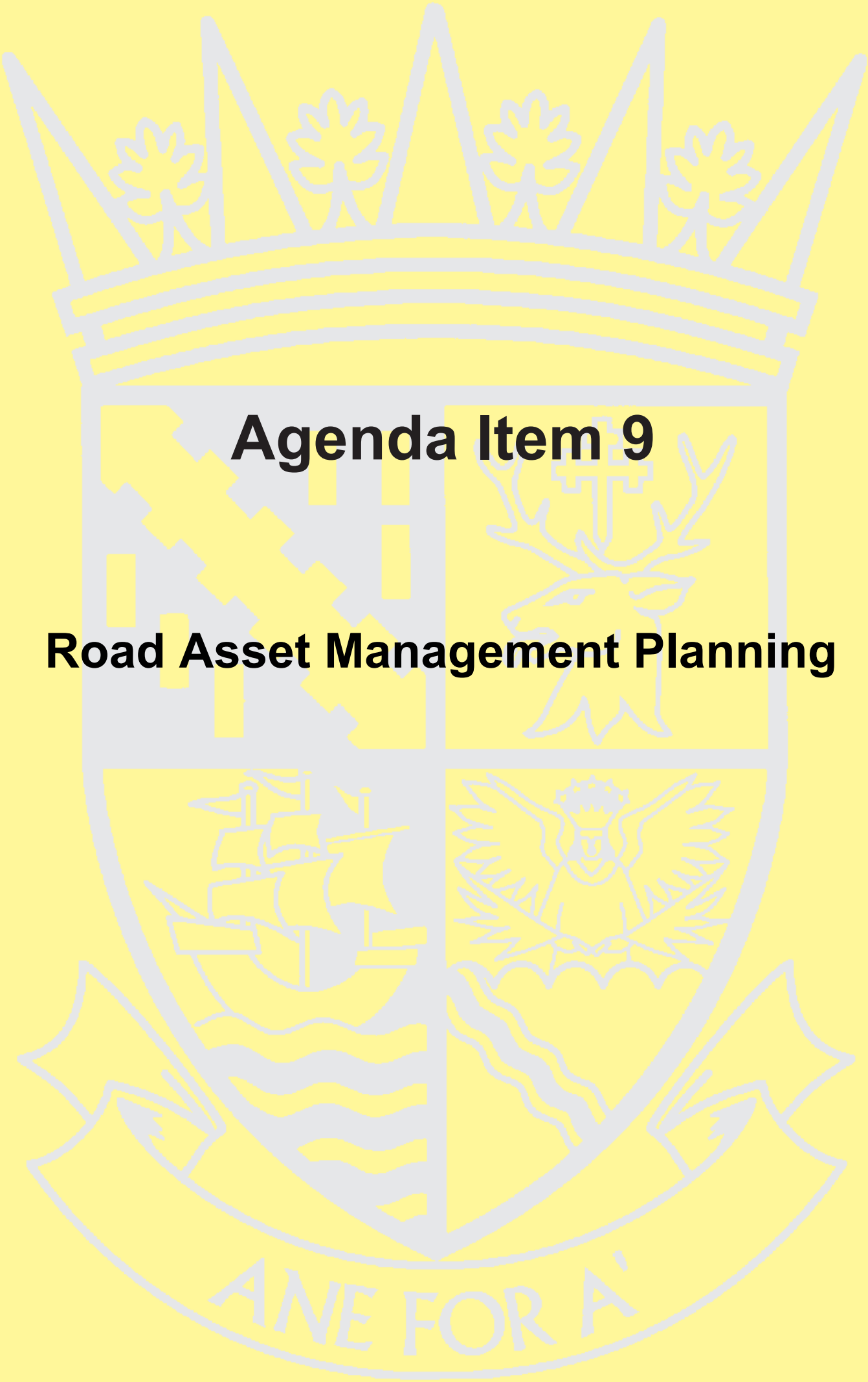


The background of the slide features a large, light blue watermark of the City of Vancouver's coat of arms. The crest is a shield divided into four quadrants. The top-left quadrant shows a sailing ship on the water. The top-right quadrant shows a stag's head with antlers. The bottom-left quadrant shows a beaver. The bottom-right quadrant shows a grizzly bear. Above the shield is a crown with four maple leaves. A banner at the bottom of the shield contains the motto "CITY OF VANCOUVER".

Agenda Item 9

Road Asset Management Planning

Falkirk Council

Title: Road Asset Management Planning
Meeting: Falkirk Council
Date: 27 June 2018
Submitted By: Director of Development Services

1. Purpose of Report

1.1 At the Council meeting on 7 March 2018, the Director of Development Services was instructed to undertake a review of roads network with a view to identifying necessary works with costing to the June meeting of Council. This report provides Members with an update in relation to road asset management planning within Falkirk Council. In particular the report brings:-

- details of existing road network condition and how further deterioration can be addressed
- details of investment levels required to maintain the carriageway network in a condition no worse than its current condition, i.e. steady state
- details of the carriageway and footway works programme 2018-19

2. Recommendation

Members are requested to:

(1) Note the contents of this report.

3. Background

3.1 Falkirk Council has been working with SCOTS (Society of Chief Officers of Transportation in Scotland) since 2008, developing asset management plans and business-like approaches to managing roads and roads related assets.

3.2 The road carriageway asset is the most valuable asset for which Falkirk Council is responsible, with a gross replacement cost valuation as at June 2017 of £1.038bn. The carriageway asset is 982km long and has an area of approximately 7,161,000m². More than half of the network (589km) consists of unclassified urban roads (residential streets).

3.3 Falkirk Council's Road Condition Indicator (RCI), which can be defined as the percentage of the carriageway asset in need of intervention/repair, has declined over recent years. In period 2014-16 it was 33.2% (326km). In period 2016-18 it is 37.3% (365km), which is slightly worse than the Scottish average figure of 36.7%. (Appendix 1)

3.4 The severe freeze/thaw action experienced during the winter of 2017/18 resulted in accelerated deterioration of the carriageway network with many pothole and other defects forming.

4. Considerations

4.1 “Maintaining Scotland’s Roads: A follow-up report” dated August 2016 (Appendix 2) stated that “*Councils should ensure that they use their RAMPs (Road Asset Management Plans) to inform elected Members of long-term investment plans for maintaining roads that take into account the whole-life costing of treatment options*”, and “*Ensure that the consequences of spending less than that necessary to maintain current road condition adequately features in budget-setting processes to allow elected Members make informed choices which take account of competing demands and priorities*”. One of the key messages of the report is that “*Only a third of councils are presenting options to elected Members on what kind of road condition can be expected from different levels of spending*”

4.2 In March 2017, SCOTS updated their “Backlog and Steady State Model” (Appendix 3). This Model uses data from the annual SRMCS (Scottish Road Maintenance Condition Survey) which specifically details different types of deterioration and deformation of the carriageway asset, and uses median repair costs derived from a recent Scottish Road Research Board study to calculate the cost of repairing the asset. This Report provides the following figures for Falkirk Council:-

Headline Backlog (Cost to remove all carriageway defects) £37.9m
Steady State (Annual cost to maintain at current condition) £ 5.6m

4.3 To maintain the road condition at steady state, additional investment on top of the annual structural roads maintenance allocation is required in the region of £3.6m per year. For comparison purposes, capital investment in the carriageway assets over the last nine years is shown below. It should be noted that this does not include revenue expenditure of c£3.9m per annum since 2010-11, covering environmental and safety maintenance and routine repairs, such as pothole patching. For 2018/19 an additional £0.5m for roads maintenance was approved by Members in February, with the Scottish Government also providing further funding of c£0.2m as a result of the severe winter weather.

Capital Investment in Carriageways

	£000's
2010/11	2,927
2011/12	2,311
2012/13	1,769
2013/14	2,024
2014/15	2,053
2015/16	2,403
2016/17	2,565
2017/18	3,250
2018/19	3,655
	22,957

- 4.4 Between 2010 and 2016, reducing the RCI was achieved via the implementation of the approved road asset management strategy by assessing the condition of the whole network and giving priority, based on a recognised hierarchy, with strategic and main distributor roads receiving the largest proportion of funding. The investment largely took the form of structural maintenance which achieves long-standing localised improvement.
- 4.5 In November 2016, a previous report on this matter, considered by the Scrutiny Committee, advised that if budget reductions continued, this approach would not allow any degree of improvement to be demonstrated and it would inevitably result in further deterioration of the remainder of the network. Accordingly, Members were advised, pursuing this strategy was expected to increase the RCI overall to 58% by year 20 (year 1 being 2016/17). (Appendix 4).
- 4.6 It can now be reported, that having changed to a strategy of undertaking less structural maintenance and more surface treatment from 2016 onwards, with current budget levels, cost projection models indicate that deterioration will continue, but at a slower rate than previously forecast, with the RCI expected to be 55% by year 18 (previous year 20) and to 56% by year 20 (Appendix 5, Option 1). Furthermore, moving forward with a further increase in the amount of surface treatment work undertaken could result in an RCI of 46% by year 20 (Appendix 5, Option 3). Surface treatments are lower cost per m² of treatment than conventional resurfacing and allow carriageway surfaces to be sealed to prevent deterioration and to improve the surface texture. To ensure optimum life of service from surface treatment work, it is important to ensure that the damaged or worn out surface areas are repaired prior to the application of the surface treatment. The expected service life of a surface treated road depends very much upon the volume and type of traffic using the road as well as the quality of the preparation work undertaken, and an estimated life of up to 15 years can be expected.

5. Investment Programme Assessment & Priorities

- 5.1 The actual investment figures, year on year, vary due to different demands for carriageway and footway works. Footway improvements are allocated a considerably lower proportion of funds each year and are generally in better condition than carriageways which attract the largest proportion of funding. However, the relative proportions of the respective allocations can vary depending on need and risk assessments. Weather conditions over winter also play a part in actual expenditure each year as damage must be addressed.
- 5.2 Footway and carriageway structural maintenance improvement programmes are attached as Appendices 6 and 7 respectively.

6. Consultation

- 6.1 Consultation within the SCOTS road asset management environment has been undertaken to determine and apply best practice in relation to cost projection work. The national road asset management project facilitates workshops where good road asset management practice is discussed and explained. Tools have been provided so that roads authorities can project the condition of the road network over the longer term. These tools have been used to derive the options given in Appendix 3.

7. Implications

Financial

- 7.1 Maintaining a road network that is fit for purpose requires adequate levels of funding. Cost projection asset management tools have been used to predict road condition over a 20 year period, using alternative budget figures and treatment types.
- 7.2 The associated borrowing costs with either maintaining or improving the condition of the road network would add pressure to the Council's budget. Therefore any increased investment needs to be considered against the Council's approved priorities and in the context of the Medium Term Financial Plan which is projecting a five year budget gap of c£60m.

Resources

- 7.3 There will be no changes required to staff resources.

Legal

- 7.4 The Roads (Scotland) Act 1984 provides Roads Authorities with a duty to maintain a list of public roads and to ensure the roads on that list are serviceable and fit for purpose.

Risk

- 7.5 Improving the quality of the Council's infrastructure can lead to growth in the local economy. Investment can lead to a thriving, sustainable and vibrant economy. Failure to maintain the road network in a serviceable condition may lead to an increase in public liability insurance claims as the risk of incident increases, and a failure to maximise economic development in the area and meet statutory obligations.

Equalities

- 7.6 No equality and poverty impact assessment was considered necessary.

Sustainability/Environmental Impact

- 7.7 It is not felt that there are any sustainability/environmental impacts as a result of the recommendations.

8. Conclusions

- 8.1 The report provides information that supports good asset management planning as well as providing documentation that explains the Council's position in relation to this. The National Audit/Review of RAMP Practices published by SCOTS in July 2016 states that *"not presenting reports may be a missed opportunity. There is merit in officers presenting decision makers with the "reality" of the situation, including alternative scenarios and likely resulting outcomes. Without such reporting, asset managers may be allowing decision*

makers to fund at a sub-optimum level without full awareness of the consequences to the longer term condition off the roads assets”.

- 8.2 Investment in the roads asset is critical to the economic well-being of Council area and the safety of road users. A longer term view, with appropriate investment, is vital if we are to maintain our road network in no poorer condition than at present state.

Director of Development Services

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dorothy.reid@falkirk.gov.uk

Date: 14 June 2018

Appendices

1. Appendix 1 – Road Condition Indicator
2. Appendix 2 – Maintaining Scotland's roads: A follow-up report
3. Appendix 3 – SCOTS Backlog and Steady State Model
4. Appendix 4 – Funding Options (2016)
5. Appendix 5 – Funding Options (2018)
6. Appendix 6 – Footway Programme 2018-19 and beyond
7. Appendix 7 – Carriageway Programme 2018-19

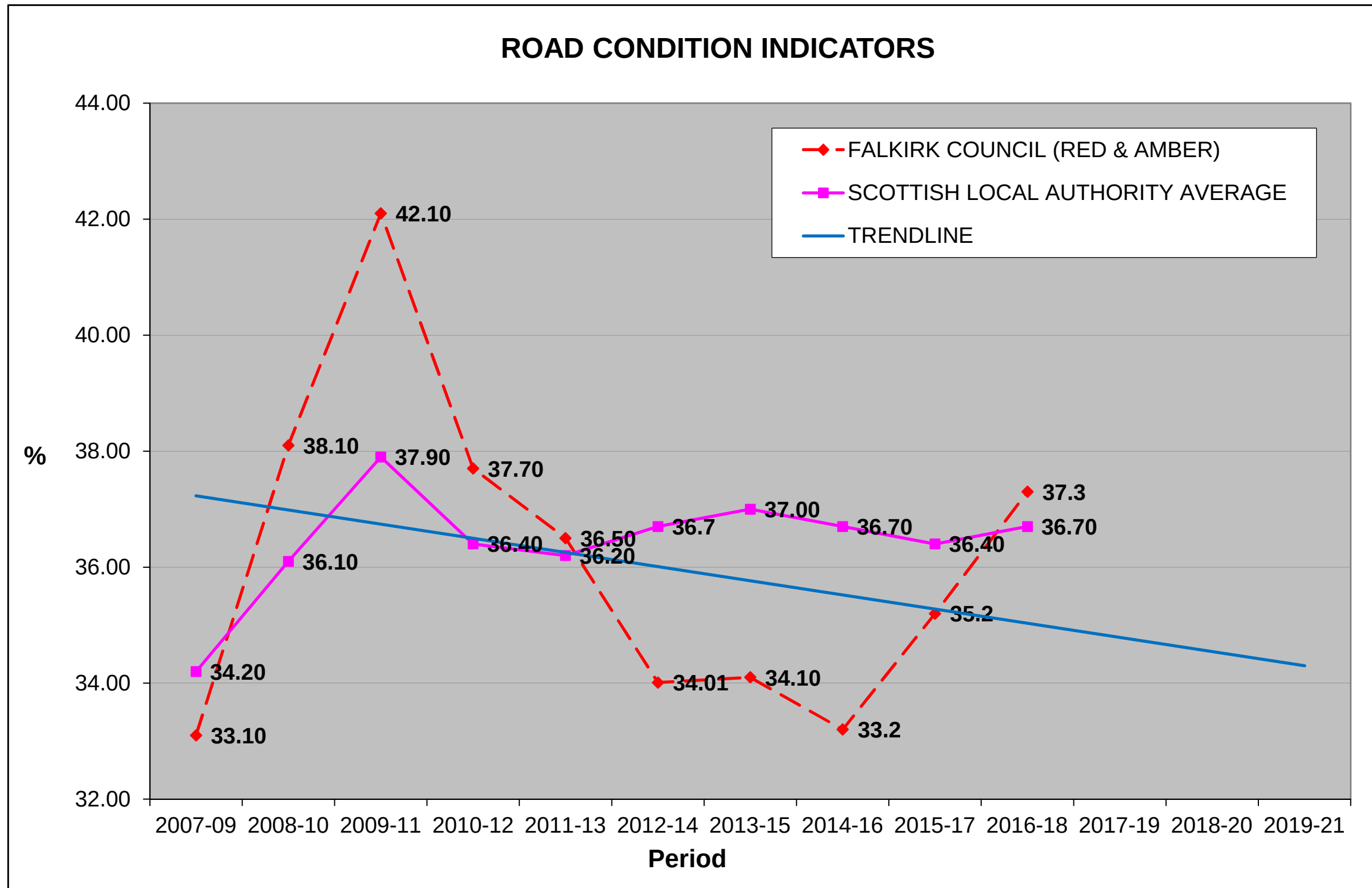
List of Background Papers:

The following papers were relied on in the preparation of this report in terms of the Local Government (Scotland) Act 1973:

Road Asset Management Plan 2016 – 2026
Road Asset Management Planning Annual Policy
Road Asset Management Planning Data Management Plan
Road Asset Management Planning Annual Status and Options Report
Road Asset Management Valuation Report 2016-17

APPENDIX 1 - FALKIRK COUNCIL - FULL ROAD NETWORK

Percentage of full carriageway network requiring maintenance treatment.



APPENDIX 2

Maintaining Scotland's roads

A follow-up report



ACCOUNTS COMMISSION 

AUDITOR GENERAL 

Prepared by Audit Scotland
August 2016

The Accounts Commission

The Accounts Commission is the public spending watchdog for local government. We hold councils in Scotland to account and help them improve. We operate impartially and independently of councils and of the Scottish Government, and we meet and report in public.

We expect councils to achieve the highest standards of governance and financial stewardship, and value for money in how they use their resources and provide their services.

Our work includes:

- securing and acting upon the external audit of Scotland's councils and various joint boards and committees
- assessing the performance of councils in relation to Best Value and community planning
- carrying out national performance audits to help councils improve their services
- requiring councils to publish information to help the public assess their performance.

You can find out more about the work of the Accounts Commission on our website: www.audit-scotland.gov.uk/about/ac 

Auditor General for Scotland

The Auditor General's role is to:

- appoint auditors to Scotland's central government and NHS bodies
- examine how public bodies spend public money
- help them to manage their finances to the highest standards
- check whether they achieve value for money.

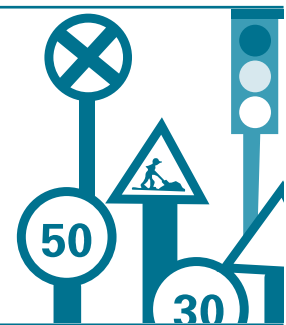
The Auditor General is independent and reports to the Scottish Parliament on the performance of:

- directorates of the Scottish Government
- government agencies, eg the Scottish Prison Service, Historic Environment Scotland
- NHS bodies
- further education colleges
- Scottish Water
- NDPBs and others, eg Scottish Police Authority, Scottish Fire and Rescue Service.

You can find out more about the work of the Auditor General on our website: www.audit-scotland.gov.uk/about/ags 

Audit Scotland is a statutory body set up in April 2000 under the Public Finance and Accountability (Scotland) Act 2000. We help the Auditor General for Scotland and the Accounts Commission check that organisations spending public money use it properly, efficiently and effectively.

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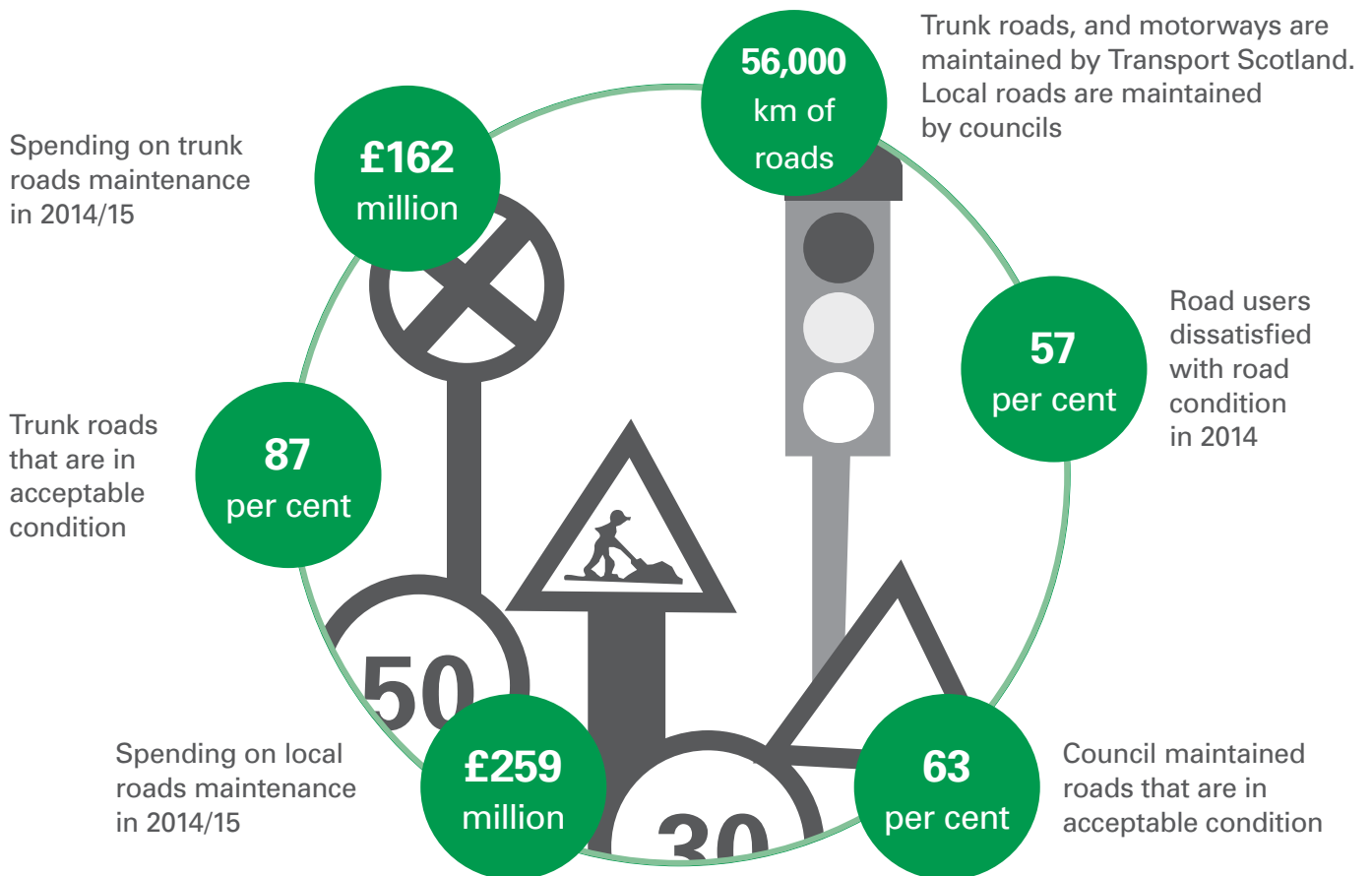
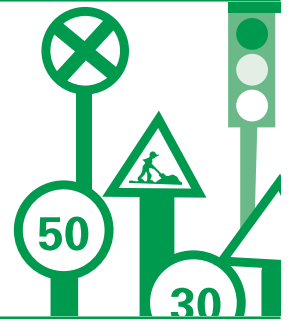


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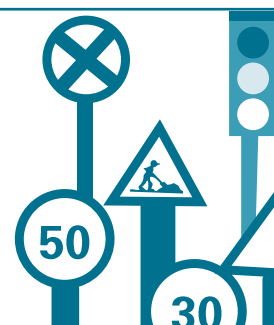
Links

-  PDF download
-  Web link

Key facts



Summary



- 1 The proper maintenance of the road network is vital to Scotland's economic prosperity and for road users to travel safely. Roads authorities, locally and nationally, urgently need to demonstrate a much greater commitment to innovation, comparing relative efficiency and being clearer with the public about the impact on road condition of agreed spending levels. It is clear that the status quo is no longer an option if there is to be any improvement in road condition. A longer-term view is required, one that takes into account both the need for new roads and the maintenance of the existing road network.
- 2 Independent survey results indicate that the condition of council-maintained roads has remained stable at around 63 per cent in acceptable condition over the period 2011/12 to 2014/15. There is significant variation in road condition among councils. There is also concern that the survey approach does not always pick up the full extent of failures in the structural integrity of lower road layers. Fifty-seven per cent of users report that road condition is a major concern. While 13 authorities increased their spending, overall council expenditure on roads maintenance continues to decrease, from £302 million in 2011/12 to £259 million in 2014/15 (14 per cent). Overall, councils spent £33 million (13 per cent) less on planned and routine maintenance in 2014/15 than the Society of Chief Officers of Transportation Scotland considers was necessary to maintain the current condition of local roads.
- 3 The condition of trunk roads declined from 90 per cent in acceptable condition in 2011/12 to 87 per cent in 2014/15. Most of this decline is associated with the condition of motorways. Transport Scotland attributes this to more resurfacing work, instead of more expensive reconstruction which would also improve the condition of the lower road layers. Transport Scotland's expenditure on trunk roads maintenance fell from £168 million in 2011/12 to £162 million in 2014/15 (four per cent). It spent £24 million (38 per cent) less on structural maintenance in 2014/15 than it considers was necessary to maintain trunk road condition at its current levels.
- 4 In the current context of reduced public spending, the competing priorities of some services, such as education, health and social care mean that roads maintenance budgets may be put under further pressure. There is evidence that roads authorities are better prioritising and targeting roads maintenance, and using cheaper treatment options. This has helped available budgets go further but carries risks. Increasing the use of surface dressing might help to maintain the condition of the surface of the road network in the short term, but this may not deliver value for money in the longer term. It is important that

roads
authorities
need to
demonstrate
greater
commitment
to improving
road
condition

proper scrutiny and challenge includes taking account of all options and users' views when considering spending on roads.

- 5** Progress with introducing a shared services approach to roads maintenance, a central theme of the 2012 National Roads Maintenance Review, has been disappointingly slow. Councils are in the process of establishing regional governance bodies for local roads maintenance but there is still no clear plan and timetable for determining the extent of shared services at an operational level. Scottish ministers want to see councils make more progress, and be able to demonstrate the efficiency savings and other benefits arising, before trunk roads could be considered for inclusion in such regional arrangements.

Recommendations

The Strategic Action Group should:¹

- Ensure that the Roads Collaboration Board works with regional group partners to determine a clear plan and timetable for:
 - supporting the development of regional arrangements for roads services to secure the benefits arising, such as efficiencies, increased service resilience and professional skills, while also preserving local accountability
 - making decisions on the extent of shared services at an operational level
 - learning lessons from existing shared service models such as the Ayrshire Roads Alliance, Tayside Contracts and further afield
 - establishing a baseline position, so that roads authorities can measure the expected benefits from collaboration over time
 - develop outcome measures which demonstrate the contribution of well-maintained roads to Scotland's economy.

Councils should:

- Ensure that they work closely with the Roads Collaboration Programme and regional group partners to determine the extent of shared service models for roads maintenance operations
- Ensure that they implement the findings of the consultant's review of Roads Asset Management Plans (RAMPs) where relevant
- Implement methods for assessing and comparing councils' roads maintenance efficiency with the aim of identifying and learning from councils delivering services more efficiently
- Use the National Highways & Transport (NHT) Network Survey, or similar, to obtain user views and perceptions of roads services consistently
- Use the results of user surveys to develop more proactive ways of engaging with the public over roads maintenance issues, and to help inform scrutiny and challenge of roads maintenance budgetary proposals.

Councils and Transport Scotland should:

- Ensure that they use their RAMPs to inform elected members and Scottish ministers of long-term investment plans for maintaining roads that take into account the whole-life costing of treatment options
- Ensure that the consequences of spending less than that necessary to maintain current road condition adequately features in budget-setting processes to allow elected members and Scottish ministers make informed choices which take account of competing demands and priorities.

Transport Scotland should:

- Make road condition information publicly available for the geographical areas of the trunk road network: North West, North East, South East and South West Scotland
- Identify unit cost or other efficiency measures to evaluate the value for money provided by operating companies
- Consider the overall trend in performance of operating companies and ensure it has appropriate mechanisms in place for addressing areas of poorer performance
- Fully take account of the needs of the existing trunk road network when considering the affordability of large-scale transport investments taken forward within the Scottish Government's Infrastructure Investment Plan
- Consider its future strategy for maintaining the trunk road network. The strategy should fully reflect the progress made by council regional groupings in determining the extent of shared service models for roads maintenance operations. If Transport Scotland decides to renew its existing operating contracts, it should seek to maximise opportunities for greater collaboration with councils through contract conditions.

The Society of Chief Officers of Transportation Scotland (SCOTS) should:

- Work with councils to implement the findings of the consultant's review of RAMPs, and promote good practice where it is identified
- Continue, as a matter of priority, to work with consultants to develop methods for assessing and comparing how efficient councils are at roads maintenance
- Focus the work of the Scottish Roads Research Board so that it identifies a programme of research projects aimed at maximising innovation and sharing current good practice in delivering roads maintenance services.

This is the third time we have reported on roads maintenance in the last six years. We expect the Strategic Action Group to publicly report on the progress made on implementing the recommendations contained in this report. It should publish this report no later than the end of December 2017.

Background

1. In February 2011, the Auditor General for Scotland and the Accounts Commission published [Maintaining Scotland's roads: A follow-up report](#) . The audit examined progress on implementing recommendations in *Maintaining Scotland's roads* which the Auditor General for Scotland and the Accounts Commission published in November 2004. The 2011 audit report found the following:

- The condition of Scotland's roads had worsened since 2004.
- Spending on roads maintenance had fallen, after taking account of road construction inflation.²
- Roads authorities could improve how they manage roads maintenance, for example by introducing Roads Asset Management Plans and using performance indicators to help them benchmark against other roads authorities.
- The Scottish Government should consider whether a national review of how the road network is managed and maintained is needed to stimulate service redesign and increase the pace of examining the potential for shared services.

2. The Scottish Government and councils initiated a National Review of Road Maintenance (NRM) later in 2011. A Strategic Action Group, jointly chaired by COSLA and the Minister for Transport and Islands, provided overall direction to the NRM. The findings of the NRM, published in July 2012, identified 30 actions under six main themes:

- Better asset management, including prioritising investment in roads maintenance.
- The use of performance information to support benchmarking.
- Using innovation.
- Enabling faster progress in improving road condition.
- Considering different delivery models, including the scope for greater collaboration and the 'optimum arrangements for the management and maintenance of roads in Scotland' (known as Option 30).
- Communicating with industry partners and road users.

[The Supplement](#) provides more details of the NRM actions.

3. In May 2013, the Accounts Commission published *Maintaining Scotland's roads: An audit update on councils' progress*. The audit examined councils' progress in implementing relevant recommendations in the 2011 audit report. It also reviewed progress on implementing the actions set out in NRM. The 2013 audit report found the following:

- The condition of local roads had improved marginally since 2010.

