ROAD2000

EXECUTIVE REPORT

Hammersmith & Fulham
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TAG
LONDON

ROAD 2000

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GLOSSARY OF TERMS

Condition A technical measure of the physical state of the highway.

Condition Index A number in the range from 0 to 100, which defines the relative state of the highway. The higher the number reflecting increasing deterioration.

Residual Life The estimated time, measured in years or millions of standard axles (msa), that remains before a road surface condition passes the point at which the road structure, including foundations, needs replacement.

Serviceability The fitness for purpose of the surface of a road e.g. riding quality, skidding resistance etc.

Treatment The care and maintenance repairs are carried out or proposed.

Structural Condition The physical condition of the road structure including foundations.

Carriageway The part of the highway, usually laid out in lanes, for vehicular use.

Wearing Course The running surface layer of the road, usually the top 40 - 60 millimetre layer.

Resurfacing The replacement of the wearing course layer.

Overlay The placing of an additional surfacing layer on top of the existing road.

Reconstruction The removal and replacement of the road construction layers either partially or totally.

Asset The value of the investment in the provision of the road facility.

Best Value The statutory duty of Best Value to provide economy, efficiency and effectiveness and the optimum use of resources to achieve continuous improvements.

Performance Indicator A measurement used to show or monitor relative changes in performance.

UKPMS The United Kingdom Pavement Management System is a package that will provide condition, rating and treatment data for road and footway networks.

Principal Road Network (PRN) The 1400 kilometres of London's A class roads.

EXECUTIVE SUMMARY

In October 1998 officers of the London Boroughs in partnership with private sector surveying and consultancy firms and with the support of the Government Office for London initiated a project to survey, model and report upon the condition of the 1400 kms of London principal roads.

This was the first time any authority in the United Kingdom had pursued such a comprehensive assessment covering the highway network of a whole major conurbation. The aim was to establish the principal road maintenance requirement at a borough level and to balance the best use of resources for asset management against the need to reduce traffic disruption in the capital.

Following the formation of the Greater London Authority 82% of this network will remain the responsibility of the boroughs but the finance for structural highway maintenance will pass from Government directly to the new Mayor of London.

This report has been prepared by officers of the London Borough of Hammersmith and Fulham acting as lead borough in consensus and consultation with the 32 London boroughs and the Corporation of London. The results have been made available and discussed individually and through a Steering Group with the other boroughs.

The detailed results provide the borough's with their principal road Best Value Performance indicator (BVPI 96) and will help establish common maintenance practice across London.

The Mayor is requested to approve and endorse the approach and recommendations in this report, which are targeted on maintaining a consensus approach for the allocation of sufficient funds for structural maintenance of the borough's principal roads.

RECOMMENDATIONS

The Mayor is recommended

1 To continue to use the Hammersmith and Fulham 'lead borough' approach to co-ordinate and project manage the Principal Road highway condition assessment to promote best practice.

2 To approve the development and use of the reports financial resource allocation model to direct resources to the areas of greatest need and to enable continuous improvements to the highway infrastructure across the London boroughs.

3 To adopt a "catching the curve" maintenance policy that optimises the use of resources and minimises traffic disruption.

4 To establish a borough principal road structural condition performance indicator benchmark of 4% and set targets to achieve overall network improvements over the next four years. Additionally to monitor other condition indicators provided by the survey analysis software over the same period seeking similar improvements.

5 To note that the highway condition assessment surveys of London's residual principal roads in future will, for the first time, provide information on whether the structural maintenance financial needs are increasing or reducing, and whether London's roads are receiving their share of national resources.

6 To adopt the resource allocation strategy to meet road user interests, asset management and serviceability requirements as outlined in the report.

7 To use the data from this on-going project for the long-term planning and co-ordination of road and street-works over a twenty year term.

BACKGROUND

1.1 The management of highway maintenance and the significant financial resources employed thereof is increasingly being recognised as a key factor in Best Value through optimising resources and reducing congestion and improving the quality of road transport through London. This paper reports on the ROAD 2000 project and sets out the key findings.

