

Modernising Construction Procurement in Northern Ireland

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL

NIA 161/03, 3rd March 2005



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Northern Ireland Audit Office

Report by the Comptroller and Auditor General
for Northern Ireland

Modernising Construction Procurement in Northern Ireland

This report has been prepared under Article 8 of the Audit (Northern Ireland) Order 1987 for presentation to the Northern Ireland Assembly in accordance with Article 11 of the Order.

J M Dowdall CB
Comptroller and Auditor General

Northern Ireland Audit Office
1st March 2005

Abbreviations

CIFNI	Construction Industry Forum for Northern Ireland
CIGNI	Construction Industry Group for Northern Ireland
CPD	Central Procurement Directorate
DETR	Department of the Environment, Transport and the Regions
DFP	Department of Finance and Personnel
ELB	Education and Library Board
GB	Great Britain
GCCG	Government Construction Clients Group
ISNI	Investment Strategy for Northern Ireland
KPI	Key Performance Indicator
M4i	Movement for Innovation
NAO	National Audit Office
NDPB	Non-Departmental Public Body
NIAO	Northern Ireland Audit Office
NICIAC	Northern Ireland Construction Industry Advisory Committee
NICS	Northern Ireland Civil Service
NIHE	Northern Ireland Housing Executive
OGC	Office of Government Commerce
UK	United Kingdom

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Executive Summary

Modernising Construction Procurement in Northern Ireland

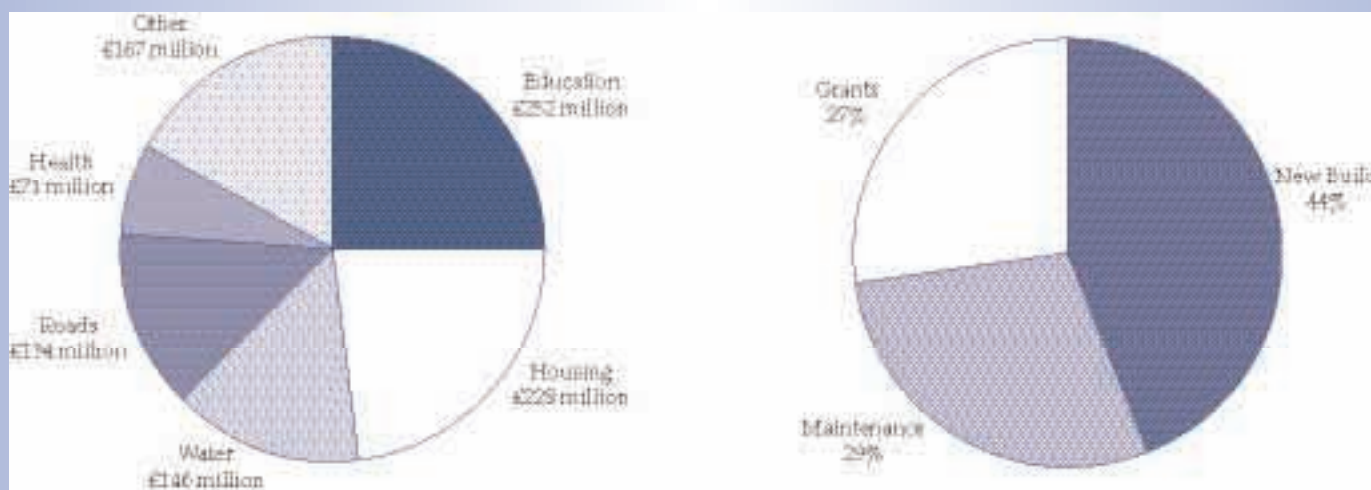
Introduction and Executive Summary

1. Government in Northern Ireland spends over 10 per cent of its total budget on the procurement of construction services. In 2003-2004 this amounted to some £998 million covering all of the major public services including Education, Housing, Health, Roads and Water. This expenditure includes both new works and the maintenance of existing assets and, in addition to those projects paid for directly by departments, agencies and Non-Departmental Public Bodies, it also includes those funded by grants paid to various voluntary, community and private sector bodies (see Figure 1).

2. This level of construction spend is likely to increase substantially. It has been widely recognised that Northern Ireland's infrastructure is in need of improvement and renewal and the draft Investment Strategy for Northern Ireland (ISNI)¹ has forecast infrastructure investment of some £16 billion over the ten year period to 2015. This represents an increase of over 60 per cent in average annual investment levels as compared with the past three years, covering all the major services including: Schools, Housing, Hospitals, Transport and Water (see Figure 2). Up to 20 per cent of these projects could be carried out through Public Private Partnerships, but the rest will be conventionally funded and ISNI recognises the need to improve procurement practice to increase the efficiency of capital programmes.

Figure 1: Analysis of Construction Spend 2003-2004

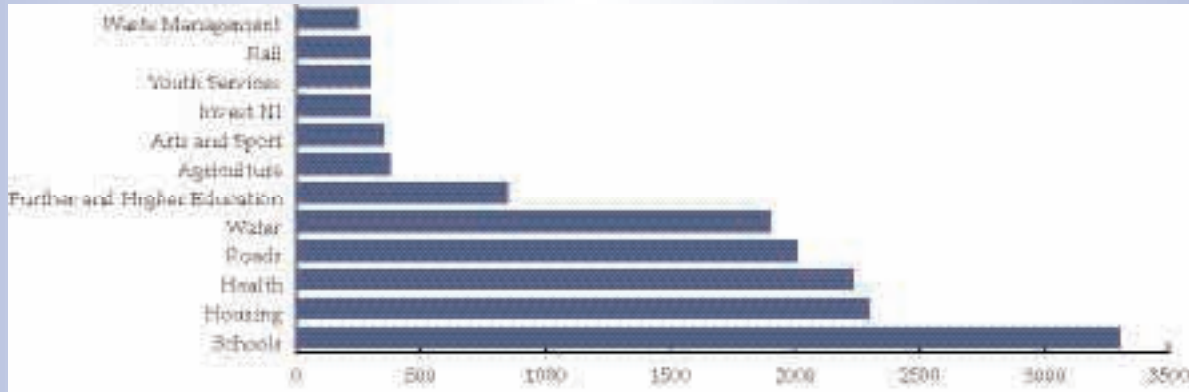
Department	Departmental Spend £m	Grants £m	Total £m
Regional Development	282	28	310
Education	175	77	252
Social Development	147	81	228
Health, Social Services and Public Safety	67	4	71
Employment and Learning		40	40
Enterprise Trade and Investment	3	24	27
Other	51	19	70
TOTAL	725	273	998



Source: NIAO based on DFP data

¹ Draft Investment Strategy for Northern Ireland 2005-2015, Office of the First Minister and Deputy First Minister, December 2004.

Figure 2: Major Investment Allocations 2005-2015 (£million)



Source: Draft Investment Strategy for Northern Ireland

3. Over the last ten years, the process of public sector construction procurement in Great Britain has been subject to a series of reviews, including the *Modernising Construction* report by the National Audit Office. The Latham, Levene and Egan Reports (see Appendix 1) highlighted problems with the traditional approach to construction procurement:

- projects are routinely delivered over budget and behind schedule. A benchmarking study² of central government projects indicated that three quarters of the projects exceeded their budgets by up to 50 per cent and two thirds exceeded their completion date by up to 60 per cent;
- the practice of awarding contracts based on lowest price alone does not deliver value for money. Contractors tend to underbid to get work and rely on cost variations from design changes to make a profit. This contributes to an adversarial relationship where claims are more likely, resulting in costly litigation. The lowest cost also takes no account of value for money in the longer term, by reducing the maintenance and running costs over the whole life of the asset;
- separation of the design and construction phases of a project, whereby detailed design is completed before a contractor is appointed, misses the opportunity to use the expertise of the contractor at an early stage to ensure that the project is buildable and to avoid expensive design changes during the construction phase;

- design specifications are over prescriptive and restrict the potential for solutions which can deliver better value for money through innovation on the part of designers, contractors and specialist subcontractors; and
- high levels of waste and inefficiency.

4. These reviews identified the need for fundamental changes in the way departments work with the construction industry and the way in which they manage projects in order to deliver improvements in value for money (see Figure 3). They also indicated the potential for efficiency savings in the order of 30 per cent of capital costs.

² Constructing the Best Government Client, Pilot Benchmarking Study, Agile Construction Initiative, University of Bath, 1998.

Figure 3: Aspects of the Construction Process Requiring Improvement

- Much more consideration of the needs of end users in the design and construction of buildings, including future needs. If flexibility is required it must be assessed as part of the value for money evaluation of options and taken into account in designs.
- Better integration of the various stages in the construction process - design, planning, construction and completion to remove waste and inefficiency.
- Partnering between clients, contractors and consultants to resolve problems collaboratively, reduce project slippage and cost overruns, promote innovation and improve quality.
- Longer term relationships between clients and contractors to promote continuous improvement in the cost and quality of final products.
- Recognition that accepting the lowest tender price for the initial capital cost does not deliver value for money and that more consideration needs to be given to the costs of a building over its whole life.
- Better integration of the construction supply chain, for example architects, surveyors, contractors, and suppliers.
- Move away from adversarial approaches between industry and clients which have produced high levels of litigation.
- Greater use of prefabrication and standardised building components in construction to improve quality and cost effectiveness.

Source: National Audit Office analysis of Latham, Levene and Egan Reports.

5. In Great Britain a number of key initiatives were established in response to these reviews, including:

- the Construction Industry Board, formed in 1995 following the Latham review, to provide a strategic forum for the industry and to improve performance through partnership between government and clients;

- the Government Construction Clients Panel set up by Treasury in 1997 to improve the performance of government as a client and to coordinate the action of the various departments;
- the Movement for Innovation, launched in 1998, to promote implementation of the principles in Egan's *'Rethinking Construction'* report. This is done primarily through publicising projects which demonstrate aspects of good practice; and
- the *Achieving Excellence* programme, launched by the Government Construction Clients Panel in 1999, ran initially for three years and has been extended for a further two. This is perhaps the most important initiative in terms of directly improving the performance of client departments since it has established an action plan aimed at achieving Egan's *Rethinking Construction* targets.

6. Government in Northern Ireland has recognised the need to improve its performance as a construction client and similar initiatives to those established in Great Britain have been set up here. The Construction Employers Federation told us that the construction industry in Northern Ireland strongly supports these initiatives. They acknowledge the work that has been done to date and feel that there is potential for the realisation of further efficiency savings.

7. This report seeks to emphasise the need to maximise efficiency in the use of very substantial public funding in Northern Ireland and reviews the action being taken here to improve the performance of construction procurement. It is intended to be constructive and to confirm that proper accountability is not an obstacle to innovative approaches which are intended to deliver better value for money.

Methodology

8. The National Audit Office's "Modernising Construction" report and the subsequent Public Accounts Committee hearing and report³ were influential in progressing innovative approaches to construction procurement in Great Britain. We drew on this experience to identify best practice which could be applied in a Northern Ireland context.

³ National Audit Office *Modernising Construction* HC 87 2000-2001 Committee of Public Accounts Second Report 2001-2002 *Improving Construction Performance* HC337

9. We consulted with key staff in the Department of Finance and Personnel and reviewed departmental papers to: obtain an analysis of construction procurement spend; identify key initiatives being taken forward with the aim of improving performance of the government as a construction client; and assess progress being made with those initiatives.

10. We reviewed action being taken by those bodies directly responsible for construction procurement to: assess the extent to which innovative approaches were being applied; examine projects in which elements of good practice had been adopted successfully; and identify any lessons to be learned for wider promulgation.

Executive Summary

Central Initiatives in Northern Ireland (Part 1)

11. Following the reorganisation of departments in 1998, the Department of Finance and Personnel (DFP) became responsible for managing the interface between the construction industry and government. It has since established enhanced consultative arrangements with the industry in the form of a Construction Industry Forum for Northern Ireland (CIFNI) with a membership drawn from two other newly created groups: the Construction Industry Group for Northern Ireland (CIGNI) representing the industry; and the Government Construction Clients Group (GCCG) representing government clients. Trade Unions are also represented.

12. In 1999, Capita Property Services undertook a review of government procurement policy which criticised the predominance of traditional thinking on construction procurement and the lack of understanding of up-to-date methodologies. It highlighted the lack of a central focus and recommended the creation of a central body within DFP which would be responsible for keeping abreast of developments in construction procurement.

13. A subsequent review of Capita's recommendations in 2002 resulted in the creation of: a high level Procurement Board with responsibility for Northern Ireland Civil Service (NICS) procurement policy; and a Central Procurement Directorate (CPD) in DFP with responsibility for the coordination of policy, provision of advice, monitoring performance and direct procurement on behalf of those bodies with insufficient in-house expertise.

14. The review also recommended the development of a Northern Ireland version of the GB Achieving Excellence initiative to improve the efficiency of construction procurement and that the GB 'Gateway' process for the approval and management of construction projects should be adopted.

