

HIGHWAY MAINTENANCE STRATEGY

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LINKS TO OTHER DOCUMENTS

See LTP Appendix for Detailed Five Year Programme

See LTP Appendix for Schemes Over £250,000

See LTP Appendix for Projected Revenue Budget

See Annual Progress Report for Completed 1999/2000 Programme

See Annual Progress Report for Impact Assessment of 1999/2000 Schemes

See Annual Progress Report for 2000/2001 Programme (capital and revenue)

See Annual Progress Report for Detailed Performance Monitoring

VISION

1. The condition of the network in West Yorkshire has generally been deteriorating over any years. Our vision is to reverse this trend, improving the riding quality and safety of the highway surface and increasing its structural strength to a level which compares with the top 25% of highway authorities, while co-ordinating schemes with other highway initiatives to achieve the maximum benefit from the investment of maintenance money.

OBJECTIVES

2. The West Yorkshire Districts have engaged their stakeholders in developing the objectives for the maintenance of the Highway Network. Each District's aim is to deliver the highway maintenance service the public expect. Democratic Renewal has been embraced as a means of engaging Members and the public in discovering the aspirations and needs of road users.

3. The objectives for carriageway maintenance have been agreed as:

- to improve safety;
- to improve the strength of the carriageway;

- to promote accessibility;
- to contribute to an efficient economy;
- to promote integration;
- to protect the environment.

STRATEGY SUMMARY

4. The strategy to achieve each of our objectives is:

Improving safety by:

- implementing proactive policies to identify defects and carry out resulting safety and routine maintenance repairs;
- implementing responsive policies to repair roads and pavements when stakeholders raise concerns, including repairing pavement trips and filling in potholes within 24 hours;
- reducing the percentage of the network failing SCRIM investigatory levels over a period of five years;
- collecting UKPMS condition data for all of the network over a period of five years and carry out maintenance to all sites with a condition index in excess of 70;
- the creation of a safer and more inviting environment for pedestrians and pedal and motor cyclists (and to provide specific facilities and features in schemes) by promoting the maintenance of pavements and the strip at the edge of the road.

Improving the strength of the carriageway by:

- monitoring the structural condition of the network and carry out maintenance to arrest deterioration and ensure, where applicable, that the network will continue to be able to carry heavy traffic flows;
- managing the network asset to ensure that strengthening work is carried out at the right time to minimise the whole life cost of maintaining the infrastructure;
- reducing the percentage of the network with negative residual life to 10% over a period of five years.

Improving accessibility:

- improving access for disabled people, for example by the inclusion of dropped kerbs at main crossing points and raised kerbs at bus stops whenever maintenance work is carried out.

Contributing to an efficient economy by:

- creating an attractive, well maintained highway environment through the promotion of good maintenance policy, to contribute to urban renewal and to help attract new businesses to industrial and commercial areas which are increasingly showing signs of dereliction;
- implementing maintenance designs which are appropriate to the style of the area and which will help to promote tourism by the enhancement of the street scene.

Improving integration by:

- co-ordination with road safety schemes, bridge and wall maintenance and public transport initiatives;
- giving significant bus routes priority in the allocation of funds for structural maintenance and integrating maintenance with schemes for the provision of bus lanes, gateways and guideways.

Protecting the environment by:

- using appropriate materials to complement the appearance of West Yorkshire Conservation Areas when works are carried out;
- using maintenance treatments which reduce the long-term reliance on quarrying new materials, disposing of existing materials to landfill sites and minimise the use of road transport of construction materials.

5. To ensure the effectiveness of all aspects of the full LTP, the objectives and strategy set out above apply not only to the Principal Road Network where maintenance is funded through the settlement, but also to the District roads maintained from revenue funding.

PROBLEMS AND OPPORTUNITIES

Problems

6. The network is in such a condition that making sure that we achieve best value from the funding available is a major challenge. Short-term solutions may have to be adopted where funding is not available for long term resolution of problems.

7. Bus and HGV traffic flow on the network continues to increase, albeit slowly, causing increasing damage. In addition, the recent increase in HGV axle weights to 40 tonnes over five axles with a maximum axle load of 11.5 tonnes creates a disproportionate increase in the stress on the road structure.

8. Utility company street works openings and reinstatements continue to be a major cause of structural damage to the highway network. The large number of telecommunication companies being granted Government licences to install new networks causes particular problems. There are still high rates of reinstatement failures of utility trenches. The effect of so many damaging openings (and failures) is to create the appearance of a poorly maintained network, to dramatically increase the rate of deterioration and reduce the life of the road.

