

RURAL ECONOMY AND CONNECTIVITY COMMITTEE

PRE-BUDGET/FINANCIAL SCRUTINY ON ROADS MAINTENANCE IN SCOTLAND

SUBMISSION FROM RAC FOUNDATION

Introduction

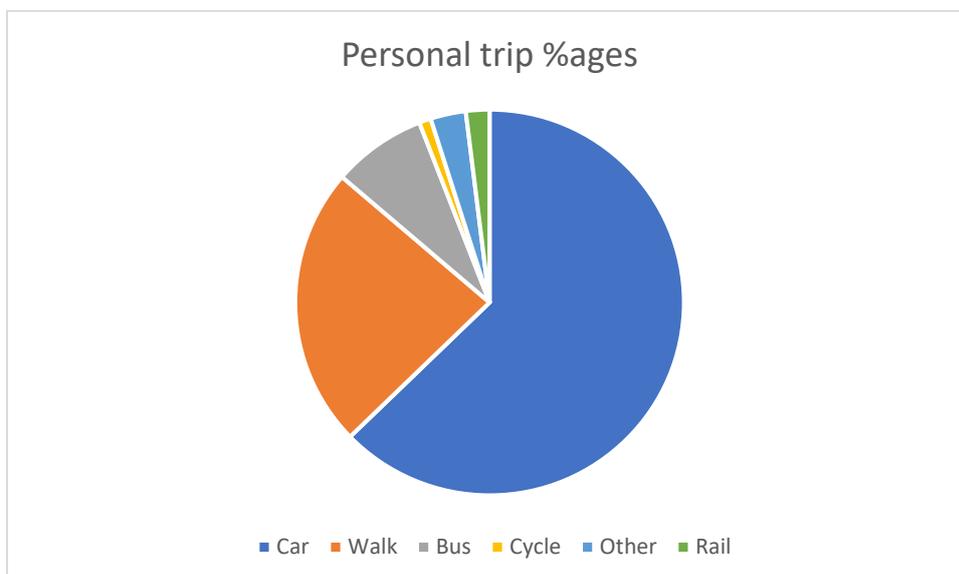
The RAC Foundation is an independent transport policy and research organisation which explores the economic, mobility, safety and environmental issues relating to motoring and road use.

This note has been prepared in response to a request from the Scottish Government's Rural Economy and Connectivity Committee to contribute to its Road Maintenance inquiry. The Foundation has taken an interest in the issue of English roads management, maintenance and funding over several years but not looked specifically at the situation in Scotland. In formulating this note we rely heavily on our work on English roads and have looked briefly, in the limited time available, at what information is available on Scotland's roads and their condition. This report does not make any specific recommendations about the current approach to road maintenance in Scotland as, in the time available limits its scope, but identifies the main considerations that should be taken into account in assessing appropriate spending levels.

The importance of roads to mobility in Scotland

Figure 1 shows the balance of personal journeys by mode of travel with over 95% of all journeys going wholly by road and most of the remaining 5% reliant to road for access to and from railway stations, ferries and airports. The reliance on car travel in Scotland is 4% higher than in England despite average (Gross Disposable Household) incomes being 9% lower, which would typically result in about 5% lower car usage - and car ownership being 6% lower.