Information on Construction Procurement Spend

15. CPD is carrying out an exercise to provide better management information, but progress has been slow. **We recommend that CPD gives priority to the completion of the current exercise and that departments cooperate fully in the establishment of suitable management information systems to update the information on a regular basis. We further recommend that since grants and loans account for over a quarter of total construction spend, figures for this area should be compiled in addition to direct departmental expenditure to help inform future procurement policy.**

Achieving Excellence

16. Achieving Excellence was developed in Great Britain to improve the performance of government as a construction client. The Northern Ireland version which was launched in May 2002 is in two parts: a Client Improvement Plan which sets out actions to be taken in the four key areas of Management, Measurement, Standardisation and Integration; and an Implementation Programme which sets targets across the four key areas within a three year period to March 2005.

17. At the date of our audit, mid-way through the last year of a three year initiative, no information was available on performance against targets and some departments had still not produced action plans. **We are seriously concerned about the progress of this key initiative and recommend that the Procurement Board consider the need to extend its life to ensure that best procurement practice is fully implemented and that potential value for money savings are realised. We further recommend that Departments complete and submit action plans as a matter of urgency and that CPD and GCCG take a much more proactive role in pushing the initiative forward. CPD and GCCG should ensure that:**

- **performance monitoring is carried out, as a minimum, at six monthly intervals to identify problems at the earliest opportunity; and**

- **progress is reported regularly to the Procurement Board, highlighting any areas where satisfactory progress is not being made and detailing remedial action being taken.**

18. Subsequent to a draft of this report, the Procurement Board agreed in October 2004 that: CPD would provide it with a report on the progress of Achieving Excellence to date; that in future, progress would be monitored twice yearly and that CPD would work with departments to define a strategy for Achieving Excellence beyond March 2004.

19. The initiative has the potential to achieve benefits in line with Egan's *Rethinking Construction* targets, including a 10 per cent annual reduction in capital cost trends. Based on current levels of spend this would give savings of £300 million over a three year period. DFP told us that while GCCG has agreed to monitor key performance indicators, implementation of this process has been problematic and further proposals for evaluating construction cost baselines have been produced. **We consider it vital that DFP ensure that effective procedures are in place to measure the outcome against the potential benefits in line with Egan targets which have been outlined.**

20. The Office of Government Commerce (OGC) in Great Britain has produced a series of Achieving Excellence procurement guidance which has been adopted as procurement policy in Northern Ireland.

21. Government spending on grants is currently excluded from the definition of public procurement. This has important implications for construction, since some £270 million or 27 per cent of the Northern Ireland spend is in the form of grants, most notably to Housing Associations and Voluntary Maintained schools. These areas are not covered by the Achieving Excellence programme, significantly reducing the potential for improvements in value for money.

22. The procurement review recommended that the Procurement Board should address the status of grant giving in its first two years of operation. **We endorse this recommendation and would suggest that specific consideration is given to how the benefits of Achieving Excellence could be extended to grants.** We note that the Procurement Board has recently agreed that CPD should examine areas where large grants are given, to determine the extent to which these grants should come within public procurement policy.

23. A Northern Ireland Sustainability Action Plan was produced in draft by GCCG in November 2002 and formally launched in April 2003. We consider that this initiative is complimentary to Achieving Excellence with the potential, in addition to its purely environmental objectives, to further enhance value for money by reducing waste etc. We welcome its introduction in Northern Ireland.

The Gateway Process

24. The OGC introduced the Gateway process in Great Britain in January 2001 to provide a more formal approach to project management by carrying out reviews at five key decision points or 'gateways' in the life of a project. Following the recommendation of the procurement review, the Gateway process was introduced in Northern Ireland in February 2004.

25. In 2001 OGC estimated that savings of five per cent of project cost had been achieved in Great Britain and in 2004 it reported that value for money gains of £730 million had been delivered. Based on current levels of construction spend in Northern Ireland, OGC's estimate would deliver value for money gains of some £50 million a year. In view of these significant potential impacts it is important that Gateway reviews are fully implemented as soon as possible. We are disappointed, therefore, that at the date of our audit, almost six months after the process was to come into effect, no construction projects had been submitted to the CPD Gateway Coordinator for review.

26. In Northern Ireland the Gateway process does not apply to projects assessed as low risk. This is a significant departure from the OGC approach which applies the review process to all projects. We are concerned that this may mean that a significant proportion of the total capital spend in Northern Ireland will not be subject to the discipline of the review and that opportunities to improve value for money may be lost.

27. **We recommend that departments should participate fully in the Gateway Process, both in terms of carrying out reviews and providing staff for review teams.** We also recommend that DFP takes a proactive role in encouraging full participation and that, following the initial implementation, it should review the effect of excluding low risk projects. We further recommend that DFP consider extending the coverage within the low risk category to optimise the potential for improvements in value for money. DFP

acknowledges that there is a need to reassess the way in which low risk projects are covered by the gateway process and has told us that further guidance will be issued in due course.

Construction Procurement Policy

28. Achieving Excellence, including OGC guidance, the Sustainability Action Plan and the Gateway Review Process were formally adopted as procurement policy in 2004. **These key elements of best practice have the potential to generate very significant improvements in the value for money of construction procurement in Northern Ireland and we strongly welcome DFP's formal statement of them as procurement policy. We will include an assessment of the extent to which this policy has been implemented in all future audits of construction projects.**

Rethinking Construction Initiatives

29. Following the publication of Sir John Egan's report "*Rethinking Construction*" in 1998, the Department of the Environment, Transport and the Regions in Great Britain set up four initiatives aimed at improving the performance of different sectors of the industry and its clients: the Movement for Innovation; the Housing Forum; the Local Government Task Force; and the Construction Best Practice Programme. These initiatives have since been brought together under a single organisation "Constructing Excellence" and a Northern Ireland Constructing Excellence Centre has been established to provide a focal point for the promotion of the rethinking construction agenda.

30. Procurement bodies in Northern Ireland have participated in the Movement for Innovation. However, despite the fact that housing accounts for almost a quarter of construction spend, only one demonstration project has come from a Housing Association. This suggests an important gap in the adoption of best practice. **We recommend that consideration is given to Northern Ireland's participation in the Housing Forum as a means of encouraging wider adoption of best practice in the housing sector, particularly in view of the fact that Housing Associations are not included within the Achieving Excellence initiative.**

Best Practice in Northern Ireland (Part 2)

The Six Key Principles

31. The National Audit Office (NAO) has identified six key principles which all construction projects should follow if value for money is to be achieved:

- contractors should be selected on the basis of achieving long term sustainable value for money, not just the lowest price;
- design should not be a separate process but should be integrated with the whole construction process;
- good planning involving risk and value management should be carried out;
- reliable project management should be in place;
- contractors should be remunerated in a way which incentivises them to deliver good quality construction on time and to budget; and
- the performance of construction projects should be measured to assess whether cost, time and quality requirements are being met and to learn and disseminate lessons for future projects.

The case examples outlined below indicate how these best practice principles are being applied to construction projects in Northern Ireland.

Selection of Contractors

32. Traditionally, contractors have been selected by competitive tender on the basis of the lowest price. Competition is essential to ensure both value for money and propriety, but experience has shown that frequently, the lowest price tendered for construction may not deliver value for money. Contractors should be selected based on their ability to deliver long-term sustainable value for money and in addition to price, selection criteria should cover the quality of design, the proposed method of construction and the cost of operating the completed construction over its whole life. Criteria should also cover issues such as the contractor's experience of partnering and their health and safety record.

Roads Service

Toomebridge Bypass

A two-envelope tender process was used for this project. Envelope A contained the contractor's submission addressing a series of quality issues and Envelope B required the contractor to provide lump sum quotations for:

- developing design and preparing a target cost; and
- profit and overheads should they be appointed.

A preferred partner was selected on this basis, but a contract was not awarded until an acceptable design was developed and target cost agreed.

Integration of Design

33. In conventional construction procurement, design is undertaken as a separate process before appointing the main contractor. It is now widely recognised as best practice, however, that contractors, end users, major suppliers and facilities managers should be involved in the design process to ensure that the needs of the user, whole life costs and "buildability" are considered at the design stage.

34. It has been policy in Great Britain since 2000, that construction projects should be procured by one of two integrated routes - Design and Build or Prime Contracting, unless it can be demonstrated that a traditional approach will deliver better value for money. This approach was not formally adopted in the Northern Ireland version of Achieving Excellence but has become policy with the establishment of the Construction Procurement Policy Framework in 2004. **Given the importance of design and the recognised benefits of integrated approaches, we welcome this development, but are concerned that it was not emphasised more clearly in the Policy Framework. We recommend that CPD ensures that all Centres of Expertise are made fully aware of this very significant development in policy.**

Health Estates Royal Victoria Hospital Phase 1

On this project separate contracts were awarded for design and construction but great emphasis was placed on involving both client and contractor at key stages of the design process. Health Estates told us that this approach delivered cost reductions of some £500,000, improved buildability, better use of materials and a simplified structure. The project was given a design award by the Royal Society of Ulster Architects in 2002.

Planning

35. Good planning should result in time and cost savings later in the project by providing for the management of risk and the elimination of waste through the process of value management. Weak risk management is a major cause of project failure and it is essential that an effective risk management plan is established at an early stage. Value management should also be carried out in the early stages of a project to identify unnecessary costs and better value alternatives.

Water Service

Aquarius Project

Water Service established a risk register covering all stages of the project and established contingency plans to minimise the impact of risks, for example by providing back-up plant and equipment. Value engineering exercises on phase 1 produced estimated savings of £500,000 through the use of alternative routes for the pipeline and reductions in the number of chambers, main line valves and pumps.

Project Management

36. Poor project management has been consistently recognised as a contributory factor in projects being delivered late and over budget. Effective project management should include: a thorough understanding of the key stages of the project; a detailed knowledge of the risks involved; an up-to-date execution plan; regular monitoring against key milestones; and effective coordination of the supply chain.

Health Estates Royal Victoria Hospital Phase 1

This £50 million contract for a seven storey hospital building on a site totally surrounded by an operational hospital was delivered four months ahead of schedule at a cost within the approved budget. Health Estates consider that effective project management contributed significantly to this successful delivery and included, strong emphasis on planning and coordination of activities and monitoring of progress against key milestones and budgets.

Remuneration of Contractors

37. The traditional approach of appointing contractors on lowest price tenders provides no

incentive to deliver good quality construction on time and within budget. For example, if the contract price is too low to allow a reasonable profit, this is likely to lead to contractual claims resulting in increased costs and possible delays in completion. It is important therefore that the basis for remuneration strikes a balance between paying the contractor a fair price while maintaining incentives to minimise cost. Target price approaches are being used increasingly in Northern Ireland whereby a target is agreed based on a detailed estimate of final cost, together with an agreed “pain/gain” formula to share savings or exceedings between the client and the contractor.

Roads Service

Toomebridge Bypass

Remuneration of the contractor on this project was on the basis of the actual costs plus an agreed lump sum for profit and overheads. The contractor was incentivised through a target cost arrangement with a formula to share any savings or exceedings. The pain / gain formula operated on a sliding scale which gave the contractor a progressive share of either savings or exceedings and limited the client’s share of any exceeding to less than 10 per cent. The project was delivered five weeks early and slightly below its original target cost.

Performance Measurement

38. Improved performance measurement is a key element in Achieving Excellence and all departments are expected to have implemented standard key performance indicators, post project implementation reviews and client performance surveys by March 2005. The Procurement Board has also issued guidance on how departments should measure value for money improvements and further detailed guidance relating to construction projects is to follow. **We note that OGC is to carry out further work on a methodology for calculating VFM gains on construction projects and recommend that DFP monitors the outcome of this work and considers it for incorporation as appropriate in any future guidance.**

39. **Departments should ensure that: reliable systems are in place to generate the management information required to produce key performance indicator scores and measure value for money gains; and adequate training is provided where required for staff responsible for compiling and reporting performance information. Departments**

may also wish to consider the involvement of Internal Audit to ensure that systems are working effectively and that information generated is robust and reliable.

40. **GCCG recommended 10 KPIs to provide a common high level approach but suggested that that departments may wish to consider other aspects of performance. We would endorse this approach and encourage the development of further KPIs to measure aspects of performance such as labour and materials productivity and whole life costs.**

Partnering

41. It is generally recognised that one of the main reasons why construction projects fail to deliver value for money is the adversarial and fragmented nature of the relationships between the various parties involved. Increasingly, a more collaborative “partnering” approach is being adopted, which involves an integrated team, comprising the client and the various members of the supply chain, working together to improve quality and delivery. This approach provides an appropriate context for the application of the key principles outlined above and research indicates that it can deliver savings of up to 30 per cent of construction cost.

42. Concern has been expressed that this could result in unduly close relationships with contractors, increasing the risk of impropriety to an unacceptable level. This risk can be managed, however, and we would encourage the use of partnering arrangements provided that the following key controls are in place:

- partners should be appointed competitively - clear criteria should be established and decisions should be clearly documented and auditable;
- targets should be agreed and performance measured - clear targets for improvement should be set, covering quality, delivery and cost. Systems should be established to measure performance; and
- open book accounting - departments should have reasonable access to the contractor’s financial records and cost information.