- Some progress had been made with the introduction of RAMPs and performance indicators but further work was needed.
- The NRMR was progressing but significant new ways of working would take time to put in place.

4. Overall, the Accounts Commission recognised that although councils were facing budget constraints, they needed to improve the condition of Scotland's roads more quickly.

About this audit

5. This audit follows up previous audit reports in 2011 and 2013. It reviews:

- changes in road condition and spending on roads maintenance since the 2011 report
- progress made against previous audit recommendations
- progress in implementing the actions set out in the NRMR, in particular Option 30.

6. During the audit we:

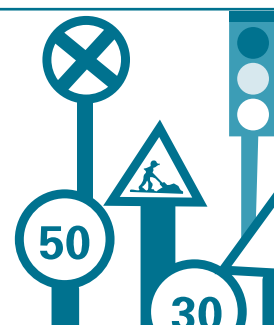
- analysed performance data, in particular road condition and spending on roads maintenance
- reviewed other key information and documents such as:
 - Transport Scotland strategic documents
 - Roads Collaboration Programme updates and reports
 - Scottish Roads Research Board documentation
 - User survey results, such as those generated from the Scottish Household Survey and the National Highways & Transport Network Survey
- conducted fieldwork at a sample of 11 roads authorities, where we:
- reviewed strategic documents such as Roads Investment Strategies, Roads Asset Management Plans and Annual Status and Options Reports
- interviewed senior officers and elected members at a sample of ten councils, and senior officers at Transport Scotland.

7. The report has two parts:

- [Part 1](#) outlines the condition and cost of maintaining Scotland's roads.
- [Part 2](#) reviews progress made in improving the management of roads maintenance.

Part 1

The condition and cost of maintaining Scotland's roads



Key messages

- 1 Independent survey results indicate the overall condition of council-maintained roads has remained stable, at around 63 per cent in acceptable condition over the period 2011/12 to 2014/15. Road condition varies among individual councils from 44 per cent to 79 per cent in acceptable condition. While 13 authorities increased their spending, overall council expenditure continues to decrease, from £302 million in 2011/12 to £259 million in 2014/15 (14 per cent). Overall, councils spent £33 million (13 per cent) less on planned and routine maintenance in 2014/15 than the Society of Chief Officers of Transportation Scotland (SCOTS) considers was necessary to maintain the current condition of local roads. Only a third of councils are presenting options to elected members on what kind of road condition can be expected from different levels of spending.
- 2 The condition of trunk roads declined from 90 per cent in acceptable condition in 2011/12 to 87 per cent in 2014/15. Most of this decline is associated with the condition of motorways. Transport Scotland attributes this to more resurfacing work, instead of more expensive reconstruction which would also improve the condition of the lower road layers. Its expenditure on trunk roads maintenance fell from £168 million in 2011/12 to £162 million in 2014/15 (four per cent). Transport Scotland spent £24 million (38 per cent) less on structural maintenance in 2014/15 than it considers necessary to keep trunk road condition at its current levels.
- 3 Fifty-seven per cent of users report that road condition is a major concern. Councils and Transport Scotland both need to be clearer with the public on the impact that current levels of investment will have on road condition. They also need to take account of users' views consistently to make informed budgetary decisions that take account of competing priorities.

**users
consider road
condition
as a major
concern**

Proper maintenance of the road network is vital to Scotland's economic prosperity and for road users to travel safely

8. Scotland's road network connects business with customers, suppliers and the workforce, helps people access places of employment and education, and helps move goods from point of production to local, national and international markets. There is no single indicator of how roads contribute to economic and social outcomes. But the Scottish Government considers that the road network plays a part in delivering nine of the 16 national outcomes in its National Performance Framework.³

9. Scotland's road network consists of almost 56,000 kilometres of road, as well as footways, bridges, lighting, signs and lines. Councils are responsible for 25,600 kilometres of classified roads and 26,800 kilometres of unclassified roads. Classified roads comprise:

- **A roads** – major roads which deliver the basic road links to certain areas or communities.
- **B roads** – roads that serve a local purpose and connect to strategic routes.
- **C roads** – mainly rural interconnecting roads.

10. Transport Scotland is responsible for 3,600 kilometres of motorways and trunk roads. Motorways and trunk roads make up only six per cent of the road network but, based on vehicle mileage, carry over a third of the traffic and nearly two-thirds of heavy goods vehicles (HGVs). In this report, the term trunk roads include motorways, while local roads mean council-maintained roads.

11. Councils are changing the way they value local roads with effect from 2016/17. The value of local roads will now be calculated on a similar basis to trunk roads, based on depreciated replacement cost, that is, the cost of replacing all roads to their current condition. The change is likely to lead to a significant increase in the value of Scottish councils' road network. Local roads will be the highest value asset on councils' balance sheets.

12. Road maintenance covers all work on roads other than major new-build work. It includes:

- structural maintenance, such as planned schedules of resurfacing or reconstruction works. Resurfacing is aimed at replacing a failed road surface. Reconstruction replaces a failed road structure, including the surface and lower road layers.
- surface dressing, to seal the surface, improve skidding resistance and restore ride quality
- routine maintenance, such as repairing potholes, emptying drains and gullies, and repairs to lighting and signs
- weather and winter services, such as applying salt and grit to remove snow and ice
- reactive maintenance, such as responding to inspections, complaints or emergencies.

Generally, the cost of materials forms the greatest proportion of spending associated with structural maintenance, while staff costs comprise the greatest proportion of spending on routine repairs.

13. Police accident records indicate that the biggest cause of road accidents is driver error or reaction, being a factor in 68 per cent of all road traffic accidents. Poor road condition is a small, but still important, contributory factor in the causes of road traffic accidents. Police accident records indicate that poor and defective road conditions are a contributory factor in around 0.7 per cent of fatal road traffic accidents in the UK, 0.8 per cent of serious road traffic accidents and 0.6 per cent of slight road

traffic accidents⁴. Between 2010 and 2014, there were 865 fatal, 8,039 serious and 38,957 slight road traffic accidents on Scottish roads. Extrapolating these figures means that poor and defective road condition may have been a contributory factor in six fatal, 64 serious and 234 slight road traffic accidents on Scottish roads over the five-year period.

14. Good road condition is also of vital interest to cyclists. The number of cyclists killed or injured on Scotland's roads increased from 776 in 2004 to 857 in 2014 (10.4 per cent).⁵ The number of accidents involving cyclists where road condition was a contributory factor is not recorded. While the increase in casualties is likely to be attributable, at least in part, to the growing popularity of cycling to work and as a leisure activity, the Scottish Household Survey routinely asks those surveyed why they do not cycle to work. On average, five per cent of those surveyed between 2010 and 2014 said that they do not cycle to work because the road surfaces are dangerous.⁶

The condition of the Scottish road network has worsened since 2011, mainly as a result of a decline in the condition of motorways

15. The Society of Chief Officers of Transportation Scotland (SCOTS) appoints WDM Ltd, a private firm with UK-wide experience in undertaking roads surveys, to undertake annual surveys of the condition of local roads on behalf of councils. *The Scottish Road Maintenance Condition Survey* uses a traffic speed machine based survey (Surface Condition Assessment for the National Network of Roads – SCANNER) to make a number of measurements that describe the condition of the road surface, including rutting, cracking and ride quality. This allows councils to assess the length of road requiring maintenance. The length of road surveyed annually includes:

- 100 per cent of A class roads with the direction of travel changed in alternate years
- 50 per cent of B and C class roads with the remaining 50 per cent surveyed the following year. The direction of travel is also alternated such that every B and C class road lane is surveyed every four years
- 10 per cent of unclassified roads are surveyed in one direction each year.

16. The results of the survey are used to classify local roads into one of three measures:

- **Green** – roads are in acceptable condition.
- **Amber** – some deterioration is apparent on the roads and should be investigated to determine the best time to carry out planned maintenance treatment.
- **Red** – roads are in poor condition and are likely to require repairs within one year.

17. A road that is assessed as in an acceptable condition through the survey does not necessarily mean it is free of any defects. Equally, a road that is in a poor condition does not necessarily mean it is unusable. But a road in poor condition:

- may require vehicles to travel at lower speeds
- increases the risk of vehicular suspension and other damage

- could present an increased safety risk, for example owing to the loss of the road's anti-skid properties.

18. SCANNER provides an indicator of the condition of the lower road layers but not an absolute measure. Transport Scotland tests the surface of the trunk road network using SCANNER. It also uses a Deflectograph to provide an estimate of the remaining useful life of trunk roads and to identify areas requiring strengthening. The Deflectograph is a lorry-mounted system involving a loaded wheel passing over the road. The size of the deflection is related to the strength of the lower road layers. Each year, Transport Scotland uses the Deflectograph to survey 20 per cent of the trunk road network.

19. The different approaches mean that, under normal circumstances, the reported condition of the local road network cannot be compared with that of trunk roads. Transport Scotland publicly reports trunk road condition using the combined results of its SCANNER and Deflectograph surveys. But it is also able to separate its survey results so that trunk road condition can be more directly comparable with that of local roads. This report outlines the condition of the trunk road network using both how Transport Scotland reports it (combined surface and lower road layer surveys) and surface survey only.

The condition of council-maintained roads has stabilised overall

20. The 2011 audit report found that the condition of council-maintained classified roads had deteriorated over the last five years. In 2005/06, 70 per cent were in acceptable condition. By 2010/11, the figure had dropped to 66 per cent in acceptable condition. Since then, the road condition survey indicates that the proportion of classified local roads in acceptable condition has remained the same ([Exhibit 1](#)).

Exhibit 1

The condition of council-maintained roads from 2011/12 to 2014/15

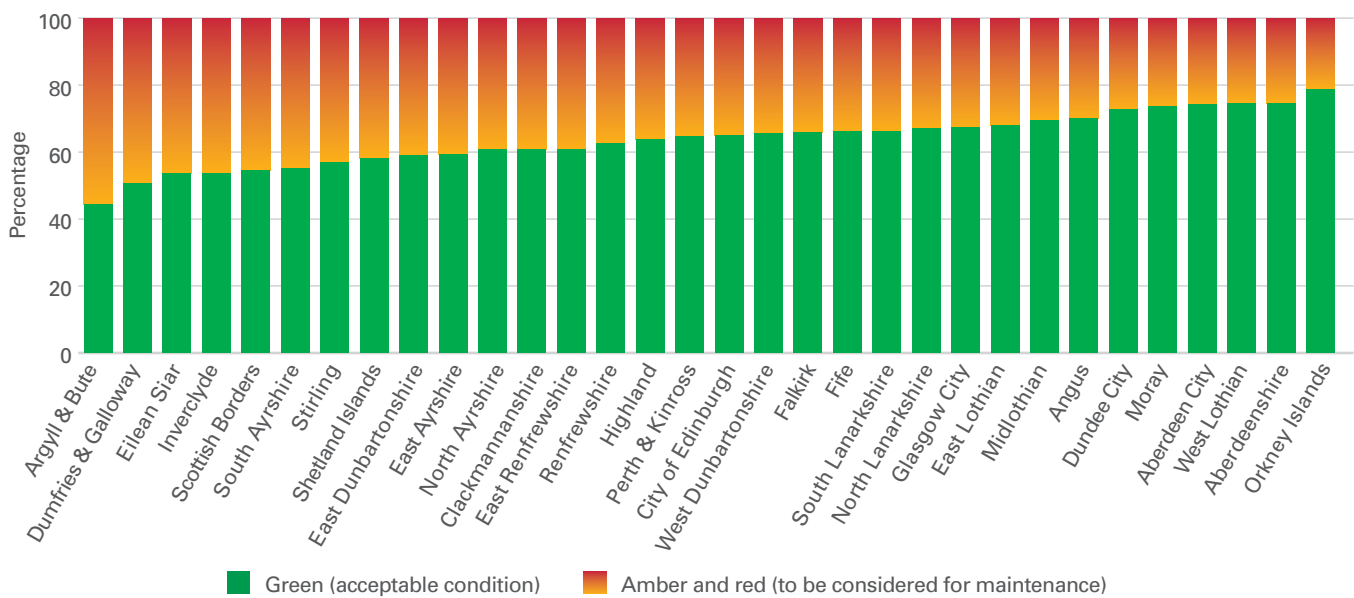
The proportion of local roads in acceptable condition remained the same between 2011/12 and 2014/15.



21. Unclassified roads make up slightly more than half the local road network. The condition of unclassified roads declined slightly from 62 per cent in acceptable condition in 2011/12 to 60 per cent in acceptable condition in 2014/15. Unclassified roads continue to be in worse condition than classified roads.

22. While the overall condition of council-maintained roads has remained stable at around 63 per cent over the period 2011/12 to 2014/15, there is significant variation in the condition of roads among councils. For example, in 2014/15, the proportion of local roads in acceptable condition ranged from 44 per cent in Argyll and Bute Council to 79 per cent in Orkney Islands Council ([Exhibit 2](#)).

Exhibit 2
Comparison of the proportion of roads in acceptable condition by council for 2014/15
There is significant variation in road condition among individual councils.



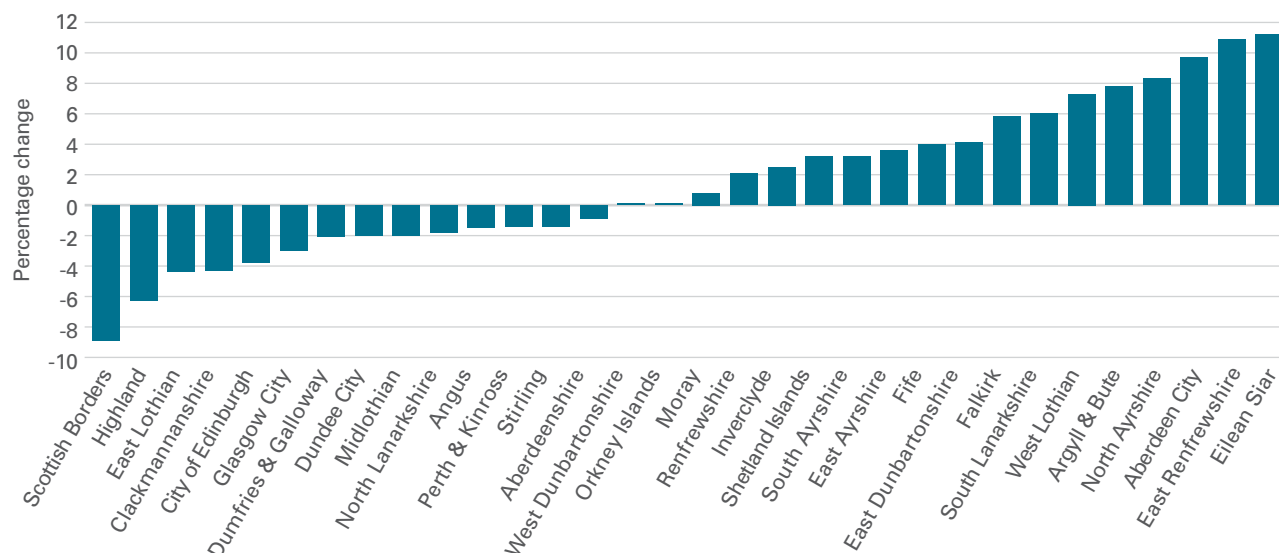
Source: SCOTS

23. There is also significant variation among councils in how the condition of local roads has changed over time. Between 2011/12 and 2014/15, survey results indicate that for 18 councils the proportion of their local roads in acceptable condition increased, while for 14 councils the condition of their local roads deteriorated. The extent of variation ranged from an improvement in acceptable condition of 11 per cent in Comhairle nan Eilean Siar to a deterioration of nine per cent in Scottish Borders Council ([Exhibit 3, page 15](#)). There is no obvious correlation between the change in road condition over time and the current level of road condition in individual councils.

Exhibit 3

Change in percentage of council-maintained roads in acceptable condition from 2011/12 to 2014/15

There is significant variation in the change in road condition between councils.



Source: SCOTS

The condition of trunk roads has worsened

24. Transport Scotland has a higher maintenance standard for the trunk road network. In particular, it considers that motorways need to be maintained to a higher standard owing to the higher proportion of HGVs thus enabling traffic to move safely at higher speeds than normally experienced on local roads.

25. Using Transport Scotland's method of assessing road condition, the condition of trunk roads declined from 90 per cent in acceptable condition in 2011/12 to 87 per cent in 2014/15. Dual and single-track A-class roads are in better condition than motorways. Motorways declined from 79 per cent in acceptable condition in 2011/12 to 74 per cent in acceptable condition in 2014/15 ([Exhibit 4, page 16](#)). Transport Scotland attributes much of the decline in motorway condition to doing more resurfacing work instead of reconstruction, which would also improve the condition of lower road layers ([paragraph 72](#)).

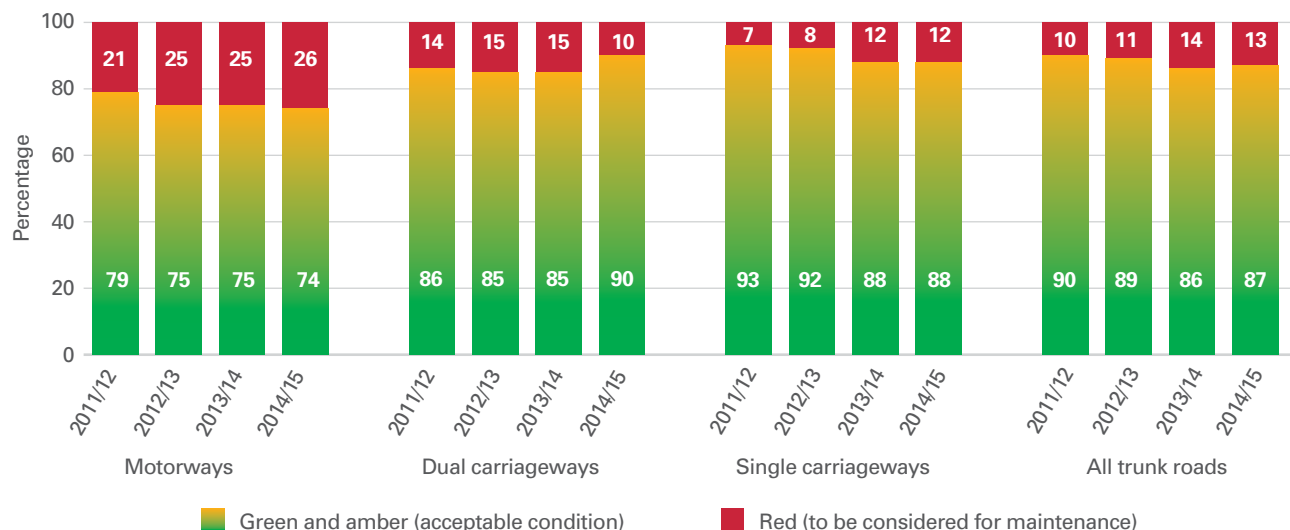
26. The 2011 audit report found that 78 per cent of trunk roads were in acceptable condition in 2010/11 based on the methodology used to assess council-maintained roads, that is, based on surface survey only. Since then, the overall condition of trunk roads has increased slightly to 79 per cent in acceptable condition. However, the proportion of motorways in acceptable condition fell from 70 per cent in 2011/12 to 58 per cent in 2014/15 ([Exhibit 4, page 16](#)).

Exhibit 4

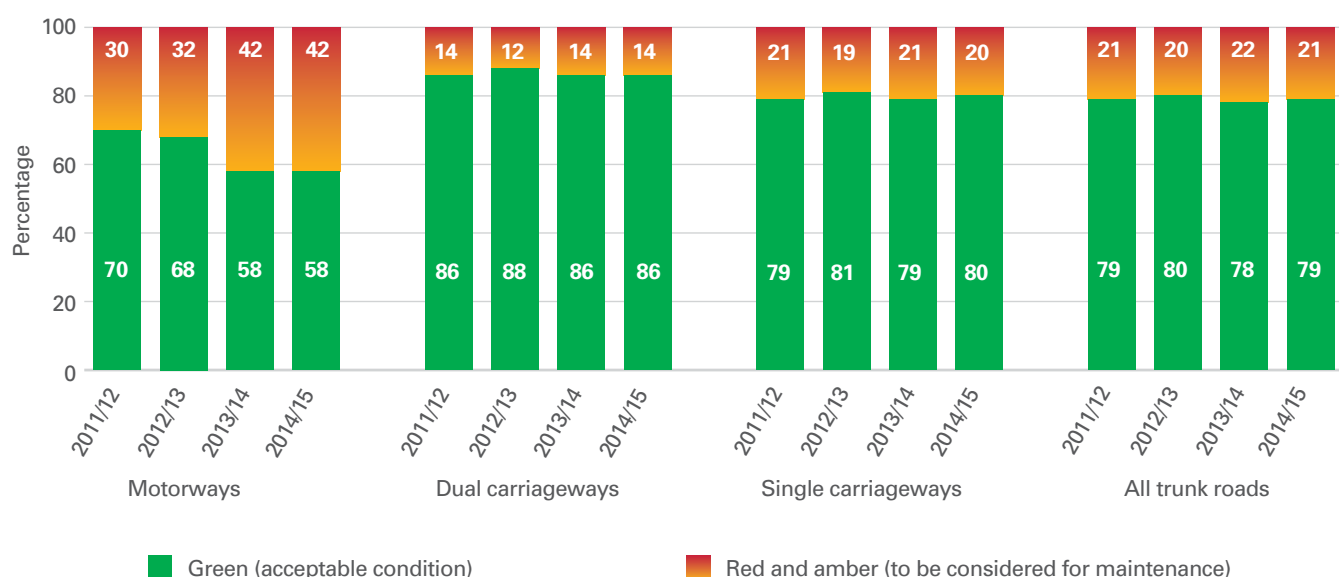
The condition of trunk roads from 2011/12 to 2014/15

The condition of trunk roads has worsened since 2011/12.

Condition results using Transport Scotland's approach, that is combined surface and lower road layers surveys.



Condition results using councils' approach, that is surface survey only



Source: Transport Scotland

27. Transport Scotland evaluates the quality of trunk road maintenance through the Performance Audit Group (PAGplus) and the annual reports it produces. These reports assess the performance of the operating companies which carry out trunk roads maintenance on behalf of Transport Scotland. Prior to June 2015, four operating companies provided trunk roads maintenance, organised into four geographical areas. A fifth operating company began operations in June 2015 when responsibility for maintaining the Forth Road Bridge and adjacent trunk road network was transferred from the Forth Estuary Transport Authority to Transport

Scotland. PAGplus assesses the performance of operating companies using a number of criteria, including:

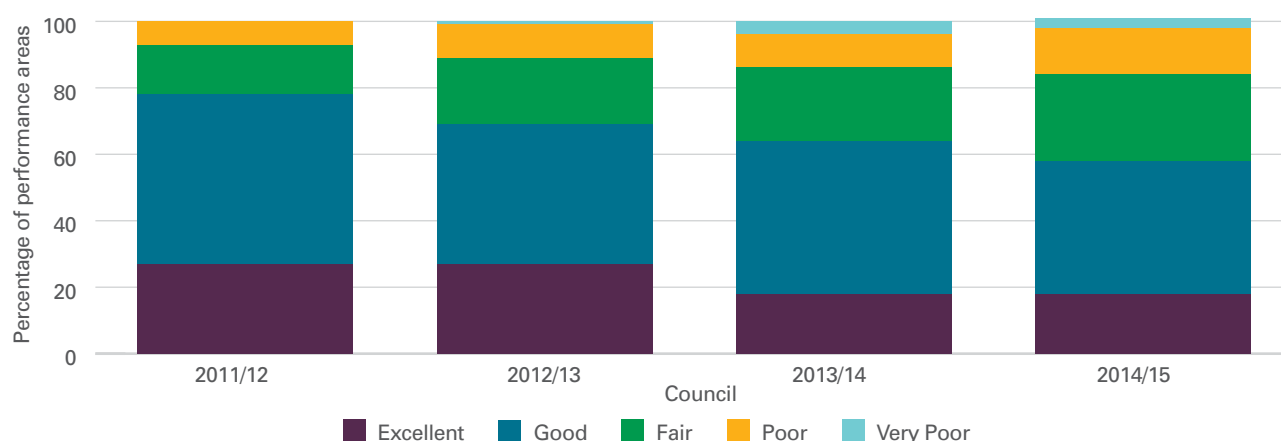
- Repair of major defects
- Planned maintenance of roads and other structures
- Winter service response times
- Safety inspections and patrols.

28. PAGplus assesses the performance of operating companies on a scale from 'excellent' through to 'very poor'. In 2011/12, PAGplus assessed 78 per cent of performance areas as 'excellent' or 'good' but this fell to 58 per cent in 2014/15. Conversely, PAGplus assessed seven per cent of performance areas as 'poor' or 'very poor' in 2011/12 but this increased to 16 per cent in 2014/15 ([Exhibit 5](#)). The introduction of new contracts in the North West, South West and South East areas during 2013 and 2014 may have played a part in the decline in performance during this time. It is important that Transport Scotland considers the overall trend in performance of operating companies and ensures it has appropriate mechanisms for addressing areas of poorer performance.

Exhibit 5

Trunk road maintenance operating company performance 2011/12 to 2014/15

The overall performance of trunk road operating companies declined between 2011/12 and 2014/15.



Note: The performance of the operating company responsible for the maintenances of the Forth Road Bridge and adjacent trunk road network is excluded from this analysis as it did not begin operations until June 2015, so there is no publicly available report through PAG plus.

Source: Transport Scotland

29. Transport Scotland does not report publicly on individual operating companies using road condition as an indicator of performance. This means it is not possible to compare the performance of operating companies in the same way as we have compared councils. Making road condition information publicly available for the geographical areas of the trunk road network – North West, North East, South East and South West Scotland – would help improve openness and transparency to the public.

Users continue to report that road condition is a major concern

30. The 2011 and 2013 audit reports both indicated that road users were increasingly dissatisfied with the condition of Scottish roads, which they believed was getting worse. In particular, the 2013 audit report referred to an AA survey in January 2013, which found that 45 per cent of local road users in Scotland considered road conditions to be poor, very poor or terrible. This was the worst rate in the UK.

31. Councils use a range of approaches to gauge customer satisfaction with roads in their area, such as user surveys and feedback from consultation groups. Not all authorities report their results publicly and, of those that do, there are differences in the type of question asked. For example, some councils seek views about road condition, while others ask about satisfaction with roads maintenance overall. There can also be different response options for customers to choose from.

32. In response to actions contained in the NRM, a question was included in the 2014 Scottish Household Survey (SHS) to capture levels of user satisfaction with road condition on a more consistent basis than councils had done previously.⁷ The results indicated that a third of respondents felt satisfied with road condition while 57 per cent felt dissatisfied. The remaining ten per cent felt neither satisfied nor dissatisfied, or had no opinion.

33. The National Highways & Transport (NHT) Network Survey asks the public more detailed questions than those contained in the SHS, including their views on road condition, road safety, traffic pollution and public transport. Since 2013, only seven Scottish councils have taken part in the NHT Network Survey. The 2015 survey results confirmed the importance that the public attach to road condition, and their low levels of satisfaction with it. For example, people living in the five Scottish councils that took part (Aberdeenshire, Dumfries and Galloway, North Ayrshire, Scottish Borders and South Lanarkshire) rated road condition as either the first or second most important aspect of roads services.

34. The NHT survey is a useful way to get councils thinking about how they might influence public perception of road condition by engaging more proactively over their roads service. For example, as part of a Roads Service communication strategy and action plan, in 2015 Aberdeenshire Council:

- used social media to inform the public about its winter roads maintenance procedures and how best to report potholes
- placed videos on YouTube to advertise particular events, such as the reopening of the Balmoral Bridge, and to let the public know more about the work of a roads manager
- issued news releases informing the public that its summer programme of surface dressing was about to begin and to be aware of loose chips
- raised the profile of female engineers by including an interview with a female member of staff in the YourJob section of the local press.

While the council acknowledges it is difficult to establish how much these activities have played a part, public levels of satisfaction with road condition in Aberdeenshire improved from 34 per cent in 2013 to 41 per cent in 2015.

35. Transport Scotland carries out annual surveys to gauge trunk road users' levels of satisfaction. Following a period of decline, levels of satisfaction have risen in the most recent survey. The 2011 audit report found that the proportion of users who were satisfied with the general condition of trunk road surfaces fell from 52 per cent in 2007 to 37 per cent in 2010. The survey results for 2015 indicate that 45 per cent of users were satisfied with trunk road surfaces.

Councils spent 14 per cent less on roads maintenance in 2014/15 than in 2011/12, while Transport Scotland spent four per cent less

36. Recent reports from the Accounts Commission have highlighted the financial challenges and service pressures that councils are currently facing. For example, [An overview of local government in Scotland 2016](#)  outlined the increasing demand for social care owing to demographic change, and how a third of councils overspent their social care budgets in 2015/16.⁸ These service demands and national policy conditions on, for example, maintaining teacher numbers, have meant that councils have tended to prioritise big spending areas such as social care and education. As a result, budget reductions have tended to focus on other areas, such as roads and transport.

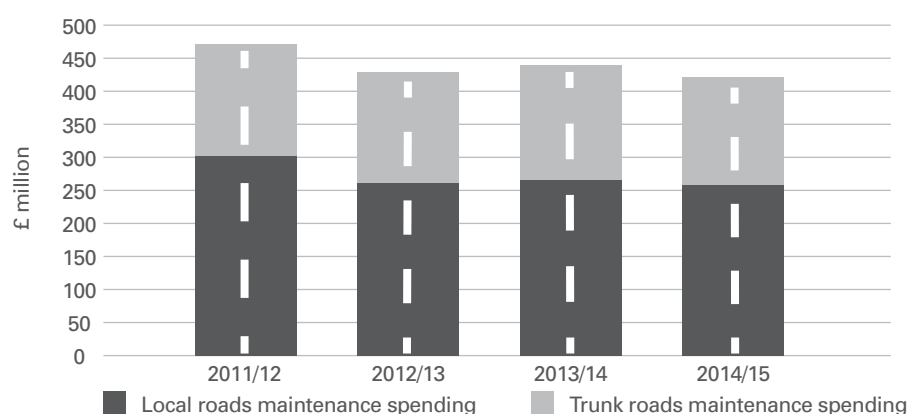
37. There is likely to be a five per cent reduction in Scottish Government revenue grant funding for local government in 2016/17, compared to 2014/15. This, and the continued prioritisation given to services such as social work and education, means that roads maintenance budgets may be put under further pressure.⁹

38. The 2011 audit report found that councils' roads maintenance spending fell by £76 million (13 per cent) between 2004/05 and 2009/10, after taking account of road construction inflation. Transport Scotland spending on roads maintenance fell by £78 million (32 per cent) in real terms, that is, allowing for inflation, over the same period. Since then, roads maintenance spending has continued to fall ([Exhibit 6](#)). Councils and Transport Scotland spent £421 million on roads maintenance in 2014/15. Taking inflation into account, this was £50 million less (11 per cent) than in 2011/12.