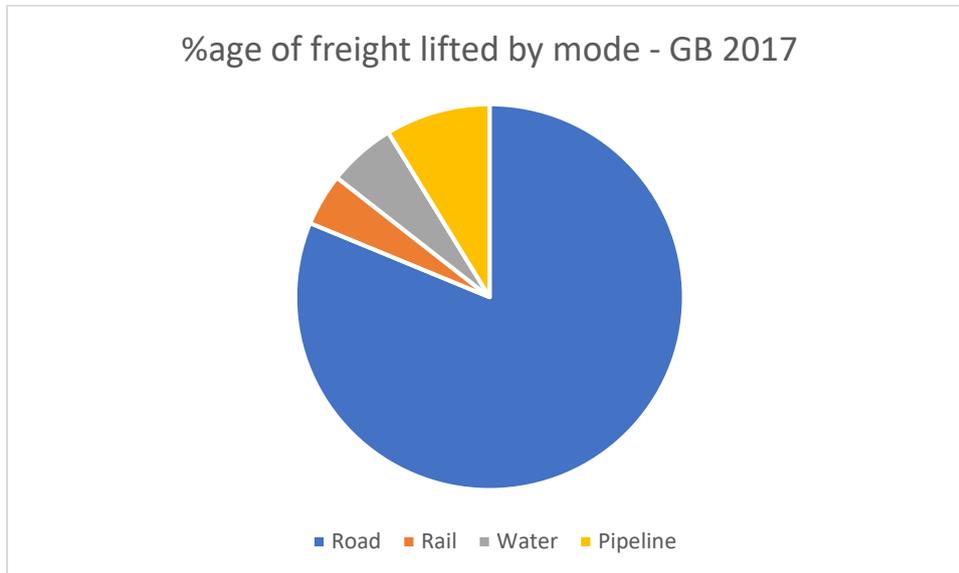
Figure 1: Personal trip usage of transport modes in Scotland 2016/17



Source: Transport Scotland 2019.

Data is not available of the split of freight traffic by mode for Scotland alone, so that for Great Britain is shown in figure 2. Over 80% goes by road – almost 90% if pipelines are excluded.

Figure 2: Percentage of tonnes lifted by mode in Great Britain 2017.



Source: DfT 2018.

This high dependence on road transport is very important to the economy. Transport activity contributes roundly 4% to the UK's GDP and, on this basis would amount to about £6bn/year for Scotland. The Scottish trunk road network is estimated to contribute approximately £1.38bn a year of Gross Value Added. An efficient transport network is also seen as crucially important to the six growth sectors in Scotland comprising:

- Food & Drink (including agriculture & fisheries)
- Creative Industries (including digital)
- Sustainable Tourism
- Energy (including renewables)
- Financial & Business Services and
- Life Sciences.

These were estimated to contribute approximately £31 billion in 2014 to the Scottish economy (excluding the financial and businesses sector).

Scottish households spend about £7½bn/year on road transport so reductions in road transport efficiency can impose substantial economic and financial penalties. It is clear therefore that road transport in Scotland is especially important and of substantial significance to the country's economy.

Present condition and recent trends

The measurement of the condition of road networks is a complex and uncertain exercise for several reasons. There is a substantial and diverse range of

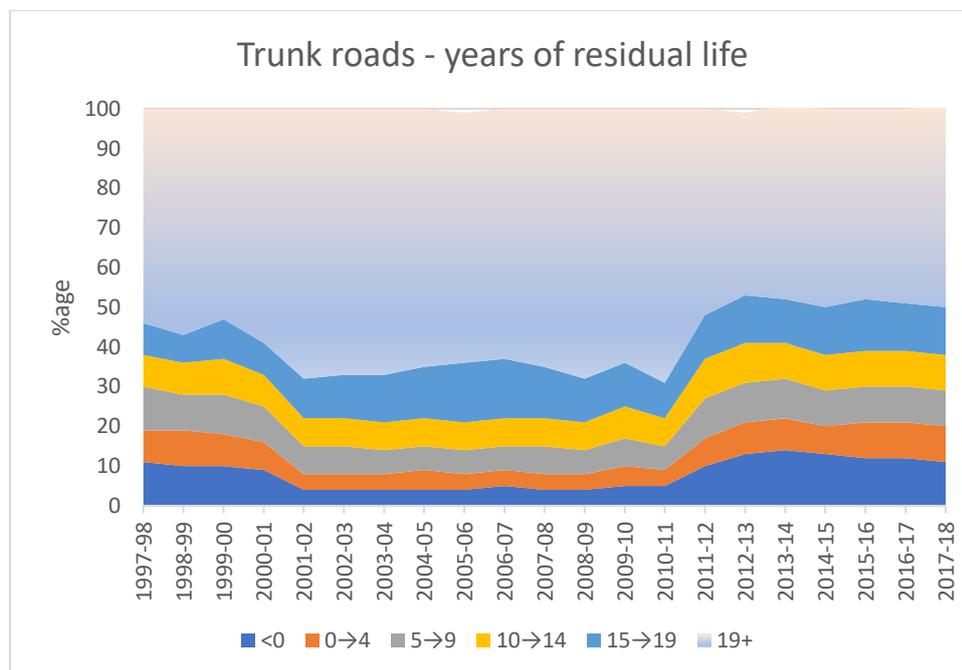
components on the surface (carriageways, verges, footways/cycleways): beneath the surface (drains, cabling, tunnels, culverts and underbridge structures) and above the surface (lighting, signage, gantries and overbridges). Also, the condition of some types of assets is hard to establish. Many parts of the fabric are buried or hidden from view in some other way making direct inspection difficult and costly.

