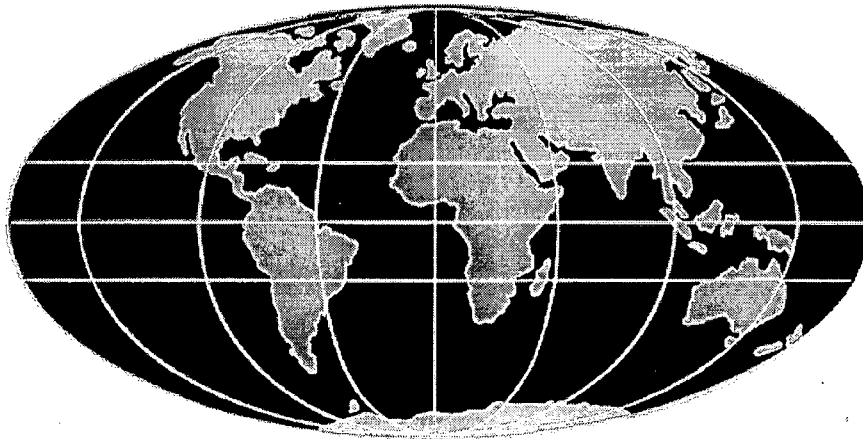


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A REVIEW OF CONTRACT MAINTENANCE FOR ROADS

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Key words: Contract, Contractor, Maintenance

1. INTRODUCTION

This paper is based on a study of contract maintenance currently being undertaken by the Transport Research Laboratory and the University of Birmingham, funded by the UK Department for International Development. The purpose of the study is to identify the different approaches adopted world-wide for increasing the use of the private sector for road maintenance. By providing a critical review it is hoped that the final report may be useful to those countries currently considering such initiatives, contributing to DFID's aims of reducing the cost of maintaining road infrastructure and of vehicle operations, hence freeing up resources, creating a competitive environment and employment opportunities for wider sections of the community. The methodology used was to review published information supplemented by case studies in the UK, Ghana and Colombia.

The purpose of this paper is to present the literature review and case studies and identify the key issues arising.

2. BACKGROUND

The importance of addressing road maintenance properly is now well understood and is illustrated by the consequence of neglect. For example the World Bank has estimated that of the 85 countries receiving their assistance for roads, the cost of reconstruction has been between three and four times the cost of earlier preventative maintenance. The effect on road users are also significant with vehicle operating costs increasing by similar or greater amounts due to such neglect (Harral and Faiz, 1988). If both the effectiveness and efficiency of road maintenance can be improved then significant economic benefits will result.

The Road Management Committee of PIARC (Montreal Congress, 1995) have shown that the majority of periodic maintenance work worldwide is undertaken by private contractors and the majority of routine maintenance is by direct labour organisations (DLOs, alternatively known as agency force). There is a general perception, but not necessarily proven, that DLOs are inefficient whereas private contractors are efficient and pressure is mounting to make more use of private contractors.

For this paper the process of road maintenance has been subdivided into client and contractor roles. The client role involves policy, budget, specification and procurement. The contractor role involves service delivery which could also include the management of the road or road network.

The terms outsourcing or privatisation refer to a transfer of work from DLO to a private contractor. The term contract maintenance could apply to the use of a private contractor or to a DLO operating on a more formal basis of procurement.

3. LITERATURE REVIEW AND CASE STUDIES

World Bank

Miquel and Condron reported in 1991 on maintenance by contract in 10 countries. Their main conclusion was to encourage more use of private contractors whilst recognising that:

- the change from DLO would require planning and the contractors would need support and training;
- private contractors did not have the necessary skills and would benefit from transferring skills, plant and equipment from the DLO; and
- road authorities need to specify maintenance tasks, prepare contract documents and supervise the contract.

Other World Bank reports (chiefly Lantran, 1990 – 1994 and Gyamfi and Ruan, 1996) focus on the ways and means of encouraging the move to contract maintenance by reporting on best practice.

PIARC

The Road Management Committee have confirmed that maintenance by private contractors can be successful but extended the 1991 World Bank study by focusing on the organisational implications and the benefit of subjecting DLOs to competition. Their report concluded that:

- major savings can be made by organisational change (e.g. client / contractor split) and better procurement policies, regardless of who undertakes the work;
- DLOs can respond to a competitive environment by increasing efficiency, provided that managers are given authority to manage and politicians restrict their role to policy development and do not interfere with operational matters;
- monopolies could emerge if all work was placed in the private sector;
- the length of contract and its packaging can affect the price tendered and the level of interest from contractors;
- the accounting rules for a DLO must be specified and the process of procurement open to scrutiny and audit; and
- there is a case for a mixed economy of efficient DLOs competing with private contractors.

UK experience

A number of highway authorities have transferred their DLOs into the private sector. The case studies of Berkshire, Somerset and Shropshire do not reveal any immediate cost savings directly attributable to the use of contractors. The savings made in Shropshire followed from organisational changes, the development of client / contractor roles and improved management of the DLO in competition with private contractors. In all of these cases the move to contract maintenance was justified by the particular circumstances in the UK of:

- government imposed restrictions on the type and location of work for which a DLO could bid;
- expected budget reductions both locally and nationally;
- changes in the management of national roads reduced the work available for DLOs; and

- a requirement for total competition in 1996, including all emergency work, which left DLOs vulnerable to predatory bids from contractors.