1.2 In July 2000, on the formation of the Greater London Authority (GLA), all of London's trunk roads and a small number of borough principal (Class A) roads will transfer from the Highways Agency and the boroughs respectively to the new GLA Road Network (GRN). The London wide principal road network will consist of 260 kms (18%) managed by the GLA and the remaining 1140 kms (82%) managed by the boroughs.

1.3 Maintenance expenditure for borough roads is through the Standard Spending Assessment (SSA) Transport block grant. A capital allocation for principal road structural maintenance was made via the borough's Transport Policy and Plan (TPP) annual submission. In 1999/2000 the TPP process was replaced by the requirement for the boroughs to develop and submit an Interim Transport Plan (ITP) to bid for funding.

1.4 On the formation of the GLA the ITP will be replaced by the requirement for the boroughs to submit a Local Implementation Plan (LIP). The GLA will be responsible for seeking the financial allocation from government for maintaining London's strategic road network. The case will have to be made to establish the relative importance of London's roads and there will be competition with other highway authorities nation-wide for structural maintenance funding both for the Greater London and Principal Road Networks. The allocation of capital funds to the boroughs for their PR networks will be based on their ITP/LIP bids.

1.5 Approximately £13 million for structural highway maintenance was made available to the boroughs in the 2000/2001 ITP and £11 million of SSA was transferred from the boroughs to the GLA as part of the road length transfer referred to above. A further sum was transferred from national Highways Agency budgets to the GLA.

1.6 The London Association of Technical Advisers (LoTAG) is an informal working group of professional and senior engineers and technical officers within the London boroughs. It has over many years provided technical advice to the Association of London Government and the Government Office for London (GOL). LOTAG has co-ordinated and formulated a range of strategic and sector transportation service delivery approaches on a London-wide basis.

The LoTAG working group

1.7 In May 1999 GOL accepted the offer made by LOTAG to co-ordinate a possible London-wide package approach for Highway Maintenance funding. The commission was to undertake the London-wide Principal Road Condition Assessment (ROAD 2000) on a package bid approach with resources provided from a two year total allocation of £253k through the 1999-2000 Transport Policy and Programmes.

1.8 This type of consensus approach through LOTAG has successfully operated for a number of technical services across London over the past decade. Some well know examples of this approach which have given benefits of consistent best practice and London-wide standards have been:

Bridge Strengthening	*lead borough* - City of Westminster
Bus Priority Network	*lead borough* - London Borough of Bromley
Cycle Network	*lead borough* - Royal Borough of Kingston upon Thames

Other current initiatives include Safe Routes to School and Walking, Transport Interchange partnerships in the south-west sector and other area transportation and sector working.

1.9 ROADS 2001, the second commission, was subsequently awarded to Hammersmith and Fulham on a lead borough basis for a future, more detailed machine based survey system, with an allocation of £354k. These resources will be used to survey the borough's residual principal roads only and will not include those roads transferring to the GLA that will become part of the GRN.

2.0 THE ROAD 2000 CONDITION ASSESSMENT

2.1 Hammersmith and Fulham set up a management team with sufficient resources assembled from internal and from private sector sources. The H&F management team also report through the LoTAG scheduled meetings and have contacts through sector working with all London boroughs. This has enabled the flow of information throughout the borough network both to highway maintenance practitioners and to borough Chief Officers.

2.2 The management team has held regular progress meetings with GOL attended by representatives from the Highways Agency, TfL, the DETR Roads Policy Unit and technical consultants. H&F produced regular briefing newsletters (Appendix 1) to inform the boroughs and other interested parties of the work that was being carried out.

2.3 The objective set out for this project with GOL was that the survey should provide technical assistance to the Mayor on future decision making for highway maintenance expenditure and priorities for London's principal roads.