Additionally, the scale and variety of road networks, with significant local variations in the condition of its many components, limits the value of simple indicators.

The technology of road condition monitoring has changed and improved over recent decades so improving our understanding of network conditions but also complication the representation of long-term trends. Consequently, some caution is appropriate in interpreting the results of road condition monitoring.

Figure 3 Shows how the condition of the trunk road network has changed over the last twenty years as indicated by years of residual life. After some improvement in the early 2000s there was relatively little change up 'till the wake of public spending reductions following the 2008/09 recession. This resulted in a sharp deterioration in the residual life of the trunk road network with the percentage estimated to have a residual life of less than 5 years increasing from 8% in 2008/09 to 22% in 2013/14. Since then there has been a slight improvement but still remains at more than double the pre-recession levels.

Figure 3: Years of residual life in Scotland's trunk road network 1997/8 – 2017/18

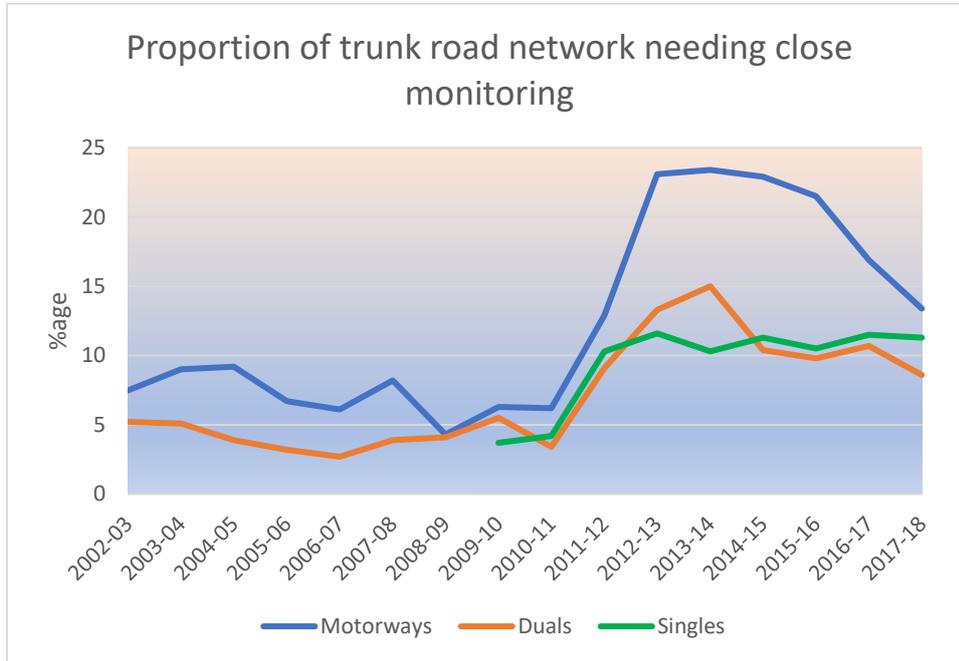


Source: Transport Scotland 2019a table 4.5.