Exhibit 6

Roads maintenance spending from 2011/12 to 2014/15

Roads maintenance spending decreased by 11 per cent between 2011/12 and 2014/15 after taking account of inflation.



39. Councils' net revenue and capital expenditure on general fund services (that is, the cost of all service provision except some council housing costs), decreased by £0.97 billion (7.5 per cent) between 2011/12 and 2014/15, after taking inflation into account. Councils' revenue and capital spending on roads maintenance fell from £302 million to £259 million over the same period (14 per cent).¹⁰ In percentage terms therefore, the reduction in councils' expenditure on roads maintenance between 2011/12 and 2014/15 was almost double that of their reduction in net spending on general services. Councils spent £4,935 per kilometre on local roads maintenance in 2014/15. Traffic volumes on council-maintained roads increased by two per cent between 2011/12 and 2014/15.

40. In 2014/15, Transport Scotland spent £162 million on trunk roads maintenance. This equates to £47,200 per kilometre and is some £6 million (four per cent) less than in 2011/12, after taking inflation into account. During the same period, traffic volumes on trunk roads increased by five per cent.

41. In addition to this spending, Transport Scotland funds trunk roads building and maintenance through its Design Build Finance and Operate schemes, such as the M6 and M80 improvements. Private operators are required to maintain these trunk roads, which Transport Scotland funds as part of its annual unitary service charges. Transport Scotland spent £84.7 million on these privately financed roads in 2014/15, an increase of 36.6 per cent from 2011/12. Transport Scotland will need to consider the implications on its budget of further increases in its annual unitary charges as new privately financed roads are built.

The amount of money councils spend on roads maintenance varies significantly

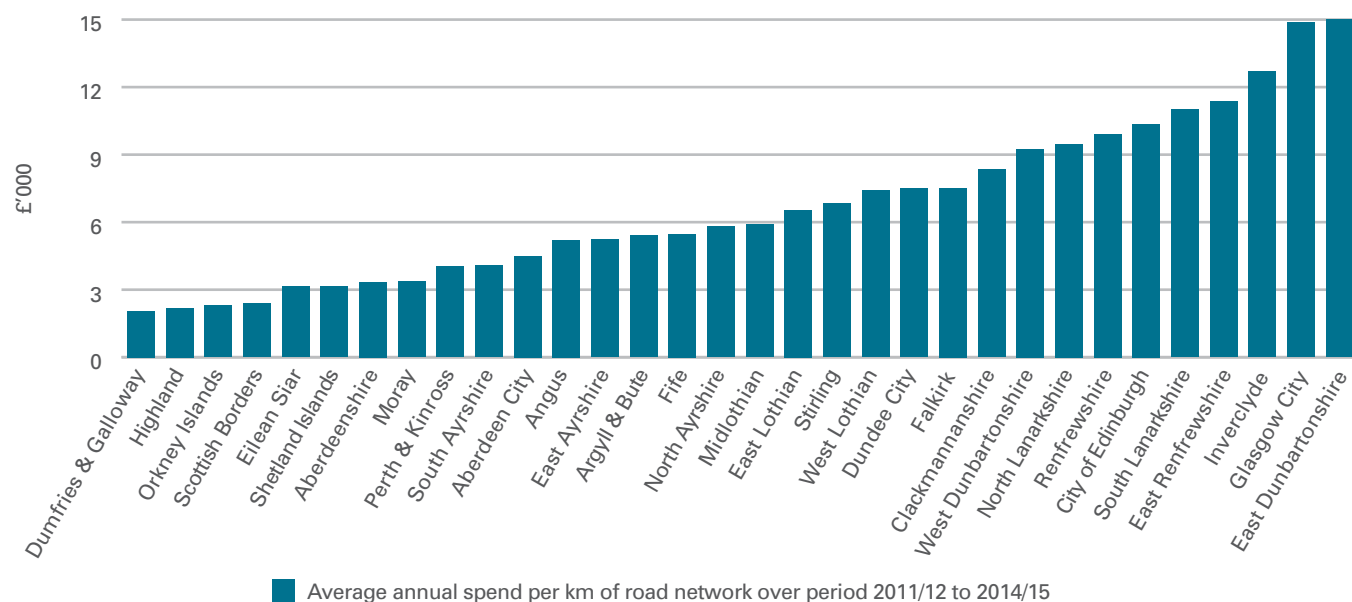
42. There is a wide variation in roads maintenance spending among councils ([Exhibit 7, page 21](#)). Between 2011/12 and 2014/15, average annual roads maintenance spending varied from £2,052 per kilometre of roads in Dumfries and Galloway Council to £14,995 per kilometre in East Dunbartonshire Council. Based on spending over the period 2011/12 to 2014/15, urban and city councils spend the most on roads maintenance per kilometre of network. There is likely to be a number of reasons contributing to this variation in expenditure between councils. We outline some of the factors which may influence council's spending patterns at [paragraphs 67–69](#) of the report.

43. In total, 19 councils reduced their spending on roads maintenance between 2011/12 and 2014/15, while 13 councils increased their spending ([Exhibit 8, page 21](#)). East Dunbartonshire Council reduced its spending on roads maintenance the most (by 64 per cent), while Dumfries and Galloway Council increased its spending the most (by 188 per cent).

Exhibit 7

Councils' spending on roads maintenance 2011/12 to 2014/15

The amount of money councils spend on roads maintenance varies significantly.

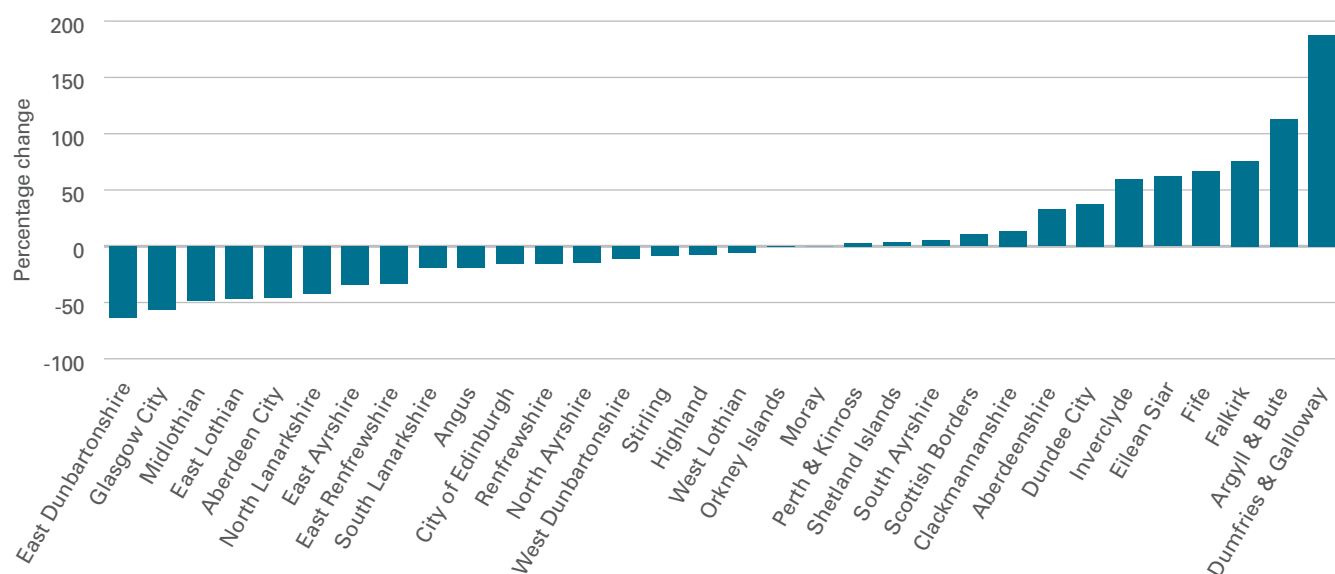


Source: SCOTS

Exhibit 8

Change in councils' roads maintenance spending from 2011/12 to 2014/15

There is significant variation in the change in roads maintenance spending across councils.



Source: SCOTS

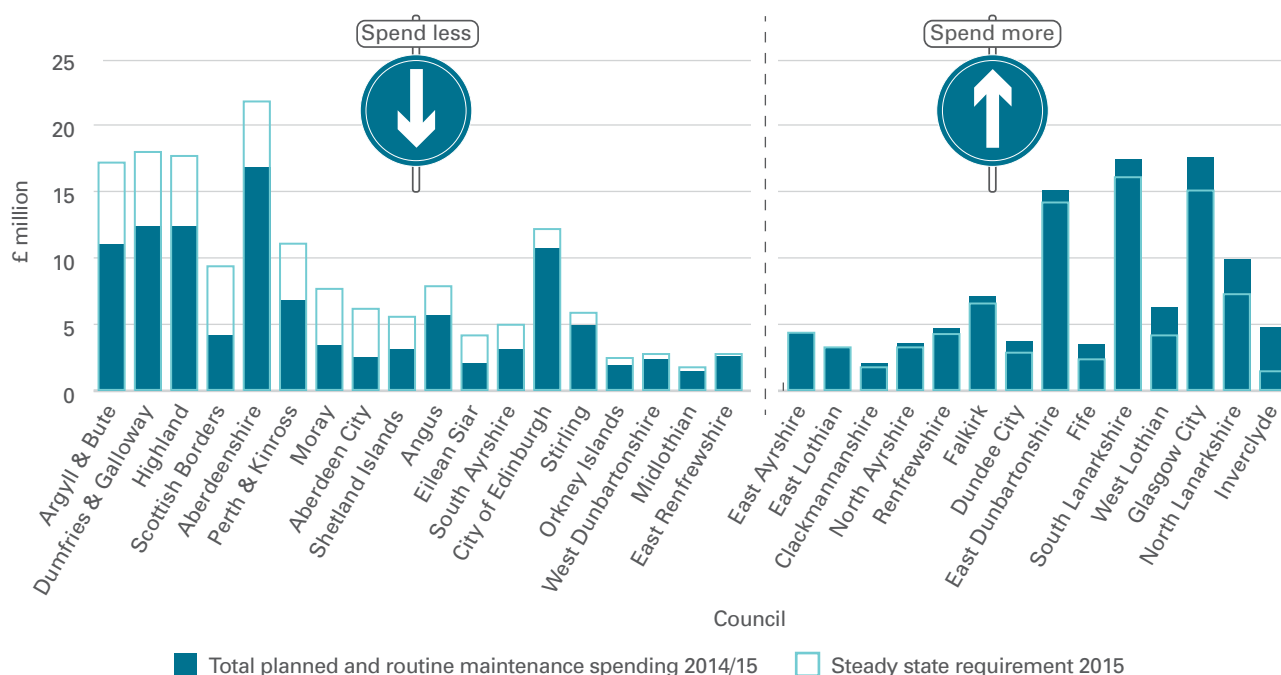
Levels of spending may not be enough to maintain roads in their current condition

44. Planned and routine maintenance are the types of road maintenance activity which are most likely to lead to improved road condition. SCOTS estimates that councils need to spend £246 million each year, excluding inflation, on planned and routine maintenance to maintain the local road network in its current condition. This is known as steady state and is calculated using a methodology that takes into account existing road condition, and the type and cost of treatments related to that condition. Overall, councils spent £33 million (13 per cent) less on planned and routine maintenance in 2014/15 than SCOTS considers was necessary to maintain the current condition of local roads. According to SCOTS' figures, 14 councils spent more in 2014/15 than that necessary to maintain their current condition, while 18 councils spent less ([Exhibit 9](#)).

Exhibit 9

Councils' roads maintenance spending compared to that necessary to maintain their current road condition in 2014/15

Based on SCOTS' steady state calculations, 18 councils did not spend enough to maintain their current road condition in 2014/15.



Source: SCOTS

45. Between 2013 and 2015 Transport Scotland undertook a study, with consultant support, to develop a long-term vision for maintaining the trunk road network. This considered a number of options for future investment, including:

- A baseline position, such that the trunk road network should be maintained in a steady state condition over a 20-year period to 2033. This was based on an overall network condition of 14 per cent in need of investigation for maintenance each year. The cost of this option was calculated at £1.24 billion (excluding inflation) and is equivalent to spending on average £62 million each year on structural maintenance.
- An option to improve the network over the 20-year period such that its condition was comparable to the rest of the UK and to similar countries internationally. This was based on an overall network condition of six per cent in need of investigation for maintenance each year. The cost of this option was calculated at £1.59 billion (excluding inflation), equivalent to spending on average £79 million each year on structural maintenance.

46. Transport Scotland spent £38 million on structural maintenance in 2014/15, some 62 per cent of what the study calculated was necessary to achieve steady state condition. Given the annualised nature of public sector budget setting, there is no guarantee that sufficient funds will be available in the future to achieve either of these aspirations.

Roads authorities need to be clearer about what road condition can be expected from given levels of spending

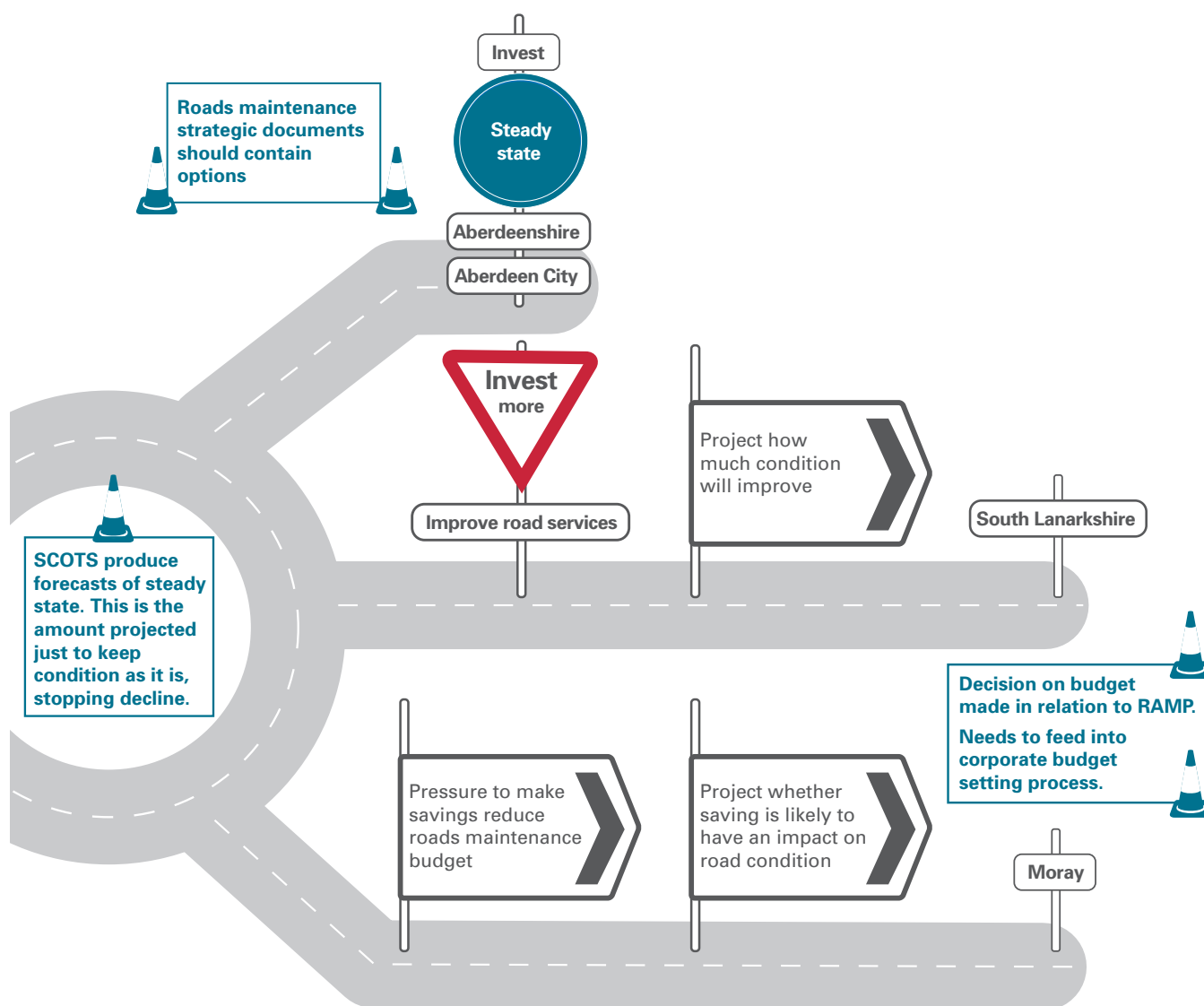
47. SCOTS' estimates of the spending needed to maintain steady state can help give an indication of the level of investment required to prevent further deterioration in road condition. Councils are beginning to use financial modelling tools to analyse how different levels of spending on roads maintenance is likely to impact on road condition. SCOTS is also promoting the use of Annual Statement of Options Reports to allow elected members to consider how different budget decisions will affect road condition. These reports can help councils decide whether they want to invest to improve road condition, maintain steady state or identify budget savings that may impact on road condition. However, only a third of councils are presenting options to elected members on the road condition that can be expected from different levels of spending.

48. A good quality RAMP should set out the expected standard of service to be provided by the road network. This can be used to help inform the consideration of options based on the level of spending and prioritisation given to roads maintenance. In turn, these can help inform councils' corporate budget decisions. [Exhibit 10 \(page 24\)](#) illustrates how this should work in practice. It also gives examples from our audit fieldwork of the decisions councils have made and whether they were investing to improve road condition, maintaining steady state or releasing budget savings that may impact on road condition.

Exhibit 10

Council budget decisions and their impact on road condition

Councils need to be clearer about what they are trying to achieve from their budget decisions and what road condition they can expect from given levels of spend.



Council

Decision taken on roads maintenance

Aberdeen City

Steady state

The council approved the option in 2015 to maintain current road condition. It calculates this would require an increase in the annual roads maintenance budget from £4.5 million to £6.9 million. The council has still to commit these additional funds.

Exhibit 10 continued

Council	Decision taken on roads maintenance
Aberdeenshire 	Between 2011/12 to 2014/15, the council has spent significantly less on roads maintenance (around £12.3 million per annum) than the amount indicated by SCOTS' steady state calculation (£21.8 million) while still maintaining condition at around 75 per cent of roads in acceptable condition. In 2015, using a tailored modelling tool, the council approved the option to continue to maintain steady state while achieving budget savings of up to £2.2 million a year, by greater use of lower cost treatments and additional works on distressed areas.
City of Edinburgh Improved condition 	The council approved a new approach to allocating its capital budget for road maintenance in October 2015. This moves away from prioritising roads in the worst condition to a more preventative approach using a range of less expensive treatments. The council did not set a specific improvement target but used a modelling tool to predict an increase from the current position of 65 per cent in acceptable condition to 88 per cent in acceptable condition.
Ayrshire Roads Alliance 	East Ayrshire Council committed funding in 2013 to improve road condition, with a target to improve the proportion of roads in acceptable condition by one per cent a year. The capital investment programme 2013-23 allocated £24.3 million to roads maintenance over the ten-year period. Options put forward in the RAMP are based on this agreed budget. Before 2014, South Ayrshire Council had not identified capital funding for roads maintenance. The establishment of the Ayrshire Roads Alliance (Appendix) brought capital funding for roads maintenance in South Ayrshire more in line with the Ayrshire area. A target was set in 2016 to improve condition by one per cent per annum.
Inverclyde 	Around 54 per cent of roads in Inverclyde are currently in acceptable condition, one of the worst in Scotland. The council approved a Roads Investment Strategy in 2013, which laid out a five-year capital investment programme of £29 million intended to improve road condition. There is no overall target for improving the proportion of roads in acceptable condition but the aim is to reduce the backlog of roads in red condition and maintain the level of amber condition roads. The condition of all classes of local roads in the council area improved in 2014/15.
Perth & Kinross 	The current RAMP identified two options, maintaining the current £8.7 million annual spend on roads maintenance or increasing annual funding to £11 million to achieve steady state. However, the RAMP does not identify the impact of current funding levels on road condition. The council has prioritised A class roads, to improve those to the national average, while allowing other classes of road, already above the average, to deteriorate. The council committed additional funding of £2 million a year for next three years, based on an annual statement and options report approved in November 2015.

Exhibit 10 continued

Council	Decision taken on roads maintenance
	The council committed funding from 2015 to slow down the rate of decline in the condition of roads. The RAMP identified a series of options and the council selected the option to invest an additional £67.3 million in roads maintenance over 20 years. This is projected to slow down the rate of decline and achieve a target of 55 per cent of roads in acceptable condition. Current condition is 54.5 per cent of roads in acceptable condition.
	The council has committed additional funding since 2008 to improve road condition. The council approved an investment plan with £126 million capital funding. It has a target of 72 per cent of roads in acceptable condition by 2019. The council has been resurfacing around 5-6 per cent of roads a year and achieved improvement from 62.5 per cent of roads in acceptable condition in 2008 to 66.2 per cent in 2015. The improvement was made mainly in category A and B roads.
	The council currently has a significantly higher than average percentage of roads in acceptable condition. As part of a wide-ranging review in 2013, the council considered the impact of a planned reduction in road condition. The report identified that allowing condition to deteriorate to the Scottish average over five years would save approximately £5 million each year. A significant increase in budget would be needed thereafter to maintain that average condition. The council has reduced the annual roads maintenance budget by £1.4 million between 2013 and 2015.

Source: Audit Scotland fieldwork

49. Transport Scotland has a number of budget headings for roads maintenance, including structural maintenance, and routine and winter maintenance. For routine and winter maintenance works, the requirement for roads maintenance is set out as service standards in contracts with the operating companies. For example, the requirement for salting and gritting treatment is triggered when temperatures fall below certain levels.

50. The structural repair budget is the main funding stream that contributes to improving the condition of the trunk road network. The operating companies submit proposals for structural maintenance schemes, which Transport Scotland prioritises to produce a three-year planned programme of works.

51. As noted in [paragraph 46](#), Transport Scotland spent £38 million on structural maintenance in 2014/15, 62 per cent of what the study calculated was necessary to achieve steady state condition. Transport Scotland's public facing RAMP, does

not outline the consequences that spending less than steady state will have on road condition. In line with councils, there is a need for Transport Scotland to be clearer on what road condition can be expected from given levels of spending.

More is spent on roads maintenance in England although only trunk roads are in significantly better condition

52. The Department for Transport publicly reports road condition in England as the proportion of roads that should be considered for maintenance.¹¹ This equates to category red condition roads in Scotland. In 2014/15 around:

- Four per cent of council A class roads, seven per cent of B and C class roads classified roads and 18 per cent of unclassified roads in England should have been considered for maintenance. The comparative figures for Scotland were five per cent, eight per cent and nine per cent respectively.
- Four per cent of motorways and trunk roads in England should have been considered for maintenance. In comparison, 13 per cent of motorways and trunk roads in Scotland were assessed as being in need for further investigation to determine if maintenance was required.

53. Roads maintenance spending is also higher in England. In 2014/15 for example, English councils spent £3.5 billion on roads maintenance, equivalent to around £12,238 per kilometre of local roads. Highways England spent £981 million on roads maintenance, equivalent to around £137,200 per kilometre of motorways and trunk roads.¹² This is two and a half times that spent per kilometre by Scottish councils on local roads maintenance, and nearly three times per kilometre more than Transport Scotland spent on trunk roads maintenance.

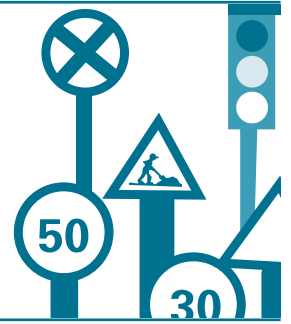
54. In December 2014, the Department for Transport published its Roads Investment Strategy, setting out plans to invest £15.2 billion on motorways and major roads in England between 2015/16 and 2019/20.¹³ Around £6 billion of this investment will be used to resurface 80 per cent of the strategic road network. In July 2015, the Chancellor of the Exchequer announced the creation of a new national roads fund, using Vehicle Excise Duty, to pay for this maintenance.

55. The Department for Transport also announced in December 2014 that £6 billion would be made available to English councils outside London for local roads maintenance between 2015/16 and 2020/21. In addition, it has agreed to provide other funding which are likely to result in increased local roads maintenance expenditure from 2014/15 onwards. In particular:

- The 2012 Autumn Statement included £75 million for Additional Highways Maintenance Funding Allocations after an underspend in 2013/14.
- In March 2014, £184 million was made available through the Weather Repair Fund for roads hit by weather damage in the winter of 2013/14.
- Local authorities were invited to bid for a share of a £250 million Pothole Fund to repair local roads, between 2016/17 and 2020/21.

Part 2

Improving the management of road maintenance



Key messages

- 1** The National Roads Maintenance Review (NRMR) has resulted in a range of actions, including the development of Roads Asset Management Plans and a common suite of performance indicators for roads maintenance activities. While much work has been done, further progress is needed. For example, existing performance indicators do not measure relative efficiencies between councils.
- 2** Roads authorities are changing the way they approach roads maintenance activities through better prioritising and targeting of roads maintenance, and using cheaper treatment options. This has helped available budgets go further but carries risks. Increasing the use of surface dressing might help to maintain the condition of the surface of the road network in the short term. But in the longer term it could lead to additional costs.
- 3** So far, the focus of roads authorities' collaborative working has been largely on specific areas of activity. Progress with introducing a shared services approach to roads maintenance, a central theme of the NRMR's findings, has been disappointingly slow. The Roads Collaboration Programme (RCP) is supporting councils to establish regional governance bodies to consider roads maintenance issues. But as yet, there is no clear plan of how this will translate into shared services at an operational level. Scottish ministers have made it clear that councils need to make more progress before trunk roads maintenance could be considered for inclusion in the regional groupings.

progress with introducing a shared services approach has been disappointingly slow

Road asset management plans are now in place although some still lack detail

56. Roads authorities need clear RAMPs for managing their roads to ensure they meet service standards and achieve value for money. A good quality roads asset management plan:

- describes the assets forming the road network and their condition
- assesses the future demand likely to be placed on the network

- clearly describes the level of service the council will provide to maintain the network
- provides financial information, including a long-term prediction of the cost of managing and operating the road network.

57. The 2011 audit report found that only around a third of councils had draft RAMPs. The 2013 audit report found that about half of councils had approved their RAMP and the remainder were in the process of doing so. The 2013 report also found that half of councils had information gaps in their RAMPs, including incomplete or unreliable asset inventory data, incomplete asset lifecycle plans and a lack of detailed long-term funding requirements.

58. To improve the consistency and quality of RAMPs, SCOTS commissioned an independent assessment of the state of councils' development and use of RAMPs as one of the NRMR action points. The consultant's report, in April 2016, found that all councils have RAMPs in place although some still lacked detail. In others, there was a need to update core data. The consultants also noted councils that were making the best use of RAMPs displayed some common characteristics, including:

- elected member recognition of the value of investing in the road network
- a lead official with responsibility for asset management
- an active programme of asset management improvement
- good asset data and capable users of RAMP software
- a high level of staff engagement with the SCOTS project to embed the use of RAMPs.

59. Transport Scotland first published a RAMP for the trunk road network in November 2007. It published an updated RAMP in January 2016. The January 2016 RAMP contains most of the good quality features outlined in [paragraph 58](#) above. It also sets out arrangements for monitoring the performance of the operating companies that Transport Scotland appoints to maintain the trunk road network. The RAMP does not provide information on planned roads maintenance spending beyond 2015/16, as the outcome of the 2015 spending review was not known at that time. Instead, it provides an indicative forward work plan, estimating work volumes up to 2024/25, based on the scenario that the budget for structural maintenance will remain at its current level.

More use is being made of performance information but further work is needed to allow comparisons of council efficiency

60. The 2011 audit report recommended that councils should adopt the suite of performance indicators that SCOTS was developing. This would allow councils to consistently measure the performance of roads maintenance activities. It also recommended that councils should make greater efforts to benchmark roads maintenance activities to drive out cost inefficiencies. The 2013 audit report found that councils were making more use of performance information but further work was needed to improve the quality and consistency of data to allow meaningful benchmarking to take place.

61. All councils have now adopted a common set of performance indicators developed between SCOTS and the Association of Public Service Excellence (APSE). The indicators cover various aspects of roads maintenance, including other asset groups such as lighting and footways. Key roads maintenance indicators within the set include:

- spend per kilometre of network
- overall road condition and by classification
- percentage of budget spent on each of planned, reactive and routine maintenance
- percentage of customer enquiries dealt with in target time
- percentage of major defects dealt with in target time
- percentage of the road network treated each year.

High-level roads maintenance condition and expenditure indicators have also been incorporated into the Local Government Benchmarking Framework, which is published annually.¹⁴

62. Although councils are now meeting as family groups to discuss performance information, the focus to date has mainly been on ensuring data is consistent. This has been useful in developing the indicator set but there is a need to move discussions on to identifying the underlying reasons for variations and sharing learning and good practice. Some examples of sharing good practice exist, for example policies for dealing with insurance claims and the APSE roads and lighting advisory group, but this is not yet established across core roads maintenance activities. At [paragraphs 67–69](#) we outline some of the factors that can influence spending and condition. Between 2011/12 and 2014/15, 11 authorities improved their road condition without increasing spending. It is important roads authorities improve their benchmarking to identify and adopt good practice.

63. The NRMR included an action for Transport Scotland to review the suite of SCOTS/APSE performance indicators to determine if it would be appropriate to adopt them, and allow direct benchmarking against councils. Transport Scotland noted that its performance management system included performance indicators that enable comparison and benchmarking between its trunk road maintenance operating companies. It recognised the usefulness of being able to compare performance with councils. But it considered that, owing to the different levels of service between trunk and local roads, many of the aspects of performance it measures were not directly comparable with the SCOTS/APSE set of performance indicators. This means it is still difficult to compare the relative efficiencies between councils and the trunk road operating companies.

64. The SCOTS/APSE indicators do not easily allow for a meaningful evaluation of the efficiency of roads maintenance activities. For example, none of the indicators covers the unit cost per metre of structural maintenance carried out. One NRMR action was to develop a consistent unit cost benchmarking methodology across

all roads authorities. In response, councils were asked to participate in a pricing exercise for a typical standard carriageway maintenance scheme. This identified several issues including how councils were handling:

- the apportionment of overheads
- differences between trading and non-trading organisations
- the profit element within costings.

65. SCOTS also considers that benchmarking is more difficult because there are now few discrete roads departments across Scotland as a result of council reorganisations over the last five years. It considers from the work done to date that there is a need to understand better the factors which contribute to the wide variation in roads maintenance unit costs of across Scotland. SCOTS is now working with the University of Leeds and Measure2improve to explore an alternative methodology for assessing and comparing councils' road maintenance efficiency and the potential for improvement.