2.4 Specific Objectives

- To provide consistent road condition data across London;
- To establish the structural requirements of the Principal Road Network;
- To assist judgements on future maintenance financial allocations for maintenance of these principal roads;
- To provide the borough's with their principal road structural condition indicator BVPI 96;
- To establish common practice across London with Best Value in mind.

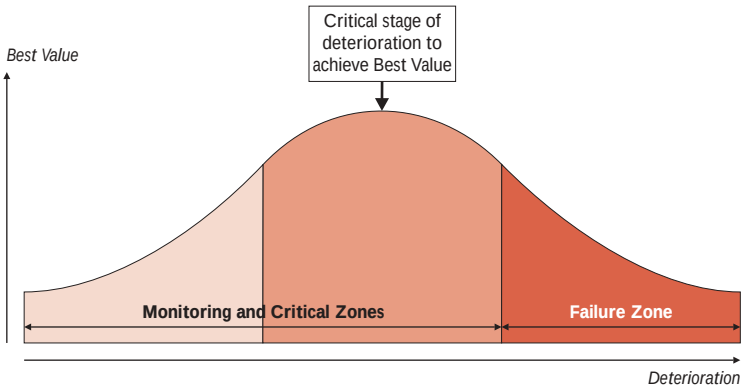
2.5 The agreed method for this condition assessment survey was to use Detailed Visual Inspections (DVI) with the data analysed through the new national standards set by the United Kingdom Pavement Management System (UKPMS). The UKPMS method provides, from a Best Value perspective, benchmark comparisons across the national highway network. The ROAD 2001 survey will supplement the initial results with machine surveys to validate and add detail to the condition assessment calculations providing, for example, residual life indicators. The survey results will be provided to he boroughs to assist and support their 2000/2001 ITP bids and their Audit Commission Best Value Performance Indicator BVPI 96.

2.6 The private sector has participated in partnership with the project management team to see this innovative strategic project through to conclusion. The partners were The Chris Britton Consultancy (Technical Advisors), JMP Consultants (Survey Project Managers), Barrett Consultants and DCL (Survey Consultants), SYMOLOGY (UKPMS Tranche 2 Accredited Software Supplier and Mapping Consultant).

3.0 TECHNICAL OBJECTIVES

3.1 The survey will assist the boroughs to identify the critical point at which maintenance is required. The "catching the curve" principle very much applies to the economic and timely intervention of road deterioration. This approach, set out diagrammatically below, of trying to determine the "shelf life" or "residual life" of a road is crucial. Intervention at the critical point with modest expenditure on preventive treatment can rejuvenate a road rather leaving it to deteriorate to a condition where full reconstruction is the only option.

Catching the Curve



3.2 The survey results also provide a backcloth upon which to develop a London-wide maintenance strategy to achieve the optimum use of resources with the least disruption to traffic and to demonstrate continuous improvements in line with Best Value requirements.

3.3 The optimum use of financial resources in highway maintenance can be made if individual roads can be identified for treatment at the critical stage of deterioration. It can then be rejuvenated by treatments such as resurfacing. It is intended that the first years surveys will help identify those sites, from a visual inspection, where the life expectancy of the road construction can be prolonged and the best use of resources targeted.

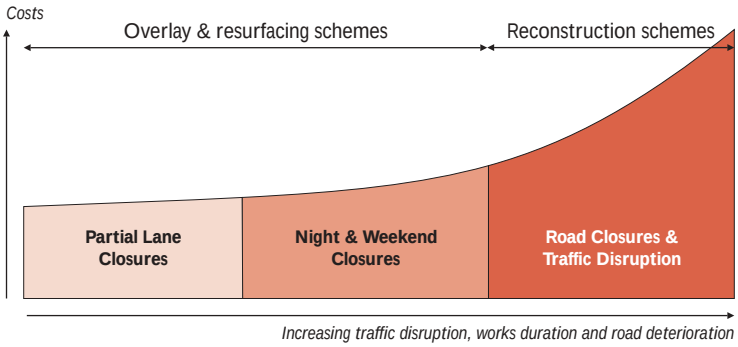
3.4 Resurfacing is generally a fraction of the price of reconstruction in terms of works costs. However this comparison is far greater if the traffic disruption caused by the complete road closures and the longer duration of works necessary for reconstruction work are taken into account.
In practice this means that twice as many resurfacing than reconstruction projects can be carried out with far less disruption to traffic, set out diagrammatically below. Additionally resurfacing is more sustainable as it optimises the potential for re-use of material resources.