Figure 4 shows a similar picture with the percentage of the trunk road network needing close inspection being in single figures up 'till 2011/12 then increasing sharply to a peak in 2013/14. This was particularly pronounced for motorways which rose to 23.4% before falling back to 13.4% in 2017/18. As the motorways are the most heavily trafficked routes this means that a disproportionately high proportion of

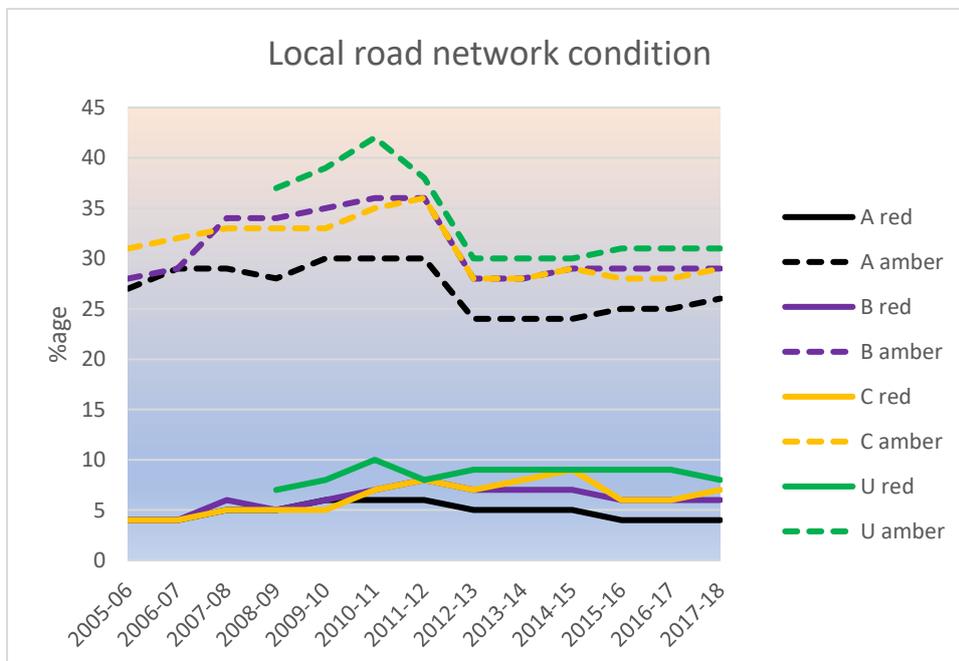
traffic, including a third of all HGV traffic, has been subject to these deteriorated conditions.

Figure 4: The proportion of the motorway/dual and single carriageway trunk road network, which require close monitoring.



Source: Transport Scotland 2019a table 4.5.