9. Potholes in the road and trips in the footway can cause damage, injury, pain and suffering. They can also be costly both in terms of the handling and settlement of litigation claims and the cost to the community of medical care and lost time to employers.

10. Increasingly the street scene is being developed with high specification materials and casualty/speed reduction features. Some of these features are vulnerable to impact and have a relatively short life. A high standard of maintenance is required to ensure that special features continue to perform their intended purpose. For example channelling heavy wheel loads concentrates the damage.

Opportunities

11. The maintenance strategy has been specifically developed to support the full Plan:

- to including specific measures as an integral part of maintenance schemes;
- to maintain features introduced through improvement schemes;
- to give consideration during the design of schemes to making the route more attractive to public transport, cyclists and pedestrians. This includes measures such as bus and cycle lanes, specific crossing points, advanced stop lines at traffic signals and cycle friendly gully grates;
- to providing additional space where possible to accommodate buses, pedestrians and cyclists;
- to give specific consideration to routes used for journeys to schools.

12. Examples of how such co-ordination has been achieved in practice are included in the progress report.

13. Opportunity is taken in the design phase of maintenance schemes to liaise with all interested parties and co-ordinate work with other proposals, including utility company works.

14. An important factor when carrying out works is to assess all the existing street furniture to ensure that it is necessary. If not it is removed to increase available pavement width for those with mobility impairments, clear obstructions for those with impaired vision and not least to reduce clutter.

15. The safer an individual feels in an environment, the more likely will be choice of a sustainable mode of transport. A well-lit environment will encourage people to walk, cycle or use public transport. For example access to and links between public transport interchanges need well maintained, quality lighting. The opportunity to provide suitable lighting is an integral part of maintenance design.

LONG TERM STRATEGY

Consultation

16. A range of mechanisms has been adopted for the stakeholders (public, specialist groups such as cyclists, Freight Transport Association, the disabled and partners such as the Police, Transport Operators etc) to contribute to developing strategies and priorities.

17. The whole Highway Maintenance activity is undertaken within a Best Value framework, including fundamental performance reviews.

18. The speak out panel in Bradford is a group of about 2500 individuals (0.5% of the population) who are selected to represent the demographic mix of the district from a much larger pool of people who are prepared to participate. They answer questionnaires at home on a range of issues. A survey done in February 1997 ranked street lighting, road and footpath maintenance and refuse collection as the most important services, above schools, nursery education and social services. Rapid response to emergency repairs, regular monitoring and maintenance and ensuring

quality of workmanship were seen as key issues. Similar results were experienced during consultation on the Leeds Vision.

19. In Calderdale and Kirklees the widest possible range of stakeholders were engaged, using panels and questionnaires to determine concerns, rank their priority and develop Performance Indicators and targets for highway maintenance activities.

20. In addition to identifying the most important activities a theme was recognised running through all the activities that stakeholders want to be able to report problems easily, have their concerns investigated and receive an explanation of what is proposed and when any necessary work will be carried out.

21. To enable the public to contact the Highway Maintenance Units initiatives such as 'one stop' shops and call centres are provided across the County. Also, an intranet service is being developed for the public to report problems from any Council Office in one District.

22. However the challenge facing all the Districts is to balance the need to keep the network safe and respond to the public's reasonable expectation that minor defects will be made safe quickly against the need to preserve the strength of the network by carrying out reconstruction schemes. The strategy across the County has been developed to achieving this fine balance within the available budget.

Network Definition

23. The network lengths shown in Table 1 will be maintained from the Local Transport Plan settlement.

District	Principal Road Length (including Primary Routes)			Primary Route Length	Non-core Trunk Road
	Urban	Rural	Total	Total	Total
Bradford	115km	21km	136km	40km	37km
Calderdale	66km	48km	114km	56km	24km
Kirklees	157km	81km	238km	49km	3km
Leeds	145km	88km	233km	127km	53km
Wakefield	77km	70km	147km	53km	nil
Total	560km	308km	868km	325km	117km

Table 1: Principal Road Lengths

24. These roads form an essential part of the regional and national road network, linking major cities, towns and industrial and commercial centres to the national motorway network and other centres outside the region.

25. In addition, a significant part of the trunk road network is defined as non-core and is being transferred to local authority control. The management of the maintenance of these roads will be covered by the strategies and systems established for the maintenance of the Principal Road Network. In view of the proposed interim funding arrangements, no account is taken of the non-core trunk road in the current bid. However, this will be a short term measure and when the details of the condition of the

roads are released by the current maintenance agents the long term investment plans will be reviewed.