Contract maintenance was arranged by a process of competition which required the successful contractor to accept on transfer the majority of DLO workforce, plant and equipment. Five year contracts were let which combined routine, emergency and some periodic maintenance.

North American experience

Studies by Gaston (1994, 1996) in both the USA and Canada indicated that budget reductions and political pressure were the main drivers of change. British Columbia was one of the first major privatisations and this is reported below. Gaston found no clear evidence of cost savings and his conclusion was to support a mixed approach of organisational, procurement and DLO improvement.

The case of Essex County in Massachusetts (Kerasiotes 1993) however revealed a story of gross DLO inefficiency and resistance to change. The DLO had become overstaffed and inflexible through strong unionisation, weak management and lack of political will. The transfer of all routine maintenance to private contractors by the Massachusetts Highways Department produced significant savings and improved performance.

In spite of the previous example, most commentators in the USA tend to favour the creation of a competitive environment to secure efficiency improvements rather than total contract maintenance (Lighthizer 1994, Jenson 1997, Forbes 1997). The advantages are seen as:

- retaining control over the activity for which government is responsible;
- preventing a private sector monopoly;
- demonstrating that the public sector can and must be efficient and compete successfully; and
- maintaining quality.

The General Accounting Office reported (General Accounting Office, 1997) on privatisation with the following conclusions:

- privatisation requires a political champion;
- government needs to establish an organisation and analytical structure for effective implementation;
- legislative changes and/or reduced funding may be required to encourage privatisation;
- reliable cost data on government activities are required to support informed decisions and assess overall performance;
- strategies are required to manage workforce transition; and
- monitoring and oversight are required to protect government interest when its role in the delivery of services is reduced through privatisation.

British Columbia - Canada

In 1988 British Columbia began privatising all highway maintenance in the province and published a review in 1994. It was a politically inspired change and the following lessons are pertinent:

- evaluation of costs from 'before' (DLO) to 'after' (contractor) is impossible because no common output measures had been established;
- there was a 15% increase from phase 1 to phase 2 contracts, a higher rate of increase than expected with in-house DLO activities;
- an adversarial relationship existed between the client and private contractor which must be avoided in future (caused by poor specification and difference of opinion about prioritisation of tasks);
- more client management staff were needed than predicted to supervise the contracts;
- the specification had encouraged short term maintenance activities at the expense of preventative maintenance;
- contract maintenance was a high risk endeavour because there was no evidence of anything wrong with the Ministry's original maintenance programme;
- the Ministry lost the ability to estimate or monitor actual costs of specific maintenance jobs for future management purposes; and
- training and apprenticeships had almost been eliminated in the province.

Ghana

The original pressure for change came from an economic crisis and an over staffed civil service and was supported by donor organisations. A major problem for reform was to overcome the chronic shortfall in funding which left contractors unpaid and therefore reluctant to work. Initial reforms included the setting up of a Road Fund and a move towards payment by results for the DLO. Only limited success was achieved until the Road Fund was modified to increase income and to give it more independence. Current issues from the present arrangements include:

- a reduction in the civil service has been achieved but the use of many small contractors for routine maintenance requires a lot of supervision;
- initial contracts were let by inviting expressions of interest for undertaking work at pre-established rates - the only competition was in the selection of contractor;
- as contractors become established there is a move towards competitive tendering;
- as the funding becomes more reliable there is a trend towards bigger contracts and larger contractors;
- contractors needed training in estimating, understanding specifications and in output measures. They also needed support in the provision of equipment and materials;
- concern about corruption leads to a need for close supervision, technical and financial audits and a rigorous procedure for contract variations. However, this can then lead to an increase in bureaucracy, inflexibility and late payments.

Colombia

A strongly unionised DLO, which was seen as inefficient, inflexible and resistant to change was the catalyst for using contractors. In the 1980s the government promoted a general programme of change under the banner of 'Change with Equity'. The Ministry of Works (MOPT), responded with the proposal to encourage co-operatives of 10-15 workers to be formed, called microempresas (MA), to provide an alternative means of undertaking routine maintenance. In practice the use of MAs enabled the service to expand and recruitment to the DLO was frozen. The changes were supported by donor organisations and the specific objectives were to:

- improve delivery of service

- reduce costs
- increase local employment
- involve local communities

An evolutionary approach was adopted and care was taken to encourage and train the MAs. A further innovation was to appoint and train agents from the private sector who would in turn promote and train the MAs. The process took two years for an MA to become functional. The following key points are noted:

