities by not capturing performance information and not for example, engaging in Gate Five reviews of the benefits delivered by projects. This should not be limited to financial and economic performance but include assessment of the social and environmental impacts (such as energy use, carbon dioxide emissions, waste, water usage, and workforce well-being). Departments should consider linking some of their suppliers' contract incentives to the delivery of improvements after the built asset has been occupied and in use. Departments should enforce knowledge capture and dissemination and always carry out post-project completion reviews of whether the built assets have delivered the intended improvements to efficiency, services and sustainability. Such reviews need to be repeated over the life of the asset.

⁹ The approach of using a single bank account for the entire construction project ensures the timely payment of all parties and mitigates the risk of the main contractor unfairly withholding payments from suppliers further down the supply chain.

- j** In support of the Government's Sustainable Development Strategy and the commitments made in the Government's White Paper "Energy Efficiency: The Government's Plan for Action" (Department for Environment, Food and Rural Affairs, April 2004, Cm 6168), relevant departments and authorities should consider developing quantifiable cross-government strategic targets focused on sustainable construction.
- 18** To assist the Office of Government Commerce in targeting its advisory and support activities so that these have maximum benefit in improving construction capability and delivery performance across all public sector organisations we make the following recommendations. The Office of Government Commerce should:
- k** **Provide co-ordination and leadership of public sector construction activities so that good practice is clearly identified and the momentum for improvement is sustained.** The fragmented responsibility for construction across a number of departments, combined with the lack of a single senior level forum for department as clients of the construction industry is a significant issue. The Office should take the lead in establishing and supporting a single departmental forum at senior management level to strengthen the leadership and co-ordination of public sector construction activity. A key priority should be a review of current approaches to collaborative working to determine the best generic approaches and whether existing procurement and funding practices support these new integrated ways of working.
- l** **Review the support available to organisations which only undertake construction projects infrequently.** For such organisations it is neither cost effective nor practicable to retain in-house skills in construction procurement. It is important, however, that when needed they can quickly access reliable support and advice. The Office needs to make sure that such support is easily available including for example, working closely with departments' Centres of Excellence to raise awareness about good practice, such as the Gateway process, and providing access to pre-tendered supply chains, and to independent cost advisors and other consultants such as expert advisers in sustainability. The Office should also work to strengthen and enlarge the pool of experienced and expert construction programme and project advisors it has available to support departments and agencies.
- m** **Assist departments to find the most appropriate tools and support to improve decision-making based on whole life value and to deliver sustainable construction and development.** The Office should encourage greater collaboration between the appropriate bodies developing advice and practical decision-making tools in this area, and co-ordinate their efforts in developing a practical tool that is sufficiently flexible for use by public sector clients on different types and sizes of projects. Such a tool is unlikely to be effective without also having a pool of expertise provided by the Office on which clients can draw during the design, key decision-making and evaluative stages of projects.
- n** **Make better use of the available information on generic lessons and good practice on projects by sharing this effectively across the wider public sector and take a lead in setting performance benchmarks.** The Office should do more to identify and disseminate project performance data together with the lessons from what has both worked well or not so well, and information gained from Gateway Reviews so that this can be shared more widely for the benefit of all public sector organisations. In particular this should cover the final repeatable gate which is intended to identify whether the construction project has achieved all its planned benefits and the extent to which performance and value for money has been maintained or improved. The Office should make more readily available case example projects setting out the lessons from what has worked well as well as approaches that have failed to deliver.
- 19** In the Annex to this summary, we set out a self-assessment tool in the form of a 'maturity grid', which public sector clients can use to assess their own, or their agencies' and non-departmental public bodies', readiness and capability to tackle construction requirements from inception to delivery of the intended benefits and to target areas for improvement. An electronic version of the maturity grid is available on the NAO website at www.nao.org.uk.

ANNEX

Maturity Grid for departments to use to gauge their construction management capability

The maturity grid below distils the most significant points covered in this study and ranks them. The right hand column of the grid represents characteristics of competent client organisations that demonstrate a mature capability in managing construction programmes and projects to successful delivery. The three preceding columns represent stages in progressing towards that level of maturity.

The contents of the grid were developed over the course of this study, reflecting both the issues and progress evident in the workshop discussions, the case studies, and the discussions with wider stakeholders. The grid is offered as a useful self-assessment tool for departments. Departments scoring “1” or perhaps “2” may decide to review their arrangements and decide whether any action is required. Departments and other public sector bodies who fund others to deliver construction may wish to use the grid to assess the capability of their delivery partners as part of the process of approving businesses cases. The grid is available at www.nao.org.uk.

We asked our workshop participants to assess the overall maturity of their organisations or those they worked with or fund. The average of their responses is shown in the grid to provide a broad benchmark for departments to assess their own progress maturity in managing construction projects. The statements in bold show the category with the most frequent responses.