3.5 Priority should therefore be given to schemes that avoid unnecessary

traffic disruption and where the best use of resources can be obtained. Reconstruction work should be identified and resources allocated where network co-ordination across London can be carried out to minimise unavoidable traffic disruption.

3.6 The condition maps and UKPMS output data provided from the survey will assist the London boroughs to determine the streets that should be considered for major structural repair works.

Disruption Curve



3.7 The UKPMS results can identify the estimated costs of all the outstanding structural maintenance treatments that can be identified from visual surveys. This is particularly useful in establishing the financial need per unit length of road. Previous work on the national road network has been carried out and this study will, for the first time, identify whether London is in greater financial need than the remainder of the country.

3.8 When the year on year total requirement is known it will be possible to tell whether sufficient resources have been provided to maintain or reduce the backlog of outstanding works. It will also be possible to tell whether sufficient money has been allocated to London as a whole; to the GLA for the GRN and the individual borough's PRN. If sufficient resources are not available the survey will provide the necessary evidence for future lobbying of Government in respect of the London share of the national allocations.

4.0 BEST VALUE

4.1 The Audit Commission and the DETR have recognised that best practice in highway maintenance requires two fundamental objectives to be achieved. Firstly that highway authorities meet their statutory obligations for safety and secondly that the value of the highway asset or highway infrastructure is maintained. A number of the new statutory national performance indicators reflect these objectives. In respect of asset management BVPI 96 - identifies the proportion of the road network at the point where strengthening should be considered or where the road has no residual life. The safety indicators monitor highway authority's performance in responding to dangerous defects or repairing street lights etc.

4.2 Making the best use of resources and maintaining the highway assets are fundamental and essential to best practice and condition assessment procedures. UKPMS is a software system that has been designed and developed to improve information for decisions about capital maintenance of highways. It is applicable to both principal and non-principal roads and its development has been conceived as a joint project between DETR, DOE (Northern Ireland) and the Local Authority Associations.

4.3 By regular surveys of the highway infrastructure UKPMS provides condition indicators (CI) that can be monitored with time and consequently trends in performance determined. The software generates the BVPI 96, the structural condition indicator, as well as a whole range of other important Condition Indicators. This study has confirmed the need to monitor additional indicators relating to overall condition requirements rather than just the structural condition indicators. Too little emphasis is placed on the serviceability, such as the quality of the

running surface of the road, which may have immediate safety or journey quality implications.

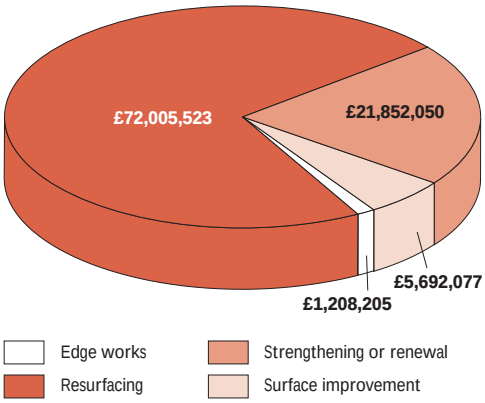
4.4 The UKPMS software can recommend maintenance treatments and their costs. This provides a most important identifier of financial need and, because the programme is "map-based" a picture of where maintenance should be considered. It will also be possible to show whether London's needs are greater or smaller than elsewhere on the national highway network as previous studies have been carried out in this field. It should be noted however that the single survey could not determine the annual maintenance requirement. There has to be a continuous survey programme to determine this so that maintenance trends and financial monitoring can be included in the assessment model.