Aquarius - The Importance of Partnering Controls

43. Water Service's Aquarius project, to replace the Mourne Conduit bringing water supplies from Silent Valley to Belfast, was the first project in Northern Ireland to adopt many of the Egan principles and promote a partnering approach. It has been widely recognised as an example of good practice but, by the end of Phase 2, target prices had increased by some 60 per cent due to a large number of "compensation events" which required additional works to be carried out. Water Service commissioned a review of the project by a consultant with expertise in this area. The consultant emphasised the need to demonstrate transparency, probity and accountability in the context of a partnering arrangement, and highlighted a number of areas where procedures could be improved.

44. We asked Water Service what it had done to assure itself of the probity and value for money of the Aquarius project in the light of this review and what action it had taken to implement the report's recommendations for the improvement of control in future projects. Water Service told us that a number of improvements have been introduced in response to the consultant's report, including: a limited design development period to minimise the opportunity for design change; spot check audits to ensure probity and value for money; and rigorous change mechanisms. Water Service intends to follow up the consultant's report with a post-project appraisal which will further examine the probity and value for money of the Aquarius project and will also deliver recommendations to be applied to future projects.

45 Water Service is to be commended for its pioneering use of partnering on the Aquarius project and for commissioning the consultant's review of its implementation. It is disappointing, however, that two years after the review, its recommendations do not seem to have been definitively addressed. **We welcome the planned post-project appraisal and recommend that it is completed as quickly as possible so that the valuable lessons emerging from Aquarius can be promulgated as widely as possible for the benefit of future projects both within Water Service and the wider public sector.**

Central Initiatives in Northern Ireland

1.1 Over the last five years, the Department of Finance and Personnel (DFP) has become the central focus for construction-related issues in Northern Ireland. Following devolution and the restructuring of the departments in 1998, it took over from the Department of Environment as ‘sponsor’ of the construction industry and in this role it is responsible for managing the interface between the industry and government. Following a review of procurement and the creation of a Central Procurement Directorate in DFP, it is now responsible for the coordination of construction procurement policy, provision of advice and guidance, monitoring performance and direct procurement on behalf of those bodies with insufficient in-house expertise. This section of the report examines initiatives taken by DFP to improve construction performance and also those GB initiatives in which Northern Ireland departments have participated.

Interface with the Construction Industry

Construction Industry Forum

1.2 Following the Latham and Egan reports in Great Britain (see Appendix 1), both government and the construction industry in Northern Ireland recognised that change was required to improve performance and that enhanced consultative arrangements were needed to allow collaboration on important issues. Arrangements for consultation did exist in the form of the Northern Ireland Construction Industry Advisory Committee (NICIAC), a NDPB set up in 1974 to advise government on matters affecting the industry. However the body had not met since 1996 and there was a consensus that this was not an appropriate forum to deal effectively with the changes in relationships and working practices which were required. NICIAC was abolished and in October 2000, a Construction Industry Forum was established with the aim of providing:

- a more effective and efficient construction industry;
- a government client “best in class” with a unified approach to procurement;

- a trust culture in place of the old adversarial culture; and
- an acceptance of new thinking and openness to innovation.

1.3 The Forum is chaired by a senior DFP official with responsibility for construction sponsorship. Its membership is drawn from the Construction Industry Group for Northern Ireland (CIGNI), representing the industry, the newly formed Government Construction Clients Group (GCCG) representing government clients and two trade union officials representing the Irish Congress of Trade Unions. The Forum has no executive powers but relies on CIGNI and GCCG to disseminate its recommendations (see Figure 4).

Construction Industry Group for Northern Ireland

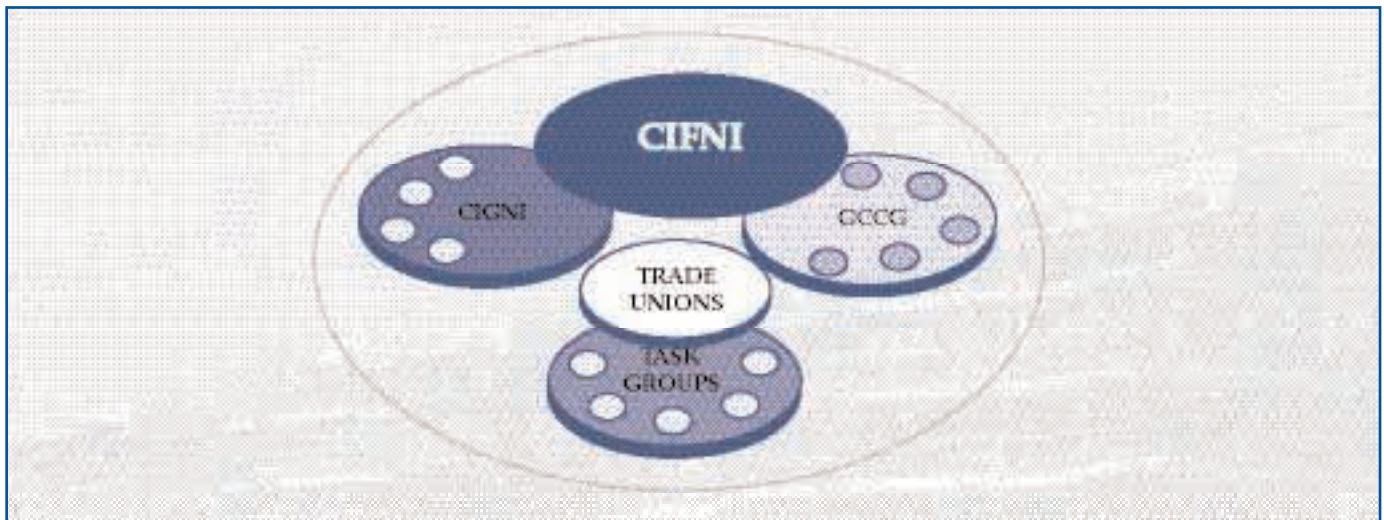
1.4 The Construction Industry Group for Northern Ireland was established by the construction industry in 1998 and largely mirrors the structure of the Construction Industry Board in Great Britain. Its aim is to bring together all sections of the industry to address key issues of common interest and its objectives include improvement of communications with government and promotion of best practice.

Government Construction Clients Group

1.5 This body was set up in September 2000 with the roles of providing a unified public sector voice in the Forum and taking forward initiatives to achieve the government’s aim of becoming a best practice client. The group is chaired by the senior DFP official responsible for the sponsorship of the construction industry and membership is drawn from all departments.

Modernising Construction Procurement in Northern Ireland

Figure 4: Construction Industry Forum for Northern Ireland



CIFNI - Construction Industry Forum for Northern Ireland
CIGNI - Construction Industry Group for Northern Ireland
GCCC - Government Construction Clients Group

Source: Department of Finance and Personnel

Review of Construction Procurement

1.6 In 1999, DFP commissioned management consultants Capita Property Services to undertake a strategic review of procurement policy and purchasing arrangements in the Northern Ireland Civil Service. Capita reported separately on construction procurement and found:

- no data available on direct costs;
- very little data available for benchmarking purposes;
- little analysis of deliverables such as out-turn costs and performance targets;
- little inter-departmental or Agency collaboration;
- some bodies unfamiliar with the role of Sponsor and Project Manager;
- most bodies unsure of HM Treasury guidelines;
- very little focused training; and
- little knowledge or information available on the activities of the Government Construction Client Panel in Great Britain.

Traditional thinking on procurement predominated, with little understanding of up-to-date methodologies and the report concluded that the overarching weakness was a lack of central focus and coordination on the latest developments together with a lack of central monitoring to measure performance against Government expectations.

1.7 Capita recommended the creation of a central body within DFP which would be responsible for keeping abreast of developments in construction procurement; promulgating this information as appropriate; carrying out a central monitoring role; and providing training. This body would also provide procurement assistance to those organisations which do not have in-house expertise. The "Centres of Expertise" such as Roads Service, Water Service, Health Estates and the Northern Ireland Housing Executive which have expertise appropriate to their own sphere of operation, would continue to be responsible for their own procurement practice.

1.8 In November 2000, the Minister for Finance and Personnel set up a review team to consider the findings and recommendations of the Capita report. The team reported in February 2002 and its recommendations were endorsed by the Northern Ireland Executive and the Assembly. The team recommended the creation of a high level Procurement Board with responsibility for the development, dissemination and coordination of public policy and practice. The Board which is chaired by the DFP Minister and includes the Permanent Secretaries of all departments, met for the first time in July 2002.

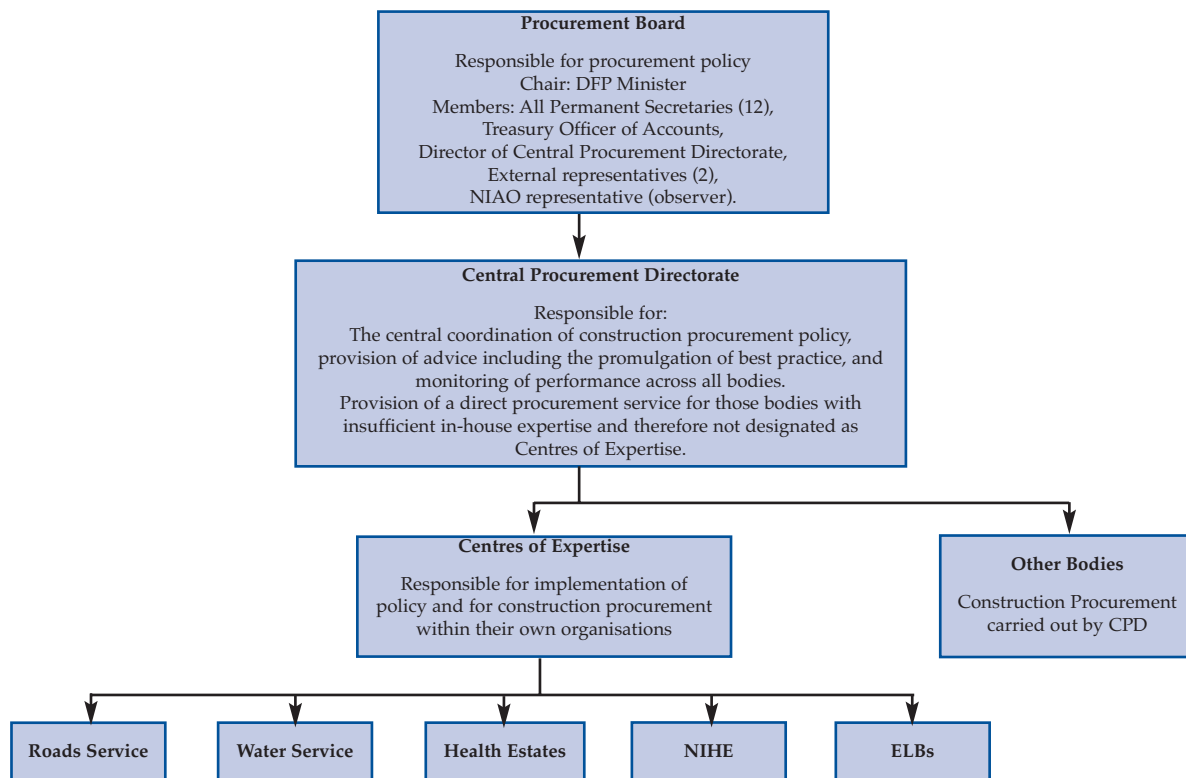
1.9 The review team endorsed Capita’s recommendation for a central body in DFP, which, in terms of construction procurement, would provide expertise, advice and a coordinating role, but would also directly procure major projects not dealt with by an existing Centre of Expertise (see Figure 5). The recommendations were accepted and a Central Procurement Directorate was created in April 2002 by amalgamating the Government Purchasing Agency and Construction Service. The review team also recommended that:

- a Northern Ireland version of *Achieving Excellence* goals and targets for new construction projects should be developed and adopted, covering reductions in capital costs, construction times and cost reliability; removal of bottlenecks; development of benchmarking comparators and improved supplier satisfaction by dates to be agreed; and
- the “Gateway Process” as adopted by all GB departments for the approval and management of construction projects, should be carried out at critical stages of project planning and development of major capital projects.

Information on Construction Procurement Spend

1.10 Problems with the lack of basic spend data and more detailed management information have been apparent since the Capita review in 1999 and the Procurement Board agreed in 2002 that CPD should work with departments to provide it. At the date of our audit, CPD had completed a pilot project which had established a suitable approach, but approval to access departmental information for the main exercise had only been sought in August 2004.

Figure 5: Responsibilities for Construction Procurement



Source: Northern Ireland Audit Office

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1.11 Accurate and comprehensive management information is essential to inform procurement policy and whilst we recognise that this issue is being addressed, progress has been slow. We recommend that CPD gives priority to the completion of the current exercise and that departments cooperate fully in the establishment of suitable management information systems to update the information on a regular basis. We further recommend that since grants account for over a quarter of total construction spend, figures for this area should be compiled in addition to direct departmental expenditure to help inform future procurement policy (see paragraphs 1.25 to 1.27).