- the number of MAs grew from 28 in 1984 to a peak of 400 in 1995 when 84% of the network was covered. The size of an MA was limited by legislation to 15 members;
- contracts varied from 40-60 kms per MA, based on an annual productivity of approximately 5 kms per person;
- contracts were let for one year on a pre-determined cost base with the MOPT fixing salaries, overheads and providing some materials and equipment. MOPT engineers would direct the work with the MAs providing labour as required;
- contracts were eventually categorised on a work content basis, with a shorter length for difficult roads and a longer length for easy roads;
- the contracts have evolved towards being performance based and the payment method includes penalties for non compliance;
- supervision by MOPT became onerous and was also privatised with the appointment of Road Administrators (AMVs). Each AMV is responsible for about 150kms of road and between 3-5 MAs;
- the trend on part of the network is now towards larger performance based contracts, using bigger contractors. These include both routine and periodic works, and were initially for a two year term (soon to be extended) with more risk transfer to these contractors. Contracts are awarded based on price and quality;
- it is difficult to prove cost savings due to lack of data but there is more satisfaction with the present system; and
- in spite of the apparent success of MAs, some local state governments refused to continue their employment when the MOPT decentralised maintenance responsibilities. They were concerned at the threat to their own DLOs.

Chile

Whilst not a specific case study, the authors received a report outlining changes in Chile (Nabalon 1998). The pressure for change was the expansion of the road network and a need to improve maintenance. It was decided to increase capacity by extending the use of private contractors (who were used for periodic maintenance) instead of the DLO (who undertook routine maintenance). The initial approach was to let one year contracts for the maintenance of networks of 400-600kms, comprising routine and some periodic maintenance.

- the first contract was let in 1992 and increased to 55 contracts by 1998, covering 31% of the national road network;
- contracts were let on a unit price basis with monthly payments;
- no information is available about cost savings but road conditions have improved and there is satisfaction with the performance of contractors;
- contractors are now very interested in maintenance contracts;
- the DLO is now deployed on the secondary network which previously lacked maintenance; and

- multiple periodic maintenance contracts are now let to the network contractor, so reducing administrative costs.

The policy evolved in 1996 with the introduction of five year performance based contracts (similar to the Colombian experience above). Two contracts have been let each for 300-400kms of road with the aim of gaining experience for both contractors and the Road Directorate.

- the specification includes the quality of the road surface, the provision of information and assistance to road users and emergency response;
- monitoring is by the Road Directorate; and
- contractors investigate, choose treatments and programme works.

Australia and New Zealand

A series of workshops were held on the topic of Road Maintenance by Contract in 1998. The issues which emerged in New Zealand were:

- partnering and risk sharing;
- the benefits of performance based maintenance contracts;
- road reform, commercialisation and funding;
- savings achieved of 30% using consultants for management and 17% using contractors since 1991 when compulsory tendering was introduced;
- an evolutionary approach is desirable; and
- the development of DLOs into Local Authority Trading Enterprises (public sector contractors) had generally been successful but took 3-5 years.

The issues for Australia were:

- benchmarking and competitive tendering had improve the efficiency of DLOs;
- a partnering approach is required for performance based contracts;
- initially all tenders had been won by DLOs;
- clear rules were needed for the evaluation of contracts balancing price and quality;
- contractors had difficulty understanding the client's requirements particularly for performance based contracts; and
- consultants began as managers but have now set up joint arrangements with contractors to provide o total maintenance capability.

4. CONCLUSIONS

A number of key issues have emerged from this part of the study.

Organisational models

There are a number of models for considering the involvement of the private sector. The various roles can be described as:

- Owner (e.g. Ministry of works or transport)
- Administrator (e.g. road agency or local authority)
- Manager (e.g. road agency, local authority or consultant)

- Service provider (e.g. DLO or contractor)

The private sector can undertake one or several of the above roles.

Funding mechanisms

A stable funding mechanism is essential if privatisation or contract maintenance is to be considered. Unstable funding can also be a cause of inefficiency in a DLO and in the reluctance of private contractors to bid for work.

Competition is more important than privatisation

Evidence confirming the importance of competition as a spur to efficiency is growing. Public sector DLOs can compete with the best contractors given the chance to do so.

Client / contractor split

Organisational change involving client / contractor separation is required if competition is introduced. This change, together with an improved process of procurement, can contribute significantly to efficiencies regardless of who does the work.

Packaging of contracts

The size and scope of contracts will affect competition and the size of contractor. The initial aim may be to encourage small contractors but the trend is towards large contracts and large contractors in order to reduce the cost of supervision, benefit from economies of scale and facilitate performance based contracts. However, for these contracts, a sense of partnering and collaboration between the parties is required and there is sometimes a concern that such contracts might not be successful if corruption is a local problem.

Monopolies

There is a need for incentives if DLOs are to improve efficiency but there is a risk of private sector monopolies developing unless steps are taken to regulate the industry and the process of competition.

Management of change

The introduction of competition requires clear aims and objectives, careful planning and managing and is best introduced in a phased or evolutionary way. DLOs can transfer successfully to the private sector providing that the staff are fully consulted on the changes. Private contractors can play a greater role in road maintenance but may require support and training.

Cost savings

The introduction of competition, particularly subjecting DLOs to competitive tendering, has resulted in significant cost savings. But there is evidence that the savings can reduce in subsequent tendering rounds if there is not enough competition. For many countries the existence of an efficient DLO is an important part of the competition and should be encouraged.

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