4.5 In summary the UKPMS can provide condition performance indicators that can be benchmarked to show improvement trends with time and comparisons locally and with other regions. It will demonstrate the effectiveness of the resources provided in arresting deterioration and maintaining the capital asset. The software identifies outstanding structural treatments and costs to enable effective resource allocation, works investigation and programming. Repairs can be carried out effectively at the critical time to optimise the use of financial resources and minimise traffic disruption.

5.0 RESOURCE ALLOCATION STRATEGY

5.1 The standard of maintenance of principal roads in London varies between the thirty-three individual authorities. Additionally the quality of the ITP bid submission and supporting documentation may also be variable thus making the structural maintenance allocation subjective and difficult to assess. LoTAG highway maintenance steering group considered that the report should include an assessment model, in much the same way as the London Bridge Engineering Group operates for bridges, that would prioritise or target resources to meet the boroughs requirements to protect the highway asset and promote best practice across London. Such a strategy would seek to carry out maintenance that minimises traffic disruption.

Structural Treatment Costs - All Principal Roads



5.2 Resource allocations to the boroughs with the worst highway conditions need to be sufficient to enable and encourage consistent improvements. Boroughs with highways in better condition should receive sufficient resources to ensure that such improvements can be sustained. A model has therefore been produced that will allocate resources based on these principles.

5.3 The model starts from the cost of all outstanding structural treatments identified from the UKPMS DVI survey data (this year based on visual data only) and then applies a number of multipliers to these initial costs to reflect the following factors:

- the amount the authority spent above its SSA in 1999/2000;
- the number of years it would take to clear the present backlog of identified structural treatments using the 1999/2000 capital

allocations;
- the relative structural condition of the network;
- the relative overall condition of the network;
- the length of the network requiring structural treatment;
- the quality of the borough's ITP bid submission;
- the level of maintenance improvements achieved (not assessed in ROAD 2000).

The resultant figures for each borough are finally adjusted to reflect the resources available.

5.4 The banding for each of the above areas has come from the spread of result from the boroughs. The banding can be refined if the spread of results reduce.

5.5 Ultimately it will be for the boroughs to bid for the level of resources required and for the Mayor to make the financial allocation. The model will be a tool to help validate bids and encourage maintenance improvements co-ordinated in the interests of road users throughout the year.

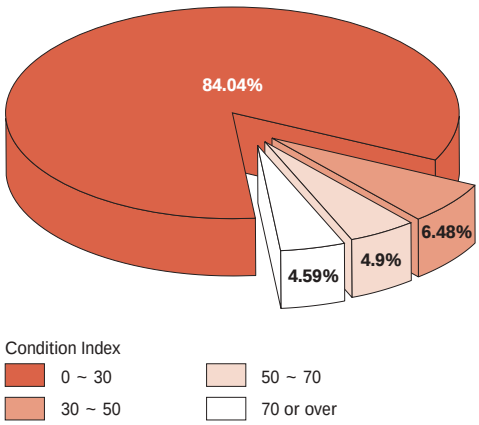
5.6 In addition bids should be favoured that specifically avoid traffic disruption. For example bids that
- prioritise resurfacing or over-lay schemes above re-construction schemes;
- can be completed during non-traffic sensitive times;
- do not require full road closures
- are co-ordinated across route and sector corridors.

5.7 Once the Mayor decides the overall level of settlement, individual allocations and where necessary reallocation to the boroughs should be managed via the Steering Group.

6.0 THE SURVEY RESULTS

6.1 Consensus working requires that all the boroughs share and are a party to information and the generation of results. In addition to the 10% audit checks built into the survey procedures, boroughs were therefore asked to audit their results when they were provided with their raw survey data and their Performance Indicator BVPI 96 results.