Achieving Excellence

1.12 The Achieving Excellence in Construction initiative in Great Britain was launched by the Chief Secretary to the Treasury in March 1999, following on the Levene Scrutiny and the Bath University study (see paragraph 3), both of which criticised the performance of central government as a construction client. In response to the recommendation of the Procurement Review (see paragraph 1.9) a Northern Ireland version of Achieving Excellence was formally endorsed by the Assembly Executive and launched in May 2002 and has been taken forward by the Government Construction Clients Group. The initiative, which is closely modelled on the GB version, is intended to improve the performance of the public sector as a best practice client in the procurement of construction projects. The main thrust of the initiative is to deliver best value for money as defined by the Procurement Policy Review i.e. *“the optimum combination of whole life cost and quality (or fitness for purpose) to meet the customer’s requirements”*.

1.13 The Initiative is in two parts:

- a Client Improvement Plan which sets out the actions which departments, agencies and NDPBs should take in the four key areas of Management, Measurement, Standardisation and Integration; and
- an Implementation Programme which sets targets to achieve full implementation of best practice across the four key areas within a three year period to March 2005.

Departments were to prepare detailed Action Plans for implementation in their own areas of

responsibility, including NDPBs. A summary of Achieving Excellence is at Figure 6 and details of the Client Improvement Plan are at Appendix 2.

1.14 It is envisaged that if best practice is implemented there is potential to achieve benefits in line with the targets set by Egan in the Rethinking Construction report as follows:

For the government client on new contracts:

- capital cost trends - 10 per cent annual reduction*;
- construction times - 10 per cent annual reduction*;
- defects - 20 per cent annual reduction*;
- completion and cost reliability - 20 per cent annual improvement*;
- benchmarking comparators for key construction elements - 30 per cent improvement in variability against best in class; and
- supplier satisfaction - 90 per cent.

For the providers

- commercial health of supply side - 10 per cent improvement annually in profit / turnover*; and
- improved safety - 10 per cent reduction in reported accidents*.

*Egan targets

1.15 This suggests considerable potential for savings. Based on current levels of spend on construction across all departments and sectors (see Figure 1), an annual reduction of 10 per cent of project cost would give savings of £300 million over a three year period.

Progress to Date

1.16 At the date of our audit, mid-way through the last year of the three year programme, CPD could give us no indication of progress against the implementation plan targets for the first two years. No report on performance had been made to the Procurement Board, four departments had still not produced action plans and only one had submitted a full Implementation Plan to CPD.

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1.17 CPD initiated monitoring against the Client Improvement Plan in 2002 and reported to GCCG in May 2003. However, only five departments submitted returns and the report, which was produced in diagrammatic form, gave no conclusions on the level of performance, no recommendations were made and the fact that only five departments had participated was not addressed. At the date of audit, a further two departments had made returns for year one and five departments had made returns for year two.

1.18 Delays in the production of action plans and the absence of performance information at this late stage in the programme suggest a lack of urgency and enthusiasm for the implementation of Achieving Excellence. We are seriously concerned about the progress of this key initiative and that an opportunity to make very significant value for money savings may have been missed.

1.19 We recommend that the Procurement Board consider the need to extend the life of Achieving Excellence to ensure that best procurement practice is fully implemented by departments and that potential value for money savings are realised. We further recommend that departments complete and submit Action Plans as a matter of urgency and that CPD and GCCG take a much more proactive role in pushing the initiative forward. CPD and GCCG should ensure that:

- performance monitoring is carried out, as a minimum, at six monthly intervals to identify problems at the earliest opportunity; and
- progress is reported regularly to the Procurement Board, highlighting any areas where satisfactory progress is not being made and detailing remedial action being taken.

1.20 Subsequent to a draft of this report, the Procurement Board agreed in October 2004 that: CPD would provide it with a report on the progress of Achieving Excellence to date; that in future, progress would be monitored twice yearly and that CPD would work with departments to define a strategy for Achieving Excellence beyond March 2005.

1.21 DFP told us that Achieving Excellence is process driven rather than target driven. We acknowledge this but consider that at the end of the initiative, DFP should be in a position to demonstrate what actual efficiency savings have been achieved (see paragraph 1.14). This is particularly important to maintain an on-going impetus for improvement of value for money beyond the life of Achieving Excellence and in view of Capita's criticisms of the lack of central monitoring of performance against government expectations.

1.22 DFP told us that while GCCG has agreed to monitor key performance indicators, implementation of this process has been problematic and further proposals for evaluating construction cost baselines have been produced. We consider it vital that DFP ensure that effective procedures are in place to measure the outcome against the potential benefits in line with Egan targets which have been outlined for the initiative.



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Figure 6: Northern Ireland Achieving Excellence Initiative

Client Improvement Plan	Implementation Programme (to be achieved by March 2005)
Management (culture change)	
<i>Commitment and Leadership</i> - department senior management commitment to change and change implementation at all relevant levels of the organisation.	GCCG to review progress.
<i>Empowerment and skilling</i> - project sponsors to be the lynch pin of client project management and delivery. Project sponsors to be fully skilled and empowered.	100% of annual targets to be achieved.
<i>Consistent and skilled project management</i>	100% of projects to have fully trained project sponsors.
	100% of departments to apply best practice project management.
Measurement	
<i>Standard key performance indicators</i> - covering performance, whole life cost, predictability, defects, health and safety, customer and supplier satisfaction.	100% of departments to use KPIs.
<i>Post project implementation reviews</i> - as basis for measurement data to include feedback from suppliers.	100% of departments to assess performance using post project implementation reviews.
<i>Client performance surveys</i> - surveys of government client performance involving industry umbrella bodies and suppliers.	90% supplier satisfaction to be achieved.
Standardisation	
<i>Key standard practices on:</i>	100% of departments to apply standard practice.
<ul style="list-style-type: none"> - procurement decisions on total value for money; - use of risk and value management; - output / performance specifications; - whole life costing; and - robust change control. 	
<i>Information technology and standardised document handling</i>	100% of departments to use recommended technology.
Integration	
Teamwork and Partnering	100% of departments to use lean project and financial approval chains.
Focus on:	100% of departments to adopt partnering / team working as appropriate.
<ul style="list-style-type: none"> - best value in whole life costs; and - better integration of the design and construction processes 	100% of projects to adopt strategies based on best value in whole life costs and better integrated supply chains.

Source: Achieving Excellence document and Client Improvement Plan

Construction Procurement Guidance

1.23 Between 1997 and 2001, OGC issued a series Construction Procurement Guidance Notes which progressively incorporated the wealth of best practice which was being established during this period. Most of the later notes were endorsed by both NAO and NIAO. The Capita Review in 1999 found that most bodies responsible for construction procurement in Northern Ireland, were “unsure” of the status and applicability of this guidance and recommended that DFP should be responsible for promulgating it as appropriate. None of this guidance was formally adopted.

1.24 OGC recently replaced the Guidance Notes series with the Achieving Excellence suite of procurement guidance and DFP adopted this guidance for use in Northern Ireland in September 2003. The guidance is intended to underpin the future strategy of Achieving Excellence, building on the experience of implementing it in Great Britain. Three core and seven supporting guides have been issued to date and a further supporting guide on Sustainability will follow in the near future (see Figure 7).

Grants

1.25 In defining the scope of public procurement, the Procurement Review Team had difficulty in deciding the extent to which grants to non-public sector bodies should be included. There were two practical issues:

- the legal requirements applying to procurement are different from those attaching to grant-giving by public bodies, particularly in the context of European Community law; and
- the lack of accurate information about grant-giving by Northern Ireland departments.

The Team took a “pragmatic approach” and excluded grants but recommended that the Procurement Board should consider the implications of their report for grant-giving within the first two years of its operations.

1.26 This has important implications for construction procurement since grants account for some £270 million or 27 per cent of the total spend in Northern Ireland, most notably in terms of grants to Housing Associations and Voluntary and Maintained schools (see Figure 8). These areas are not covered by the Achieving Excellence programme, significantly reducing the potential for improvements in value for money.



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Figure 7: Achieving Excellence Guides

Core Guides

Initiative into Action - This guide provides an overview of Achieving Excellence and the other Procurement Guides. It describes the key initiatives and aspirations for Achieving Excellence. It brings together the key messages for management from each of the guides and outlines the contents of the guides.

Project Organisation - This guide explains the key roles and responsibilities involved in construction procurement projects. It provides a recommended framework for project organisation that can be adapted to individual circumstances.

Project Management Lifecycle - This guide outlines the decision points and processes involved in the delivery of construction projects. It sets the project procurement process in the context of Gateway reviews, the design and construction stages and key supporting processes such as risk management, value management and quality, cost, time and change control. It describes the key outputs required at each stage.

Supporting Guides

Risk and Value Management - This guide explains how risk and value are managed. These processes are fundamental to the successful delivery of projects and should be used throughout the life of the project. The guide summarises the key principles of risk and value management and describes practical steps that need to be taken over the project lifecycle.

The Integrated Project Team - This guide explains how client and suppliers can work together as an integrated project team to enhance whole life value while reducing total cost, improve quality, innovate and deliver a project more effectively than in a traditional more fragmented relationship that is often adversarial.

Procurement and Contract Strategies - This guide explains how to determine the appropriate route that will deliver best value for money. Design, construction, operation and maintenance should not be considered in isolation from each other. The recommended procurement routes ensure that designers, contractors and specialist suppliers work together in an integrated team.

Whole Life Costing - This guide focuses on the need to base decisions on a whole-life approach rather than the up front capital cost of the construction. It provides advice on producing whole-life cost models and explains what needs to be done to keep costs under control at key stages of the project.

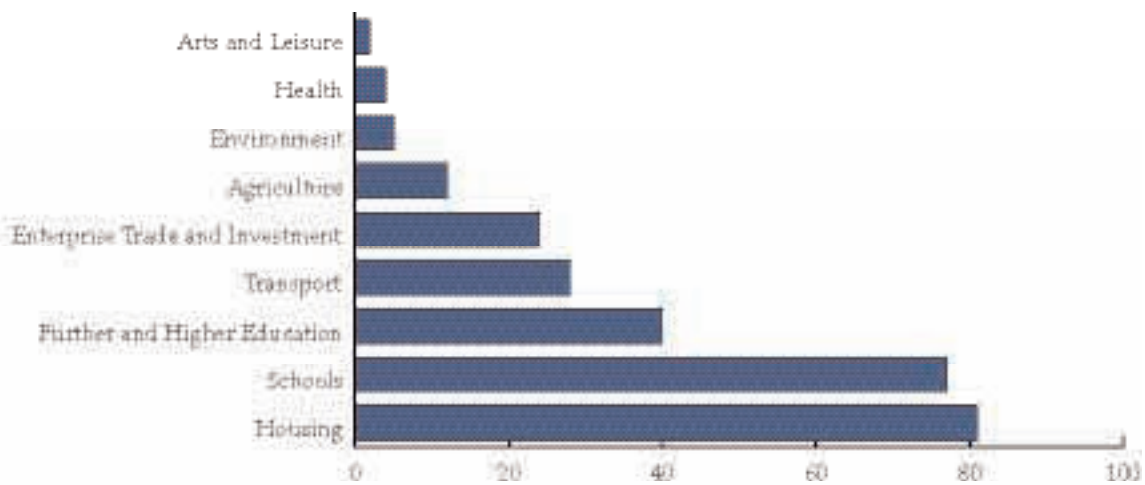
Improving Performance - This guide explains the principles and practice of performance evaluation. Measuring the performance of construction projects is essential for ensuring that planned improvements in quality cost and time are achieved, comparing achieved performance with similar projects and identifying potential for doing things better.

Design Quality - This guide explains the characteristics of good design and how design quality can be raised through the procurement process. Design is integral to Achieving Excellence in Construction and to the achievement of value for money.

Health and Safety - The Achieving Excellence initiative encompasses health and safety and the Achieving Sustainability Initiative similarly commits central government clients to consideration of health and safety and environmental awareness in the appointment of designers and contractors.

Source: Office of Government Commerce

Figure 8: Expenditure on Grants 2003-2004 (£ million)



Source: NIAO based on DFP data

1.27 We recognise the broader conceptual difficulties in defining grants as procurement, but consider that in the cases of Housing and Education, grants given for the purpose of construction procurement are clearly being used to fund assets required to deliver public services. We endorse the Review Team's recommendation that the Procurement Board should address the status of grant-giving and would suggest that specific consideration is given to how the benefits of Achieving Excellence could be extended to grants given for the purpose of construction procurement.

1.28 We are pleased to report that subsequent to a draft of this report, the Procurement Board has agreed that CPD should examine areas where large grants are given, to determine the extent to which these grants should come within public procurement policy.

Achieving Sustainability

1.29 In June 2000, shortly after the launch of Achieving Excellence in Great Britain, a complimentary initiative, Achieving Sustainability in Construction Procurement was launched by the Government Client Construction Panel. Its action plan sets out how the government client would take forward the government's sustainable development agenda through better procurement of new works, maintenance and refurbishment, to achieve improved value for money. All departments signed

up to the action plan which sets targets to be delivered by March 2003 in the following areas:

- reuse of existing buildings;
- design for minimum waste;
- minimise energy consumption;
- reduce pollution;
- enhance biodiversity;
- conserve water;
- respect for people and their environment; and
- target setting and performance measurement.