26. Although funds are provided from each District's revenue budget and traffic flows are generally lower, similar principles are used in determining maintenance policies for non-principal roads. However the local pressures and influences are greater and as they were constructed to lower standards they are more susceptible to damage by heavy vehicles such as buses.

Condition Assessment

27. Consistent, reliable, comparable condition data is an essential foundation for the joint strategy.

28. The need for a systematic approach to highway maintenance is promoted by the Highway Maintenance Code of Good Practice. This requires that the network, quality standards and maintenance policies are clearly defined and consistently applied. Although the Code needs considerable updating in line with developments in highway maintenance practice, it has been adopted, where still applicable.

29. Funding levels are insufficient to implement the standards defined in the Code and systematic prioritisation is therefore an essential element to work programming.

National Road Maintenance Condition Surveys (NRMCS)

30. With the transition from Compulsory Competitive Tendering to Best Value, the need to be able to measure and compare performance, both between authorities and generally against a national base line is increasingly important. We support the National Road Maintenance Condition Survey (NRMCS), both with the submission of visual condition data and more recently with deflectograph and scrim data.

UK Pavement Management System (UKPMS)

31. Preparations are well advanced for implementation of Tranche 2 UKPMS across West Yorkshire. This is a welcomed major development and very close joint working between authorities is now part of the regular routine, for example in ensuring a consistent approach to, survey strategy and interpretation of the rules and parameters.

32. Four of the five Districts are MARCH PMS users and although the other has only recently chosen another PMS provider all are committed to adopting the policies and standards of UKPMS, sharing expertise and knowledge on a day-to-day basis.

33. Each Authority has, historically, collected condition data and all are now collecting visual condition data for Course Visual Inspections (CVI) and Detailed Visual Inspections (DVI) in accordance with the UKPMS national rules and parameters.

34. The details of the surveys are:

- Visual Condition CVI and DVI to UKPMS
- Deflectograph strength Assessment 3-5 year cycle - PANDEF
- Skid resistance 1-3 year cycle - SKID

35. Preparations are well advanced for the full implementation of UKPMS. WAYLEN files are being prepared for computer data analysis and network inventory for the Principal Road Network has been adapted to conform to UKPMS requirements.

36. In addition all the Principal Road networks are subject to regular safety inspections to identify defects which may lead to trips, damage to vehicles and result in third party claims.

Network Condition

37. Visual condition assessments confirm that maintenance is required on a significant proportion of the network. This is based on analysis against Highway Maintenance Code of Good Practice intervention levels built onto MARCH assessment systems, and, latterly, UKPMS rules and parameters.

38. The deflectograph surveys carried out by nearly all the Highway Authorities in England show that an average 15% have no residual life. However in West Yorkshire even the best is 27% and the worst is 51% Full results are given in the Annual Progress Report.

39. Where SCRIM results are available these have been considered in two categories. The risk of motorists losing control on the layout of some 70% of the network is low and the recommended investigatory level is 0.40 or less. Less than 15% of this part of the network has an unsatisfactory skid resistance.

40. However, on bends, the approach to junctions and other similar locations, where a greater skid resistance is required, more than 60% locations fail the investigatory level. Full analysis is given in the Annual Progress Report.

41. Network condition is an ever varying situation. As certain roads are brought to standard, others are deteriorating below an acceptable level and it is recognised that there will never be a zero maintenance requirement. However assessment results indicate that the West Yorkshire network is well below the national average condition.

42. In setting objectives to improve the network condition it is agreed that the following condition standards should be achievable given an appropriate level of funding.

43. First, in addressing the need for a safe highway surface, and recognising that the public are concerned about visual defects rather than network strength, carriageway defects over 40mm deep and footway defects over 20mm should be dealt with within 24 hours of being identified and areas should be treated before they reach a UKPMS Coarse Visual Inspection score of 70. All carriageway surfaces should have a skid resistance at or above investigatory level.

44. In balancing the above with the need to improve the structural strength of the carriageway network it is agreed that the backlog of strengthening work identified by deflectograph surveys, should be reduced to less than 10% of the network length.

Maintenance Priorities and Scheme Selection

45. The experience gained in the maintenance of the Principal Road Network, together with a study of the impact of previous years expenditure, has generated a common view that future works need to balance expenditure between surface treatment, resurfacing and reconstruction to produce a long term improvement in the strength of the network while still addressing preventative maintenance and routine safety work.

46. At present a "worst first" Tranche 2 system is adequate to prioritise the extensive lengths of the network with no residual life.

47. When Tranche 3 UKPMS systems become available, programmes will be developed on a 'whole life' costing basis rather than the current "worst first" approach, provided that funding levels are sufficient to make such a strategy feasible.