The path to continuous improvement

		Level 1
Defining objectives	Programme objectives are...	Defined in broad terms,
Defining benefits	Programme benefits are defined ...	At a high level
Setting budgets	Programme budgets are...	Based on benchmarks or comparable projects,
Whole life costs	Whole life costs ...	Are not considered, or
Planning programmes	Investment in planning time is carried out...	In an unstructured way by people in their "day job", or
Managing programmes	Programmes, and their projects, are managed ...	On a project by project basis
Managing benefits	Programme benefits are managed...	Reactively at project level, triggered by risks or issues,
Challenging the objectives	Independent reviews (such as Gateway) are ...	Never carried out
Building teams	Programme teams are selected...	Based on internal availability
Managing resources	Project resources are managed...	Within the bounds of the project
Team experience	The client's project team ...	Is inexperienced in construction, or
Committing funds	Funding commitment matches ...	The annual cycle only, or
Programme controls	Cost, time, changes, and risk controls are.....	Partly in place, or
Procuring effectively	The procurement strategy...	Involves a traditional tender and selecting the least price
Collaborative working	The extent to which contracts encourage collaborative working...	Least price contracts are later followed by claims, or
Incentivising behaviours	Incentives within the contract mechanism ...	Incentives are not considered at the start of the project.
Reporting effectively	Reporting arrangements...	"Upward only" reporting,
Managing risk	Risk and contingency approaches...	Risk assessment is carried out and documented at the start,
Managing stakeholders	Stakeholder management and involvement...	Stakeholders are involved at the inception of a project
Leading projects	Client leadership...	Sponsor and Board involved at the start of the programme
External learning	The team learns from other projects...	In an ad-hoc unstructured way,
Internal learning	Learning from within the project itself...	Feedback and learning processes are absent, or
Developing people	Training in relation to the programme's needs is ...	Confined to a few members of the client team,
Sustainable delivery	Sustainability's profile in the programme is...	Low - by not including sustainability objectives
Involving communities	The impact on the local and wider community...	The project meets its own needs, and
Using standards	Standard specifications, designs, contracts are...	Infrequently used, or
Constructing safely	Health and Safety....	Legal requirements are met

Level 2

and by costs, benefits, time and performance outcomes

and at a detailed level

are validated by independent external third parties,

are considered in principle, but not calculated, or

in a structured way by people in their “day job”, or

with some understanding of the effects of other projects

and on a proactive basis, using project forecasts,

sometimes carried out, or are started mid-project

with a capability assessment, with criteria set for the project

with awareness of the resource impacts on other projects

has broad construction experience

50% of the programme, or

fully in place, but lag the project’s events and activities,

and sometimes concludes by not selecting the least price

contracts are bid in a regular supplier pool

the form of contract itself is an incentivising force,

with management actions taken as required

and a clear process links risks with contingency funds,

and when there is a major issue to resolve

and reactively throughout the programme.

and by published guidance notes and case studies

the processes are in place, but not seen as central, or

and to all needing this support in the client team

moderate - meeting general guidelines or targets

considers its impacts at the planning stage

frequently used

and the client ensures that appropriate resources and organisation are in place

Level 3

and are linked to related projects and sub-projects,

and linked to benefit-yielding projects and sub-projects

and based on robust business cases

are calculated, and used to inform the design

by project planning teams, or

with full understanding of the effects of other projects

in an integrated way over the whole programme

often carried out, including at the early Gates

and on external resource availability

prioritising the highest benefit-yielding projects

has some directly relevant construction experience

75% of a programme, or

and keep up to date with the project’s events and activities

and often concludes by not selecting the least price,

and long-term frameworks align objectives and enable earlier supplier input

and main supplier and client staff have incentives,

and reported within a programme

which are managed actively through the project

and intermittently, determined by the project team,

and offers ad-hoc proactive support

and by exchanges with other project teams

the processes are in place and seen as central,

and including the main suppliers

Good - it “aims high”, with clear criteria and targets

using a consultation process to solicit views and opinions

and their costs reviewed in-house and with suppliers,

and H&S reports routinely inform the project board

Level 4

with trade-off criteria explicit between the objectives.

that are prioritised clearly from the outset.

that are reviewed at intervals during the programme.

and form part of the evaluation criteria, published in advance.

by a programme-wide planning team.

with regular prioritisation between projects.

with actions to preserve or enhance the programme benefits.

always carried out, and at all Gates.

and with an understanding of the impact on related projects.

within a structured programme-wide approach.

has highly relevant construction experience.

the whole programme.

and cover all the projects in the programme.

with price being only one of many wider criteria.

with collaboration reinforced in special vehicle companies, or PPPs.

and so does the whole supply chain.

with management actions taken in a coherent way across the programme.

and across the programme as a whole.

regularly via briefing papers and update presentations.

and is regularly involved throughout the project.

and by commissioning research or innovation work.

and are measured in the performance process.

and the specialist suppliers.

Excellent - and is an exemplar demonstrating real benefits.

with continuing community involvement during and after completion of the project.

balancing speed, economy, effectiveness, efficiency, flexibility and innovation.

and the client leads from the front, embedding the policies through the organisation.