1.30 A Northern Ireland Sustainability Action Plan was produced in draft by GCCG in November 2002 and formally launched in April 2003 (see Appendix 3). This initiative is complimentary to Achieving Excellence with the potential in addition to its purely environmental objectives, to further enhance value for money by reducing waste etc. We welcome its introduction in Northern Ireland.

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The Gateway Process

1.31 The Office of Government Commerce (OGC) introduced the Gateway process in January 2001 to provide a means of systematically reviewing the progress of procurement projects through planning, implementation and evaluation phases. Reviews are carried out at five key decision points or “gateways” in the life of a project, three before the award of the contract and two covering service implementation. For programmes or high risk projects, a further Gateway 0 applies, before the development of the business case (see Figure 9). Reviews are conducted by teams of experts who are independent of the project team and are mandatory in Great Britain for all major procurement projects, including construction projects in departments, agencies and NDPBs. Where a review is not successful it is brought to the attention of the Senior Responsible Owner (SRO) who will decide on what action is to be taken. Ultimate responsibility for whether or not such a project will proceed is with the Accounting Officer.

1.32 OGC has cited the benefits of the Gateway process as ensuring that:

- the best available skills and experience are deployed on the project;
- all stakeholders fully understand the status of the project and the issues involved;
- the project can proceed to the next stage of development; and
- realistic time and cost targets can be achieved.

When it was introduced in 2001, OGC estimated that savings of an average of five per cent of project cost were being achieved and in December 2004, it reported that value for money gains of £730 million had been delivered.

1.33 Following the recommendation of the Procurement Review (see paragraph 1.9), the Procurement Board adopted the Gateway process as policy in Northern Ireland in July 2002. It came into effect in February 2004 for construction projects scoring 31 or more using the OGC Risk Potential Assessment for the assessment of risk, including those projects which are already in progress but have not passed the Gateway 3 decision point. Projects scoring less than 31, i.e. those corresponding to the low risk category in Great Britain, will only be carried

out on an exceptional basis, whereby in any year, a Department which does not have any projects scoring 31 or more, will be required to review one of its low risk projects.

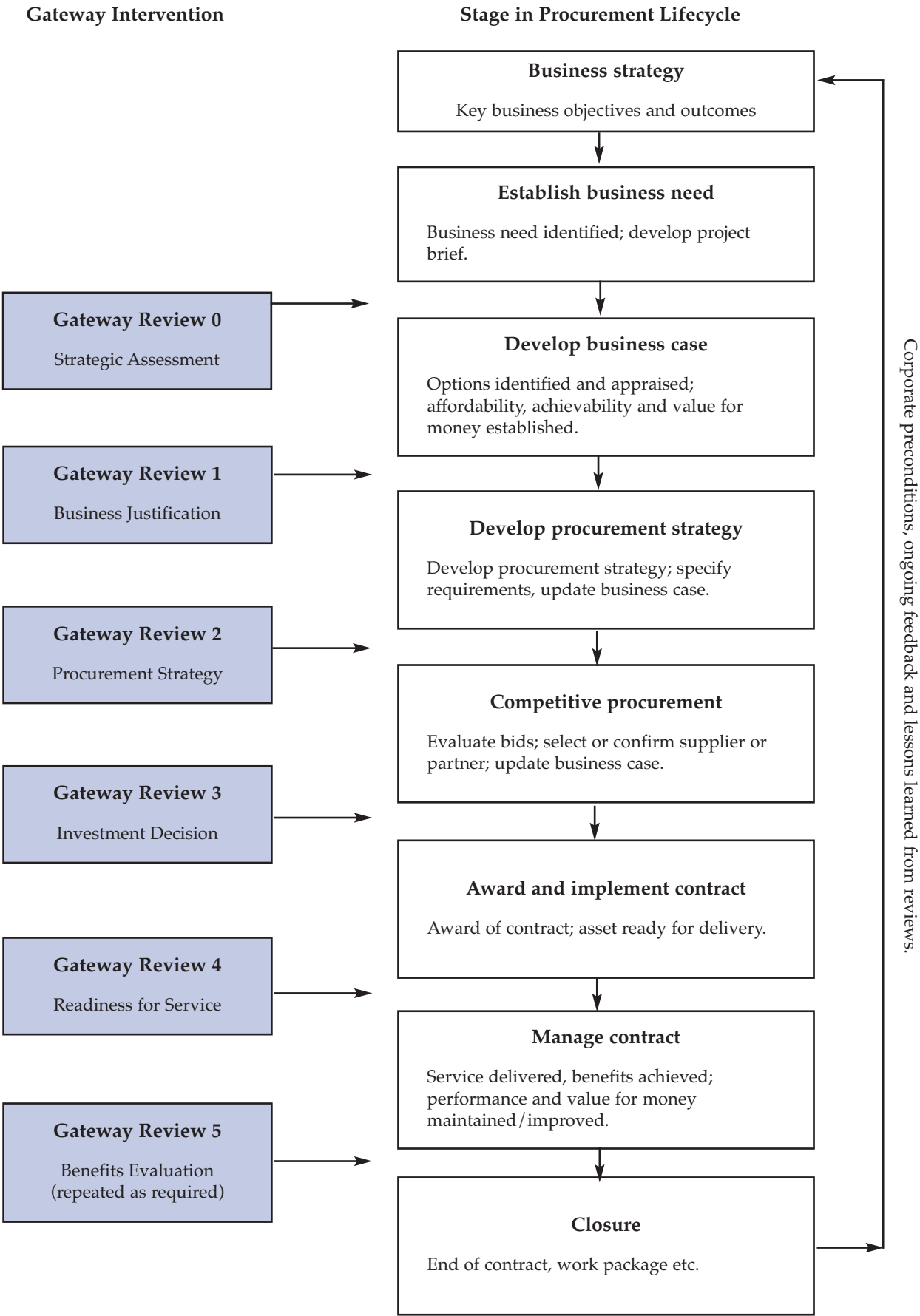
1.34 Reviews in Northern Ireland will be carried out by teams selected from a pool of trained reviewers. Team members will normally be practitioners from other departments who have experience of the issues under consideration. However until a pool of review team leaders is established, it is intended that local leaders will be supplemented by staff from OGC. CPD has appointed a Gateway Coordinator for Northern Ireland who will be responsible for appointing the team and scheduling the review. The Coordinator will also receive copies of all reports produced to enable generic lessons to be identified and disseminated.

1.35 The Gateway Process provides a means of ensuring a more formal and disciplined approach to project management which will help to avoid time and cost overruns and encourage implementation of best practice across the board. In this context it is totally consistent with Achieving Excellence and its implementation would greatly assist in the progress of this initiative. It is also capable of delivering considerable value for money gains in its own right. Based on current levels of construction spending in Northern Ireland, OGC’s estimate of five per cent of project cost, would deliver value for money gains of of some £50 million.

1.36 In view of these significant potential impacts it is important that it is fully implemented as soon as possible. DFP told us that 16 information technology projects have been reviewed but we are disappointed that almost six months after the process was to come into effect, no construction projects had been submitted to the Gateway Coordinator for review.

1.37 We are also concerned, that reviews will not be carried out on the vast majority of projects classified as low risk. This is a significant departure from the OGC approach which applies the review process to all projects, whilst recognising that individual departments may wish to set de minimis limits for which they will be accountable. OGC has recognised that the Risk Potential Assessment may classify projects as low risk, which are significant in terms of value and it has been suggested that given the smaller scale of projects in Northern Ireland, use of the Risk Potential Assessment could result in a high proportion of projects being classified as low risk.

Figure 9: The Gateway Process



Source: Office of Government Commerce

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There is a possibility therefore that a significant proportion of the total capital spend in Northern Ireland would not be subject to the discipline of the gateway process and that opportunities to improve value for money could be lost.

1.38 We recommend that departments should participate fully in the Gateway Process, both in terms of carrying out reviews and providing staff for review teams. We also recommend that DFP takes a proactive role in encouraging full participation and that following the initial implementation, it should review the effect of excluding low risk projects in terms of the proportion of total capital spend and the number of projects which are not covered. We further recommend that DFP consider extending the coverage within the low risk category to optimise the potential for improvements in value for money.

1.39 DFP acknowledges that there is a need to reassess the way in which low risk projects are covered by the gateway process and told us that further guidance will be issued in a revised Dear Accounting Officer letter in due course.

Construction Procurement Policy

1.40 The initiatives examined in this section of the report were brought together formally by CPD in 2004 as a statement of construction procurement policy as follows:

- OGC Achieving Excellence in Construction guidance is a requirement under the *Northern Ireland Practical Guide to the Green Book*⁴ and should be fully incorporated into departmental procedures and processes;
- project management procedures should be documented and include a clear definition of “client” and “provider” roles;
- all new procurement projects should be subject to the Gateway Review Process;
- all procurements by bodies not designated as a Centre of Expertise should be carried out under a service level agreement with CPD or another Centre of Expertise;
- all departments are required to comply fully with the Achieving Excellence for Northern Ireland Implementation Programme by March 2005 (see Figure 6); and

- all departments are required to comply fully with the Sustainability Action Plan by March 2006 (see Appendix 3).

1.41 These key elements of procurement best practice have the potential to generate very significant improvements in the value for money of construction procurement in Northern Ireland and we strongly welcome DFP’s statement of them as procurement policy. We will include an assessment of the extent to which this policy has been implemented in all future audits of construction projects.

Rethinking Construction Initiatives

1.42 Sir John Egan’s report “*Rethinking Construction*”, published in 1998, identified the need for radical change in the construction industry if improvements in performance were to be achieved. The report established an agenda for change based on five key drivers, four processes and seven annual targets (Figure 10). To encourage the adoption of this process, the Department of the Environment, Transport and the Regions (DETR) in GB, set up four “rethinking construction” initiatives aimed at improving the performance of different sectors of the industry and its clients.

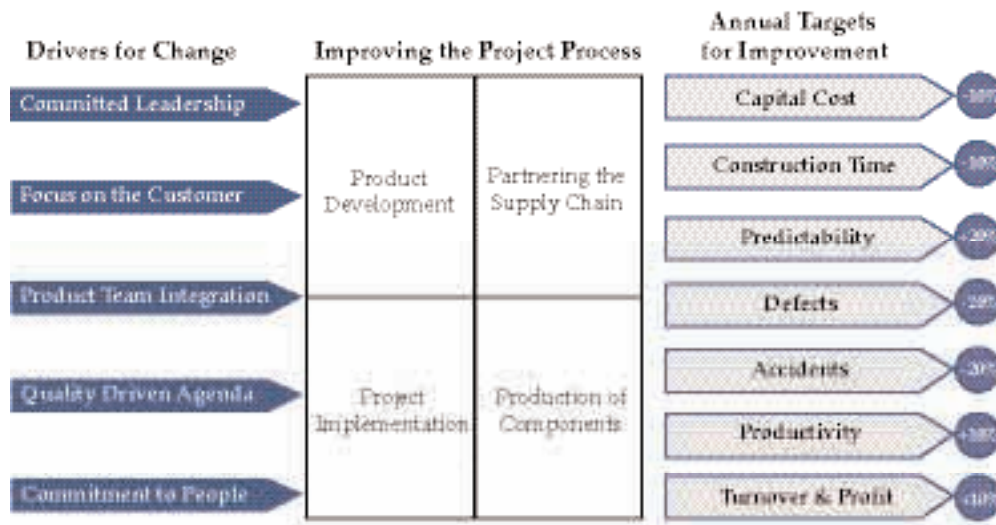
Movement for Innovation

1.43 The Movement for Innovation (M4i) promoted innovative approaches on non-housing construction and encouraged the adoption of best practice. Contractors and clients submitted details of projects which exemplified some aspect of the Egan agenda and these “demonstration projects” were disseminated through a network of local “cluster groups” and on the M4i website. It developed a standard set of key performance indicators (KPIs) to measure project performance and reported that in 2002, its demonstration projects out-performed industry averages for all KPIs.

1.44 A Northern Ireland cluster group was set up in March 2000. This has provided a useful regional focus for rethinking construction activity and has produced 28 demonstration projects covering many areas of public sector construction including roads, water, schools, hospitals and housing maintenance.

⁴ The Green Book is the name given to the HM Treasury Guide “Appraisal and Evaluation in Central Government”. The Northern Ireland Practical Guide published in September 2003, replaces the previous Northern Ireland Preface to the Green Book published in 1997.

Figure 10: The Egan Agenda



Source: Rethinking Construction report

Housing Forum

1.45 The Housing Forum fulfilled a similar role to the Movement for Innovation but related specifically to the housing sector of the industry, public and private sector clients, Housing Associations and Local Authorities. It assembled a portfolio of 126 demonstration projects, established a benchmarking club, developed a set of housing - specific KPIs and established a number of working groups on a variety of relevant topics. Northern Ireland did not participate in this initiative.

Local Government Task Force

1.46 The Local Government Task Force promoted Rethinking Construction principles within local government procurement and worked closely with M4i and the Housing Forum.

Construction Best Practice Programme

1.47 The Construction Best Practice Programme was intended to raise awareness across the industry of the need to change and to provide assistance in choosing appropriate tools or techniques. Its services included a helpdesk and a comprehensive website and it set up 11 local best practice clubs across the UK. A Northern Ireland club was launched in September 2000.