48. In so far as it is possible without a Tranche 3 UKPMS, maintenance interventions are timed to minimise cost over time. Hence the implications of traffic flow and the potential for deterioration to accelerate are considered and areas with minimal residual life but otherwise showing no signs of distress are given a lower priority in an economic best value approach.

49. The proposals for each site have been primarily considered in terms of their priority, based on condition assessment. Sections have then been linked together, wherever appropriate, to create a holistic approach to each route. Treatments within each scheme will vary and the identified treatment will not necessarily apply to the whole length. The proposals have been co-ordinated with other works identified in the Plan to fully tackle the problems and deliver the objectives of the strategy. Schemes are linked to other investment programmes (e.g. structures, transport initiatives) by ensuring appropriate scheme design.

Scheme Design

50. Effective planning and design is essential to procure the construction of maintenance schemes with the least inconvenience to all road users.

51. Whenever possible the opportunity is taken to co-ordinate works with Utility Company works to reduce the disruption to pedestrians, ensuring that they are completed before the final surfacing.

52. Schemes are subject to impact assessment during the design phase including thorough consultation with stakeholders such as on Disability Groups, Residents Groups, the Police and other Emergency Services and Metro. Before the work starts letters are delivered to all affected properties telling them about the proposals and asking if they have any requirements, proposals to change the use of their properties or need new or changed utility services. The latter was especially important to avoid the road or pavement being dug up after the works are complete.

53. In addition to co-operating works within West Yorkshire, the programme is co-ordinated with the Authorities bordering West Yorkshire.

54. Scheme design and safety audits ensure the incorporation of appropriate features to contribute to integrated transport, environment and local economy objectives, particularly in respect of the following vulnerable road user groups:

- the disabled;
- pedestrians;
- cyclists;
- public transport users.

55. Particular consideration is given to environmental matters:

- re-using materials;
- recycled materials;

- thin surfacings;
- using natural stone materials in Conservation Areas.

Maintenance Requirements

56. The 2000/2001 settlement has given a positive start to improving the condition of and preserving the investment in the Principal Road Network infrastructure, although the proven maintenance requirement is still considerable. However a bid level has been selected in recognition of the overall funding limitations and the need to adopt a realistic approach with work prioritised over time. The concern remains, though, that if adequate funding does not continue to be made available the network condition will deteriorate.

57. Estimating the financial commitment to tackle the backlog of maintenance and bring the network to an acceptable condition is difficult when the rate of continuing deterioration cannot easily be measured. Estimates have therefore been made assuming minimal deterioration and ignoring the damaging effect of utility openings. This obviously underestimates the need.

58. First, to reduce the proportion of the network with zero residual life to 9% (the upper quartile of National data) over a five-year period, will require strengthening of more than of 35% of the network or 60 km per annum. The estimated annual cost based on £300/ linear metre is in the region of £18m per annum or a total of £90m.

59. Such a programme would need to be implemented while giving continued support to the routine maintenance of the whole network, including maintenance for the safety of road users. This will include considerable maintenance of lengths with one to four years' residual life or with a CVI condition index in excess of 70.

60. Given the results from skid resistance condition assessments and a budget which reflects the needs of the network, an expanded programme to restore skid resistance would be implemented.

61. Currently an estimated 114km of carriageway require surface dressing to restore the skid resistance to at least 0.45. The total cost is in the region of £2.1m.

62. Of greater concern is the length of network which fails to meet the higher investigatory levels (0.55) required for the approach to signals, crossings and the like. An estimated 80 lane km in this category currently fail investigatory levels. Some of these will be addressed through resurfacing and strengthening programmes. Nonetheless a programme of various treatments to restore a high skid resistance to just half of these sites over a period of five years would cost an estimated £1.2m per annum or a total of £6m.

63. Given a settlement for 2000/01 which resulted in the allocation of some £10.5m to highway maintenance, a bid in the region of £14m to £16m per annum is judged to be realistic. While this will not permit the implementation of all the work in the five-year programmes described above, the prioritisation process will enable resources to be used to maximum effect. The greater the shortfall in budget allocation, the further the programme to reduce the maintenance backlog will extend beyond five years.

64. The maintenance work proposed in the five-year programme would make a significant contribution to increasing the strength of the treated sections to bring the network condition up to the current national average. If the settlement is lower than the bid, then it will not be possible to achieve this improvement. Resources would then be

directed to reactive maintenance and resurfacing to address safety issues. The amount of reconstruction would be reduced and would consequently limit the possible improvement in the BV PI measurement of residual life.