Roads authorities are changing how they manage roads maintenance but there are risks attached

66. It is difficult to establish a clear link between changes in councils' spending on maintenance and changes in road condition. [Exhibit 2 \(page 14\)](#) and [Exhibit 7 \(page 21\)](#) noted wide variation among councils in their roads condition and the amount they spend on roads maintenance. [Exhibit 11 \(page 32\)](#) notes the difficulty in establishing a link and shows that between 2011/12 and 2014/15:

- seven councils increased their roads maintenance spending and the proportion of roads in acceptable condition increased
- eight councils reduced their roads maintenance spending and the proportion of roads in acceptable condition declined
- in six councils the roads condition declined, despite spending more on maintenance
- in 11 councils the roads condition improved, despite spending less on maintenance.

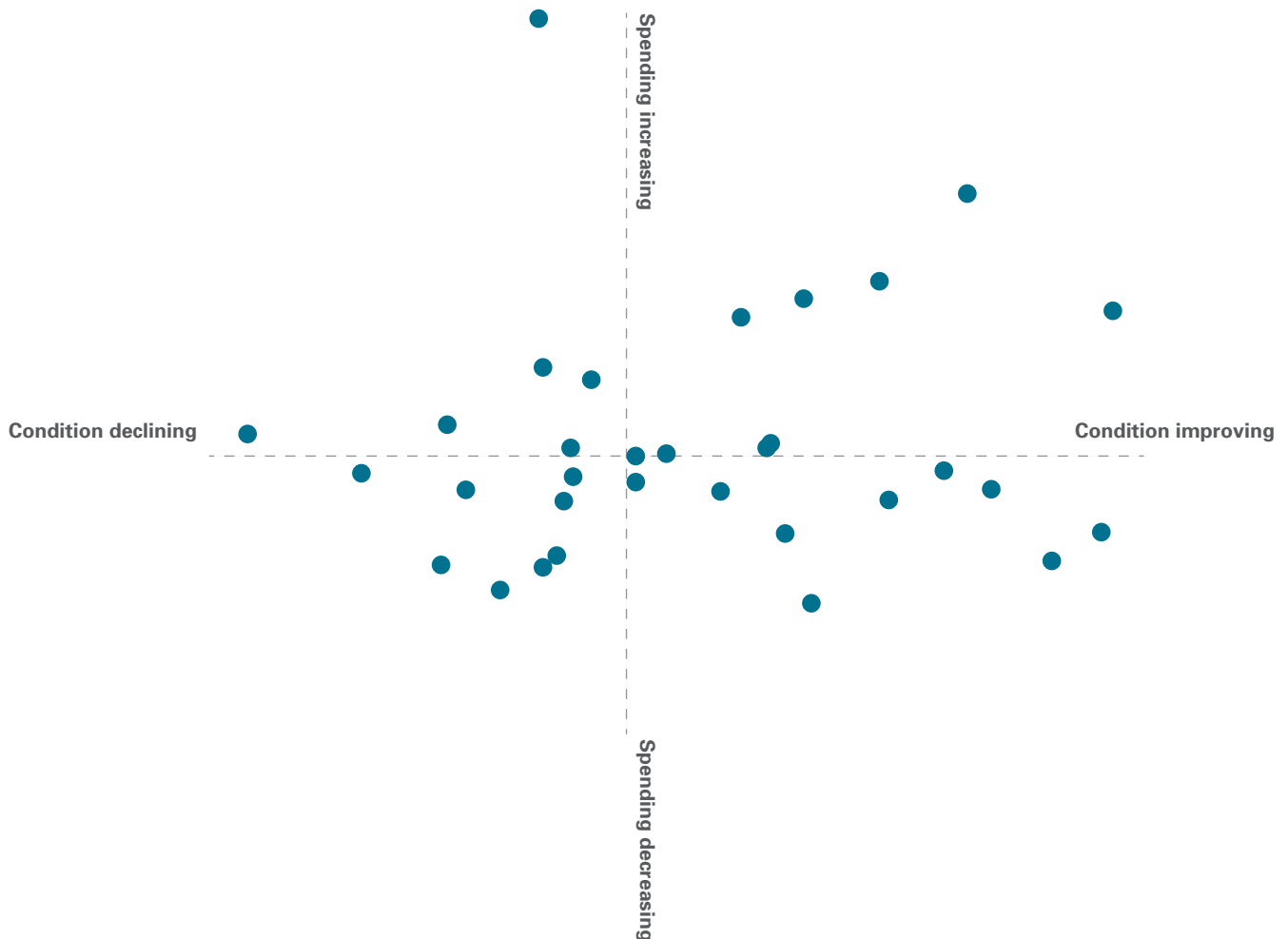
67. How road expenditure is incurred, where and on what, may have a greater or lesser effect on road condition. For example, depending on the scale of deterioration, roads engineers might decide that one section of road needed less expensive surface dressing while another section required more expensive reconstruction. Both road sections would be returned to an acceptable condition but at greatly different cost and resulting lifespan. Other factors influencing the relationship between spending and condition include:

- The nature of the road network. For example, depending on the distance from the roads maintenance depot, some road maintenance activities might require extra travel time and costs.
- Greater traffic volumes in some council areas may mean some roads need maintained more often.

Exhibit 11

Change in councils' roads maintenance spending from 2011/12 to 2014/15

There is significant variation in the change in roads maintenance spending across councils.



Source: SCOTS

- Compared to 2009/10, recent winters have not been as challenging to roads authorities. However, localised rainfall and the resultant flooding can damage roads and take money from a budget that could otherwise be spent on structural maintenance that would improve the condition of roads.
- Owing to the way councils calculate road condition using a two-year rolling average of survey results, there is likely to be a time lag between a decision to increase or reduce roads maintenance spending and how this affects reported road condition.
- Historic patterns of investment may impact on what level of spending and types of treatment are now required to maintain or improve road condition. For example, a council that has previously invested heavily in roads maintenance is more likely to be able to maintain road condition at lower cost than a council that has not historically invested in its roads.

- Some councils may focus more on maintenance activities that make greatest contribution to improved road condition. For example, unless councils actively use RAMPs to improve road condition, there is a risk that maintenance work is targeted at short-term solutions, such as filling potholes, rather than a planned programme of works.

68. There is evidence that councils and Transport Scotland are changing the way they manage roads maintenance. To some extent this has been stimulated by actions resulting from the NRM. Public sector budgetary constraints have also played a part. For example:

- SCOTS is encouraging councils to use asset management hierarchies to prioritise roads of greater strategic importance and intervene earlier when roads begin to deteriorate, rather than treating those in the worst condition. Transport Scotland is also using asset management hierarchies to prioritise trunk roads maintenance where it is of most benefit. These are based on a scoring methodology which evaluates the function of a route based on its economic, social, and integrated transport connections.
- The introduction of RAMPs and greater use of modelling has led several councils to modify how they carry out planned maintenance by paying more attention to long-term costs. For example, Aberdeenshire Council, City of Edinburgh Council, Dumfries and Galloway Council and Glasgow City Council have developed preventative road maintenance strategies aimed at minimising long-term cost by applying lifecycle costing techniques.
- There are moves to adopt lean management techniques as a systematic process for improving efficiency.¹⁵ Dumfries and Galloway Council and Aberdeenshire Council are now carrying out lean management projects, looking at aspects of planning and making repairs. It is too early to say what the results will be but early indications from the Dumfries and Galloway Council pilot suggest that efficiencies of ten per cent may be achievable.
- Roads authorities are focusing savings on activities which contribute least to road condition. For example, Perth and Kinross Council plans to save £280,000 during 2016/17 by reducing the frequency of certain roads maintenance activities such as road sign maintenance and verge and ditch clearing. Councils consider it is more difficult to find savings from structural maintenance work, which have the greatest impact on improving road condition. This is because the main element of cost is the purchase of materials which is largely outside their control.

69. These approaches are helping to target roads maintenance activities and make available budgets go further, but carry risks. For example, prioritising roads which are of greatest strategic importance may mean that the condition of less important roads will deteriorate over time. Concentrating maintenance works on roads that are beginning to deteriorate may also mean that roads already in poor condition will get worse.

70. Roads authorities are also changing how they treat road deterioration. For example, road condition in the Aberdeen City Council area improved from 68 per cent in acceptable condition in 2011/12 to 74 per cent in 2014/15. The council

reduced its roads maintenance expenditure from £6,287 per kilometre to £3,430 per kilometre (45 per cent) over the same period. It considers this has been achieved through a combination of:

- targeting A class roads which are in the worst condition using surface treatments with limited deeper patching
- making more use of surface dressing as an alternative to reconstruction work in appropriate urban locations
- a more efficient approach to pothole filling, including using dedicated response teams along with a better quality material
- more innovative practices, such as the use of thinner treatments and how cracks are treated
- not undertaking any major full reconstruction work in the last four years.

71. While surface dressing can be effective at halting deterioration, it can be more expensive in the long term than reconstruction work. Surface dressing has a life span of between ten to 15 years dependent on traffic volume, compared to 20 to 40 years for reconstruction work. Councils consider that there are times when surface dressing represents better value for money than reconstruction. But they also recognise that making more use of surface dressing could also be hiding the true condition of local roads. This is because their road condition surveys do not always pick up the full extent of failures in the structural integrity of lower road layers.

72. As a result of budgetary constraints, Transport Scotland is also focusing on maintaining the condition and safety of trunk roads through resurfacing, as an alternative to more costly strengthening or reconstruction options. It considers this is having an impact on the structural integrity of some motorways built in the 1970s and which are now approaching the end of their useful lives. These roads are not unserviceable but need to be closely monitored to identify the best timing to strengthen or reconstruct them.

73. Similarly, Perth and Kinross Council has decided recently to change how it deals with potholes by repairing them only when they reach a depth of 60mm, compared to the previous depth of 40mm. It expects this to generate savings of £120,000 in 2016/17. But it recognises that the changed approach could accelerate the decline in road condition and result in higher repair costs in the long term.

74. Perth and Kinross Council's decision to reduce its roads maintenance budget was taken against a backdrop of it identifying the need to save £12 million from its overall annual revenue budget. As part of its 2016/17 budget considerations, the council undertook a web-based consultation exercise between December 2015 and January 2016 to seek the public's and staff's views on which service budgets should be maintained or reduced. The three service areas where respondents were most in favour of maintaining budgets were children and families social work, services for older people and roads maintenance. The council recognised that a reduced roads maintenance budget could result in more customer complaints and give a poor visual impression of the council area. But it felt that budget reductions were necessary in order to achieve the overall savings amount.

75. In May 2015, Scottish Ministers announced a review of the office and functions of the Scottish Road Works Commissioner (SRWC). The SRWC's role is to improve the planning, coordination and quality of roads works throughout Scotland. The SRWC also monitors the performance of, and promotes good practice across, both utility companies and roads authorities. One of the issues the review is considering is the guarantee period for road reinstatements after the completion of utility works. Currently, utility companies are required to guarantee the quality of road reinstatements for two years after the completion of utility works, or three years for a deep excavation. Councils have informed the current review that they would prefer a longer guarantee period to fit with a longer-term asset management approach. The review is due to report later in 2016.

The Scottish Roads Research Board has been established to promote greater innovation in roads maintenance

76. In response to the NRM, Transport Scotland, SCOTS and the SRWC set up the Scottish Roads Research Board (SRRB) in 2011. SCOTS and Transport Scotland jointly fund the SRRB which has an annual budget of around £400,000 to fund research projects. Its main objectives are to promote and deliver innovation and share new products, techniques and knowledge across Scotland's road sector.

77. To date, research projects coordinated through the SRRB have been completed in a number of areas including:

- the use of new types of materials, such as bitumen as a binder for asphalt and thermoplastic road markings
- photo-luminescent technology
- fabric reinforcement to surface dressing
- tourist signs
- climate change adaptation.

78. The SRRB disseminates all project reports and other relevant information to the roads community via its website, in the form of technical reports, advice notes and other guidance. However, it does not provide a coordinated role for research activity. Roads authorities continue to trial materials and techniques on an individual basis which risks duplication of effort and cost. While there are networks for sharing the outputs of these trials, for example through SCOTS working groups and the Transport Scotland Pavement Forum, this is not yet being centrally coordinated to ensure roads authorities share good practice.

79. The SRWC and SCOTS are also taking forward research projects under the auspices of the SRRB. For example, the SRWC is leading on research into joint repair techniques, in response to survey findings indicating the poor quality of repairs by utility companies and others. SCOTS is leading on producing guidance on how to achieve best value in selecting materials and techniques for repairing potholes.

Staff reductions are adding to the challenges for roads maintenance

80. Roads authorities are increasingly concerned about the potential effect of staff reductions arising from budgetary constraints on future roads maintenance activities. In particular, they are concerned at the loss of technical and commercial skills and expertise, the presence of an ageing workforce and how they can attract and train new staff. There is no central record of the scale of roads maintenance staff reductions over the last few years. But of the approximately 5,000 council staff currently engaged in roads activities, 40 per cent are aged over 50 years and only 13 per cent are aged under 30 years.

81. Councils are responding by training staff through modern apprenticeships and graduate programmes:

- Twelve councils are employing modern apprentices, with 61 apprentices currently in training.
- Fourteen councils have graduate programmes in place, with a total of 47 graduates currently in training.

82. The Roads Collaboration Programme (RCP) ([paragraphs 90–93](#)) is also working to address staffing issues. For example, it is:

- Developing a ‘futures leaders programme’ to bring together opportunities for leader exchange, coaching and mentoring and technical training. The RCP expects to be able to roll out the programme from autumn 2016.
- Working with Skills Development Scotland and the Construction Industry Training Board to attract and recruit young people at all levels into the roads sector. This will include improved secondary school career advice to supplement that already provided by professional civil engineering institutions.
- Working with academia to better match industry needs with college and university curricula, and with the roads sector to create more attractive career paths within the public road service.

Progress in delivering a shared service approach to roads maintenance has been disappointingly slow

83. Before finalising its report, the steering group overseeing the NRM identified the need for a more detailed assessment of the ‘optimum arrangements for the management and maintenance of roads in Scotland’ (known as Option 30). A separate Option 30 report, published in June 2012, concluded that current arrangements could be improved on and that all councils should explore sharing services in the short term.¹⁶

84. The report also considered that the benefits from setting up a new roads authority, or authorities, were likely to take longer to achieve. It stated that if the benefits of shared services were not realised as anticipated in the short term, work on exploring structural change should be accelerated. The report did not define 'short term' but we would regard it as normally encompassing a two to three-year period.

The focus of collaborative working has so far largely been on specific areas of activity

85. Roads authorities can demonstrate many examples of collaboration, both between themselves and with other partners ([Exhibit 12, page 38](#)). Particular themes include:

- shared procurement – for example procuring minor works contracts, weather forecasting services, road condition surveys and materials
- the delivery of specific maintenance activities – for example surface dressing, winter gritting and sharing of specialist equipment
- joint staff training – for example health and safety training and using equipment
- joint improvement projects – for example the SCOTS RAMP project.

86. So far, the focus of roads authorities' collaborative working has largely been on specific areas of activity rather than wider reform to the way roads maintenance services are designed. There are currently only two shared service arrangements in place between councils – Tayside Contracts and the Ayrshire Roads Alliance.

87. Tayside Contracts is a well established multi-council consortium established between Angus, Dundee and Perth and Kinross councils in 1996 through a joint committee. It provides services that include roads maintenance, fleet maintenance and management, winter maintenance, catering and facilities management services. A range of individual collaborative arrangements are in place within the consortium and not all councils are involved in all service areas. Reported benefits include:

- economies of scale enable the delivery of a wide range of services at competitive rates
- delivery of a full range of services from minor potholes repairs to major contracts, possible through the retention of specialist skills and vehicles
- a single management structure which promotes a focus on front-line service delivery
- flexibility to move resources across council areas
- scale of operations has enabled a focus on innovation, such as a cold road paving system (known as TAYSET) and a reed-based system for the treatment of gully waste.

Exhibit 12

Examples of roads authorities' collaborative working

Roads authorities collaborate on a wide range of activities and with a wide range of partners.

Collaborative working examples



Collaboration between councils

There are many examples of councils working together on developing joint procedures, joint procurement, sharing specialist staffing and the delivery of specific road maintenance treatments.



Collaboration between roads authorities and industry

Councils, Regional Transport Partnerships and the timber industry are funding joint Timber Transport Officer posts to improve how to transport timber and to minimise its impact on roads.

The Transport Scotland Pavement Forum brings industry representatives and roads officers to work together on approaches and solutions for roads maintenance.



Collaboration between councils and trunk road operating companies

Councils often collaborate with trunk road operating companies in rural areas to deliver roads maintenance services. For example, Scottish Borders Council provides winter maintenance services on behalf of AMEY (responsible for delivering the South East trunk roads maintenance contract) on trunk roads in the Scottish Borders.

Similarly, BEAR (responsible for delivering the North West trunk roads maintenance contract) and Stirling, Highland, and Argyll and Bute councils maintain joint depots and share salt stocks. Argyll and Bute Council also delivers emergency response, winter services and Category 1 repairs on behalf of BEAR.

Source: Audit Scotland fieldwork

88. East Ayrshire Council and South Ayrshire Council established the Ayrshire Roads Alliance in April 2014. The councils decided to agree a fully shared service on the basis of a detailed business case and options appraisal process that considered a range of service models. The [Appendix](#) provides more details on the shared service, its anticipated benefits and progress to date.

89. The experience of establishing the Ayrshire Roads Alliance has highlighted several lessons and challenges for other potential shared service arrangements. Similar to other Audit Scotland reports commenting on what good partnership working looks like, the Ayrshire Roads Alliance has identified that the main lessons for others include the importance of:

- agreeing a lead authority (in this case East Ayrshire Council) early in the process to maintain progress
- the early involvement of elected members to ensure they have influence and are kept informed of developments
- setting out well defined governance arrangements, such as oversight, roles and responsibilities, which maintain clear elected member involvement

- clarifying the split between strategic and operational functions early in the process
- the need to keep affected staff informed and involved throughout
- having a good baseline understanding of the existing services and where the shared arrangements can have most impact.

Regional governance bodies are being established but there is no clear plan of how this will translate into shared services at an operational level

90. The Roads Collaboration Programme (RCP) was launched in November 2013 to explore opportunities for further collaboration between roads authorities. A Strategic Action Group, which the Minister for Transport and Islands and COSLA's spokesperson for Development, Economy and Sustainability takes turn to chair, provides political oversight to the RCP. It also includes representatives from SCOTS, Transport Scotland, the Improvement Service and the Society of Local Authority Chief Executives. In addition, a Roads Collaboration Board, with a similar wide-ranging membership, oversees the activities of the RCP. The board replaces the Shared Capacity and Shared Services Improvement Board established as a result of the NRMR to take forward various actions relating to shared services, including Option 30.

91. A key part of the RCP's work is the Governance First project. This aims to establish more formal governance arrangements for roads authorities looking to deliver collaborative activity or shared services in clusters or across regions. Within Governance First, creating a formalised governing body is the fundamental first step to developing shared services, and needs to happen before designing how the shared service will operate.

92. The constituent members of the Roads Collaboration Board are all strongly behind the core principle of Governance First, that sharing should be the default position to delivering roads services. Through working with councils, the RCP has identified various benefits to shared services, including:

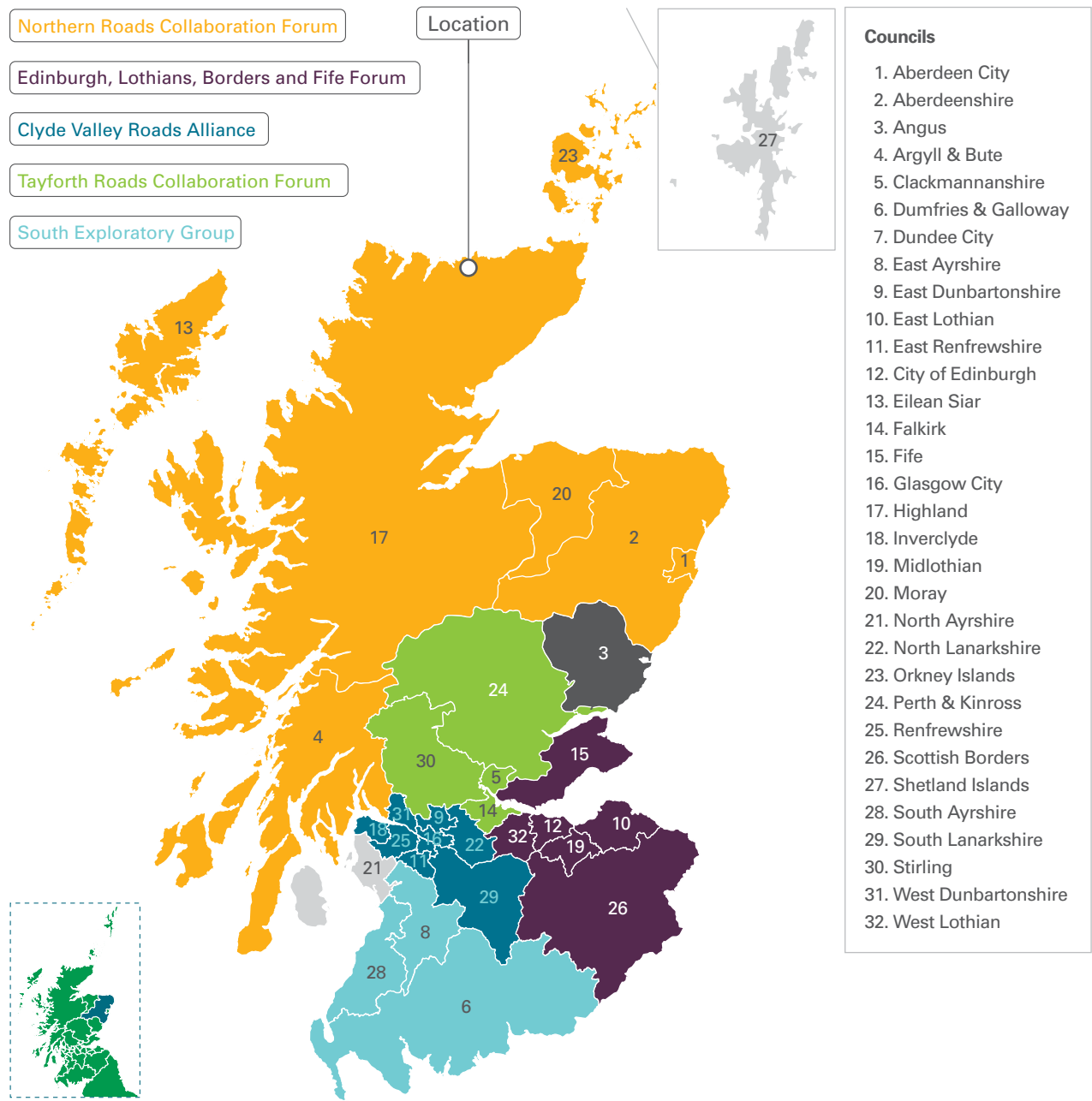
- Efficiency of size through having a larger available budget, greater purchasing power, a stronger strategic function and streamlined back-office functions such as administration.
- Being stronger organisationally through having a larger and more mobile workforce. A shared service would be less dependent on individuals, and a bigger volume of work would enable it to retain skilled staff more readily and offer enhanced training opportunities.

93. The RCP has been working with councils to establish five regional groups to explore opportunities for further collaboration ([Exhibit 13, page 40](#)). The RCP has provided support through leading discussions at meetings, providing guidance on different models for collaboration and commissioning legal advice for councils on the implications of these different models. Regional joint committees are being established in some areas. Regional Transport Partnerships, the statutory bodies responsible for transport planning at a regional level, present another option. Roads authorities need to determine the governance arrangements that best suit their needs, but it is important that any potential for duplication is avoided.

Exhibit 13

Regional collaboration through the Roads Collaboration Programme

Councils are now participating in regional partnerships to consider how they can provide roads maintenance services in new ways.



Notes:

1. Angus Council is currently involved in two groupings: the Northern Roads Collaboration Programme and the Tayforth Roads Collaboration Forum.
2. North Ayrshire Council has still to decide whether it wishes to be part of the formal groupings. Shetland Islands Council is monitoring progress of the Northern Forum having decided in 2015 not to be part of a formal group at this time.

Source: Roads Collaboration Programme

94. COSLA agreed at its Leaders Group meeting in November 2015 to endorse the proposals for regional working. In particular, Leaders agreed that the optimum model for the future management and maintenance of the Scottish road network is via regional bodies covering the work of all existing roads authorities, that is the 32 councils and Transport Scotland. SCOTS has also endorsed the proposals.

95. Councils are responsible for agreeing how best to establish regional bodies. This has led to a variety of different approaches and has contributed to the slow progress being made. Some of the challenges encountered include:

- Uncertainty on whether the trunk road network would be included in the development of collaboration proposals. Scottish ministers did not clarify their position on this until November 2015 ([paragraph 100](#)).
- Concern that the service areas to be included in the shared service arrangement are small scale and unlikely to deliver the service improvement or organisational benefits required.
- Fewer perceived benefits for larger councils, or for those who have previously been investing in their road network.
- Fear of bigger councils dominating.
- Elected members' concerns about the extent of the powers for joint committees and how this impacts on local financial control. So far, proposals for the powers for joint committees do not extend to the control of budgets.

96. As at March 2016, the current status of each regional group was:

- **Northern Roads Collaboration Forum** – Elected members have met twice and have appointed a councillor from Highland Council to chair the forum. Aberdeenshire Council is preparing a minute of agreement which, once the other councils approve it, will form the basis of a joint committee. The formal committee's first meeting is expected in autumn 2016.
- **Edinburgh, Lothians, Borders and Fife Forum** – All councils have now approved the setting up of a shadow joint committee. The committee first met at the end of March 2016. City of Edinburgh Council legal officers are preparing a draft Memorandum of Agreement for consideration at the next Forum meeting, prior to it being circulated to constituent councils for approval.
- **Clyde Valley Roads Alliance** – An officer subgroup has been established and is to develop proposals for an integrated service by summer 2016. Elected members have yet to be closely involved in the arrangements and member councils recognise that faster progress is needed.
- **Tayforth Roads Collaboration Forum** – There will be overarching collaboration across the Tayforth area, but operational collaboration will be split. This will be between the three Tayside Contracts councils (Angus, Dundee and Perth and Kinross) and the Forth Valley councils (Falkirk, Stirling, Clackmannanshire) plus potentially West Lothian and East Dunbartonshire. This is to allow for a review of the Tayside Contracts arrangements to be completed.

- **South Exploratory Group** – This is still very much at an exploratory stage. Discussions are continuing between officers but formal arrangements have still to be established and potential shared services to be confirmed. Collaboration with Cumbria County Council is also being explored.

97. Based on the progress of establishing regional governance bodies, it is clear that the second phase of Governance First, which covers designing how shared services will operate, is still some way off. A key issue with the rate of progress is the low profile that roads services have with elected members and senior managers due to them being now largely subsumed within larger council departments. As a result, the lead officer for roads maintenance is often at a lower management tier level than before and lacks delegated authority for taking shared services forward. Similarly, the extent of elected member involvement and buy-in to the shared service concept has been mixed.

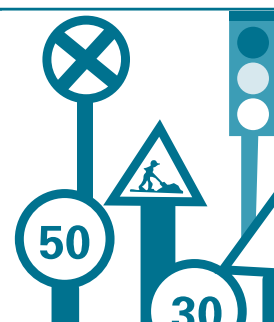
98. Councils may also be able to learn from others about how to develop shared services in the future. For example, Transport for London and London borough councils formed the London Highways Alliance in 2013 as a joint initiative to deliver all aspects of roads services, including maintenance. Roads services are provided through four geographic contracts that cover eight years. Transport for London and London borough councils expect to save up to £450 million over the life of these contracts, with annual savings equivalent to around ten per cent of current spending on roads services. They expect to achieve this through measures such as collaborative procurement, sharing expertise and innovative construction techniques.

Scottish ministers want to see more progress being made before trunk roads could be considered for inclusion in regional groupings

99. A key question for roads authorities is the extent to which the shared service operational model should include trunk roads. Transport Scotland has yet to decide whether to enter into regional arrangements. It considers that more competitive procurement and pricing through its trunk road operating contracts has generated efficiency savings of around £42 million over the three years 2012/13 to 2014/15.

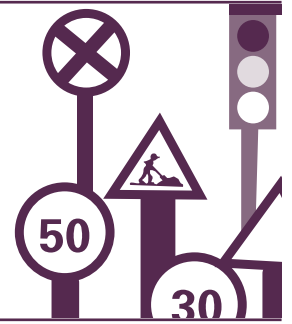
100. Two of the trunk road operating contracts are due for renewal in April 2018 (North West and South West). Another two are due for renewal in August 2020 (North East and South East), although all four contain options to extend contract lengths. This provides Transport Scotland with flexibility over its future approach to trunk road maintenance, including its inclusion in regional groupings. Scottish ministers outlined to COSLA in November 2015 that, before trunk roads maintenance could be considered for inclusion in any future regional groupings, councils need to make more progress. In particular, councils need to be able to demonstrate that including trunk roads within any future regional groupings would lead to efficiency savings and other benefits.

Endnotes



- 1 The Strategic Action Group is jointly chaired by the Minister for Transport and the Islands and COSLA. It is tasked with overseeing the progress of the National Roads Maintenance Review.
- 2 The Office for National Statistics calculates road construction inflation by examining price increases in a variety of materials and activities associated with road construction. It is currently reviewing how it calculates road construction inflation and has stopped publishing updates of it. This report therefore uses GDP price deflators to calculate changes in roads maintenance expenditure in real terms.
- 3 **Scottish Government National Performance Framework** The Scottish Government considers that the road network contributes to the following outcomes: We live in a Scotland that is the most attractive place for doing business in Europe; We realise our full economic potential with more and better employment opportunities for our people; We live longer healthier lives; We have tackled the significant inequalities in Scottish society; We live our lives safe from crime, disorder and danger. We live in well-designed, sustainable places where we are able to access the services and amenities we need; We value and enjoy our built and natural environment and protect it and enhance it for future generations; We reduce the local and global environmental impact of our consumption and production; Our public services are high quality, continually improving, efficient and responsive to local people's needs.
- 4 <http://www.driving-test-success.com/causes-car-crash.htm>
- 5 **Reported Road Casualties Scotland 2014**, Scottish Government, October 2015.
- 6 **Scottish Household Survey 2014**, Scottish Government, October 2015. The survey uses a main sample base of over 10,000 respondents covering all council areas.
- 7 **Scottish Household Survey 2014**, Scottish Government, October 2015.
- 8 **An Overview of Local Government in Scotland 2016**, Accounts Commission, March 2016.
- 9 **An Overview of Local Government in Scotland 2016**, Accounts Commission, March 2016.
- 10 Council spend figures come from the SCOTs/APSE data returns and include both revenue and capital expenditure.
- 11 **Road Conditions in England 2015**, Department for Transport, March 2016.
- 12 **Maintenance expenditure by road type**, Department for Transport, March 2016.
- 13 **Roads Investment Strategy for the 2015/16-2019/20 Roads Period**, Department for Transport, December 2014.
- 14 The Local Government Benchmarking Framework (LGBF) brings together performance information from all 32 councils covering a wide range of services. The Improvement Service maintains the LGBF to support councils to improve their services by working and learning together.
- 15 Lean management is a long-term approach that systematically seeks to achieve small, incremental changes in processes in order to improve an organisation's overall efficiency and quality.
- 16 Option 30 Report, Consideration of optimal delivery structures for roads management and maintenance, June 2012.