Structural Condition Index - All Principal Roads



6.2 Final survey results need to be repeatable and our survey has identified that this will not necessarily be the case unless stricter rules or quality standards are applied. The UKPMS survey specifications needs to be standardised. The survey companies themselves are keen to develop standard quality procedures from more tightly defined specifications for ensuring reasonable

survey consistency and accuracy within acceptable confidence limits. Once this is accomplished the performance of the UKPMS software and mapping systems can then be validated in the field.

6.3 The entire project team, as a partnership, has an interest to ensure that this survey provides accurate and valid results and that the GLA, the boroughs and indeed the country have complete confidence in our results.

6.4 This is the first time that a survey of this type and magnitude has been carried out and it has generated particular interest particularly as it comes at a time when the Highway Maintenance Code of Good Practice and the National Road Maintenance Condition Survey are both being reviewed.

6.5 Further work by the Project partnership team is taking place, in consultation with the boroughs to audit potential areas of concern to ensure confidence can be achieved. Detailed results giving borough by borough data will be published later in the year to enable them to be taken into consideration during the current ITP assessment.

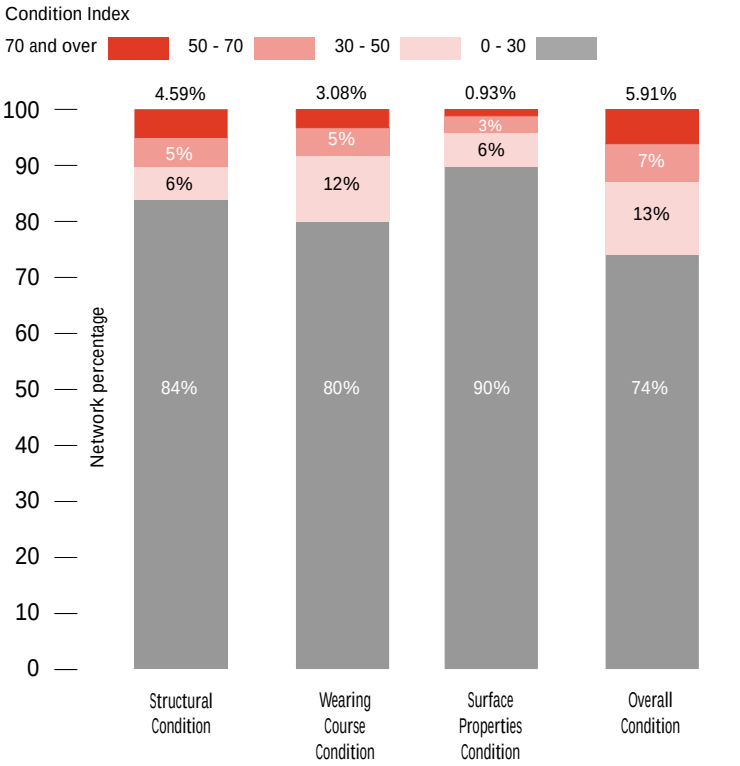
6.6 Some of the key results from the visual survey are:

1 Just under 5% of London's principal road network is at the point where structural maintenance should be considered.

2 The variation between borough principal roads is significant for example:

- Whilst the 4.59% average of London's principal road network at the point where structural maintenance should be considered the borough figures vary between 0% in some boroughs to over 25% in another.
- With current level of financial resource provided some boroughs would take over 7 years to clear the structural maintenance backlog.
- nearly a half of all boroughs have between 5km and 25km of structural maintenance identified.
- approximately a third of all London borough have between 20% and 60% of their principal road network requiring maintenance.
- expenditure above and below SSA on highway maintenance generally varies between +/- 50%.

London's Principal Road Performance Indicators



3 The total outstanding volume of structural treatments across London's PR is £101m (or £64.5k/km) and this is about twice the average for urban principal roads nationally using the same price base.

4 A comprehensive database giving structural condition and treatment needs has been established that can be used for bench marking and monitoring improvements locally and nationally.

5 Other condition indicators that can be generated from the UKPMS software need to be monitored and interpreted to obtain the full picture of the overall highway condition.