65. However, if allocated in excess of the bid, the programme would be accelerated to remove the backlog of maintenance in a shorter period of time. This would enable future maintenance to keep pace with deterioration using the best value whole life costing techniques available with tranche 3 UKPMS.

IMPLEMENTATION PROGRAMME

66. The programme for 2000/01 is included in the Annual Progress Report and shows how the settlement is being used to implement the proposals included in the provisional LTP to make most effective use of the resources.

67. The full five-year programme for 2001/06 is included in the Appendix to the LTP. Difficulties nationally in the implementation of UKPMS using live data mean that a totally objective ranking of schemes on condition index has not yet been possible. Furthermore, each of the five West Yorkshire districts are at slightly different stages in the development of PMS and condition assessment databases. None the less, each district has sufficient information to determine priorities within its own area. The single integrated list is a best attempt at merging the five different lists. It is based on the available information which is included against each scheme and the list will be refined in the Annual Progress Report as more information becomes available.

68. Each scheme has been given a cost estimate. Cut-off lines indicate the likely annual progress in programme implementation based on a bid level which Government Office has advised to be realistic.

69. The programme also includes detail of the length of each scheme, the nature of the work, available condition data and linkages with other initiatives. Annual programmes of surface dressing and routine maintenance / minor surfacing ensure that the proposals continue to address maintenance safety issues.

70. The Appendix to the LTP includes additional information on all schemes over £250,000 which it is hoped to start in 2001/02

71. The general strategy is to allocate funds between highway structures and road maintenance in proportion to the bids as these are deemed to represent relative need between the two areas. However, major schemes priorities in either area may require a concentration of funding in a particular year for the affected District. Where this occurs it will be identified in the monitoring report.

72. Where a major scheme impacts on the balance of priorities between bridges and highways, there will be a resulting impact on HM and bridge priorities between Districts. The intention is, therefore, that major bridge and highway schemes should, wherever possible, be managed by adjusting future programmes within the affected District to correct any distortion that such schemes may create.

73. The procurement of the works at each site will be within the Best Value framework developed in each District. Work has been done on challenging the service provision from feasibility study to construction supervision. The most economically advantageous means of procuring the works is used.

74. Consultation and benchmarking within the county and externally is ongoing.

Extensive publicity is given for schemes and Performance Indicators measure the completion of the works.

Monitoring Progress against Plan Objectives

75. Monitoring information is given in the Annual Progress Report and covers performance indicators and targets in some detail.

76. Progress in applying the strategy is identified by reference to two specific schemes which have been completed in accordance with the principle of the provisional LTP and Best Value, giving full regard to local requirements.

77. It is anticipated that, to comply with Best Value requirements, future monitoring with need to fit into a national framework to enable comparisons between authorities. With UKPMS still at a very early stage of implementation and both NRMCS and the Highway Maintenance Code of Good Practice facing changes there is still much work to do before a full set of meaningful performance indicators is established nationally.

78. Meanwhile the West Yorkshire LTP Highway Maintenance Group is intent upon maintaining awareness of best practice in developing performance indicators. Initiatives include the recent organisation of a Best Value Workshop, chaired by Mike Kendrick. The outcome is a coherent effort to assemble data from the five districts which will:

- measure the impact of work carried out on the structural strength, visual condition and skid resistance of the network;
- measure performance against specific aspects of service provision, including repair of dangerous defects and maintenance of street lights;
- help assess whether the resources invested in both the principal and district road networks are helping to deliver the LTP objectives.

HIGHWAY MAINTENANCE REVENUE PROGRAMME

79. Local Transport Plan settlement moneys cover only the structural maintenance of carriageways on Principal Roads. The effect of ring fencing this finance, and the consequential reduction in Standard Spending Assessment, has increased the pressure on funding of maintenance on the district roads. Without some early recognition of the effects of this funding crisis the long-term financial consequences for the local economy and budgets will be extremely serious.

80. The objectives and strategy for delivery of road maintenance on principal and district roads is covered earlier. The challenges and opportunities apply equally to district roads. However there are additional issues that impact primarily on work carried out from revenue moneys and these are addressed in this section. Transport starts at home. There needs to be a recognition that if buses are to become a transport mode of choice people will want to board them close to home. If they have to get into their cars for the first part of the journey they won't use buses at all. However, the weight of buses on local roads, not designed for the purpose, causes a disproportionate degree of damage.