Figure 5: Local authority road network conditions 2005/06 – 2017/18



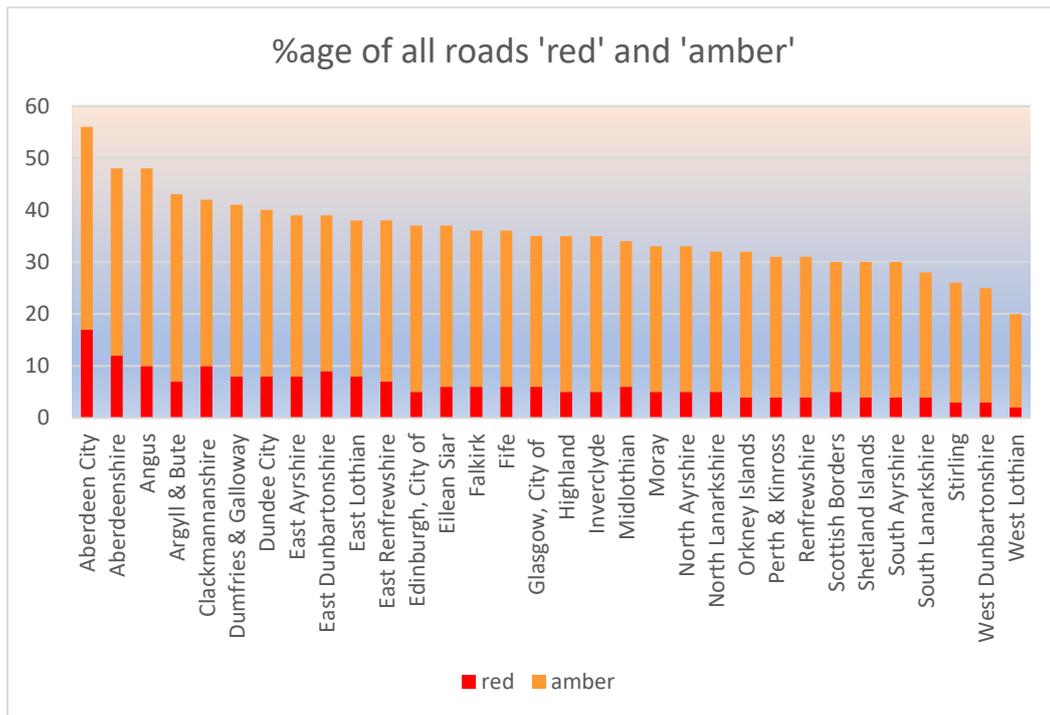
Source: Transport Scotland 2019a table 4.6.

Figure 5 shows how local authority roads have fared since 2005/06 when the current monitoring system was started. Roads in the red category have deteriorated to the point at which it is likely repairs to prolong its future life should be undertaken. Roads

in the amber category require further investigation to establish if treatment is required. At the beginning of the period all classes of road ('A', 'B', 'C' and Unclassified) had similar red readings (4%) but since, whilst 'A' roads have changed little, the proportions of red categories have grown – especially for unclassified roads suggesting that local highway authorities have been prioritising the maintenance of their busier roads.

The trends for the amber category have been more variable with the proportion of classified roads having changed little by the end of the period but with a marked deterioration up 'till 2010/11 followed by a recovery in the subsequent two years. A similar pattern prevails for unclassified roads except that by the end of the (shorter) period there has been an improvement from 37% to 31%. Within these national averages there are some wide variations as can be seen from figure 6. To some extent these variations will reflect the different mixes of road types in each authority area but also suggests that the local roads maintenance effort may not be distributed as efficiently as it might be between the 32 local authorities.

Figure 6: Percentages of all local roads in 'red' & 'amber' categories in 2017/18



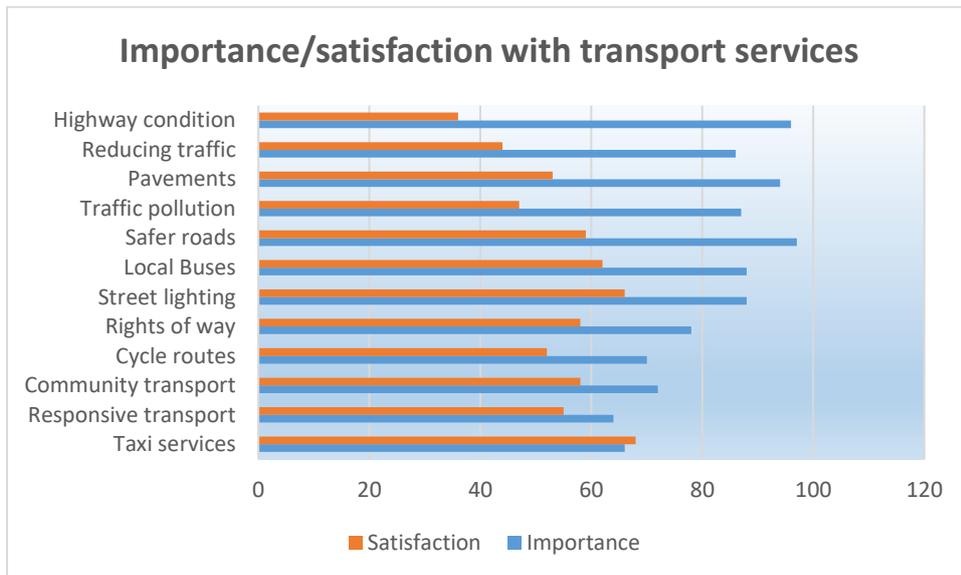
Source: Transport Scotland 2019a table 4.6.