1.48 The Movement for Innovation, Housing Forum and Local Government Taskforce were subsequently brought together under Rethinking Construction Limited, a not for profit company. In 2003, Rethinking Construction and the Construction Best Practice Programme were combined under a single organisation, "Constructing Excellence". The remit of Constructing Excellence is to continue to implement the rethinking construction initiative through a network of best practice clubs and demonstration projects.

1.49 When arrangements were made for Northern Ireland's participation in Rethinking Construction, DFP decided, in consultation with industry representatives, that due to the relatively small number of demonstration projects available at that time, all Northern Ireland activity would be dealt with through M4i. We recognise that this may have been necessary to create a critical mass of demonstration projects in the early stages. We note, however, that despite the fact that some 3,000 new houses have been built by Housing Associations in the past three years, only one demonstration project has come from this sector. This is in contrast to the level of activity in the Housing Forum in GB and given that Housing accounts for almost a quarter of construction expenditure, much of this is in the form of grants to Housing Associations (see Figure 1), this suggests an important gap in the development and adoption of best practice.

1.50 We recommend that consideration is given to Northern Ireland's participation in the Housing Forum as a means of encouraging wider adoption of best practice in the housing sector particularly in view of the fact that Housing Associations are not included within the Achieving Excellence initiative (see paragraph 1.26).

Constructing Excellence Centre

1.51 The Northern Ireland Constructing Excellence Centre was launched in April 2002 under the Rethinking Construction regime. The Centre is based in the School of the Built Environment at the University of Ulster, Jordanstown, and is funded by the Department of Trade and Industry. The primary aim of the Centre is to be a focal point within the Northern Ireland construction industry for the promotion and implementation of the Rethinking Construction agenda. To do this the Centre collaborates with all the key bodies in both the public and private sector in Northern Ireland.

Constructionline

1.52 The Latham report in 1994 concluded that the process of maintaining approved lists of contractors in public sector bodies was proving extremely costly to both the industry and clients. Some estimates put the cost of repetitive qualification procedures at £130 million a year across the United Kingdom. Constructionline was introduced in Great Britain in 1998 to provide an on-line register of contractors and consultants who have been prequalified according to standards set by DETR. The service is run as a Public-Private partnership with Capita and is funded by annual subscriptions from contractors and consultants registered on the system. The register is free to clients. Both CIGNI and GCCG agreed to the adoption of Constructionline as the single prequalification database for public sector bodies in Northern Ireland and that registration should be a requirement for contractors and consultants seeking public sector work. It was formally launched in Northern Ireland in September 2002. Adoption of this system across the public sector will obviate the need for multiple registrations and should result in savings for both contractor and client. However, we were told that consideration for inclusion on a tender list in Northern Ireland is not based solely on information held on the register and additional prequalification information may be required.

Best Practice in Northern Ireland

2.1 In carrying out its review of Modernising Construction in Great Britain, the National Audit Office identified six key principles which all construction projects should follow if value for money is to be achieved.

Figure 11: The Six Key Principles

Selection of Contractors

Contractors should be selected on the basis of achieving long term sustainable value for money, not just the lowest price.

Integration of Design

Design should not be a separate process but should be integrated with the whole construction process.

Planning

Good planning involving risk and value management should be carried out.

Project Management

Reliable project management should be in place.

Remuneration of Contractors

Contractors should be remunerated in a way that incentivises them to deliver good quality construction on time and to budget.

Performance Measurement

The performance of construction projects should be measured to assess whether cost, time and quality requirements are being met and to learn and disseminate lessons for future projects.

Source: National Audit Office

2.2 Centres of Expertise in Northern Ireland have begun to introduce these principles into their construction procurement. For example, Water Service uses design and build contracts on all projects to integrate design into the construction process; Roads Service has used target price arrangements for the remuneration of contractors which has improved the delivery of projects within time and cost budgets; Health Estates uses its “performance related

partnering” approach on suitable projects over £500,000; the Northern Ireland Housing Executive has reduced the number of its maintenance contracts from 100 to 15; and CPD has introduced key performance indicators for the management of its measured term contracts.

2.3 In this section of the report we examine the six key principles in detail and give examples of construction projects in Northern Ireland where they are being put into practice. This section also deals with the implementation of partnering and gives guidance on the controls necessary for its successful application to public sector projects.

Selection of Contractors

2.4 Traditionally, contractors have been selected by competitive tender on the basis of the lowest price. Competition is essential to ensure both value for money and propriety in a public sector context, but experience has shown that frequently, the lowest price tendered for construction may not deliver value for money. There are two main reasons for this. Firstly, contractors are encouraged to submit unrealistically low tenders and to rely on subsequent variations to restore their profit margins, often resulting in claims and expensive litigation. This leads to escalation of costs, results in delayed completion and has contributed to the creation of adversarial relationships between client and contractor which militate against efficient working. Secondly, value for money does not mean the lowest initial construction cost. It means securing a construction which fulfils the user’s needs and achieves a balance between quality and cost throughout the life of the asset. There must be recognition therefore that increased capital cost may be desirable to achieve a lower whole life cost or that better quality may be required to adequately meet the user’s need.

2.5 In selecting contractors, criteria should be established to assess their ability to deliver long-term sustainable value for money. In addition to price, such criteria should cover the quality of design, the

Modernising Construction Procurement in Northern Ireland

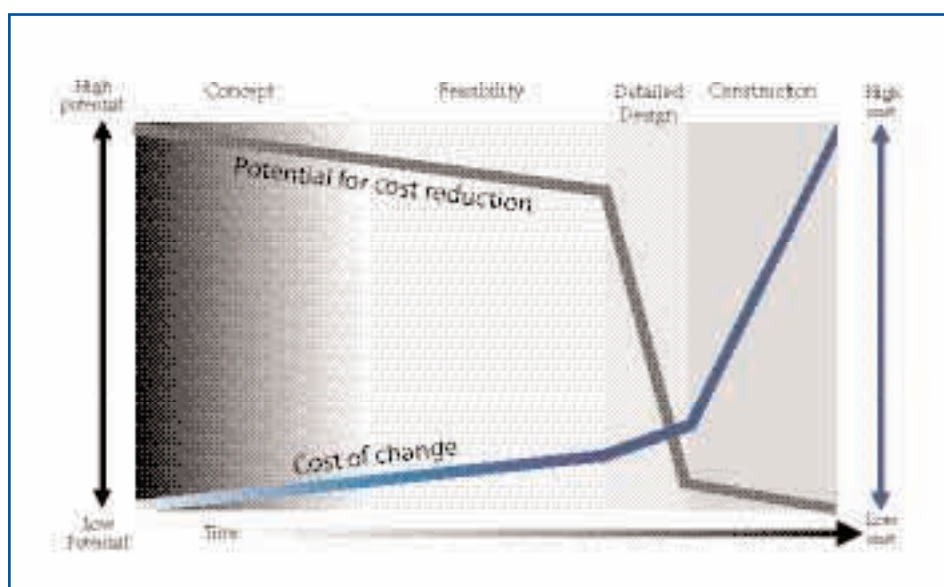
proposed method of construction and the likely implications for the cost of operating the completed construction over its whole life. Criteria should also cover issues such as the contractor's experience of partnering and their health and safety record.

Integration of Design

2.6 Design is of vital importance to any construction project since it is at this early stage that there is the greatest opportunity to influence costs and improve value for money (see Figure 12). In conventional construction procurement, design is undertaken as a separate process to be completed before appointing the main contractor. Taking this approach, however, the design team has little incentive to consider the cost implications of their design and has no opportunity to use the expertise of the contractor to improve "buildability". It is now widely recognised as best practice that design should be integrated into the construction process and that end users, contractors, major suppliers and facilities managers should be involved at an early stage in the design process to ensure the achievement of best value for money. A properly integrated design process should:

- *consider the future running costs of the asset.* It is often quoted that the costs of owning a building are in the ratio of 1 for construction costs, 5 for maintenance costs and 200 for running costs⁵. To achieve value for money in terms of whole-life costs, therefore, future running costs should be considered at the design stage;
- *involve the contractor at an early stage,* to take advantage of the expertise of the contractor to ensure the feasibility and efficiency of the design, minimise the need for expensive design changes during construction and maximise the potential for prefabrication and standardisation; and
- *be based on an output specification.* Traditionally, clients have produced detailed specifications for building such as the number of windows, the size of rooms etc. Design specifications on the basis of outputs such as the number of people to be accommodated or the nature of the service to be provided give the integrated design team the opportunity to be innovative in producing solutions which will deliver these outputs in the most cost-effective way.

Figure 12: The Opportunity to Minimise Costs



Source: *Just Capital: Local Authority Management of Capital Projects*, Audit Commission, 1995

⁵ *The Long Term Costs of Owning and Using Buildings*, Royal Academy of Engineering, 1998.

Case Example A: Selection of Contractors

Roads Service

Toomebridge Bypass

This £18.5 million project involved the construction of a 3.5 kilometre bypass around Toomebridge and a new single span bridge over the Lower River Bann.



The tender process was a two-envelope procedure. In Envelope A, tenderers made a submission on quality, addressing design and innovation, partnering, respect for people, risk management, supply chain management, communication and open book accounting. Scoring against criteria in Envelope A accounted for 60 per cent of the total score. In Envelope B the tenderers submitted two lump sum prices, one covering design and the development of a target cost; and the other for profits and overheads if they were successful in the competition. Scoring against criteria in Envelope B accounted for 25 per cent of the total score. Tenderers were also required to make a presentation to expand on the submission and to answer questions from the selection panel. This accounted for 15 percent of the total score.

The “preferred construction partner” selected by this process was commissioned for a twelve week period to develop the design and a target cost for construction. An independent team of quantity surveyors developed a cost comparator based on the contractor’s design, to check the reliability of the contractor’s target cost. The construction contract was only awarded following satisfactory completion of this stage.

This project was delivered five weeks early and slightly below its original target cost.

2.7 Since April 2000, government policy in Great Britain has been that projects which are not being conducted through the Private Finance Initiative should be procured by one of two routes - Design and Build or Prime Contracting (see Figure 13) to ensure that design is fully integrated into the construction process. Traditional procurement routes where design and construction are carried out as two distinct processes should only be used if they can be demonstrated to deliver better value for money. This is fully incorporated in the Great Britain Achieving Excellence Programme and associated OGC guidance. Some departments in Northern Ireland are increasingly pursuing design and build and prime contracting routes but, this approach was not formally adopted in the Northern Ireland version of Achieving Excellence.

Figure 13: Preferred Integrated Procurement Routes

Design and Build

Using a single contractor to act as the sole point of responsibility to a public sector client for the design, management and delivery of a construction project on time, within budget (taking account of whole life costs) and in accordance with a pre-defined output specification using reasonable skill and care.

Prime Contracting

Using a single contractor to act as the sole point of responsibility to a public sector client for the management and delivery of a construction project on time, within budget (defined over the lifetime of the project) and fit for the purpose for which it was intended, including demonstration during the initial period of operation that operating cost and performance parameters can be met in accordance with a pre-agreed cost model.

Source: Office of Government Commerce

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2.8 DFP told us that with the establishment of the Construction Procurement Policy Framework in 2004 (see paragraph 1.40), Northern Ireland policy is now in line with the Achieving Excellence guidance and traditional, non-integrated procurement routes should only be used where it can be clearly demonstrated that they will provide better value for money than the preferred integrated procurement routes.

2.9 Given the importance of design and the recognised benefits of integrated approaches, we welcome this statement by DFP. We are concerned, however, that this was not emphasised more clearly in the Policy Framework. We recommend that CPD ensures that all Centres of Expertise are made fully aware of this very significant development in policy.

Planning

2.10 Public Sector construction projects by their

nature tend to have long lead times and there can be considerable pressure to minimise time on planning in order to get to the construction phase as quickly as possible. Good planning, however, should result in time and cost savings later in the project by providing for the management of risk and the elimination of waste and inefficiency through the process of value management.

Risk Management

2.11 Some element of risk is inherent in any construction project, particularly so where innovative approaches are being taken to achieve improved value for money. It is important for the success of a project that such risks are actively managed but weak risk management has been frequently criticised in Gateway reviews in Great Britain and HM Treasury has identified it as a major cause of project failure. It is essential therefore that sufficient time and effort is applied in the early stages of a project to set up an effective risk management plan. Such a plan should:



Case Example B: Integration of Design

Health Estates

Royal Victoria Hospital Phase I

This project involved the construction of a seven storey hospital building of approximately 29,000 square metres including specialist outpatient clinics, day surgery, intensive care, operating theatres, fracture clinics and accommodation for 400 inpatient beds.

Separate contracts were awarded for design and construction, but great emphasis was placed on getting design right and involving both client and contractor in this process.

At key stages the design was reviewed by a multidisciplinary team of experts to assess its feasibility and buildability. Before construction, full size mock-ups of critical areas were built to be examined by end users and a series of workshops were undertaken involving the client, design and contractor elements of the team. Health Estates told us that these initiatives resulted in: cost reductions of around £500,000; improvements in buildability; improvements to specifications; improved economy in the use of materials; and simplification of the structure.