Meeting Plan Objectives

81. Highway maintenance has a significant contribution to make towards the implementation and subsequent maintenance of features introduced to the highway in

support of the plan strategies. However the cost of maintaining this greater part of the network is funded from revenue including:

- the proper maintenance of pavements and road edges as an essential element of the strategy to encourage more walking and cycling;
- addressing the structural damage caused by local bus services on local roads, particularly on housing estates;
- maintaining the environment with the increasing pressure to include high specification materials and casualty/speed reduction features;
- regular and expensive renewal of carriageway markings and coloured and anti-skid surfacings;
- the regular replacement and repair of features such as refuges, kerb build outs and bollards which are often located in particularly vulnerable locations;
- addressing repairs on streets with road humps and cushions - features which increase the requirement for carriageway resurfacing by concentrating damage in very concentrated narrow wheel tracks and then require more expensive repairs due to the need to hand lay around them, often with extensive traffic control arrangements or even road closures.

82. The role of these features in casualty reduction and encouraging the use of other modes of transport and in improving the environment is vital. However, the resulting pressure on revenue maintenance does need to be recognised in the SSA calculation.

General Analysis

Structural Maintenance of Pavements, Roads and Drainage

83. The increase in the highway network length resulting from new developments and highway improvement schemes has most impact on the District's road length. While network length is reflected in SSA calculations, this is of little consequence when a control total is applied and the increase is not reflected in budget growth.

84. Furthermore, the SSA calculation fails to properly account for the increase in maintenance intensive features and high cost materials. This results in an overall reduction in the area of maintenance work which can be completed for the same money and reduces the effectiveness of other initiatives.

85. Revenue budgets also need to address the increase in level of damage the District road network suffers both from a lack of strength and a lack of carriageway width, particularly on the older parts of the network and where there is no off-street provision for parking. This is resulting in considerable damage as vehicles over-ride the pavements, breaking flags and damaging verges.

86. The National Road Maintenance Condition Survey has indicated that the gap between maintenance requirements and available funding on the non-principal road network has again widened with many roads in critical need of major maintenance work.

87. The ageing highway drainage systems have been neglected for many years because of insufficient funding and it is anticipated that a substantial increase in reactive maintenance will be required during the next few years.

Fences, Walls, Bridges, Culverts and Subways

88. Walls less than 1.5m high supporting the road or adjacent land are 'small walls' and together with culverts less than 1m across are funded from Revenue. Due to the lack of funding over the years they are now deteriorating to such an extent that work can only be carried out when they collapse and even then it often has to be delayed for long periods, creating an unkempt appearance.

89. The programme of strengthening and structural maintenance of highway structures is accompanied by a substantial amount of other work; mainly routine maintenance to fences, walls, bridges, culverts and subways. This work is covered in more detail in the bridges and structures text.

Horticultural Maintenance

90. Priorities for grass cutting may have to be changed if further reductions are made to budgets. In some areas verge maintenance work has already been reduced to only cutting 1 metre wide at the edge of the road and visibility splays at junctions.

91. The highway tree stock requires a continuous programme of felling and replenishment to maintain a safe healthy and attractive stock.

Winter Maintenance

92. Winter Maintenance operations are expensive and budget limitations only permit a basic service for an average winter. The network is prioritised for treatment. Main Bus routes and main roads receive precautionary salting, as well as first action during snow, to help maximise safety and keep the network functioning to ensure the continuation of economic activity during periods of inclement weather.

93. The authorities have the responsibility for the maintenance of highway ranging from altitudes of near sea level to 526m (Holme Moss) above sea level. A substantial length of highway is above 183m (600ft) with a significant number of residential areas above the 300m (1,000ft) contour. A major effect is the frequency with which precautionary salting has to be carried out. Often both morning and evening grits are required to counter frost and ice in addition to gritting and ploughing to remove snow.

94. Salt kept dry in a salt barn is not only much more effective at treating ice on roads but is also more efficient. It is anticipated that the savings from using dry salt would achieve a pay back period for the cost of a barn within 5 years. Some Districts are considering the provision of salt barns, particularly where there are added environmental problems resulting from the location of sites and control of run off.

Traffic Signal Maintenance (Urban Traffic Control)

95. Costs include the maintenance of traffic signals and pelican installations, provision of computer and data transmission facilities and telephone line rentals.

96. The objective of the methods and technology used is to minimise the downtime of all UTC equipment. In particular, the application of remote monitoring techniques at installations ensures that faults are detected early and the required course of action is identified to effect a repair.

Carriageway Markings, Traffic Signs and Features

97. The increasing use of signs and markings as control features is placing an increasing pressure on budgets. Carriageway markings are being eroded more rapidly

as a result of increased traffic flows and heavier axle weights of HGVs.