Appendix



The Ayrshire Roads Alliance

The Ayrshire Roads Alliance (ARA) was established in April 2014 as a shared roads service between East and South Ayrshire councils. All three Ayrshire councils were involved in developing it following the establishment of the Ayrshire Shared Services Joint Committee in March 2012. In June 2013 North Ayrshire Council decided not to join the ARA after the business case was prepared. East and South Ayrshire councils consider that the joint committee arrangement provides an established governance framework, and a good forum for discussing the development of the shared service, and joint decision-making.

The Ayrshire Roads Alliance has been set up as a shared strategic function, including a single head of service. The two participant councils remain the statutory roads authorities. The ARA acts as a single operational service across the area. All South Ayrshire Council roads and transportation staff transferred (under TUPE arrangements) to East Ayrshire Council. The Ayrshire Roads Alliance considers this provides a more flexible and mobile workforce that can be used more effectively across the combined road network.

To maintain responsiveness to each council's priorities, roads maintenance and improvement work is currently planned separately through two separate RAMPs. Each council also retains responsibility for its roads maintenance budget. The Ayrshire Roads Alliance sees this as a key factor in addressing elected member concerns about the potential for loss of local control and accountability in a shared service. With the exception of a small shared strategic budget, spending is ring-fenced for activity within each of the geographic areas. The total budget for 2014/15 was £24.4 million, with £16.7 million coming from East Ayrshire Council and £8.1 million from South Ayrshire Council.

The business case identifies developing a mobile, integrated and responsive workforce as a core aim of the shared service. It sets a savings target of £8.6 million over the first ten years of the service (approximately six per cent of current revenue spending). Savings over the first few years are expected to be generated mainly through a reduction in strategic staff. There are currently no plans to reduce the level of operational staffing, although the Alliance has identified the opportunity to reduce its combined winter maintenance fleet as a result of more efficient gritting routes across the combined area.

Historically, the two councils' spending on roads maintenance has differed significantly. The Ayrshire Roads Alliance considers that joint scrutiny of plans and budgets at the shared services joint committee has allowed elected members to become more aware of these differences and the potential impact of different levels of investment. Since the Alliance was established, South Ayrshire Council has decided to allocate additional capital investment to roads maintenance, investing an additional £10 million over five years.

Maintaining Scotland's roads

A follow-up report

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1.0 INTRODUCTION

1.1 Background

In 2010 a study was completed by W.D.M. Limited using the 2007 and 2008 SRMCS survey data to determine the effect of applying different maintenance budgets to all the 32 Scottish highway local authority networks. As part of the study a headline backlog, defined as the carriageway maintenance funding required to treat all 10m subsections in the amber or red annual performance indicator category, was calculated. The headline backlog for 2009 using the 2007 and 2008 SRMCS survey data was calculated to be £1.539 billion.

The February 2011 SCOTS Backlog report presented the results from using the purpose-built models created in the 2010 study to estimate the cost of removing the maintenance backlog for each Highway Authority using the 2009 and 2010 SRMCS survey data. The updated 2011 backlog was reported as £1.729 billion.

The April 2013 SCOTS Backlog report used the SRMCS survey data collected on the classified roads in 2011 and 2012 and SRMCS surveys for the Unclassified roads from 2009 to 2012 to report a backlog of £2.076 billion.

In February 2015 SCOTS requested that the backlog was recalculated using the latest SRMCS survey data collected in 2013 and 2014 for the classified roads and from 2011 to 2014 for the Unclassified roads. The treatment costs used in the February 2015 backlog report were increased by a factor of 1.65% from those used in 2013. The increase in treatment costs was derived from the Department for Business Innovation and Skills Construction Resource Cost Indices. The updated 2015 backlog was reported as £2.015 billion.

For this March 2017 report the backlog has been calculated using the SRMCS data collected in 2015 and 2016 for the classified roads and from 2013 to 2016 for the Unclassified roads. In a change to the previous backlog calculations the same treatment costs have been applied Scotland-wide rather than using individual rates for each authority. The new costs were derived from the Scottish Road Research Board (SRBB) Cost Benchmarking report published in August 2016.

The original 2010 study also included a scenario where the models were run for each authority to maintain a 'steady state', where average annual budgets are calculated so that both the red and amber RCI percentages are held at their current levels over a ten-year period. The steady state budget in the 2010 report was calculated to be £167.6 million. In the February 2015 report the steady state calculations were revisited and the outputs compared with those first published in 2010, the steady state budget in the 2015 report was £245.5 million.

For this March 2017 backlog and steady state report the steady state budgets for each authority have been recalculated with the same latest SRMCS survey data used for the backlog calculations and the new SRRB Scotland-wide treatment costs.

1.2 Road Condition Index and SRMCS PI

From the SRMCS surveys, a Road Condition Index (RCI) is calculated for every 10m of the road that has been surveyed. The survey coverage used to produce the RCI is collected over two years for the classified network and, since the completion of the 2011 surveys, every four years for the unclassified network. Before 2011 the unclassified RCI was also calculated from two years of surveys. The surveys provide 100% coverage in both directions for the A class roads, 100% in one direction for the B and C class roads and a minimum 40% in one direction for the unclassified roads. The five individual condition parameters that contribute to an RCI score are Rut Depth, Texture Depth, 3m and 10m Longitudinal Profile Variance and Whole Carriageway Cracking Intensity. Each 10m subsection of road network surveyed is given an overall RCI score dependent on the SCANNER survey readings of these five parameters. The individual scores for each parameter that are assigned to each SCANNER reading are shown in Table 1.

Table 1 Threshold Levels for PI

SCANNER Parameter	Road Class	Lower Threshold	Upper Threshold	Weighting (Importance x Reliability)	Maximum Score
Rut Depth	A	10mm	20mm	$1 \times 1 = 1.0$	100
	B	10mm	20mm	$1 \times 1 = 1.0$	100
	C	10mm	20mm	$1 \times 1 = 1.0$	100
	U	10mm	20mm	$1 \times 1 = 1.0$	100
3m Profile	A	4mm ²	10mm ²	$0.8 \times 1 = 0.8$	80
	B	5mm ²	13mm ²	$0.8 \times 1 = 0.8$	80
	C	7mm ²	17mm ²	$0.8 \times 1 = 0.8$	80
	U	8mm ²	20mm ²	$0.8 \times 1 = 0.8$	80
10m Profile	A	21mm ²	56mm ²	$0.6 \times 1 = 0.6$	60
	B	27mm ²	71mm ²	$0.6 \times 1 = 0.6$	60
	C	35mm ²	93mm ²	$0.6 \times 1 = 0.6$	60
	U	41mm ²	110mm ²	$0.6 \times 1 = 0.6$	60
Whole Carriageway Cracking	A	0.15%	2.0%	$1 \times 0.6 = 0.6$	60
	B	0.15%	2.0%	$1 \times 0.6 = 0.6$	60
	C	0.15%	2.0%	$1 \times 0.6 = 0.6$	60
	U	0.15%	2.0%	$1 \times 0.6 = 0.6$	60
Texture Depth Urban	A	0.6mm	0.3mm	$0.5 \times 1 = 0.5$	50
	B	0.6mm	0.3mm	$0.5 \times 1 = 0.5$	50
	C	0.6mm	0.3mm	$0.3 \times 1 = 0.3$	30
	U	0.6mm	0.3mm	$0.3 \times 1 = 0.3$	30
Texture Depth Rural	A	0.7mm	0.4mm	$0.75 \times 1 = 0.75$	75
	B	0.6mm	0.3mm	$0.75 \times 1 = 0.75$	75
	C	0.6mm	0.3mm	$0.5 \times 1 = 0.5$	50
	U	0.6mm	0.3mm	$0.5 \times 1 = 0.5$	50

An individual condition parameter does not score until it reaches the lower threshold. Between the lower and upper threshold the score increases linearly until the upper threshold is met, at which time the maximum score of 100 is applied. The weightings for importance and reliability are applied to the score to provide the RCI score for the parameter.

As indicated, each parameter is weighted depending on its importance to the condition of the road and the reliability of the measurement. For example, rutting is considered very important and the measurement is very reliable, therefore, the weighting is 1 for both factors so the maximum score achievable for rutting is 100. Whereas, cracking is considered important but the measurement of cracking is not as reliable therefore, the weightings are 1 and 0.6 respectively and the maximum score for cracking is 60. The reliability and importance of the measurement stays constant regardless of what class of road is being surveyed except for texture when the importance varies. This is to reflect the importance of adequate texture in supporting good skid resistance on rural high speed roads.

The upper and lower thresholds vary across the class and environment of road for longitudinal profile, or road roughness, and A class rural roads have different texture thresholds from other classes.

The individual parameter scores are combined to produce an RCI for each 10m subsection. Only the highest of the 3m or 10m Profile Variance scores contribute to the overall RCI score. The SRMCS PI is made up from the total proportion of a network that is above or equal to an RCI of 40.

Traffic light colours, Green, Amber and Red have been assigned to different RCI bands as shown below:

- **Green** - an RCI score <40 - where the carriageway is generally in a good state of repair;
- **Amber** - an RCI score ≥ 40 and <100 - where some deterioration is apparent which should be investigated to determine the optimum time for planned maintenance treatment;
- **Red** - an RCI score ≥ 100 - where the carriageway is in poor overall condition which is likely to require planned maintenance soon (i.e. within a year or so).

The SRMCS PI score is made up of all the 10m subsections that are in an amber or red condition. This updated 2017 report is based on the SRMCS PI data obtained from 2013 to 2017. For the remainder of this report the SRMCS PI will be referred to as PI.

2.0 OBJECTIVES

SCOTS wish to recalculate the cost of the headline backlog for March 2017, which is the cost of producing a network free from any 10m subsections in an amber or red condition. Therefore, this is the cost to create a network with a PI of zero. It is not, however, a network that is free of deterioration; deterioration will exist at levels just below the lower threshold values and consequently rut depths of up to 9.9mm could still exist, even if the headline budget were spent in one year.

SCOTS also wish to recalculate the costs of the steady state budget. The steady state for this report is defined as the reporting of the same network PI in each subsequent year over a ten-year period.

3.0 METHODOLOGY

The raw data from the SRMCS SCANNER surveys for the rutting, 3m profile, 10m profile, cracking and texture at a 10m level has been extracted from each authority's UKPMS database. Checks were applied to the data to ensure, for example, no double counting and that all values were valid. The extracted data was linked with road class, A, B, C and U, the environment, urban or rural, and road type, dual or single carriageway.

256 financial models (8 for each highway authority, 4 road classes each with two environments) were populated using the validated data for each of the 32 Scottish local authorities. The models were then run for each network.

3.1 Model Inputs

The inputs to the model are:

- the raw individual 10m SCANNER survey data parameters used to define the current condition of the network;
- a set of treatments that are related to the condition; shown in Appendix 1A and 1B;
- a set of Scotland-wide treatment costs for March 2017; shown in Appendix 2;
- network carriageway lengths and widths for each authority for March 2017; shown in Appendix 3A and 3B;

The backlog is the cost to treat all the road network that is in an amber or red condition and move them to a green condition in one year. Therefore, since the model will only be run over one year there is no need to use deterioration rates and reset values.

For the steady state calculations the model was run and values were output so that each authority red RCI percentage was held at current level by treating any amber RCI values that would otherwise deteriorate into red values in the subsequent year. In the model the highest ten percent of the red RCI scores were also treated each year to represent maintenance costs that would be immediately necessary.

The amber RCI percentages were sub-divided into three portions, A1 (RCI=100 to 80), A2 (RCI=80 to 60) and A3 (RCI=60 to 40). Treatments were applied in the model to maintain the length of each of these amber portions as the network deteriorated. This simulated maintaining both the current level of amber RCI percentages and also the overall condition of the network within the amber RCI category.

The steady state model calculated a revised Network RCI for each year by deteriorating each of the five measured survey parameters at set rates. When treatments were required to maintain steady state the parameters were reset to default levels to represent a repaired carriageway. The deterioration rates and reset values used in the model are shown in Table 2.

Table 2 Deterioration Rates and Reset Values

SCANNER Parameter	Deterioration Rate/Yr	Reset Value	Surface Dressing Reset Value
Rut Depth	0.3 mm	2.0 mm	Not Reset
3m Profile Variance	0.2 mm ²	0.4 mm ²	Not Reset
10m Profile Variance	1.0mm ²	2.2 mm ²	Not Reset
Whole Carriageway Cracking	0.03% or +10% of crack value if >0.03%	0.00 %	0.00 %
Texture Depth	-0.035 mm	1.00 mm	1.00 mm

4.0 RESULTS

The individual authority overall PI's from 2009, 2011, 2013, 2015 and 2017 for each of the headline backlog reports are shown in Table 3. A breakdown of the 2017 PI's in terms of percentage in the red and amber condition for each class and environment are shown in Appendix 4.

The 32 Scottish local authorities are sub-divided into five family groups defined by SRMCS: - Islands (I), Rural (R), Semi-Urban (SU), Urban (U) and Cities (C) to enable comparisons to be made with authorities with similar environmental conditions and treatment costs.

Table 3 PI Results

Authority	Type	SRMCS PI 2009*	SRMCS PI 2011*	SRMCS PI 2013	SRMCS PI 2015	SRMCS PI 2017	Change in PI 2015 to 2017
Orkney	Islands	19.5	24.2	20.4	21.3	21.2	-0.1
Shetland		38.3	40.7	42.5	41.9	37.7	-4.2
Western Isles		45.7	50.6	49.8	46.4	43.1	-3.3
Aberdeenshire	Rural	22.7	28.1	24.3	25.4	24.9	-0.5
Angus		26.6	29.4	27.9	30.1	31.2	+1.1
Argyll & Bute		52.6	56.8	57.6	55.6	55.3	-0.3
Scottish Borders		37.2	39.2	41.7	45.5	46.6	+1.1
Dumfries & Galloway		43.6	47.2	48.6	49.3	46.5	-2.8
Highland		34.5	33.2	33.2	36.2	38.7	+2.5
Moray		22.7	27.5	26.1	26.3	26.9	+0.6
Perth & Kinross		32.1	35.0	35.3	35.2	37.2	+2.0
E Ayrshire	Semi-Urban	40.5	45.3	40.6	40.8	39.1	-1.7
E Lothian		32.0	31.0	31.6	32.1	31.9	-0.2
Fife		32.8	42.8	34.1	33.8	32.6	-1.2
Midlothian		35.9	31.1	32.4	30.7	31.4	+0.7
N Ayrshire		37.2	47.9	42.7	39.1	38.3	-0.8
S Ayrshire		42.2	48.0	44.5	45.0	42.3	-2.7
S Lanarkshire		37.6	38.0	36.8	33.8	33.1	-0.7
Stirling		44.8	43.8	40.8	43.1	43.8	+0.7
W Lothian		26.2	31.7	26.9	25.4	29.4	+4.0
Clackmannanshire	Urban	36.9	37.4	33.7	39.1	35.2	-3.9
E Dunbartonshire		44.4	44.6	43.6	41.0	37.4	-3.6
E Renfrewshire		44.0	50.1	43.3	39.1	39.2	+0.1
Falkirk		33.3	42.1	36.5	34.1	35.2	+1.1
Inverclyde		42.5	46.4	49.0	46.3	40.5	-5.8
N Lanarkshire		32.6	35.2	32.0	33.0	31.8	-1.2
Renfrewshire		35.7	49.3	37.3	37.5	34.8	-2.7
W Dunbartonshire		29.4	35.9	34.0	34.6	33.8	-0.8
Aberdeen	Cities	24.6	34.7	30.5	25.8	28.2	+2.4
Dundee		23.2	28.0	27.7	27.3	26.7	-0.6
Edinburgh		34.1	34.6	34.0	35.1	34.6	-0.5
Glasgow		25.5	33.9	32.4	32.7	30.8	-1.9

*PI's calculated using two years Unclassified survey coverage compared with four years for 2013 onwards

Twenty-one of the authority PI values have improved over the latest two-year period and eleven have deteriorated below the level they were at in 2015.

4.1 Headline Backlog Budget

The headline backlog budget is defined as the carriageway maintenance funding required to treat all 10m subsections in an amber or red condition within one year. This can be thought of as achieving a network free from carriageway defects exceeding the lower threshold levels detailed in Table 1. It is not a network free from any defects because it will allow, for example, rut depths up to 10mm, and texture depths down to 0.7mm.

In reality to treat all the amber and red in one year would not be a practical maintenance option due to the disruption it would cause, but the figure does allow a comparative budgetary valuation to be calculated which can be monitored on an on-going basis.

Appropriate treatments were determined, using the decision trees in Appendices 1A and 1B. The treatment selected for each 10m network subsection is based on the measurements for each of the five parameters reported in the SRMCS indicator, namely rut depth, macro-texture depth, 3m profile variance, 10m profile variance and cracking. Each parameter is assessed as green, below its lower threshold, amber between its upper and lower thresholds or red at or above its upper threshold. The combinations of the colours for each parameter determine the treatment selected in the model.

For the 2017 backlog calculations the individual costs for the maintenance treatments for every authority were based on the median 2014/15 baseline rates published in the August 2016 Scottish Roads Research Board Cost Benchmarking Report. This represented a significant change from the previous backlog reports which used treatment rates submitted for each individual authority. The 2017 treatment rates by class and environment are presented in Appendix 2.

The reported lengths and average widths of authority carriageways are mainly unchanged since the last backlog report in 2015. The carriageway lengths used in the 2017 backlog models are the same as those used to produce the 2016/17 SRMCS PI's and the widths are the same as documented in each authorities latest Depreciated Replacement Cost (DRC) report. The carriageway lengths and widths for each authority by class and environment used in the 2017 backlog calculation are presented in Appendices 3A and 3B. There are only relatively small changes to the network dimensions since the previous 2015 report.

The overall and individual authority headline backlog figures for 2017 is presented in Table 4. Also included in this table are the headline backlog figures from the previous 2015 backlog calculations and, due to the varying changes to the treatment costs between authorities, the 2015 headline backlogs recalculated also using the SRRB median treatment rates for 2014/15.

Table 4 Results for the Headline Backlog (£000's)

Authority (% Change in PI 2015 to 2017)	Type	Headline Backlog 2015	Headline Backlog 2015 (2017 rates)	% Change in 2015 Backlog (2017 rates)	Headline Backlog 2017	% Change in Backlog 15 to 17 (2017 rates)
Orkney (-0.1)	Islands	13,526	13,820	+2.2	12,719	-8.0
Shetland (-4.2)		53,797	36,389	-32.4	31,871	-12.4
Western Isles (-3.3)		40,066	36,956	-7.8	32,962	-10.8
Aberdeenshire (-0.5)	Rural	121,130	97,027	-19.9	88,366	-8.9
Angus (+1.1)		64,586	52,911	-18.1	49,707	-6.1
Argyll & Bute (-0.3)		187,295	106,889	-42.9	101,342	-5.2
Scottish Borders (+1.1)		81,829	91,428	+11.7	91,679	+0.3
Dumfries & Galloway (-2.8)		213,397	217,753	+2.0	190,800	-12.4
Highland (+2.5)		156,169	175,017	+12.1	177,755	+1.6
Moray (+0.6)		44,138	33,588	-23.9	33,174	-1.2
Perth & Kinross (+2.0)		85,141	71,229	-16.3	72,737	+2.1
E Ayrshire (-1.7)	Semi-Urban	39,167	52,774	+34.7	49,906	-5.4
E Lothian (-0.2)		23,057	21,095	-8.5	19,522	-7.5
Fife (-1.2)		95,560	72,306	-24.3	69,929	-3.3
Midlothian (+0.7)		20,614	19,003	-7.8	19,500	+2.6
N Ayrshire (-0.8)		30,994	33,382	+7.7	31,653	-5.2
S Ayrshire (-2.7)		45,580	46,261	+1.5	42,084	-9.0
S Lanarkshire (-0.7)		124,627	91,014	-27.0	79,067	-13.1
Stirling (+0.7)		51,198	46,679	-8.8	46,284	-0.8
W Lothian (+4.0)		26,868	22,989	-14.4	25,414	+10.5
Clackmannanshire (-3.9)	Urban	14,538	12,633	-13.1	10,854	-14.1
E Dunbartonshire (-3.6)		23,238	24,301	+4.6	21,803	-10.3
E Renfrewshire (+0.1)		26,328	22,908	-13.0	22,176	-3.2
Falkirk (+1.1)		45,985	39,168	-14.8	37,901	-3.2
Inverclyde (-5.8)		16,545	17,308	+4.6	14,504	-16.2
N Lanarkshire (-1.2)		51,173	62,244	+21.6	56,444	-9.3
Renfrewshire (-2.7)		41,092	35,962	-12.5	31,028	-13.7
W Dunbartonshire (-0.8)		15,234	14,076	-7.6	12,687	-9.9
Aberdeen (+2.4)	Cities	39,454	28,767	-27.1	31,151	+8.3
Dundee (-0.6)		19,961	19,540	-2.1	17,986	-8.0
Edinburgh (-0.5)		94,823	67,187	-29.1	63,840	-5.0
Glasgow (-1.9)		108,086	94,614	-12.5	84,579	-10.6
		2,015,196	1,777,220	-11.8	1,671,425	-6.0

The 2017 backlog figure of £1.671 billion is £105.8 million less than the backlog calculated using the new treatment rates for 2015. This represents a decrease in percentage terms of 6.0% over the two-year period.

If the percentage changes in performance indicators are compared with the percentage changes in backlog by individual authority:

21 authorities output a decrease in PI and a decrease in backlog;
6 authorities output an increase in PI and an increase in backlog;
5 authorities output and increase in PI and a decrease in backlog;
0 authorities output a decrease in overall PI and an increase in backlog.

4.2 Steady State Budget

The average annual budget calculated in the models for each authority to maintain steady state RCI scores, excluding any allowance for inflation or discount levels over the next ten-year period, are presented in Table 5. The total annual steady state calculated for 2017 is £222.3 million.

The previously published steady state figure for 2015 of £245.6 million using current 2017 network dimensions and Scotland-wide treatment costs was calculated to be £224.9 million. The latest steady state calculation therefore represents a decrease of £2.6 million or 1.2% in percentage terms over the two-year period.

If the percentage changes in performance indicators are compared with the percentage changes in steady state by individual authority:

17 authorities output a decrease in PI and a decrease in steady state;
6 authorities output an increase in PI and an increase in steady state;
5 authorities output and increase in PI and a decrease in steady state;
4 authorities output a decrease in overall PI and an increase in steady state.

Table 5 Results for the Steady State (£000's)

Authority (% Change in PI 2015 to 2017)	Steady State 2015	Steady State 2015 (2017 rates)	% Change in 2015 Steady State (2017 rates)	Steady State 2017	% Change in Steady State 15 to 17 (2017 rates)
Orkney (-0.1)	2,445	3,008	+23.1	2,940	-2.3
Shetland (-4.2)	5,584	4,093	-26.7	3,887	-5.0
Western Isles (-3.3)	4,149	3,902	-5.9	3,590	-8.0
Aberdeenshire (-0.5)	21,779	17,730	-18.6	17,607	-0.7
Angus (+1.1)	7,829	6,611	-15.6	6,517	-1.4
Argyll & Bute (-0.3)	17,110	10,192	-40.4	10,109	-0.8
Scottish Borders (+1.1)	9,308	11,120	+19.5	10,969	-1.4
Dumfries & Galloway (-2.8)	17,928	19,823	+10.6	19,079	-3.8
Highland (+2.5)	17,671	20,832	+17.9	21,700	+4.2
Moray (+0.6)	7,621	6,480	-15.0	6,628	+2.3
Perth & Kinross (+2.0)	11,024	9,399	-14.7	9,476	+0.8
E Ayrshire (-1.7)	4,325	6,336	+46.5	6,188	-2.3
E Lothian (-0.2)	3,214	2,992	-6.9	2,857	-4.5
Fife (-1.2)	14,132	10,810	-23.5	10,845	+0.3
Midlothian (+0.7)	2,739	2,733	-0.2	2,747	+0.5
N Ayrshire (-0.8)	3,293	3,704	+12.5	3,763	+1.6
S Ayrshire (-2.7)	4,937	5,108	+3.5	5,079	-0.6
S Lanarkshire (-0.7)	16,002	11,703	-26.9	11,048	-5.6
Stirling (+0.7)	5,847	5,401	-7.6	5,359	-0.8
W Lothian (+4.0)	4,184	3,781	-9.6	3,952	+4.5
Clackmannanshire (-3.9)	1,787	1,639	-8.3	1,613	-1.6
E Dunbartonshire (-3.6)	2,360	2,519	+6.7	2,817	+11.8
E Renfrewshire (+0.1)	2,750	2,536	-7.8	2,457	-3.1
Falkirk (+1.1)	6,576	5,721	-13.0	5,600	-2.1
Inverclyde (-5.8)	1,464	1,511	+3.2	1,492	-1.3
N Lanarkshire (-1.2)	7,298	9,496	+30.1	8,811	-7.2
Renfrewshire (-2.7)	4,246	3,883	-8.5	3,779	-2.7
W Dunbartonshire (-0.8)	1,705	1,619	-5.1	1,645	+1.6
Aberdeen (+2.4)	6,131	4,466	-27.2	4,613	+3.3
Dundee (-0.6)	2,899	3,063	+5.7	2,896	-5.5
Edinburgh (-0.5)	12,164	9,352	-23.1	9,220	-1.4
Glasgow (-1.9)	15,040	13,331	-11.4	12,985	-2.6
	245,537	224,893	-8.4	222,263	-1.2

5.0 CONCLUSIONS

The headline backlog for the Scotland highway authority network has decreased by £105.8 million over a two-year period, from £1.777 billion in 2014/15 to £1.671 billion in 2016/17, using the new Scotland-wide treatment costs for all authorities.

For the 2017 results twenty-one authorities output both a decrease in PI and a decrease in backlog, this compares with just thirteen authorities which reported the same trend in the April 2015 report.

The headline backlog calculation reveals further detail regarding the actual condition of the proportions of network classified red or amber.

Changes over the two-year period in the condition indicators between road classes combined with changes in the treatment selection profiles for individual authority networks mean that an increase or decrease in the PI does not necessarily follow a similar increase or decrease in the backlog.

The 2017 backlog model results do show that where there has been a 'significant' increase or decrease in a network PI of 2% or greater, the headline backlog also increases or decreases in the same direction.

The total steady state budget calculated in the 2015 report was £245.5 million. When recalculated using the new Scotland-wide treatment costs the 2015 steady state was output in the model at £224.9 million. The 2017 steady state calculated using the same Scotland-wide costs was output at £222.3 million, a decrease of £2.6 million or 1.2%.

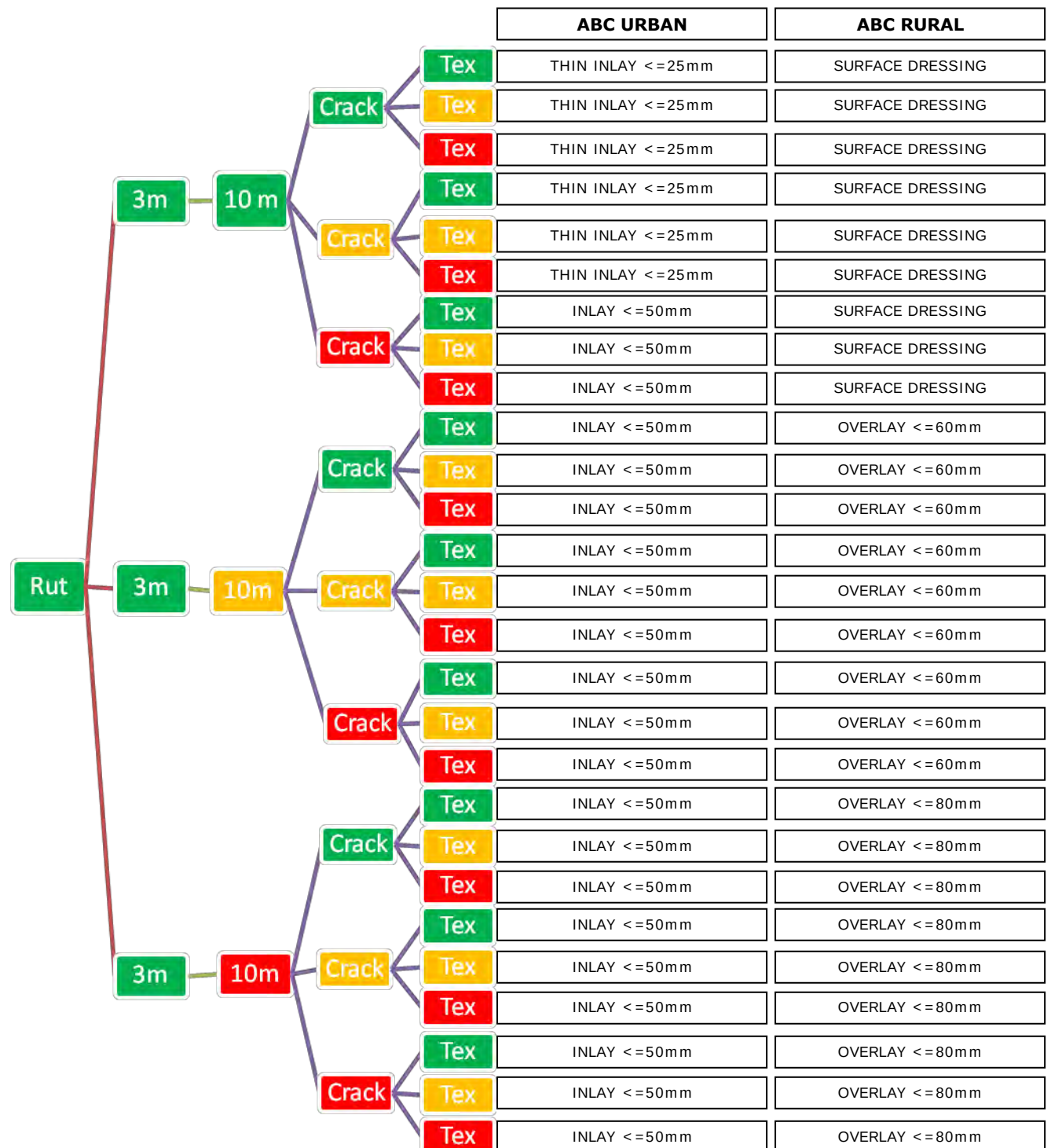
For the 2017 results seventeen authorities output both a decrease in PI and a decrease in the steady state budget. The relationship between an increase or decrease of 2% or greater in the PI and an increase or decrease in the same direction for the steady state budget holds for all but one authority.