The costs of poorly maintained roads are reflected in the attitudes of both the public and organisations dependent on road transport for their operations. The National Highways and Transport Public Satisfaction Survey (NHTPSS) is an annual survey benchmarking public perspectives on, and satisfaction with, local authority highway & transport services. It is managed by the National Highways and Transport Network which is a national highways industry benchmarking group and includes returns mainly from English Highway authorities but also six Scottish.

Respondents were asked what mattered to them about their local transport and the results for 2017 are shown in figure 7. Highway conditions and pavements make up

two out of the top three most important aspects, so clearly therefore the condition of local roads and pavements is very important to the public. But how satisfied are the public with road conditions? Figure 7 shows that the conditions of local highways are least satisfactory by a large margin; with pavements ranking 8th out of the twelve topics. Street lighting on the other hand gets a good relative score as the 2nd most satisfactory. If the difference between the importance of each attribute and the satisfaction score is measured the gap for road conditions is by far the largest (60) followed by reducing traffic (41) and pavements (40) against an average of 27.3. Not surprisingly this is reflected in the public's priorities for improvements.

Figure 7: Results of the 2017 NHTPSS questions 'How important do you consider the following?' and 'How satisfied are you with the following?'



Source: NHTN 2017.

The RAC annual Reports on Motoring contain results of surveys of motorists' top concerns. Over the last four years the condition and maintenance has appeared top in three; being displaced in 2017 by concerns about the use of mobile phones when driving but back on top in the 2018 survey. Maintenance of local roads topped their investment priorities in all four years by a large margin. In the 2016 survey roundly 4 out of every 5 respondents agreed that the state of UK roads is generally poor and 2 out of every 3 that local road conditions had got worse in the last year, with 98% mentioning the road surface as the main factor in this deterioration. The most recent found 78% of drivers agreeing that the state of UK roads is generally poor and 83% supporting the ring-fencing of a share of motoring taxes to fund the maintenance of local roads.

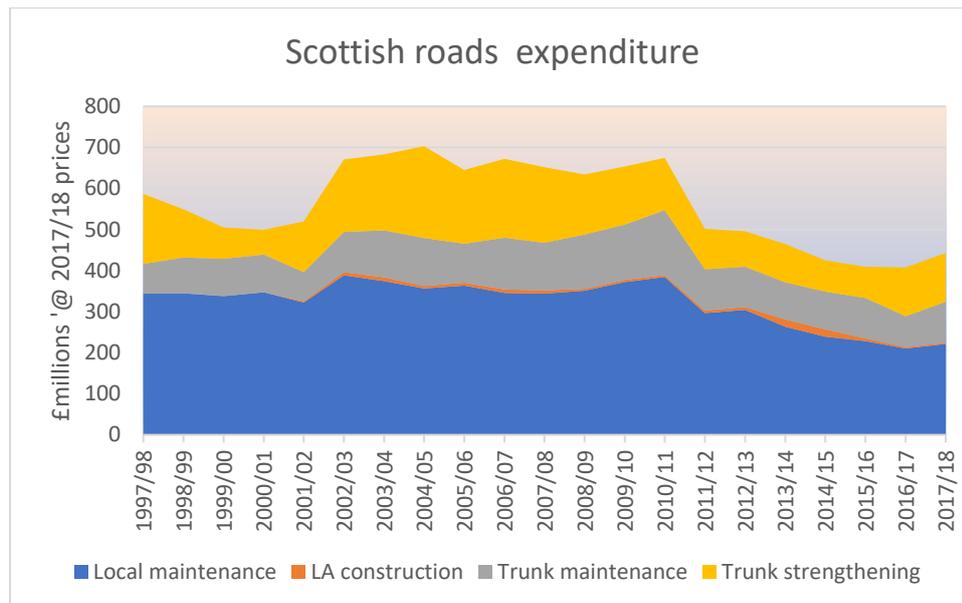
Potholes are a particular source of complaint and the 2016 Freedom of information request by the Foundation found that there were about 4,858 pothole compensation claims in 2015/16 – up from less than 2,861 in the previous year and these resulted in almost £16 million being paid out by Scottish local authorities.