On completion, a further review of design issues was undertaken, again involving client, design and contractor representation, which identified further improvements for incorporation in the design of Phase II of the hospital

The project was given a design award by the Royal Society of Ulster Architects in 2002.

- identify and assess risks in terms of impact and probability;
- establish a risk register which should be updated throughout the life of the project;
- allocate responsibility for risks to those best able to manage them; and
- establish procedures for managing and monitoring risks.

Value Management

2.12 Best value for money has been defined by the Procurement Board as “the optimum combination of whole life cost and quality (or fitness for purpose) to meet the customer’s requirements”. Value management provides a structured approach to the development of a project, to increase the likelihood that this will be achieved. Most projects include some element of unnecessary cost and although the process of value

management may result in cutting these costs, it is primarily a means of enhancing value, based on whole life costs rather than the cost of acquisition alone. The process is characterised by workshop meetings involving the client and the technical team which critically evaluate design developments to test whether the client’s objectives are being met and to find ways of improving value. Value engineering is a form of value management by which all the components and processes involved in construction are critically appraised to determine whether better value alternatives are available with the objective of reducing waste and inefficiency in specific aspects of design, construction and maintenance. Detailed guidance on these aspects of planning is available in the OGC Achieving Excellence Guide 4 on *Risk and Value Management*.

Case Example C: Planning

Water Service

Aquarius Project

In the early 1990’s Water Service identified the need to replace the Mourne Conduit bringing drinking water supplies from the Silent Valley Reservoir to the Greater Belfast and North Down areas. Phase I of this “Aquarius” project involved the replacement of 23 kilometres of the old brick and concrete conduit with 1200mm and 1300mm steel pipe and the construction of a pumping station. Extensive excavations were required and this, along with the need to negotiate rights of access with many different landowners, had the potential to cause major delays due to unforeseen ground conditions and legal difficulties.

As part of its strategy to manage this project effectively, Water Service adopted a proactive risk management approach. The project team established a register which identified risks at all stages of the project; prioritised risks in terms of their cost and time implications and allocated them to those best placed to manage them. Contingency plans were put in place to minimise the impact of risks if they materialised, for example by providing for back-up plant and equipment, and regular reviews were carried out as the project progressed.

Value engineering exercises undertaken on Phase I of the project, addressed methods, materials and processes. Water Service estimates that these resulted in savings of some £500,000 through improvements such as the use of alternative routes for the pipeline and reductions in the numbers of chambers, main line valves and pumps.

On Phase 3 of the project which involved the construction of a new water treatment plant, a value engineering exercise at design stage resulted in the lowering of the profile of plant roofs, delivering estimated savings of some £120,000.





Case Example D: Project Management

Health Estates

Royal Victoria Hospital Phase I

This £50 million contract for a seven storey hospital building on a site totally surrounded by an operational hospital was delivered four months ahead of schedule at a cost within the approved budget. Health Estates consider that effective project management contributed significantly to this successful delivery and included: strong emphasis on planning and coordination of activities; monitoring of progress against key milestones and budgets; active management of risks and timely remedial action where appropriate; and an experienced management team with a permanent presence on site and ready access to information to monitor progress and identify problems.

Project Management

2.13 Poor project management has been consistently recognised as a contributory factor in projects being delivered late and over budget and OGC has identified effective project management as a key principle in the integrated procurement process which supports the Achieving Excellence initiative in Great Britain. The characteristics of good project management are:

- a thorough understanding of the key stages of the project which are critical to its success;
- a detailed knowledge of the risks associated with the project and reliable contingency arrangements to manage them;
- an up-to-date plan for the execution of the project and regular monitoring of progress against key milestones; and
- effective coordination of all those involved in the supply chain such as suppliers and sub-contractors.

Detailed guidance on project management is available in the OGC Achieving Excellence Procurement Guide 3 *Project Procurement Lifecycle - the integrated process*.

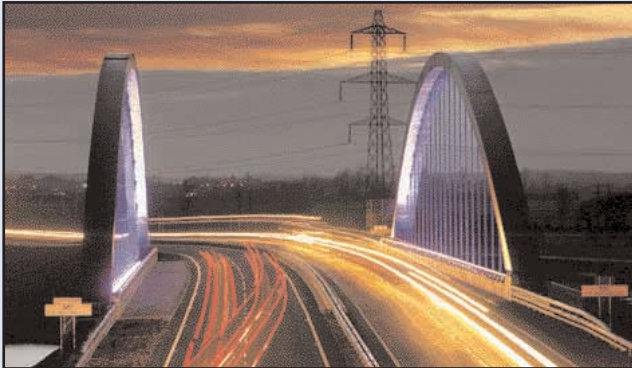
Remuneration of Contractors

2.14 The basis on which contractors are paid has an important influence on the delivery of value for money in construction projects. The traditional approach of appointing contractors on lowest price tenders may give some comfort that an excessive price is not being paid, but in practice this provides

no incentive to deliver good quality construction on time and within budget. If agreed contract prices are too low to allow a reasonable profit, contractors are likely to maximise opportunities to increase their income through expensive contract variations, often leading to formal claims and litigation. This tends to increase costs beyond the agreed tender and contributes to delays in completion. Conversely, a contract price which is too generous and allows the contractor to make excessive profits will not represent value for money. It is important, therefore, that in establishing the basis for remuneration, a balance is struck between paying the contractor a fair price while maintaining incentives to minimise cost, consistent with delivery of a quality product.

2.15 Existing guidance is not prescriptive on how this balance is to be achieved and the OGC Achieving Excellence Procurement Guide 6 on *Procurement and Contract Strategies* gives a range of examples covering: fixed price; payment on the basis of outcomes; and target price. Target price approaches are being used increasingly by innovative procurements in Northern Ireland whereby a target is agreed based on a detailed estimate of final cost, together with an agreed “pain/gain” formula to share savings or exceedings between the client and the contractor. Financial incentives of this kind encourage contractors to drive out waste and seek innovative engineering to reduce construction costs.

Case Example E: Remuneration of Contractors



Roads Service

Toomebridge Bypass

This contract was for the construction of a 3.5 kilometre bypass around Toomebridge and a new single span bridge over the River Bann.

Remuneration of the contractor was on the basis of the actual costs of delivering the project plus an agreed lump sum for profit and overheads. The contractor was incentivised through a target cost arrangement with a pain / gain formula to share savings or exceedings relative to the target. The target cost was agreed following risk management and value engineering exercises and the pain / gain formula operated on a sliding scale which gave the contractor a progressive share of either savings or exceedings and limited the client's share of any exceeding to less than 10 per cent.

As indicated in Case Example A, this project was delivered five weeks early and slightly below its original target cost.

Performance Measurement

2.16 The main impetus behind the modernising construction initiatives in Great Britain and Northern Ireland is to improve the performance of construction projects in terms of cost, time and quality. It is essential therefore that project performance is measured to assess the extent to which this is being achieved and to allow realistic targets to be set for future projects. The Egan Report commented on the lack of quantitative information to measure construction performance in GB and the 1999 Capita review highlighted a similar situation in Northern Ireland with: no data available on the level of spend, very little data available for benchmarking; and little analysis of deliverables such as outturn costs and performance targets.

2.17 The need for improved performance measurement is recognised within Achieving Excellence and all departments are expected to have fully implemented the use of standard key performance indicators, post project implementation reviews and client performance surveys by March 2005 (see Figure 6). To this end, DFP has established a framework of 10 key performance indicators, based on work carried out by the Construction Best Practice Programme in Great Britain and endorsed by GCCG for use in Northern Ireland (see Figure 14). The Procurement Board has also recognised the need to monitor value for money improvements resulting from procurement initiatives and has issued guidance on how these should be measured. The guidance includes reference to construction projects

and the need to measure improvements in terms of: capital cost; the cost of procurement; and the whole life costs of the asset.

2.18 We have endorsed this guidance and note that further detailed guidance relating to construction projects is to follow. We also note that following review of the GB Achieving Excellence, OGC is to carry out further work on the definition of a methodology for calculating VFM gains on construction projects. We recommend that DFP monitors the outcome of this work and considers it for incorporation as appropriate in any future guidance.

2.19 We welcome these two important central initiatives and recommend that departments should ensure that:

- reliable systems are in place to generate the management information required to produce KPI scores and measure value for money gains; and
- adequate training is provided where required for staff responsible for compiling and reporting performance information.

Departments may also wish to consider the involvement of Internal Audit to ensure that systems are working effectively and that information generated is robust and reliable.

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Figure 14: Achieving Excellence Key Performance Indicators

Key Performance Indicator	Objective
Client Satisfaction - Product	To determine the overall level of client satisfaction with the completed project.
Client Satisfaction - Service	To determine the overall level of client satisfaction with the service of the consultant and the main contractor during the project.
Defects	To assess the impact on the client of any defects at the point of hand-over.
Predictability - Cost	To measure the reliability of cost estimates.
Predictability - Time	To measure the reliability of time estimates.
Construction Cost	To measure the change in the cost of construction.
Construction Time	To measure the change in construction time.
Safety	To measure the number of reportable accidents.
Environmental Impact - Product (Sustainability)	To determine the extent to which environmental impacts (energy use, CO2 emissions, materials from non-renewable resources) were taken into account in the finished product.
Environmental Impact - Process (Sustainability)	To determine the extent to which environmental impacts (waste, noise and dust) were taken into account during the construction process.

2.20 In recommending the suite of 10 KPIs, GCCG emphasised that this was intended to provide a common high level approach and that departments may wish to consider other aspects of performance. We would endorse this approach and encourage the development of further KPIs to measure aspects of performance such as labour, materials, productivity and whole life costs.

Partnering

2.21 Construction projects involve complex supply chains of specialists such as design consultants, contractors, sub-contractors and suppliers and their success depends to a large extent on how well these parties can work both with each other and with the client. It is now generally recognised that one of the main reasons why construction projects fail to deliver value for money, is the adversarial and fragmented

nature of the relationships between these parties. In the private sector, and increasingly in the public sector, attempts are being made to establish more effective collaborative relationships to improve both the quality and delivery of construction projects. This 'partnering' approach involves an integrated project team, comprising the client and the various members of the supply chain, working together to improve performance. A partnering arrangement normally involves:

- agreed mutual objectives;
- defined dispute resolution procedures;
- commitment to continuous improvement;
- measurement of progress ; and
- sharing of gains.

2.22 It provides an appropriate context for the application of the key principles outlined above and research⁶ indicates that it can deliver savings of the order of 2 to 10 per cent of construction costs on single projects. Longer term collaborative relationships, often referred to as strategic partnering, can deliver up to 30 per cent savings, where the client and an integrated supply team work together on a series of projects.

2.23 Some concern has been expressed that collaborative approaches of this kind could result in unduly close relationships with contractors and that within a public sector context, this could increase the risk of impropriety to an unacceptable level. This risk can be managed, however, and we would encourage the use of partnering arrangements as a means of achieving value for money benefits, provided that the following key controls are in place.

Partners should be appointed competitively

2.24 The process of selecting a partner will differ from the traditional tendering procedure with its emphasis on cost and it is likely that more weight will be given to issues such as the contractor's attitude to collaborative working or a track record of innovation. Nevertheless, to ensure the propriety of the client - contractor relationship, partners should still be appointed through a competitive process. It is important that clear selection criteria are established at the outset and that decisions on selection and appointment are clearly documented and auditable. Similarly, where further contracts are awarded on the basis of satisfactory performance on an initial project, clear performance criteria should be established at the outset, performance should be independently measured against these criteria and appointment decisions should be fully documented. It is also important in strategic partnering arrangements, where contracts apply to more than one project, that these are periodically retendered.

Targets should be agreed and performance measured

2.25 Since the main reason for taking a partnering approach is to improve performance, it is important that clear targets for improvement are set, covering quality, delivery time and cost reduction. Incentivised forms of remuneration discussed at paragraph 2.14 will reinforce this approach by encouraging contractors to be innovative in achieving or bettering these targets and systems should be established to measure performance on a regular basis.

Open book accounting

2.26 Target cost mechanisms for remuneration are an important element of partnering which encourage innovation and improved efficiency. Since these approaches are based on the payment of actual costs for work done (see the Toomebridge Bypass example on page 33), it is essential that departments have reasonable access to the contractors financial records and cost information. This will give assurance to departments as to the accuracy of payments to contractors and reported improvements in efficiency.

Aquarius - the Importance of Partnering Controls

2.27 Water Service's Aquarius project to replace the Mourne Conduit bringing water supplies from Silent Valley to Belfast, was the first project in Northern Ireland to adopt many of the Egan principles and promote a partnering approach. It has been widely recognised as a good practice example through such bodies as the Movement for Innovation. However, towards the end of Phase 2 of the project it became increasingly apparent that because of a large number of 'compensation events' requiring additional works to be carried out, target prices had increased by some 60 per cent compared with original targets (see Figure 15). We note that no reappraisal of this project was submitted to DFP.

Figure 15: Aquarius - Increases in Target Prices

	Original Target Price £ million	Revised Target Price £ million	Increase £ million	
Phase 1	14.5	16.8	2.3	16%
Phase 2	12.7	26.7	14.0	110%
	27.2	43.5	16.3	60%

Source: NIAO based on Water Service data

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2.28 Water Service told us that it was concerned about the escalation of cost and in October 2002, had commissioned an independent consultant with expertise in this area, to review the management of the project and to make recommendations for improvement.