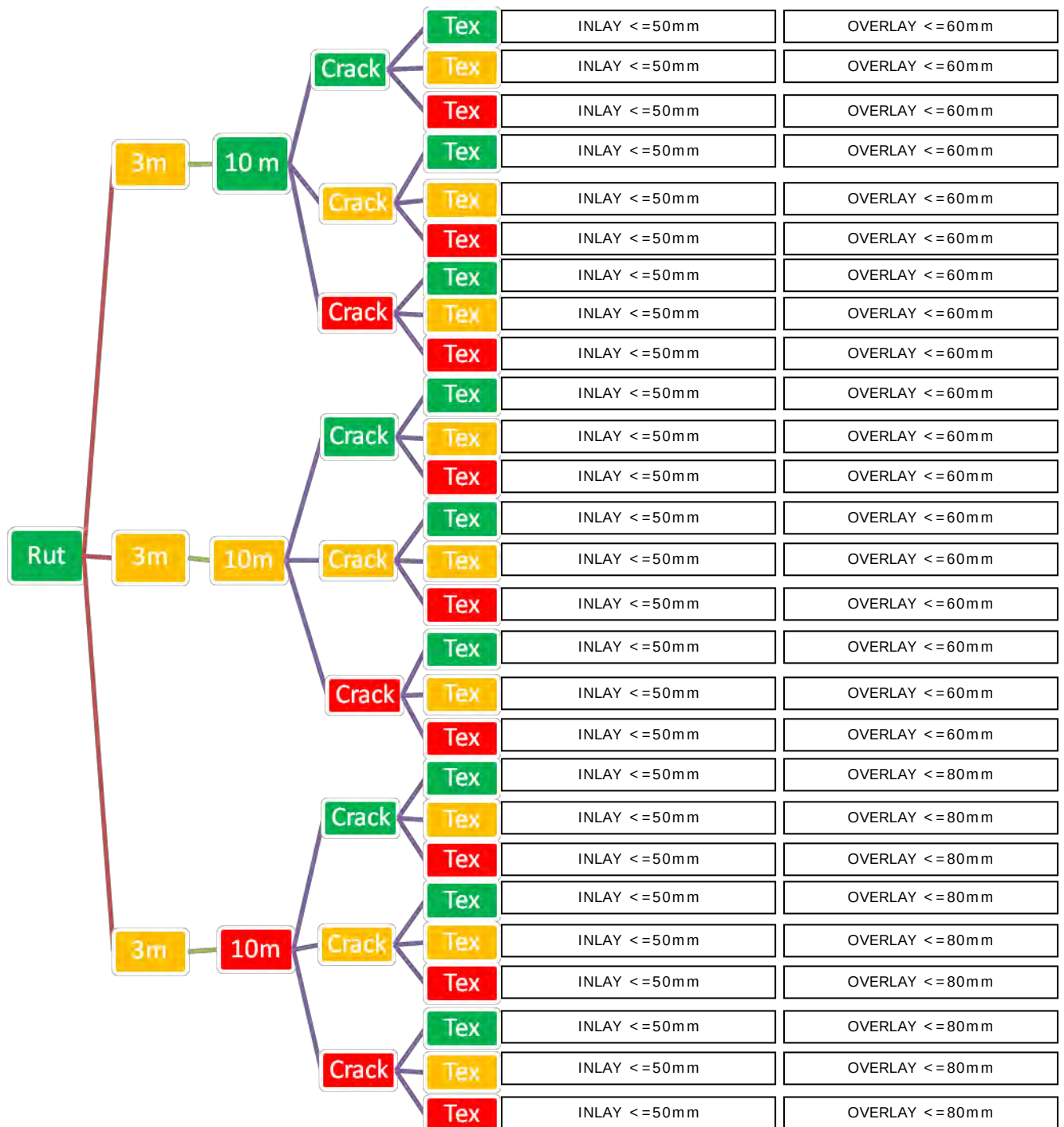
Further analysis of the authority where a relatively large improvement in the PI of 3.6% is combined with an increase in its steady state budget of 11.8% reveals that it has a very large proportion of Unclassified network. Only a minimum 10% of the Unclassified network is surveyed each year and four years of Unclassified surveys contribute to the overall PI. This means that the Unclassified steady state budget comparisons are calculated from approximately 20% of common network, compared with 100% for the classified sections. Increasing the Unclassified dataset to six years may help to smooth variations in the budget model calculations.

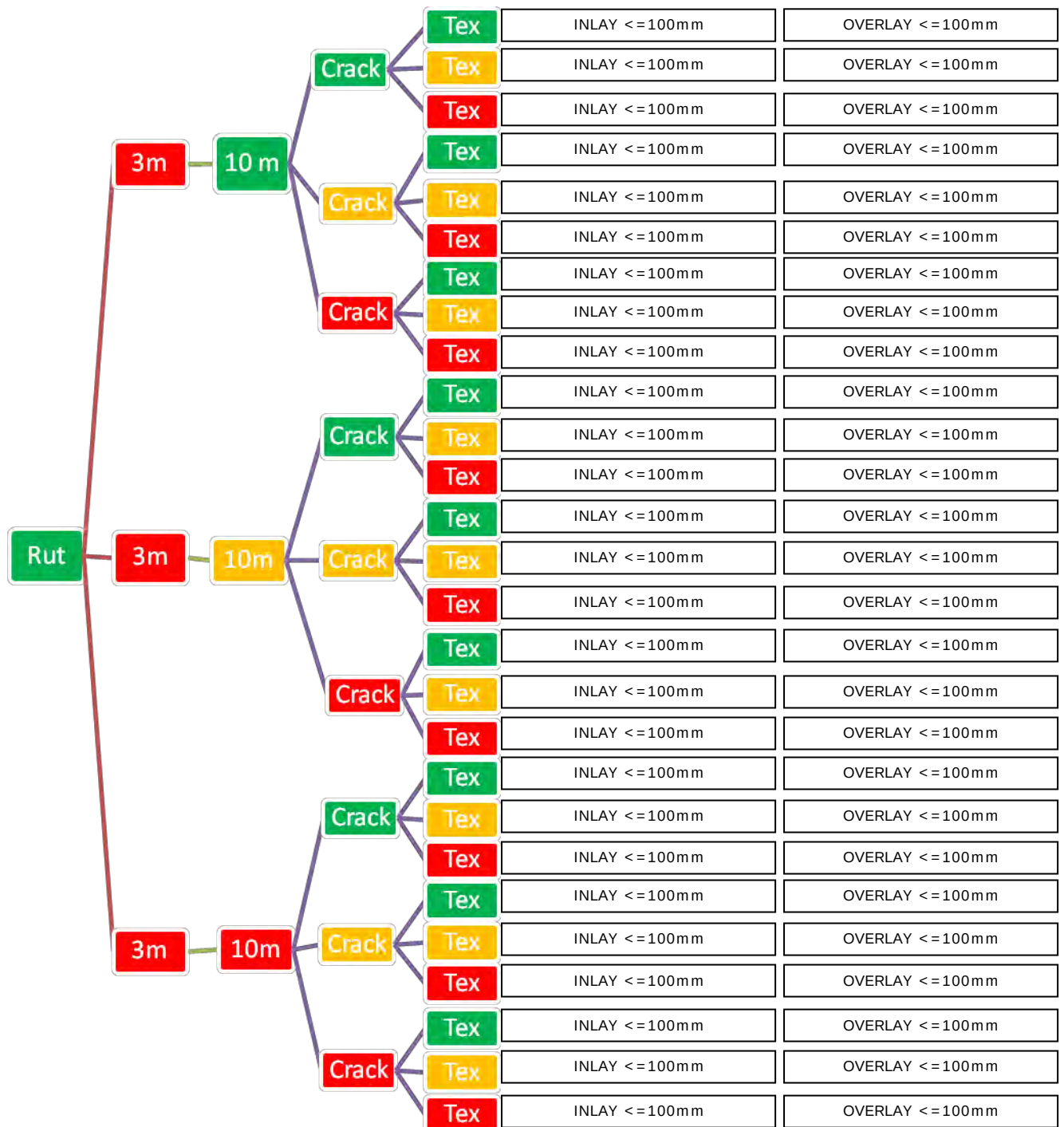
Whilst there is a relatively direct comparison between the PI and the backlog budgets there are more subtleties when comparing steady state budget versus PI relationships. For instance, the intrinsic value of having an improved network for road users and potential reduction in personal claims is not accounted for.

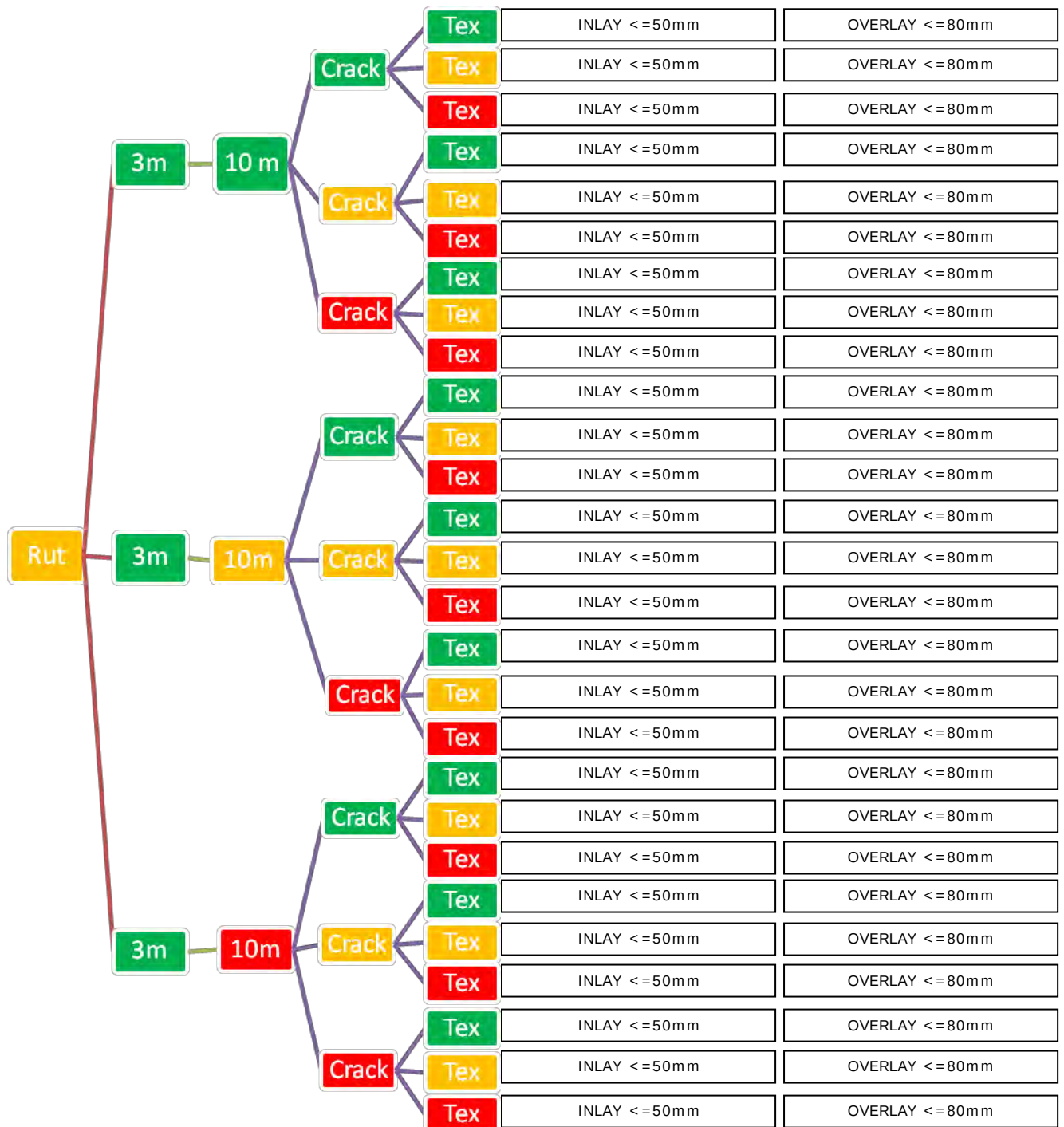
Also, the amber network condition covers a wide range of PI scores from 40 to 100, if there is a significant increase in the amount of 'green' network then there can be a greater amount of network with the potential to fall into the amber bands, particularly the low amber, over the ten-year period rather than maintaining a significant amount of network in the low to mid-amber range.

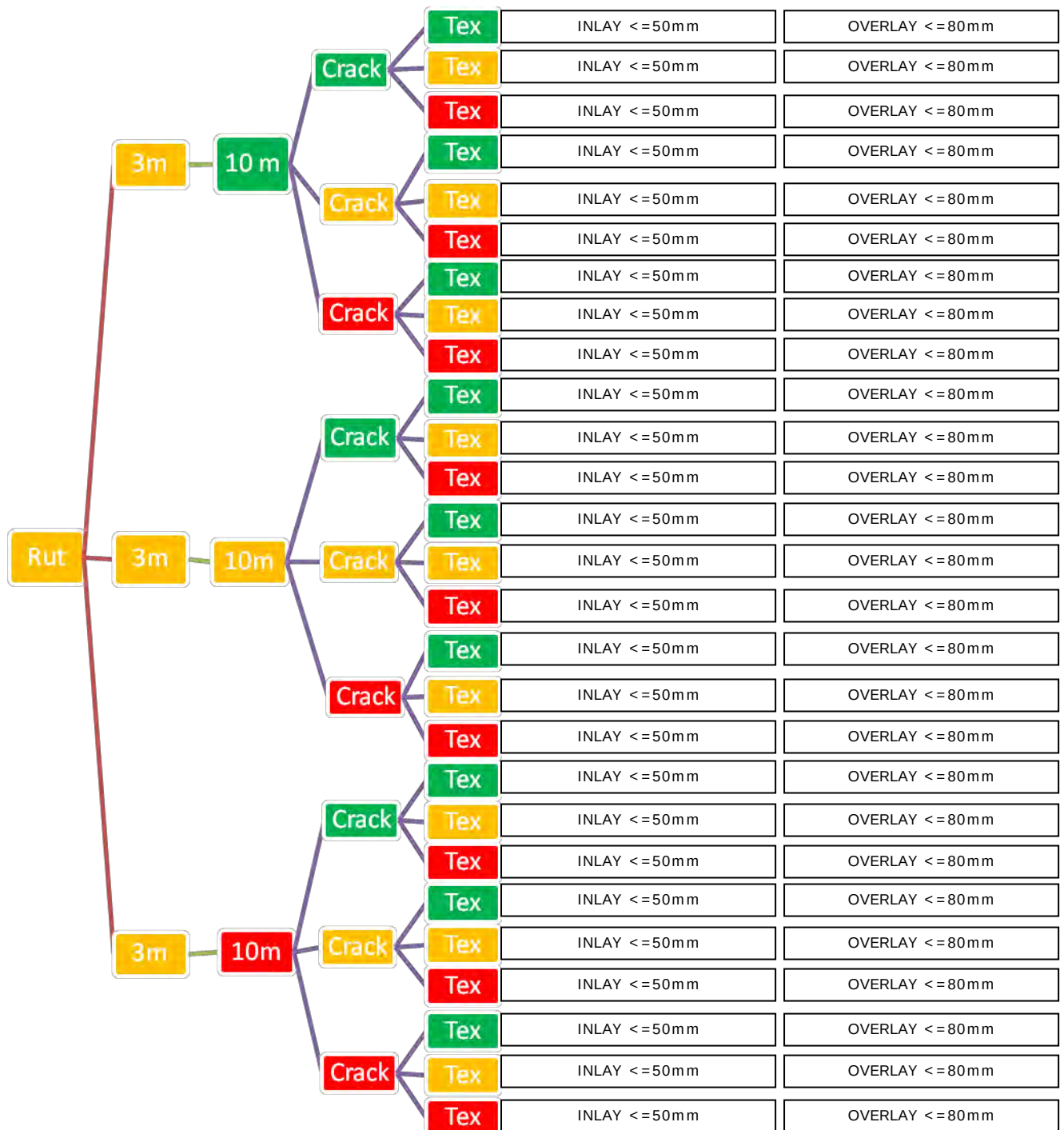
APPENDIX 1A DECISION TREE CLASSIFIED ROADS