It is clear therefore that the general public is concerned about the condition of roads and considers this to be an important matter. To put this in a wider context of the 12

indicators of infrastructure quality in the World Economic Forums Global Competitiveness Report the UK's road connectivity and quality are the second and third worst performers and rank 29th and 26th – well behind most of the western European countries (France 9/7, Germany 6/19 and Spain 3/13).

Recent Spending Trends

Figure 8: Public expenditure on Scottish roads 1998/99 – 2017/18 @ 2017/18 prices¹.



Sources: Transport Scotland 2010 & 2019a and Scottish Government 2006.

Figure 8 shows expenditure on Scotland's roads over the last two decades. This excludes street lighting and traffic management. In today's prices this has reduced by roundly 24% since 1997/98 but is only two thirds of the level prevailing between 2002/03 and 2010/11. This means – compared with this level – a cumulative 'underspend' of roundly £¾ billion.

Insufficient spending on maintaining the fabric of the road network has a number of consequences. It leads to a growing backlog of work resulting in more remedial treatment and less planned/preventative maintenance. The June 2018 report by Accounts Commission estimated the backlog in respect of national roads to be £1.2bn and the 2011 Audit Scotland report estimated that it would cost £1.54bn just to fix all local roads carriageway defects. A Freedom of Information request in 2018 by the Foundation found that Councils in Scotland had over 400 sub-standard bridges amounting to a backlog of work of over £0.5bn and that Transport Scotland had 38 sub-standard bridges amounting to a backlog of work of almost £1bn.

¹ Adjusted by the UK RPI.

These shortcomings, in turn, result in lower levels of service which is reflected in user dissatisfaction as illustrated in figure 7. Moreover, it stores up problems for the future as illustrated in figure 9.

Some implications of inadequate road maintenance

Figure 9: Effect on overall maintenance costs of differing maintenance strategies in Glasgow City Council



Source: Audit Scotland 2004.

The above analysis shows that by spending £115m over a ten-year period a £50 backlog is eliminated; thus, giving an undiscounted net cost of £65m. If, on the other hand, there is no maintenance spend the backlog grows to £250m costing £200m. The intermediate spending levels of £5m/year and £6m/year give net undiscounted costs of £115m and £130m respectively.

As well as storing up future costs for highways authorities, inadequate maintenance increases user costs. A study carried out in 2012 for Transport Scotland² explored the wider impacts of varying highway maintenance expenditure in Scotland. This was in the particular circumstances of the finances and physical condition of eight local authority's roads in 2012. This showed that reducing the road maintenance budget would have an overall negative Net Present Value, as user (mainly vehicle operating) costs increase more than the savings achieved in works costs and that for every £1 (undiscounted) saved by reducing maintenance budgets, there is an increase of more than £2 in non-works costs from the wider impacts of the reduced maintenance. The ratio is £1 to £1.67 for discounted costs with the 40 percent

² Parkman et al 2012.

overall reduction in maintenance funding. There would also be unquantified benefits including:

- improved footway condition to encourage walking and, hence, healthier lifestyles;
- increases in the number of cyclists;
- avoidance of the 'broken windows' effect (i.e. general deterioration of the locality;
- when the area does not appear to be looked after);
- reduced compensation costs from lower claims following accidents;
- reduced health service costs from the reduction in accidents;
- increases in house prices and commercial activity in areas with well-maintained roads and
- reduced litter on well-maintained roads.