2.29 The consultant emphasised the need to demonstrate transparency, probity and accountability in the context of a partnering arrangement, to guard against the risk of cosy relationships being developed between contractor and client and highlighted a number of areas where procedures could be improved to achieve this:

- there was no breakdown of the Target Price for Phase 1, which was considered vital for assessing the validity of compensation events, demonstrating probity and ensuring value for money;
- methods adopted for assessing compensation events and agreeing adjustments to Target Costs were too relaxed and informal. For example, the contractor was not required to submit formal early warning notices; the cost of some events were agreed on the basis of actuals paid, providing no incentive to the contractor to improve efficiency; and documentation was insufficient to fully support the adjustments in Target Prices;
- the award of the contract for Phase 2 was to be based on adequate performance on Phase 1, but insufficient records were maintained to fully and readily demonstrate whether performance on Phase 1 met criteria for the award of Phase 2;
- procedures for open book accounting were satisfactory to verify that costs had been incurred by the contractor but not to give adequate assurance that the costs had been incurred wholly in respect of this project;
- the partnering process could have been better implemented and reinforced, for example through more regular partnering workshops and continued focus on “soft” issues such as team working and dispute resolution; and
- claims had been made for the project in terms of improved performance and savings achieved, but no information was readily available to demonstrate that the target prices represented value for money for Water Service. *The consultant stated that “the only headline indicator currently*

available to those not directly associated with the project is the 60 per cent increase in Target Prices (£16 million) and the delay in completion of over a year.”

2.30 We asked Water Service what it had done to assure itself of the probity and value for money of the Aquarius project in the light of this review and what action it had taken to implement the report’s recommendations for the improvement of control in future projects. Water Service told us that:

- an independent cost manager checked all invoices relating to work done, prior to payments being made;
- many elements of additional work were exposed to competition through sub-tendering by the contractor;
- Water Service had access to the contractor’s on-site accounting system which provided a full breakdown of costs for Phase I (both as tendered and as the project developed) and provided the same base information to build costs for Phase II;
- value engineering and value management were incorporated in the procurement process with the aim of increasing value for money and project performance was measured using key performance indicators introduced by the project team;
- because of public health concerns, Phase II of the project needed to start before Phase I was complete. An assessment of the cost and quality of the work which had been completed on Phase I concluded that there was adequate justification for the appointment of the same contractor for Phase II;
- value engineering and design development meetings provided early warnings of compensation events and were followed up in construction meetings and cost meetings which were held on a weekly, fortnightly or monthly basis;
- many of the elements of additional work that led to increased costs have been retrospectively subjected to and have satisfied review in accordance with standard Water Service procedures; and
- if, as is now required, optimism bias had been applied when carrying out the economic

appraisal, the estimate would have been expected to exceed £40 million, compared to the total revised target price of £43 million.

2.31 A number of improvements have been introduced in response to the consultants report, including:

- a limited design development period prior to financial approval. This is intended to minimise the opportunity for design change;
- the introduction of spot check audits across different work areas and throughout the supply chain to ensure probity and value for money; and
- the development of rigorous change mechanisms that pass through sign-off stages, identifying each stage as being sufficient and robust.

Water Service also told us that it intends to follow up the consultant's report with a post project appraisal which will further examine the probity and value for money of the Aquarius project and which will also deliver recommendations to be applied to future projects.

2.32 Water Service is to be commended for its pioneering use of partnering on the Aquarius project and for commissioning the consultant's review of its implementation. It is disappointing, however, that two years after the review, its recommendations do not seem to have been definitively addressed. We welcome the planned post-project appraisal and recommend that it is completed as quickly as possible so that the valuable lessons emerging from Aquarius can be promulgated as widely as possible for the benefit of future projects both within Water Service and the wider public sector.

Appendix 1

(see paragraph 3)

Key Reports on Construction Procurement

Constructing the Team - Sir Michael Latham - 1994

This government sponsored examination concluded that the construction industry in the United Kingdom was inherently inefficient and excessively costly.

The report identified many of the key failings of the traditional approach to procuring and managing contracts such as: the emphasis on lowest price rather than value for money; an adversarial culture throughout the supply chain; and the lack of a client focus.

It made detailed recommendations including: the need to bring together client, design consultants, contractors and subcontractors as an integrated team; a partnership approach to working with an emphasis on teamwork, openness and continuous improvement; and a move away from awarding tenders solely on the basis of lowest price. It emphasised the role of the client in bringing about the necessary changes within the industry and recommended that Government commit to becoming a best practice client.

The report estimated that if the recommended improvements were implemented there was potential to achieve efficiency savings of 30 per cent of construction costs over five years.

Construction Procurement by Government - Sir Peter Levene - 1995

Subsequent to the Latham report, the Government commissioned this Efficiency Unit Scrutiny to examine its performance as a construction client.

The report concluded that the performance of departments was poor and that this was contributing in a significant way to the poor performance of the industry. It criticised: poor communication with contractors; lack of understanding of risk and how to manage it; unrealistically optimistic budgets and timetables; and over simplistic views of competition with emphasis on long tender lists and initial price rather than quality and long term costs.

The report made detailed recommendations to improve performance by: encouraging team working and partnering; improved forms of contract; training for staff; and improvement of best practice guidance.

Rethinking Construction - Sir John Egan - 1998

Despite implementation of many of the recommendations of Latham and Levene, progress in improving performance on construction projects was perceived to be slow. A Construction Task Force was set up to advise the Deputy Prime Minister from the client's perspective on the opportunities to improve the efficiency and quality of delivery of construction, to reinforce the impetus for change and to make industry more responsive to customer needs. The Task Force produced the report Rethinking Construction which identified five "drivers" which needed to be in place to secure improvement; four key processes which had to be significantly enhanced; and seven quantified targets for the level of improvement to be achieved.

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Five Key Drivers	Four Key Processes	Seven Annual Targets
<ol style="list-style-type: none">1. Committed leadership2. Focus on the customer3. Integration of process and team around the project4. A quality driven agenda5. Commitment to people	<p>Partnering the supply chain Develop long term relationships with a supply chain based on continuous improvement.</p> <p>Components and parts Sustained programme of improvement for the production and delivery of components.</p> <p>Focus on end products Integration and focus on construction process on meeting the needs of the end user.</p> <p>Construction process Elimination of waste.</p>	<ol style="list-style-type: none">1. Reduce capital costs by 10%2. Reduce construction time by 10%3. Reduce defects by 20%4. Reduce accidents by 20%5. Increase predictability of cost and time by 10%6. Increase productivity by 10%7. Increase turnover and profit by 10%

Appendix 2

(see paragraph 1.13)

Client Improvement Action Plan

Objective	Action by GCCG	Action by Departments
1. Management		
1.1 To obtain endorsement to becoming best practice clients	To obtain GCCG endorsement to becoming best practice clients and this Action Plan	Departments to obtain senior management endorsement to this Action Plan Departments to prepare implementation plans Departments to obtain implementation plans from NDPBs To promote “The Government Client Improvement Study” and this Action Plan
1.2 To enhance key client roles	GCCG to endorse the enhanced Project Sponsor role in in Procurement Guidance No1 and the supplementary Guidance to No1	Departments to endorse the enhanced Project Sponsor role and empower that role
1.3 To enhance Project Sponsor training and skills	GCCG to endorse Project Sponsor training at Civil Service College and its competence award scheme	Departments to ensure that Project Sponsors are fully skilled
1.4 To improve client project management techniques	GCCG to identify and disseminate information on best practice project management	Departments to adopt the recommended project management approach(es)
1.5 To ensure construction procurement meets Government policy on sustainability	GCCG to endorse the objectives of GCCP’s Sustainability Action Plan GCCG to produce a Sustainability Action Plan for Northern Ireland	Departments to adopt the Action Plan
2. Measurement		
2.1 To identify and refine best practice using benchmarking	GCCG to endorse the Key Performance Indicators (KPIs) developed by GCCP GCCG to co-ordinate benchmarking and disseminate results	Departments to apply KPIs to measure performance Departments to provide demonstration projects for the Movement for Innovation
2.2 To identify and refine best practice using post implementation reviews	GCCG to endorse guidance on post project implementation reviews (Procurement Guidance No 8)	Departments to undertake post project implementation reviews and make results available to GCCG
2.3 To improve client performance using collaboration and joint working	GCCG to establish a website	Departments to provide case studies and other information for GCCG website to allow full sharing of information Departments to develop links with the Construction Best Practice Programme

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Objective	Action by GCCG	Action by Departments
2.4 To improve client performance using feedback from industry	GCCG to undertake periodic surveys and disseminate results	Departments to assist with surveys and implement improvements in areas identified during survey
2.5 To enrol assistance of strategic allies in implementing client improvements	GCCG, NIAO and departmental heads of Internal Audit to develop model for co-operation and agreement on establishing progress on implementation	Departments to advise Heads of Internal Audit and Finance Branches of Action Plan
3. Standardisation		
3.1 To develop standard practices and approaches/procedures	<p>GCCG to promote the use and development of whole life costings (Procurement Guidance No.7)</p> <p>GCCG to endorse the adoption of best practice approaches/procedures including:</p> <ul style="list-style-type: none"> (a) procurement decisions based on value for money (not lowest cost); (b) use of whole life costings; (c) prompt payment of bills in accordance with terms of contract and legislation; (d) use of risk and value management principles (degree of adoption dependent upon the size and complexity of the project; (e) use of output based/performance specifications wherever possible; (f) inclusion of project control gateways in every project; (g) use of robust change control mechanisms on all projects; and (h) debriefings based on value for money (not cost alone) 	Departments to implement best practice approaches/procedures where they are not already standard practice
3.2 To improve client performance through the use of technology	GCCG to identify the technology necessary to improve performance and liaise with GCCG and CIFNI	Departments to liaise on introducing technology
4. Integration		
4.1 To reduce project delays caused by waiting for decisions to be made or funds to be released		<p>Departments to review and reduce where necessary, project and financial approval chains (links with Objective 1.2)</p> <p>Departments to use the CSR 3-year programme and budget planning process to ensure smooth progress of projects</p> <p>Departments to review their risk management and change control processes to minimise disruptions, e.g. legislative or policy change (links with Objective 3.1)</p>

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Objective	Action by GCCG	Action by Departments
4.2 To increase integration of all parties in the supply chain	GCCG to endorse the team working/partnering principles and the use of innovative means to obtain best value, while meeting, amongst others, design, legal and competitive requirements (links with Objective 3.1)	Departments to adopt team working/partnering principles where these will obtain best value in whole life terms
4.3 To increase the use of incentives to achieve improved performance and value for money on projects	GCCG to liaise with GCCP in relation to developments in EU procurement policy	Departments to adopt innovative procurement strategies where these will obtain best value in whole life terms
4.3 To increase the use of incentives to achieve improved performance and value for money on projects	GCCG to liaise with GCCP in relation to the scope for and the type of incentives that could be used	

Appendix 3

(see paragraph 1.30)

Northern Ireland Sustainability Action Plan

Theme	Actions/Targets to be achieved by March 2006
Re-use Existing Built Assets	100% of projects to use 'whole life cost' assessment as part of the technical appraisal for decision to build new or refurbish/re-use existing assets. 100% of projects to have criteria for evaluation of sustainability included in procurement procedures.
Design for Minimum Waste	All projects to have plans to meet targets in line with the Waste Management Strategy for Northern Ireland. 100% of projects measure performance and report as part of the post project reviews against construction industry benchmarks where established.
Aim for Lean Construction	Targets already set through 'Achieving Excellence'.
Minimise Energy in Construction and Use	All new projects to set targets for 'in-use' energy consumption which meet at least current best practice for construction type. 100% of projects to measure and report as part of post project reviews, performance against established energy consumption benchmarks.
Do not Pollute	100% of projects to include in the specifications performance criteria for contractors in relation to pollution.
Preserve and Enhance Bio-diversity	Government bodies to take due account of the Biodiversity in Northern Ireland - recommendations to Government for a Biodiversity Strategy. In planning new construction to take all reasonable measures to protect habitat and species. Report actions taken in post project reviews.
Conserve Water Resources	Set targets for water consumption which meet at least current best practice for construction type. 100% of projects measure and report as part of post project reviews, performance against water consumption benchmarks where established.
Respect for People	100% of projects to have procedures for procurement which include criteria for the evaluation of competence, resources and commitment of designers and contractors in relation to health and safety, training and engagement with local communities. 100% of projects to monitor user satisfaction following occupation.
Set Targets	Review and up-date targets in implementation plans at six-month intervals and report as part of 'Achieving Excellence' updates. All new projects to carry out environmental assessment using BREEAM ⁷ or equivalent, all new build projects to achieve an 'excellent' rating. (Refurbishment projects to achieve at least 'very good' rating) Use existing and new Performance Indicators (for sustainability and respect for people as they are developed) to monitor progress and continuous improvement.

⁷ Building Research Establishment Environmental Assessment Method.

NIAO Reports 2004-05

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