98. The normal replacement of signs and barriers reaching the end of their effective life is exacerbated by the need to meet statutory obligations on damaged or vandalised bollards and signs.

Footpaths and Bridleways

99. West Yorkshire has a substantial length of footpaths, bridleways and byways and with increased leisure time for residents and increased numbers of tourists to the area, greater recreational use is being made of these highways.

100. Strong representations have been made by horse riders and walkers for substantial improvements to be made to bridleways and footpaths. Weather conditions combined with the local topography and unsuitable usage such as “off-roading” and mountain biking on footpaths lead to a significant annual maintenance requirement.

101. Targets set by the Countryside Commission’s Milestones Approach have been adopted and commitment is demonstrated with additional staff and resources. However, large numbers of footpaths and bridleways are currently impassable and substantial additional funds are required if the objectives are to be met.

Highways Act and NRSWA Functions

102. Ensuring that roads and pavements are not unduly obstructed by skips, scaffolding, overgrown vegetation and that undertakers carry out street works in accordance with legislation, is costly in staff time. This is becoming increasingly more onerous with the high number of developers and telecommunications companies moving into the region.

103. There is an ever increasing expectation by the public that the Highway Authority will take a proactive role in managing the work of the Utilities. This is compounded by the Utilities reducing their costs by outsourcing more and more of their work and some apparent unwillingness to programme mains renewals in advance of maintenance works.

Reducing Third Party Claims

104. The public is increasingly aware of their recourse to litigation whenever an accident occurs on highway land. The Authorities want the introduction of the Woolf protocol in the handling of claims to become a positive tool which will assist them in dealing quickly with valid claims, while using good information from their management systems, to repudiate those claims where the authority has acted in a fully responsible manner.

STREET LIGHTING

105. The provision of effective street lighting is essential to implementation of the Highway Maintenance Strategy within the Local Transport Plan and is therefore given specific reference in this document.

Objectives

106. The following objectives have been agreed for the maintenance and enhancement of our street lighting installations:

To maintain the lighting installation:

- to maximise the number of lighting units which are working as planned;
- to ensure the structural stability of existing units;
- to achieve a level of lighting consistent with current standards;
- to ensure the electrical integrity and safety of existing units.

To contribute to a safe and secure night time environment:

- as a crime prevention measure, and in particular to reduce the risk and the perception of risk of personal assault and harassment;
- to reduce the risk of collision between road users (to see and be seen);
- to reduce the risk of collision or accidents from road users' inability to clearly see potential hazards on the highway (e.g. footway trips, potholes, etc.);
- to manage the use of energy;
- to ensure that all new highway schemes have street lighting that meets the relevant standards.

Strategy

107. All the authorities carry out a programme to change lamps on a two or three year cycle, on an area basis, for units where the occurrence of random failure is likely to increase beyond this period. The transparent outer cover and the optical reflective surface are cleaned at the same time to maximise the effectiveness of the light output. In some Districts, lamps with a longer burning life are permitted to 'burn to extinction' or have a longer block change cycle of up to 6 years. The block change strategy is supported by systems for the identification and repair of random failures.

108. Non-settlement moneys also fund:

- maintenance and replacement of obsolete / end of life equipment;
- ad hoc replacement, on an individual basis, of vandalised and impact damaged;
- minor community safety / enhanced lighting schemes and road safety schemes;
- energy costs and repair to street lighting energy supply equipment.

109. Maintenance strategies are evolving using the benefits of new technology. Systems are being developed to manage the asset and to deliver improved service delivery. The introduction of remote detection of faults using a mains borne signalling device from a monitoring unit fitted to each lighting unit, electronic transmission of works instructions and the benefits of Geographic Information Systems (GIS) linked to inventory databases are leading the way to a better service. New types of lamps and energy efficient control gear are currently being evaluated. They are more expensive, but could be suitable for use on new installations.

Consultation and Monitoring

110. Recent surveys have indicated that people consider that the standard of street lighting should have a very high priority. Two specific issues identified were:

- the need to promptly repair lamps that had failed;

- the need to improve the standard of lighting of poorly lit roads.

111. The first issue is currently addressed in a systematic manner and is the subject of performance indicators published by the Audit Commission. The latter issue should be resolved by bringing the standard of lighting up to current British Standard recommendations during a structural replacement programme.

112. There is a debate about the relative merits of white (SON) and yellow (SOX) lighting units. The use of yellow units is perceived to be the economical solution and most sustainable in terms of energy consumption. However, white units give better colour rendition and are more popular to the extent that white lighting may encourage people to go out at night in situations where they, otherwise, feel personally vulnerable. This issue is still being considered and will be one of the topics where feedback from consultation will be particularly useful.