Reducing the backlog and providing a stable source of revenue for Scotland's roads will require reformation of the existing funding regime. There is a range of possibilities for this and the Foundation contributed to the winning entry for the 2017 Wolfson Economics Prize 'Miles Better' which proposed replacing the current Fuel Duty and VED regime by a mileage-based road user charging system using the insurance companies as collection agents. This could generate an additional £3.5bn - £10.1bn ten years after initiation (2015 prices) for the UK as a whole.

Future Challenges

Looking forward there are two emerging issues which will bear on the maintenance standards required for Scotland's roads to be fit for purpose. Firstly, climate change is likely to lead to more extreme weather episodes with implications for choice of materials for the road's fabric, capacity of drainage system etc. and winter maintenance regimes. Secondly the emergence of Advanced Driving Aids and perhaps even autonomous vehicle operations have implications for the standards to which roads (especially markings and signage) should be maintained if they are to be effective.

Summary and Conclusions

This report draws on work carried out over recent years by the Foundation on the condition and maintenance of English roads and formulates some conclusions which are designed to assist the Scottish Government's Rural Economy and Connectivity Committee on deciding the adequacy of current spending levels.

Scotland is heavily dependent on its road network for the movement of people and goods with over 95% of all personal journeys going wholly by road and most of the remaining 5% reliant to road for access to and from railway stations, ferries and airports. The situation in respect of goods transportation in Scotland is less well understood but in Britain as a whole 80% goes by road – almost 90% if pipelines are excluded.

Transport industry activity contributes about £6bn/year to Scotland's GDP. The Scottish trunk road network is estimated to contribute approximately £1.38bn a year of Gross Value Added

Whilst reliable and comprehensive monitoring of road conditions is very difficult, it is clear that the residual life of the trunk road network shortened significantly (probably by about a fifth) following the reduction of maintenance expenditure in 2010/11 and subsequent years and there was a corresponding doubling or so in the proportion needing close monitoring.

Overall proportion of the local road network needing early repairs has changed little in recent years and that requiring further investigation reduced between 2010/11 and 2012/13 but remains at around a quarter - but with substantial differences between areas ranging from over 40% in need of repair or further investigation in seven areas and less than 30% in six areas.

There is clear evidence that road conditions matter to users and indeed top their transport service priorities - whilst at the same time being regarded as the least satisfactory. Potholes are a particular source of complaint and there were about 4½ thousand pothole compensation claims in 2015/16 – up from less than 3 thousand in the previous year and these resulted in £13 million being paid out by Scottish local authorities in 2015/16.

Spending on Scotland's roads reduced sharply following the last recession to a low in 2016/17 of two thirds the pre-recession levels and has only just started to recover. This inevitably displaces some planned maintenance by emergency repairs so building up a backlog. There is no comprehensive assessment of the size of this backlog but piecing together what information is available it must now exceed £3bn for all Scotland's roads and bridges.

The costs to road users and the wider community of poorly maintained roads have been estimated that user costs increase more than the savings achieved in works costs and that for every £1 saved by reducing maintenance budgets, there is an increase of more than £2 in non-works costs from the wider impacts of the reduced maintenance. There would also be unquantified benefits including:

- improved footway condition to encourage walking and, hence, healthier lifestyles;
- increases in the number of cyclists;
- avoidance of the 'broken windows' effect (i.e. general deterioration of the locality;
- when the area does not appear to be looked after);
- reduced compensation costs from lower claims following accidents;
- reduced health service costs from the reduction in accidents;
- increases in house prices and commercial activity in areas with well-maintained roads and
- reduced litter on well-maintained roads.

Higher levels of spending will be needed to improve the conditions of Scotland's roads and replacing the current fuel duty VED system with a Pay As You Go arrangement would be an efficient way of providing this.

Emerging challenges include the effects of climate change and the move towards Advanced Driver Aided and Autonomous road vehicles. Each of these requires higher standards of road specifications and maintenance.

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