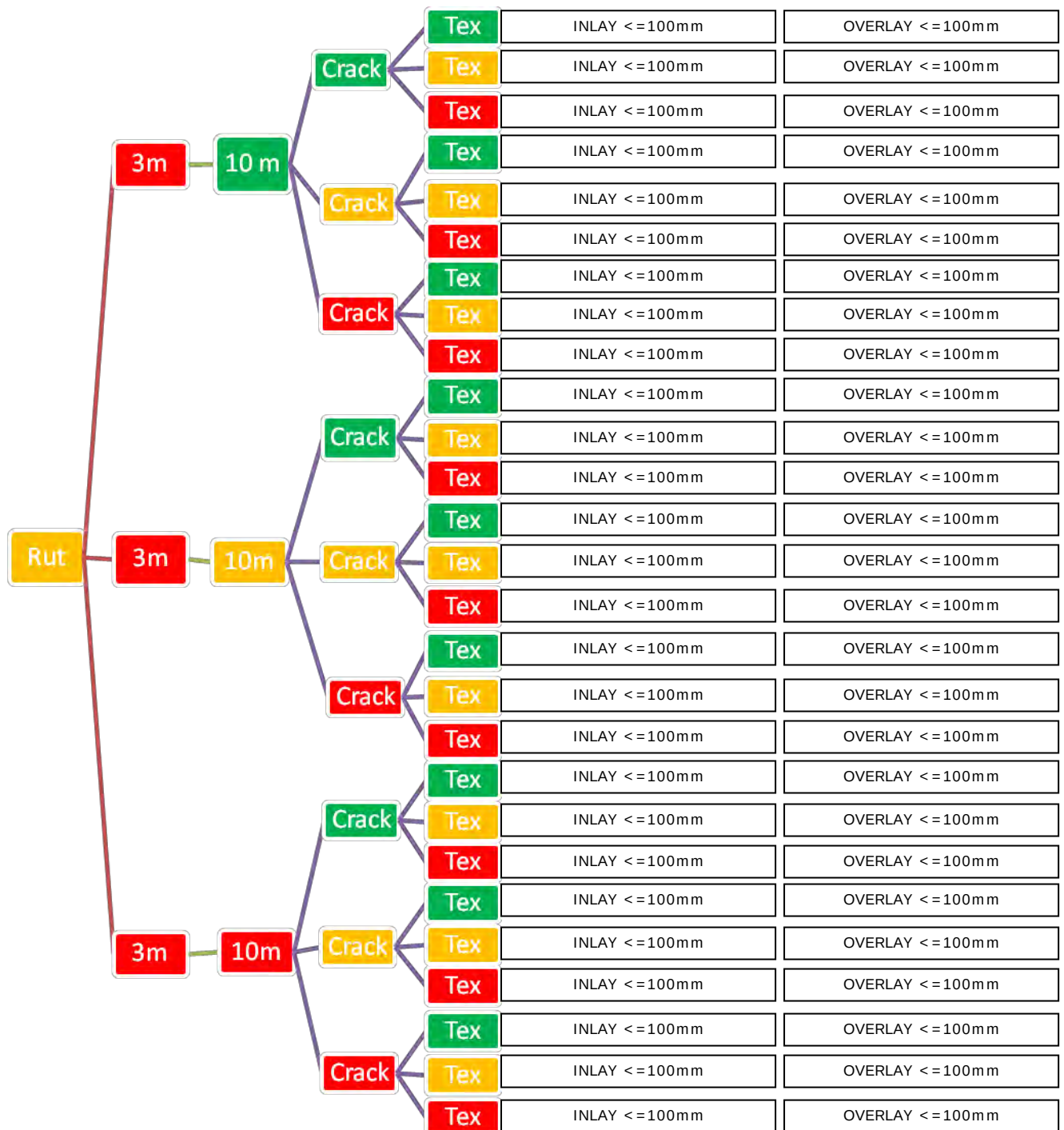


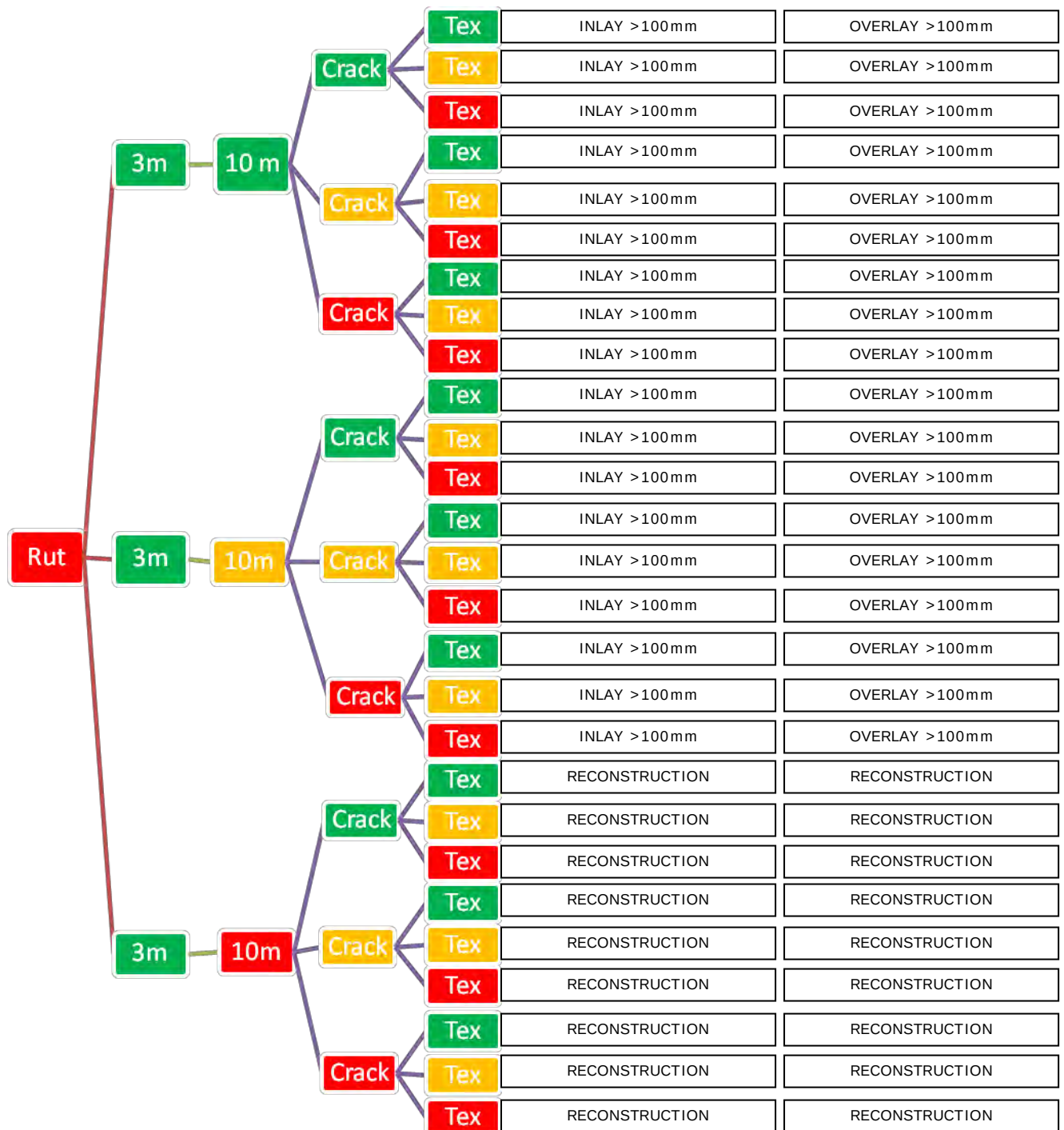


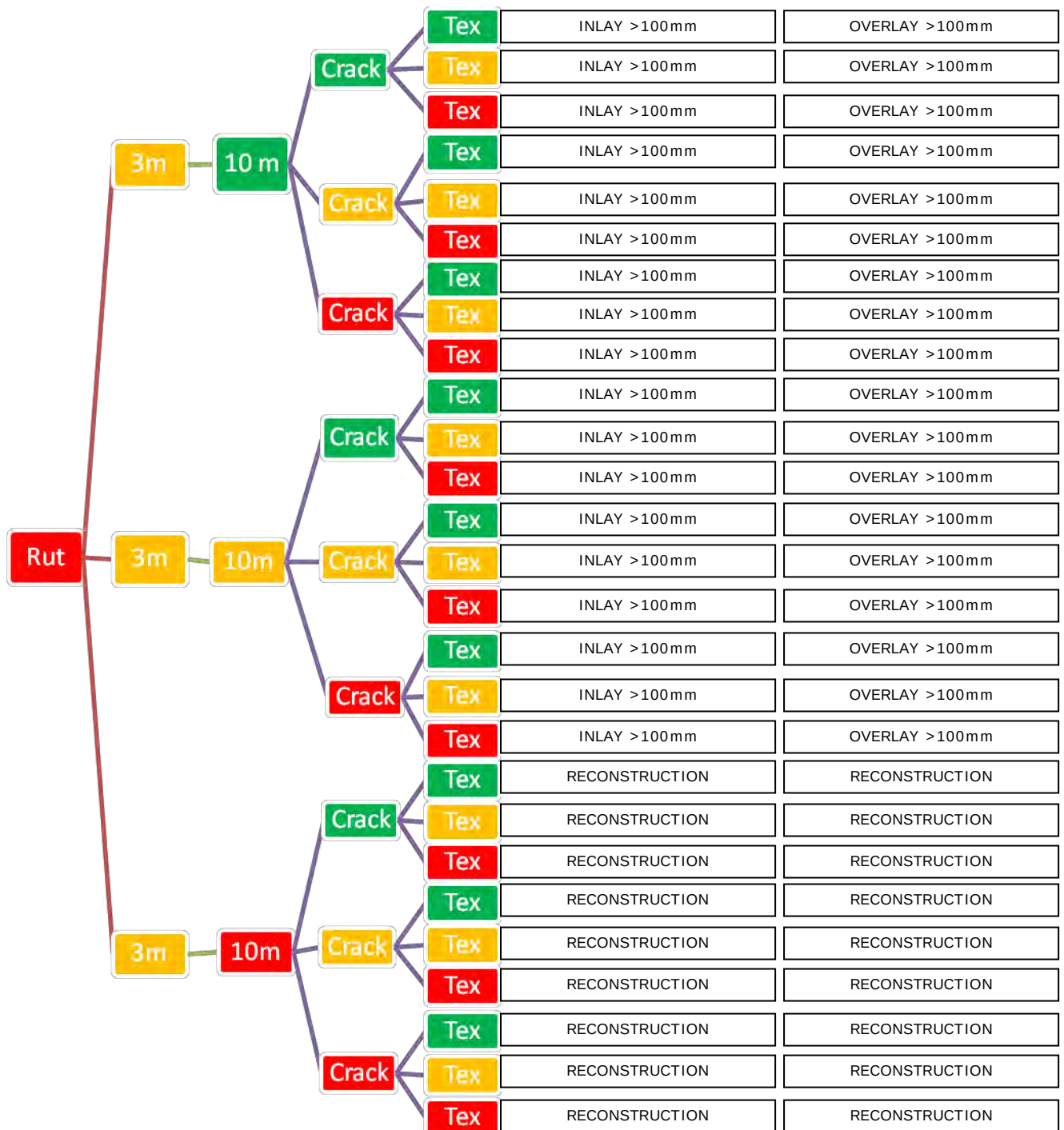


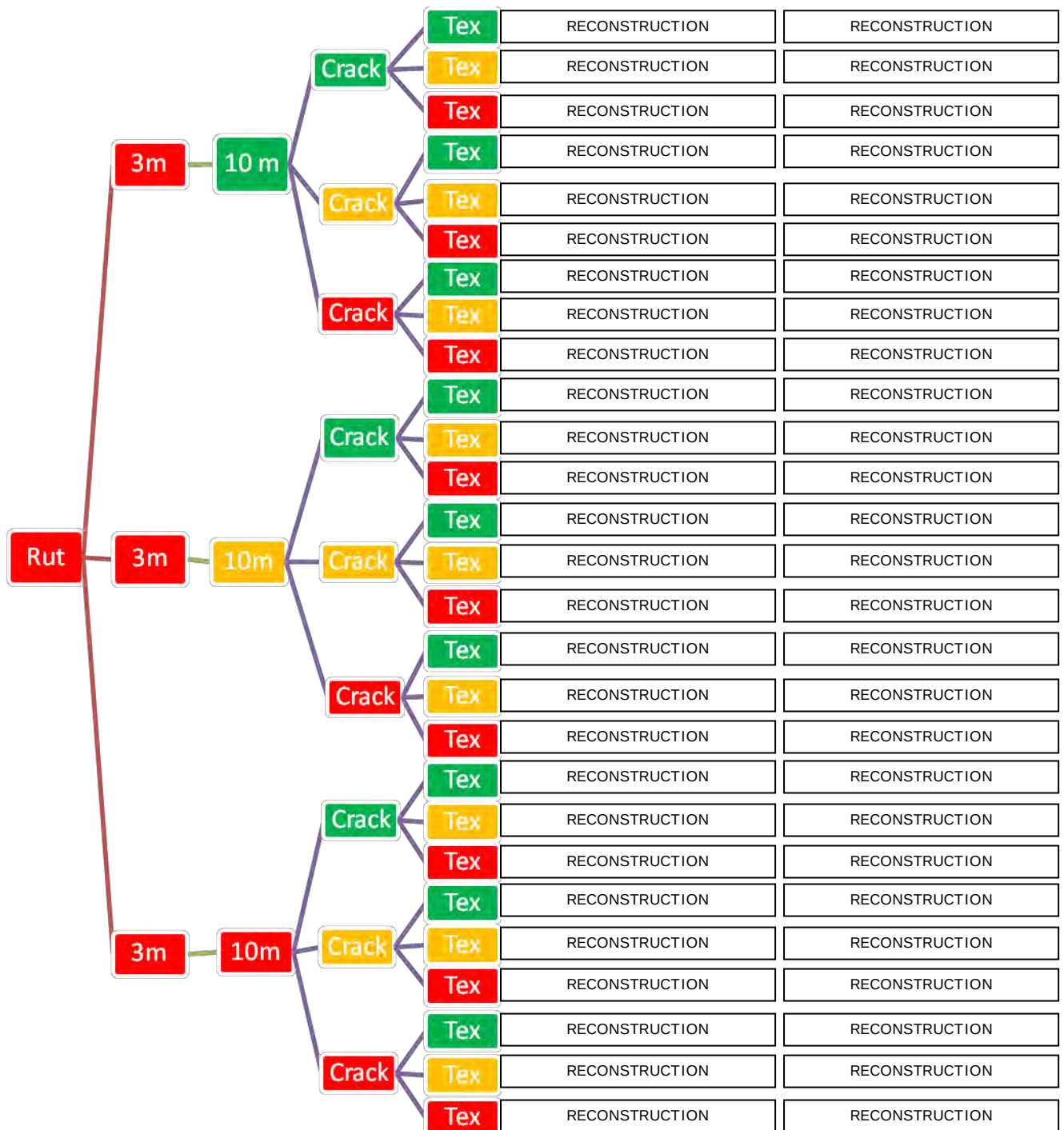






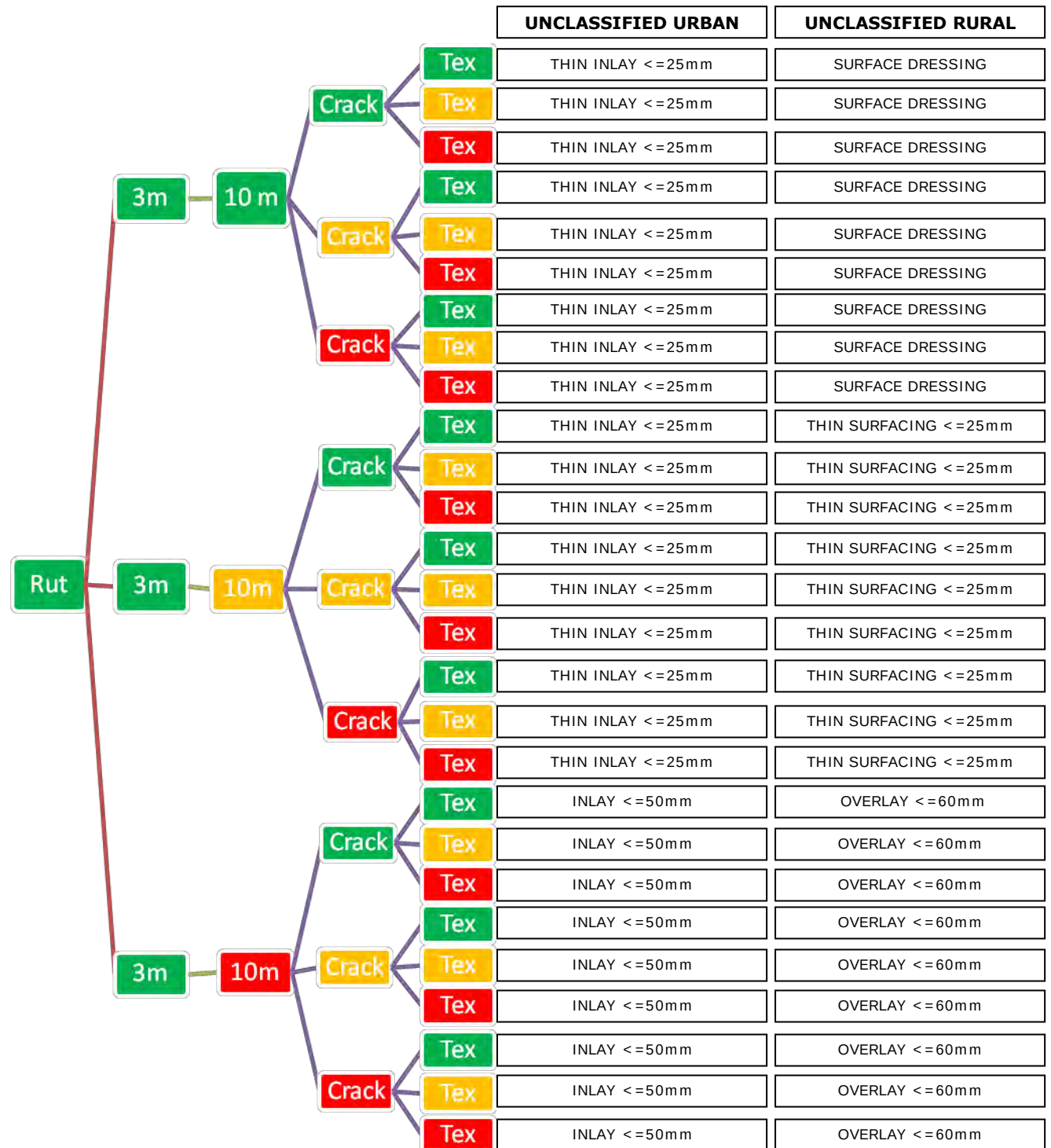


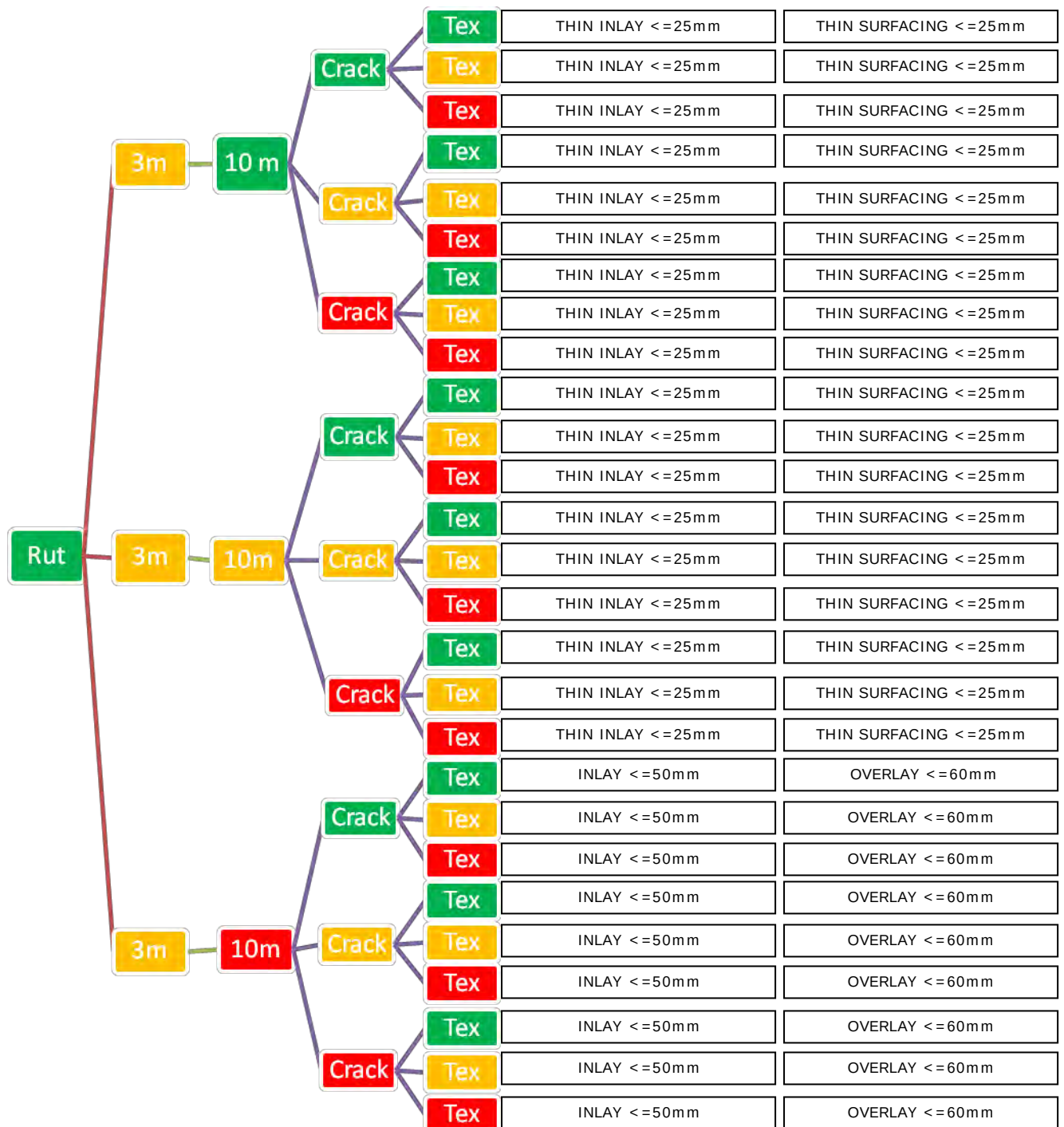


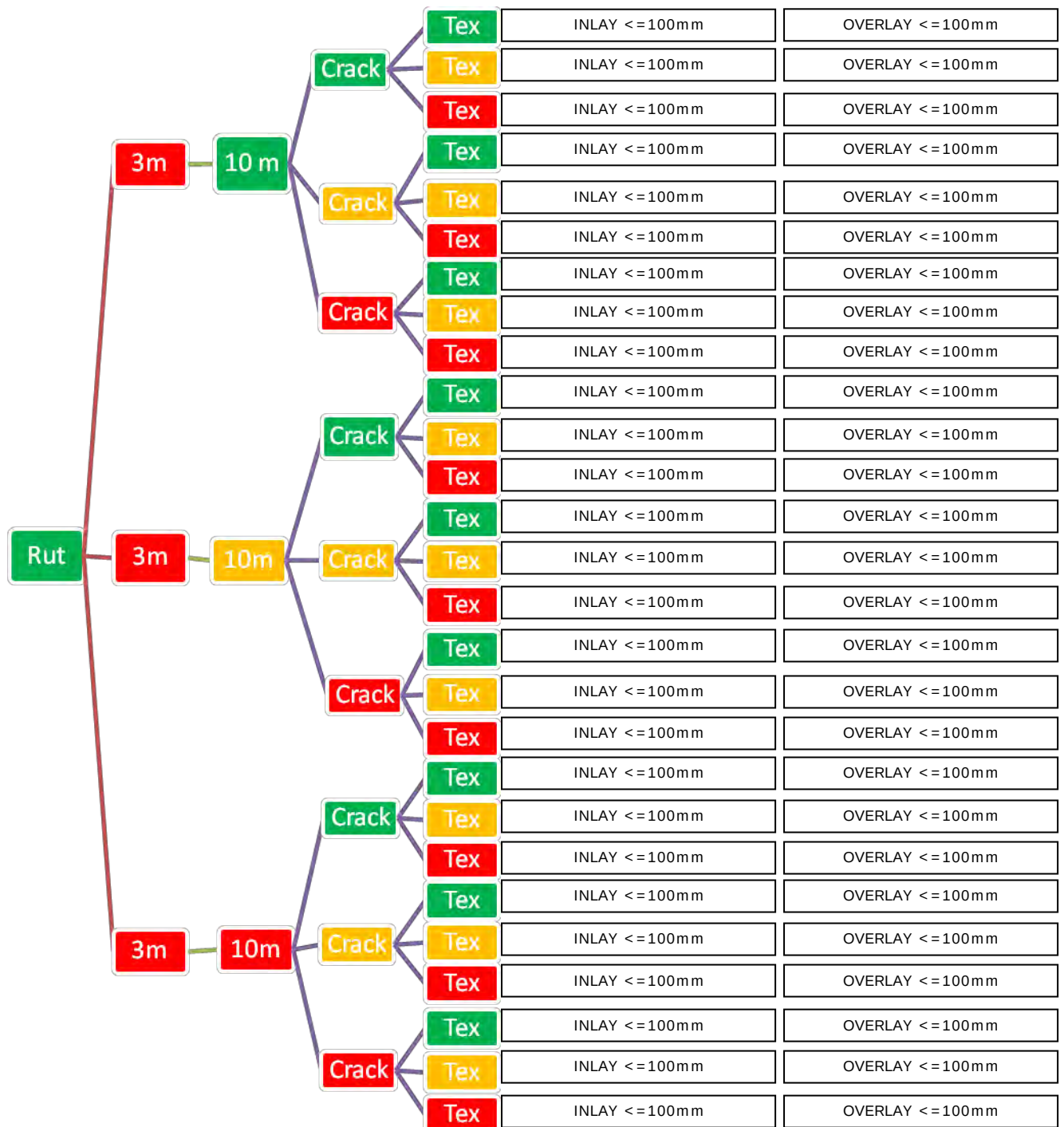


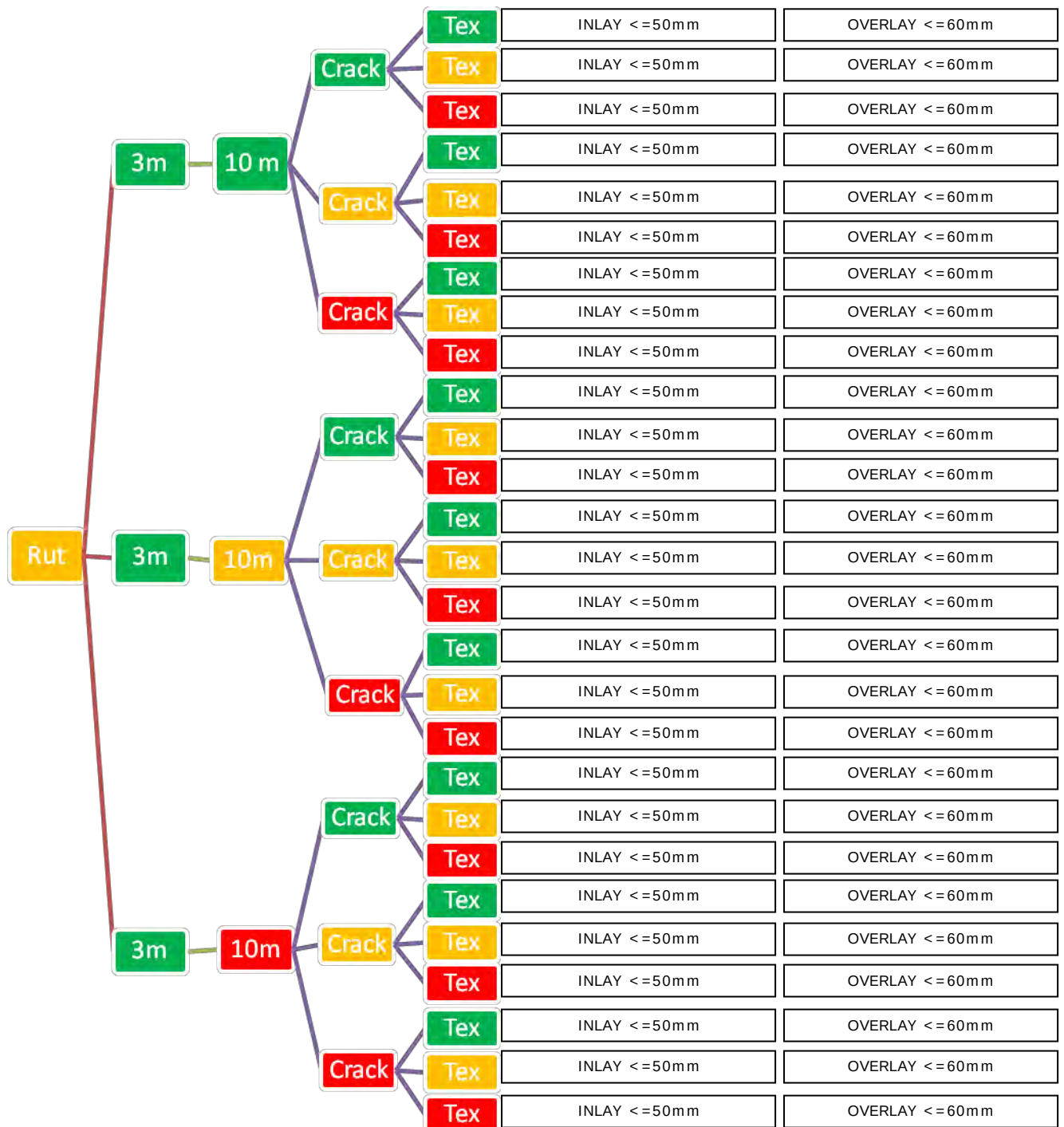
APPENDIX 1B

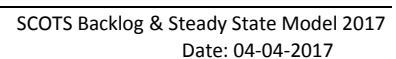
DECISION TREE UNCLASSIFIED ROADS

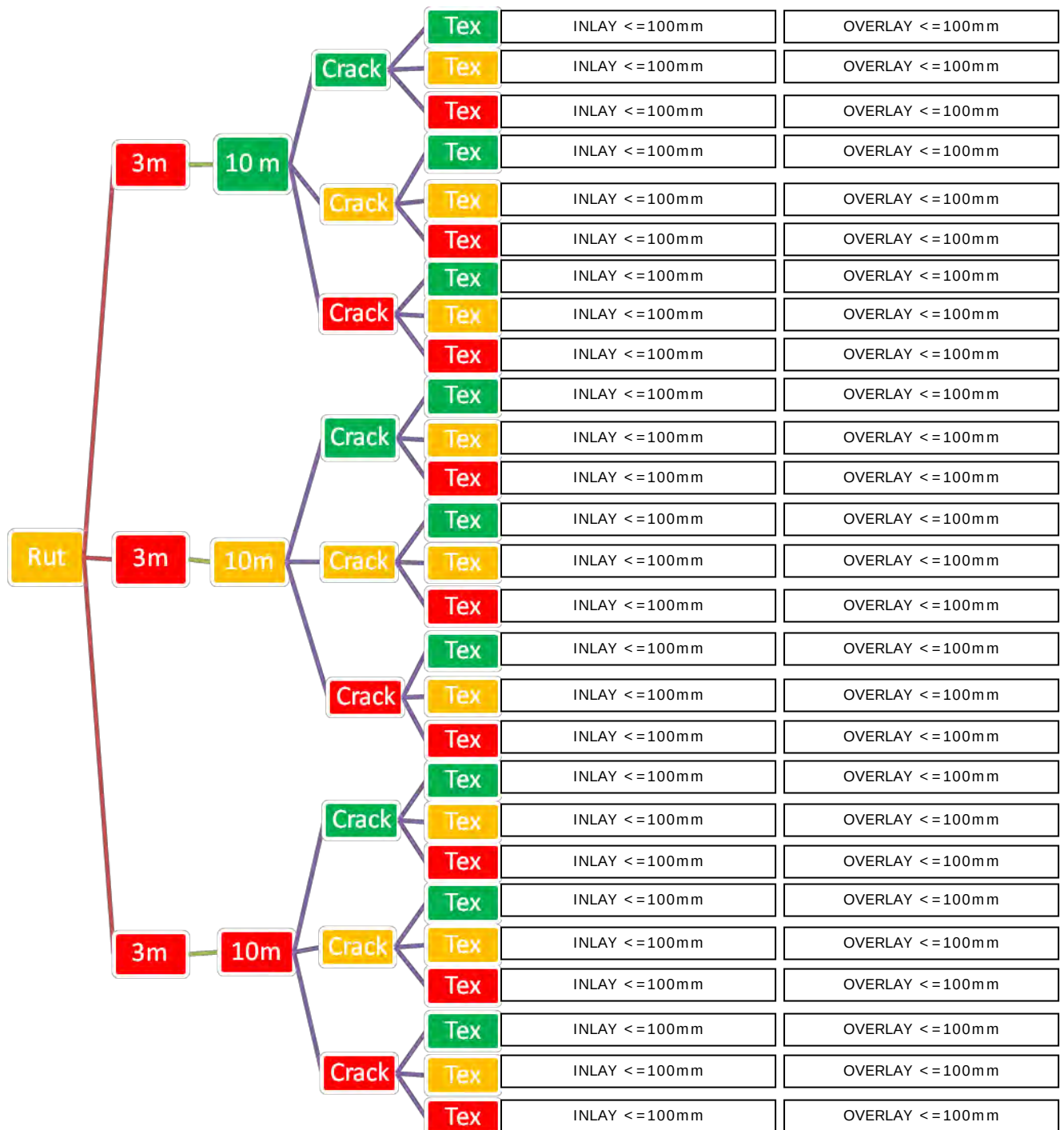


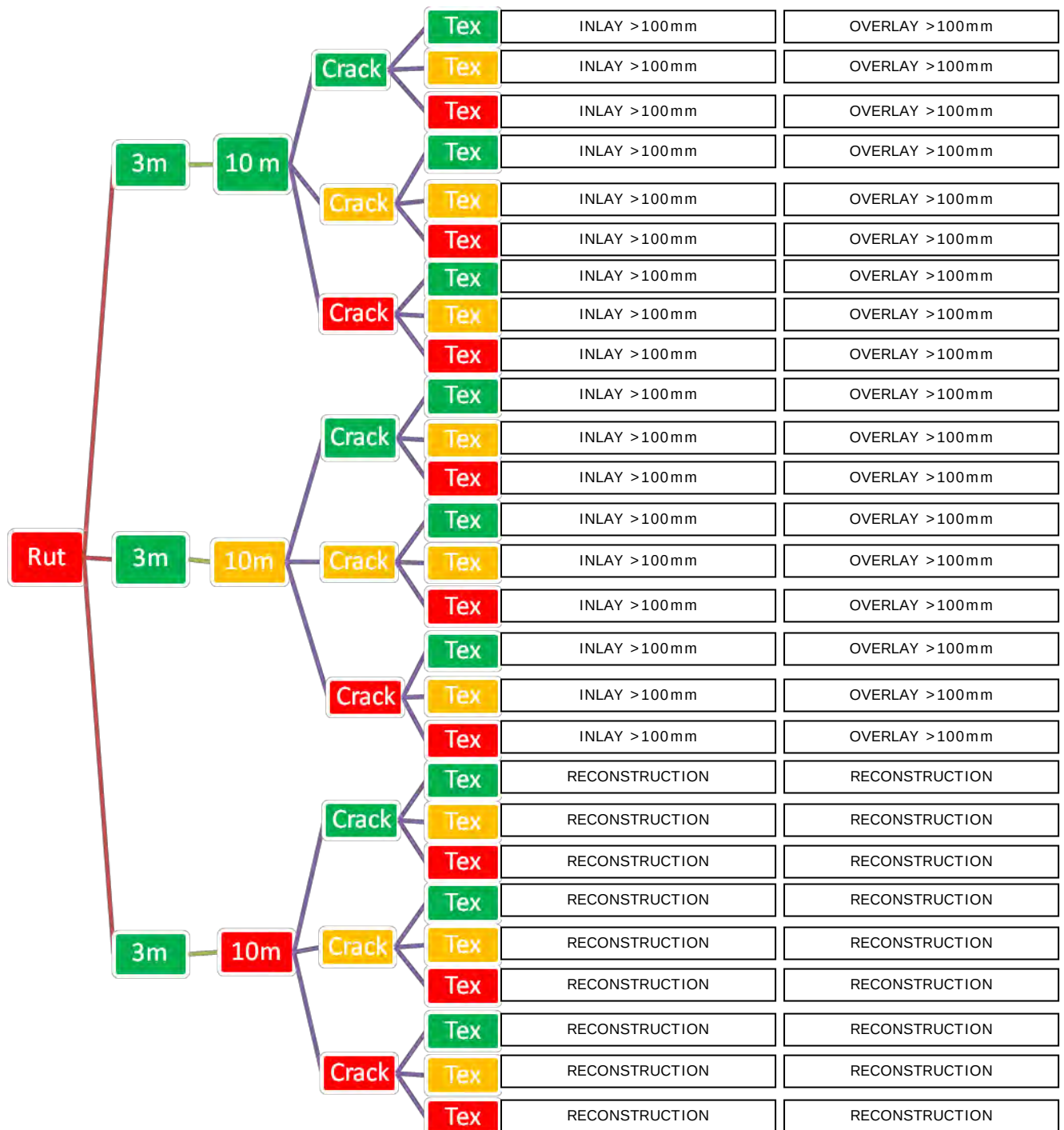


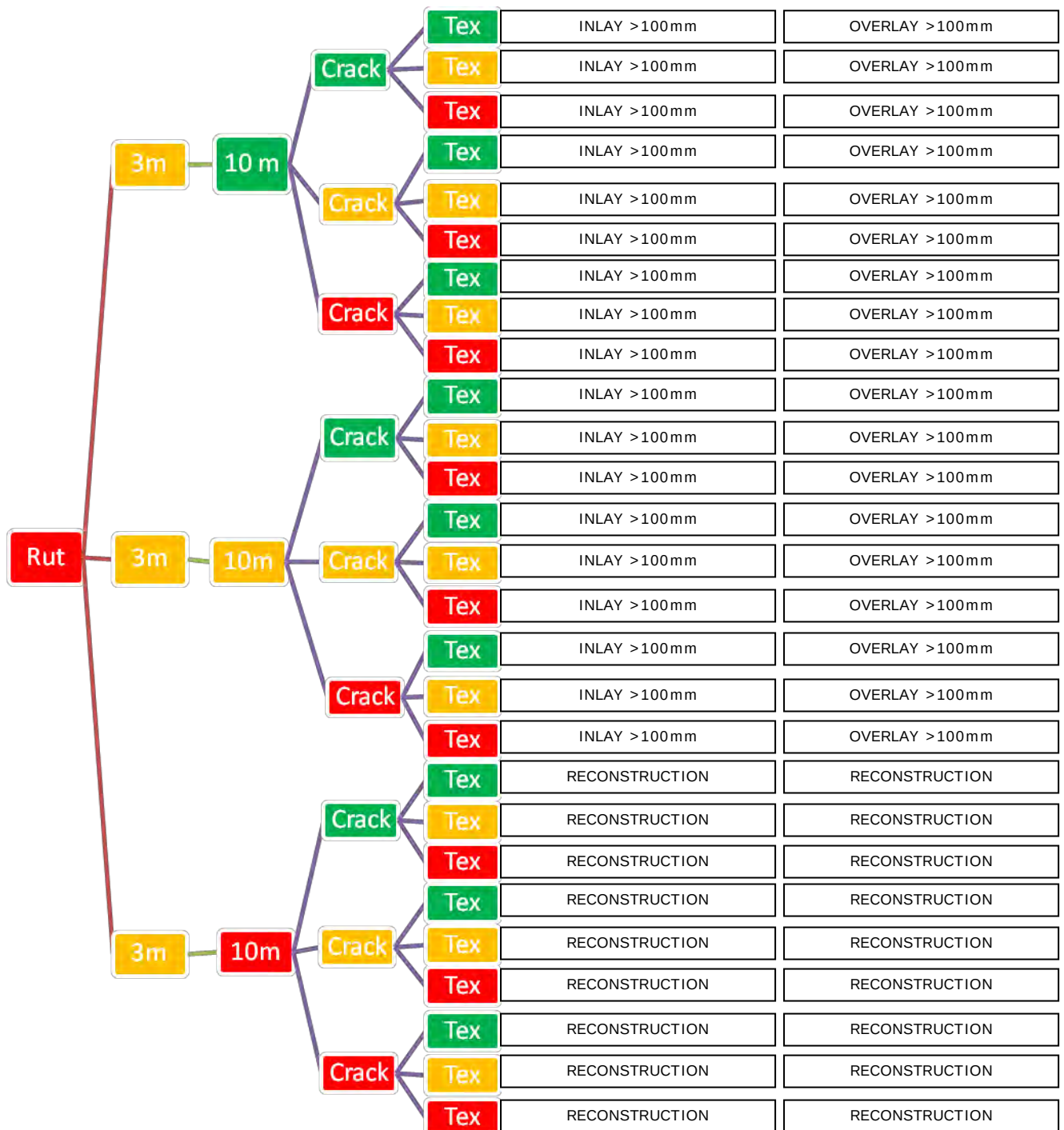


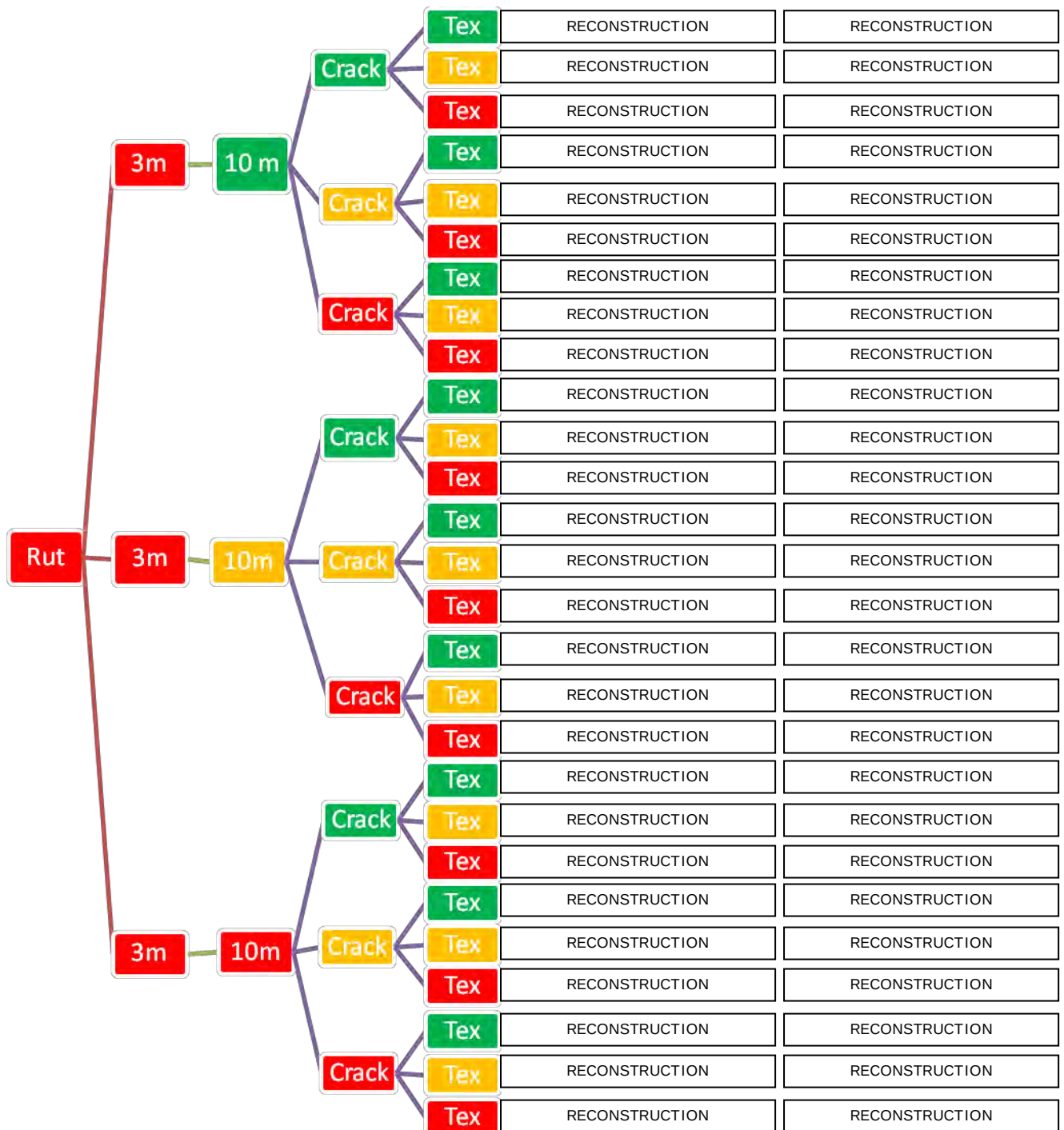












APPENDIX 2 TREATMENT RATES BY CLASS AND ENVIRONMENT 2017

Treatment Rates A, B & C Class Urban Roads (£/m ²)				
Thin Inlay ≤25mm	Inlay ≤50mm	Inlay ≤100mm	Inlay >100mm	Recon
7.70	22.89	25.66	48.72	60.68