Meeting Plan Objectives

113. Street lighting improvements form an integral part of the delivery of the Plan objectives as part of:

- safe routes to schools;
- road safety, casualty reduction schemes;
- community safety / enhanced lighting schemes;
- highway improvement and capital maintenance schemes;
- transport initiatives to encourage modal change.

114. Revenue funding is enhanced by private sector funding for lighting on new housing and commercial estate roads and on highway improvements associated with those developments. Consideration is being given to incorporating commuted sums for maintenance/energy costs in these cases.

115. The public concern about the need for good lighting is potentially a major factor in choice of travel mode when making journeys in the hours of darkness. Personal safety considerations greatly affect the decisions people make.

116. Good street lighting will increase the effectiveness of casualty/speed reduction measures and in some cases will form an integral part of the scheme, for example in ensuring road width restrictions are visible at night.

117. City and town centres are becoming more reliant on the use of closed circuit television (CCTV) cameras as a tool to fight crime and to visually monitor activities in public areas. It is essential that sites where these cameras are used be particularly well lit with white lights to make it easier for operators to see people, vehicles etc.

118. Adequate street lighting is an essential part of safety and transport schemes and resources need to be made available to support lighting replacement and improvement schemes to ensure that the objectives are met.

Implications

119. In delivering the objectives and fulfilling the strategy, street lighting faces some specific challenges.

120. There are approximately 254,000 street lights in West Yorkshire, with this total

increasing year on year. During the 1950s and 1960s there was a large increase in the column population. These columns are all now reaching the end of their safe working life. About 20% of the current street lighting needs to be replaced due to age and deteriorating condition (approximately 56,000 columns). Each year an additional 6,000 columns are reaching a similar condition.

121. Renewal of the existing stock is also required to achieve current lighting standards. This would increase the number of lighting units by up to 50%. Improving standards of lighting will result in higher energy consumption.

122. Opportunities to pay a premium for 'green' electricity, which has not been generated from fossil fuel sources of energy, are consistent with environmental policies. The issue of sustainability versus economy will therefore be a topic for feedback and debate.

123. The cost of energy is further affected by proposals to introduce a new tax on the business use of energy. Designed to curb greenhouse gas emissions, this is estimated to increase local authority energy bills by 10 to 15% and will have major implications for street lighting revenue budgets.

124. Even without a major replacement programme, the number of streetlights on the highway network is increasing by between 1 and 2% per annum. As a result the routine maintenance liabilities are increasing which diverts resources from renewal programmes.

125. There is a serious safety risk if a column in critical condition collapses. Many columns are now reaching the end of their safe working life, despite maintenance strategies such as steel oversleeving of concrete columns. There is a current liability of about £56 million with a continuing liability of £6 million per annum to ensure the existing situation does not deteriorate.

126. However, the level of funding for maintenance replacements and renewals is not enough to even keep pace with the current rate of deterioration of the lighting stock or to meet the identified need to maintain and improve the network and satisfy public aspirations. The level of maintenance replacements and renewals that occur as a result of other schemes assists, but is not enough to prevent further deterioration of the lighting stock. The level of revenue funding available for street lighting is completely inadequate to make any significant impact on the backlog of replacements.

127. Unless there is a significant investment in street light renewals very soon, serious consideration will have to be given to a policy of removing old and dangerous columns and not replacing them. Currently in some areas there is a review of whether there is a need to replace street lighting to the same standard after columns are removed for structural safety reasons. There is also the possibility of targeting areas where repairs will not be carried out if units fail.

128. Hence alternative sources of funding are being investigated. In particular, advertising and private finance initiatives are being considered as areas with some potential. However, these can only take effect in the longer term. There is an immediate need for an increase in street lighting funding to enable the most urgent problems to be tackled. Recent events elsewhere, including a fatality and serious personal injury have shown the potential consequences that may result from inadequate maintenance of the street lighting infrastructure.

129. This is not a bidding issue according to LTP guidance, however, revenue funding cannot support the sums involved. Neither PFI, nor revenue streams generated by advertising on lamp columns, are yielding sufficient revenue. To address this national problem the Street Lighting Parliamentary Working Group recently indicated the need for street lighting replacements to be funded from capital. For this reason a bid has been included for lighting column replacement.

130. If it is assumed that further deterioration to the lighting stock can be prevented using existing sources of finance, then a ten year programme at £6million per annum would address the existing backlog. The works would be prioritised using the results from ongoing visual inspections and ultra sonic testing.