Treatment Rates A, B & C Class Rural Roads (£/m ²)					
Surface Dressing	Overlay ≤60mm	Overlay ≤80mm	Overlay ≤100mm	Overlay >100mm	Recon
4.09	15.91	20.18*	24.44	38.15	60.68

*Pro-rata cost derived from SRRB Benchmarking Report

Treatment Rates Unclassified Urban Roads (£/m ²)				
Thin Inlay ≤25mm	Inlay ≤50mm	Inlay ≤100mm	Inlay >100mm	Recon
7.70	22.89	25.66	48.72	60.68

Treatment Unclassified Rural Roads (£/m ²)					
Surface Dressing	Thin Surfacing ≤25mm	Overlay ≤60mm	Overlay ≤100mm	Overlay >100mm	Recon
4.09	7.70	15.91	24.44	38.15	60.68

APPENDIX 3A NETWORK LENGTHS BY AUTHORITY 2017

Authority	Urban Network Lengths for PI (km)			
	A	B	C	U
Aberdeen	51.10	28.90	44.10	646.10
Aberdeenshire	61.80	64.50	50.20	615.80
Angus	36.90	24.80	34.00	307.50
Argyll & Bute	84.50	43.10	42.00	272.20
Scottish Borders	32.40	34.60	24.80	288.10
Clackmannanshire	20.60	12.30	15.60	156.90
Dumfries & Galloway	66.11	54.02	87.65	435.26
Dundee	44.40	12.00	93.90	346.30
E Ayrshire	36.70	49.00	23.80	375.80
E Dunbartonshire	31.80	22.30	19.40	330.60
E Lothian	32.80	35.40	15.50	229.90
E Renfrewshire	18.10	18.90	48.70	266.00
Edinburgh	129.00	41.00	75.00	1110.00
Falkirk	67.90	51.49	45.40	577.23
Fife	99.70	96.70	124.60	1102.90
Glasgow	183.50	72.50	245.00	1397.10
Highland	74.30	91.20	97.30	755.50
Inverclyde	14.30	6.00	26.70	237.30
Midlothian	18.60	20.40	20.30	250.80
Moray	26.33	40.11	37.46	306.49
N Ayrshire	36.80	45.70	24.90	446.00
N Lanarkshire	99.30	84.30	128.40	933.80
Orkney	19.94	6.96	6.11	83.35
Perth & Kinross	61.60	21.88	25.13	406.58
Renfrewshire	33.60	27.00	71.20	477.40
S Ayrshire	33.50	22.80	27.20	347.90
S Lanarkshire	89.36	55.66	62.78	992.52
Shetland	12.90	4.62	21.13	77.69
Stirling	42.10	25.20	22.90	278.00
W Dunbartonshire	43.30	10.65	7.60	252.66
W Lothian	20.50	44.10	14.40	521.00
Western Isles	12.00	0.86	3.15	39.92

Authority	Rural Network Lengths for PI (km)			
	A	B	C	U
Aberdeen	7.20	15.30	58.40	44.20
Aberdeenshire	625.40	735.50	1485.80	1779.80
Angus	170.90	230.50	454.40	548.40
Argyll & Bute	420.50	570.70	392.50	454.00
Scottish Borders	426.30	564.70	743.60	855.00
Clackmannanshire	28.60	22.20	12.50	16.00
Dumfries & Galloway	428.17	680.91	1090.61	1317.14
Dundee	3.70	2.90	25.90	15.10
E Ayrshire	106.70	192.30	204.30	279.60
E Dunbartonshire	21.90	25.00	14.40	36.00
E Lothian	62.40	134.00	207.40	198.50
E Renfrewshire	12.90	31.40	33.10	33.20
Edinburgh	44.00	12.00	45.00	55.00
Falkirk	49.22	44.91	72.73	61.20
Fife	216.00	231.20	228.30	275.60
Glasgow	n/a	n/a	n/a	n/a
Highland	1313.80	888.10	1341.00	2178.30
Inverclyde	9.20	16.70	27.30	29.80
Midlothian	68.90	76.40	80.90	98.40
Moray	130.90	256.23	325.68	430.22
N Ayrshire	64.30	109.10	181.60	116.10
N Lanarkshire	73.80	65.50	121.50	97.10
Orkney	140.68	197.75	153.68	370.65
Perth & Kinross	365.01	325.93	593.28	650.10
Renfrewshire	31.10	35.30	68.40	61.20
S Ayrshire	81.90	185.20	204.50	270.30
S Lanarkshire	200.59	194.64	344.49	355.02
Shetland	211.70	157.11	177.39	381.52
Stirling	170.00	135.60	147.50	187.40
W Dunbartonshire	11.60	0.00	21.02	11.10
W Lothian	131.30	72.90	101.90	92.40
Western Isles	327.06	160.98	183.15	509.84

APPENDIX 3B CARRIAGEWAY WIDTHS BY AUTHORITY 2017

Authority	Urban Carriageway Widths (m)			
	A	B	C	U
Aberdeen	11.84	8.51	9.64	6.53
Aberdeenshire	7.30	6.00	5.00	5.00
Angus	8.10	8.10	7.20	6.80
Argyll & Bute	7.56	6.24	5.57	6.18
Scottish Borders	7.00	6.50	5.00	5.00
Clackmannanshire	8.39	7.49	6.93	6.76
Dumfries & Galloway	8.70	8.30	7.60	6.70
Dundee	9.50	9.40	9.20	7.10
E Ayrshire	8.70	8.70	7.50	6.80
E Dunbartonshire	9.10	8.50	7.20	6.60
E Lothian	5.80	4.90	5.20	5.20
E Renfrewshire	10.60	9.80	8.20	6.70
Edinburgh	10.60	9.90	9.70	7.20
Falkirk	9.32	8.84	8.19	6.00
Fife	7.30	6.00	5.85	5.50
Glasgow	12.00	10.28	10.28	7.70
Highland	7.30	6.50	6.00	5.70
Inverclyde	7.50	7.00	6.80	5.80
Midlothian	9.30	8.20	7.40	6.90
Moray	8.76	7.37	7.54	6.38
N Ayrshire	6.48	6.83	5.65	5.50
N Lanarkshire	9.80	9.00	8.60	7.10
Orkney	6.70	6.00	6.00	5.50
Perth & Kinross	7.40	6.40	6.10	5.50
Renfrewshire	8.00	7.00	7.00	6.00
S Ayrshire	7.30	6.00	6.00	5.50
S Lanarkshire	8.00	7.70	7.60	6.50
Shetland	7.90	7.00	6.60	6.20
Stirling	8.86	8.86	7.98	7.11
W Dunbartonshire	6.50	6.50	6.00	6.50
W Lothian	8.00	8.00	5.00	5.90
Western Isles	6.30	6.30	6.00	6.00

Authority	Rural Carriageway Widths (m)			
	A	B	C	U
Aberdeen	15.15	6.10	5.01	5.90
Aberdeenshire	7.30	6.00	3.50	3.00
Angus	7.30	6.20	5.30	4.40
Argyll & Bute	6.05	3.95	4.07	3.57
Scottish Borders	7.30	5.00	5.00	3.50
Clackmannanshire	7.84	6.69	5.69	4.08
Dumfries & Galloway	7.30	6.50	5.40	4.90
Dundee	9.00	6.00	5.80	6.50
E Ayrshire	7.30	6.90	5.10	4.70
E Dunbartonshire	7.60	7.20	5.90	5.20
E Lothian	7.90	6.50	4.50	3.50
E Renfrewshire	8.70	7.20	5.60	5.00
Edinburgh	9.60	8.80	6.60	4.70
Falkirk	8.64	7.11	6.68	5.00
Fife	7.30	6.00	5.85	5.50
Glasgow	n/a	n/a	n/a	n/a
Highland	5.00	4.50	3.50	3.50
Inverclyde	6.80	5.20	4.30	3.50
Midlothian	7.90	6.40	5.90	4.80
Moray	6.66	5.88	4.63	4.14
N Ayrshire	5.38	5.15	3.70	2.95
N Lanarkshire	8.30	7.90	6.60	5.80
Orkney	5.60	4.70	4.20	3.00
Perth & Kinross	6.50	5.70	4.70	3.80
Renfrewshire	8.00	7.00	7.00	6.00
S Ayrshire	6.50	6.00	5.00	4.00
S Lanarkshire	8.00	7.70	7.60	6.50
Shetland	6.40	4.70	4.40	4.20
Stirling	7.97	6.44	5.26	4.60
W Dunbartonshire	6.50	6.40	5.00	6.50
W Lothian	8.00	6.00	4.80	4.70
Western Isles	5.27	4.22	3.57	3.30

APPENDIX 4 RED AND AMBER PI PERCENTAGES

The results for the proportion of the urban and rural network for each class of road are shown in Tables A4.1 for the red and A4.2 for the amber.

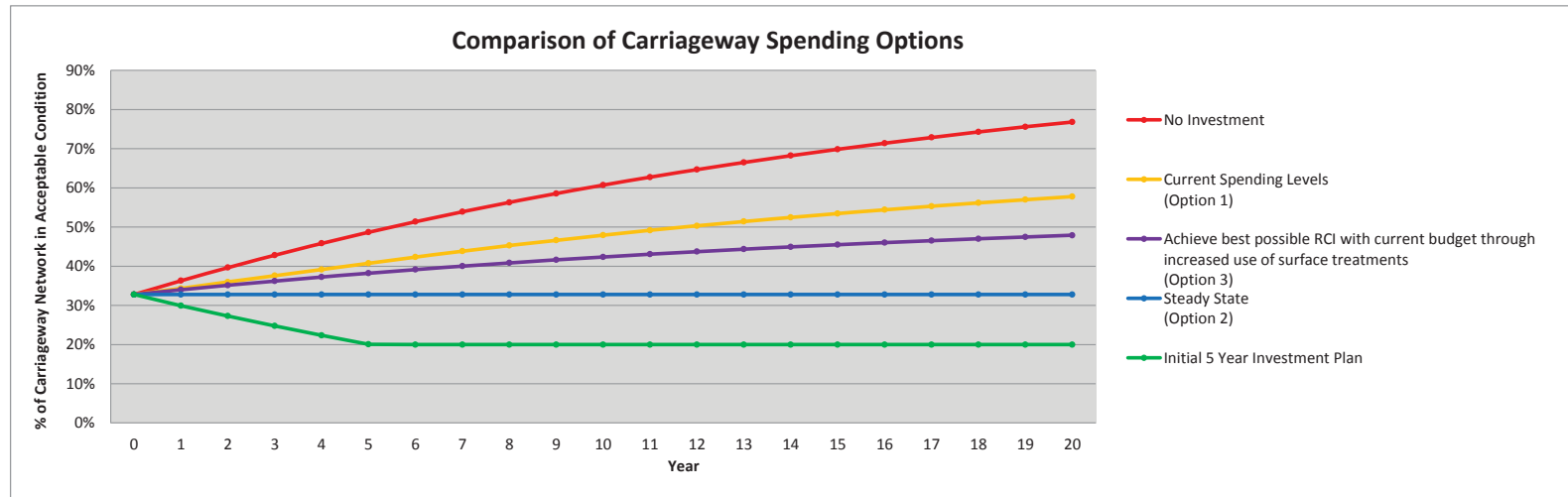
Table A4.1 Percentage of Red for each road class and environment

Authority	2017 Red %							
	A Urban	A Rural	B Urban	B Rural	C Urban	C Rural	U Urban	U Rural
Aberdeen	3.01	0.80	3.53	2.17	5.52	3.08	4.48	3.72
Aberdeenshire	1.75	2.86	2.60	1.84	1.52	1.84	1.64	7.19
Angus	2.30	1.89	2.00	3.50	2.49	4.24	3.02	10.55
Argyll & Bute	3.18	9.96	4.98	21.73	3.70	19.50	4.50	22.24
Scottish Borders	7.59	5.08	5.91	7.40	5.07	8.08	7.01	17.01
Clackmannanshire	3.13	1.51	2.48	2.59	4.14	2.19	8.34	8.13
Dumf. & Galloway	5.43	5.19	3.54	4.88	6.10	9.68	7.62	21.93
Dundee	1.82	2.71	0.68	2.00	0.94	2.59	5.26	2.95
E Ayrshire	2.85	2.14	3.28	6.46	3.66	8.14	5.78	19.38
E Dunbartonshire	3.94	5.65	3.71	5.00	4.30	3.52	8.52	10.47
E Lothian	2.49	3.00	2.23	5.57	2.51	3.27	4.63	3.77
E Renfrewshire	2.45	0.98	3.92	2.94	2.25	15.27	8.58	24.39
Edinburgh	4.22	1.52	2.99	1.90	4.19	2.56	7.13	13.02
Falkirk	3.30	2.26	5.43	6.04	3.64	5.59	4.93	10.21
Fife	2.96	4.05	3.54	5.94	2.18	2.86	4.52	5.55
Glasgow	2.52	-	1.43	-	1.49	-	5.68	-
Highland	3.08	3.94	4.03	6.75	3.07	9.56	4.05	14.80
Inverclyde	2.83	4.24	4.69	7.19	3.41	14.10	5.84	35.56
Midlothian	3.40	2.30	4.20	3.60	2.53	3.35	4.59	7.37
Moray	2.36	2.52	2.02	1.63	1.80	2.61	2.56	6.58
N Ayrshire	6.12	11.04	4.63	5.73	0.00	13.49	3.68	14.21
N Lanarkshire	1.33	1.98	1.21	3.64	1.80	4.50	4.64	16.01
Orkney	7.64	1.19	3.71	1.74	1.37	2.03	0.97	4.48
Perth & Kinross	4.42	7.49	3.60	6.28	4.57	6.12	3.19	9.61
Renfrewshire	2.58	2.33	2.31	3.60	2.36	14.04	4.97	28.09
S Ayrshire	4.40	7.25	5.55	8.52	3.77	8.83	5.42	16.48
S Lanarkshire	2.67	2.41	1.93	2.48	2.84	5.96	4.33	11.61
Shetland	4.27	1.39	3.93	6.12	1.74	3.43	3.26	15.48
Stirling	4.48	4.44	5.26	8.59	7.49	8.69	7.78	27.45
W Dunbartonshire	2.80	4.69	2.06	-	0.72	6.45	6.04	5.49
W Lothian	1.73	1.53	2.31	3.77	2.19	7.24	2.40	11.86
Western Isles	1.92	7.64	1.82	6.78	1.42	7.07	3.40	7.60

Table A4.2 Percentage of Amber for each road class and environment

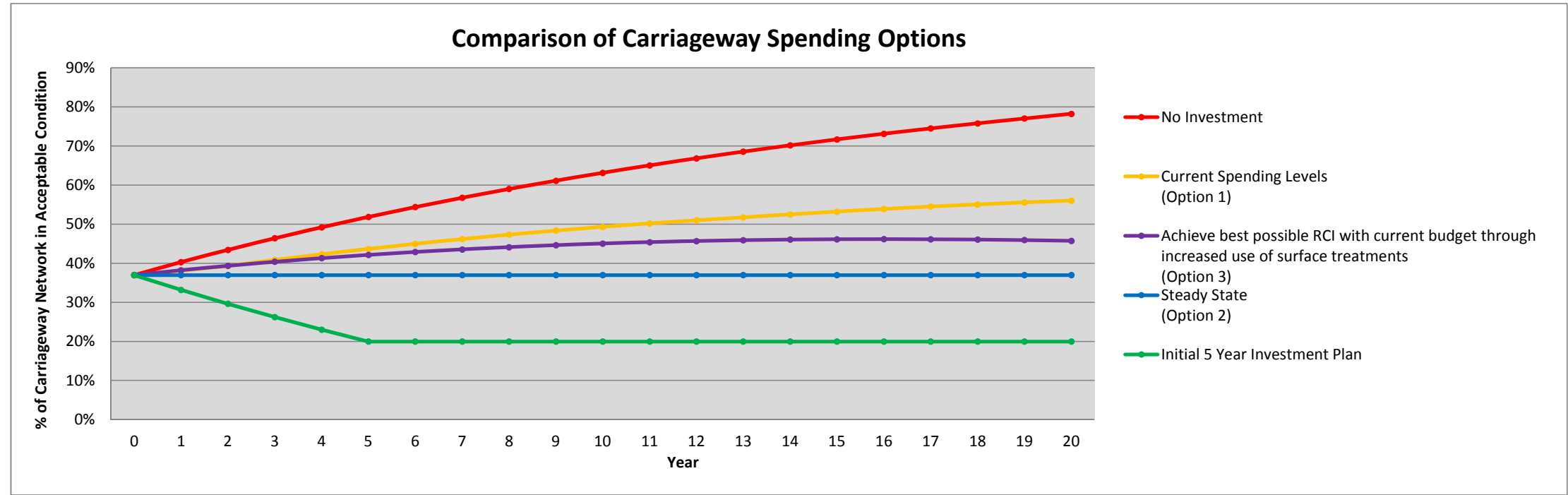
Authority	2017 Amber %							
	A Urban	A Rural	B Urban	B Rural	C Urban	C Rural	U Urban	U Rural
Aberdeen	19.50	11.11	23.66	17.27	21.83	24.45	25.12	19.19
Aberdeenshire	18.95	22.34	19.89	19.48	17.54	16.66	19.09	26.36
Angus	21.70	19.21	19.38	31.09	22.21	23.69	23.21	29.31
Argyll & Bute	26.00	37.74	33.40	43.51	31.22	43.43	31.38	40.85
Scottish Borders	29.98	28.93	27.74	36.46	28.54	35.47	34.64	43.31
Clackmannanshire	20.77	19.41	25.84	22.62	25.92	24.14	34.21	25.83
Dumf. & Galloway	30.60	28.43	30.58	29.68	30.16	34.74	35.76	39.33
Dundee	15.21	20.95	17.79	16.29	12.40	20.19	27.24	16.43
E Ayrshire	18.53	16.22	22.27	29.69	25.07	31.46	30.73	38.33
E Dunbartonshire	21.70	29.45	24.04	25.15	21.55	23.51	31.50	36.41
E Lothian	22.73	28.62	17.21	34.40	24.15	27.60	29.90	24.56
E Renfrewshire	18.46	8.76	24.66	28.26	18.35	35.34	33.91	39.14
Edinburgh	23.01	13.64	18.22	13.49	22.04	20.24	30.23	33.04
Falkirk	25.70	25.77	33.05	34.75	32.11	33.26	29.59	31.65
Fife	23.04	24.01	25.46	28.85	20.33	29.28	29.65	31.10
Glasgow	22.00	-	17.55	-	15.22	-	28.97	-
Highland	25.97	25.20	27.93	30.02	22.38	31.65	25.19	33.40
Inverclyde	26.02	26.59	24.01	33.59	25.36	43.66	31.17	38.73
Midlothian	21.25	17.54	22.79	26.21	24.79	25.92	29.04	32.25
Moray	22.18	22.77	17.76	21.69	16.19	19.75	22.71	29.18
N Ayrshire	21.53	30.03	26.17	33.63	25.16	40.78	26.80	36.01
N Lanarkshire	17.51	17.58	16.85	23.76	14.11	31.30	30.39	38.28
Orkney	26.36	19.19	27.42	15.76	20.01	13.23	17.92	21.08
Perth & Kinross	26.91	33.70	31.39	34.04	28.13	32.08	22.99	30.56
Renfrewshire	20.30	19.54	23.72	25.00	18.23	39.81	27.93	37.26
S Ayrshire	28.87	33.52	26.55	36.82	23.64	33.12	30.88	35.80
S Lanarkshire	21.58	20.00	19.00	22.52	22.56	34.24	26.85	35.94
Shetland	34.69	17.28	27.56	27.47	21.00	29.13	31.28	38.27
Stirling	26.97	26.73	26.84	35.06	29.06	33.36	32.21	40.36
W Dunbartonshire	22.78	27.53	19.44	-	16.35	27.62	30.12	31.69
W Lothian	16.55	16.80	21.09	26.33	20.87	36.96	24.21	37.94
Western Isles	23.83	30.07	22.88	31.95	18.58	43.11	21.81	39.69

Appendix 4 - Carriageway Spending Options



	No Investment		Current Spending Levels (Option 1)		Steady State (Option 2)		Achieve best possible RCI with current budget through increased use of surface treatments (Option 3)		Initial 5 Year Investment Plan	
Year	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure
0	32.76%	£0	32.76%	£0	32.76%	£0	32.76%	£0	32.76%	£0
1	36.31%	£0	34.33%	£2,317,061	32.76%	£3,528,940	33.98%	£2,317,061	29.95%	£5,695,900
2	39.67%	£0	35.97%	£2,317,061	32.76%	£3,528,940	35.13%	£2,317,061	27.28%	£5,695,900
3	42.84%	£0	37.59%	£2,317,061	32.76%	£3,528,940	36.22%	£2,317,061	24.75%	£5,695,900
4	45.84%	£0	39.14%	£2,317,061	32.76%	£3,528,940	37.25%	£2,317,061	22.34%	£5,695,900
5	48.68%	£0	40.74%	£2,317,061	32.76%	£3,528,940	38.23%	£2,317,061	20.06%	£5,695,900
6	51.36%	£0	42.34%	£2,317,061	32.76%	£3,528,940	39.15%	£2,317,061	19.99%	£3,766,000
7	53.90%	£0	43.85%	£2,317,061	32.76%	£3,528,940	40.02%	£2,317,061	19.99%	£3,715,100
8	56.30%	£0	45.28%	£2,317,061	32.76%	£3,528,940	40.85%	£2,317,061	19.98%	£3,715,600
9	58.58%	£0	46.63%	£2,317,061	32.76%	£3,528,940	41.63%	£2,317,061	19.98%	£3,715,600
10	60.73%	£0	47.93%	£2,317,061	32.76%	£3,528,940	42.37%	£2,317,061	19.98%	£3,715,600
11	62.76%	£0	49.16%	£2,317,061	32.76%	£3,528,940	43.06%	£2,317,061	19.98%	£3,715,600
12	64.69%	£0	50.32%	£2,317,061	32.76%	£3,528,940	43.73%	£2,317,061	19.98%	£3,681,600
13	66.51%	£0	51.43%	£2,317,061	32.76%	£3,528,940	44.35%	£2,317,061	19.98%	£3,674,700
14	68.24%	£0	52.48%	£2,317,061	32.76%	£3,528,940	44.94%	£2,317,061	19.98%	£3,674,700
15	69.87%	£0	53.47%	£2,317,061	32.76%	£3,528,940	45.51%	£2,317,061	19.98%	£3,674,700
16	71.42%	£0	54.41%	£2,317,061	32.76%	£3,528,940	46.04%	£2,317,061	19.98%	£3,605,900
17	72.88%	£0	55.32%	£2,317,061	32.76%	£3,528,940	46.54%	£2,317,061	19.98%	£3,605,900
18	74.27%	£0	56.18%	£2,317,061	32.76%	£3,528,940	47.02%	£2,317,061	19.98%	£3,530,400
19	75.59%	£0	57.00%	£2,317,061	32.76%	£3,528,940	47.47%	£2,317,061	19.98%	£3,524,900
20	76.83%	£0	57.78%	£2,317,061	32.76%	£3,528,940	47.90%	£2,317,061	19.99%	£3,481,400
		£0		£46,341,220		£70,578,800		£46,341,220		£83,277,200

Appendix 5 - Carriageway Spending Options



	No Investment		Current Spending Levels (Option 1)		Steady State (Option 2)		Achieve best possible RCI with current budget through increased use of surface treatments (Option 3)		Initial 5 Year Investment Plan	
Year	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure	% of Carriageway Network in Need of Treatment	Expenditure
0	37.00%	£0	37.00%	£0	37.00%	£0	37.00%	£0	37.00%	£0
1	40.33%	£0	38.08%	£1,992,670	37.00%	£5,600,000	38.25%	£1,992,670	33.24%	£4,261,950
2	43.47%	£0	39.36%	£2,032,523	37.00%	£5,712,000	39.38%	£2,032,523	29.66%	£4,261,950
3	46.44%	£0	40.91%	£2,073,174	37.00%	£5,826,240	40.41%	£2,073,174	26.27%	£4,261,950
4	49.24%	£0	42.32%	£2,114,637	37.00%	£5,942,765	41.34%	£2,114,637	23.05%	£4,261,950
5	51.90%	£0	43.68%	£2,156,930	37.00%	£6,061,620	42.18%	£2,156,930	20.00%	£4,261,950
6	54.41%	£0	45.00%	£2,200,069	37.00%	£6,182,852	42.93%	£2,200,069	20.00%	£2,433,210
7	56.79%	£0	46.23%	£2,244,070	37.00%	£6,306,510	43.59%	£2,244,070	20.00%	£2,433,210
8	59.03%	£0	47.35%	£2,288,951	37.00%	£6,432,640	44.16%	£2,288,951	20.00%	£2,433,210
9	61.16%	£0	48.40%	£2,334,730	37.00%	£6,561,293	44.66%	£2,334,730	20.00%	£2,433,210
10	63.17%	£0	49.35%	£2,381,425	37.00%	£6,692,518	45.09%	£2,381,425	20.00%	£2,433,210
11	65.08%	£0	50.23%	£2,429,054	37.00%	£6,826,369	45.44%	£2,429,054	20.00%	£2,433,210
12	66.88%	£0	51.03%	£2,477,635	37.00%	£6,962,896	45.72%	£2,477,635	20.00%	£2,433,210
13	68.59%	£0	51.76%	£2,527,187	37.00%	£7,102,154	45.94%	£2,527,187	20.00%	£2,433,210
14	70.21%	£0	52.54%	£2,577,731	37.00%	£7,244,197	46.09%	£2,577,731	20.00%	£2,433,210
15	71.74%	£0	53.25%	£2,629,286	37.00%	£7,389,081	46.18%	£2,629,286	20.00%	£2,433,210
16	73.18%	£0	53.92%	£2,681,871	37.00%	£7,536,863	46.21%	£2,681,871	20.00%	£2,433,210
17	74.56%	£0	54.54%	£2,735,509	37.00%	£7,687,600	46.18%	£2,735,509	20.00%	£2,433,210
18	75.86%	£0	55.10%	£2,790,219	37.00%	£7,841,352	46.10%	£2,790,219	20.00%	£2,433,210
19	77.09%	£0	55.60%	£2,846,023	37.00%	£7,998,179	45.97%	£2,846,023	20.00%	£2,433,210
20	78.26%	£0	56.06%	£2,902,944	37.00%	£8,158,143	45.78%	£2,902,944	20.00%	£2,433,210

		£0		£48,416,640		£136,065,271		£48,416,640		£57,807,900
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*All costs include an inflationary increase of 2% each year

2018-19 Footway Minor Improvement Programme							Appendix 6
	Sum available = £500,000						
AREA	ROUTE/STREET	Town	Hierarchy	Score	Additional Demand	Estimate	
A	West Bridge Street/Cockburn St	Falkirk		100	carry over 17/18	£25,000	
A	Stirling Road (Link F/path)	Camelon		100	carry over 17/18	£4,000	
A	Grahams Rd to Garrison Pl underpass	Falkirk		100	carry over 17/18	£3,000	
C	York Lane	Grangemouth		100	carry over 17/18	£48,000	
A	Nevis Place to Cuillin Court	Hallglen		100	carry over 17/18	£11,000	
A	Sunnyside Street Area 1	Falkirk		100	carry over 17/18	£4,000	
B	Redding Road	Brightons		100	carry over 17/18	£25,000	
A	Machrie Court	Tamfourhill		100	carry over 17/18	£16,000	
B	Redding Road	Redding		100	carry over 17/18	£10,000	
A	Callendar Road	Falkirk		100	carry over 17/18	£15,000	
A	Watling Gardens	Camelon		100	carry over 17/18	£13,000	
					Sub Total	£174,000	
C	Main Street	Polmont	1.3	90		£10,000	
A	Glenfuir Road (Anson to Westburn)	Falkirk	1.1	95		£16,000	
C	126 Carronshore Road	Carronshore	1.1	95		£5,000	
C	Park Road	Grangemouth	1.1	95		£10,000	
A	Findhorn Place	Hallglen	1.1	95		£8,000	
A	Mariner Road	Camelon	1.1	95		£21,000	
A	Wilson Avenue	Camelon	1.1	95		£27,000	
B	Graham Crescent	Bo'ness	1.1	95		£44,000	
A	Calder Place	Hallglen	1.1	95		£4,000	
B	Culloch Road	Slamannan	1.1	90		£25,000	
B	Balcastle Road Phase 1	Slamannan	1.1	90		£25,000	
B	Memorial Drive	Bo'ness	1.1	85		£25,000	
D	Hayfield Terrace	Head of Muir	1.1	85		£22,000	
A	Contingency Footway Schemes	Area A				£25,000	
B	Contingency Footway Schemes	Area B				£25,000	
C	Contingency Footway Schemes	Area C				£25,000	
D	Contingency Footway Schemes	Area D				£25,000	
					Sub Total	£342,000	
					2018-19 Total	£516,000	
	Cut Off Point						
A	Montgomery Street	Falkirk	1.1	80		£192,000	
A	Woodburn Road	Falkirk	1.1	80		£236,000	
A	Weir Street (Garden Street to Kerse Lane - both sides)	Falkirk	1.1	80		£73,000	
B	Elm Drive	Westquarter	1.1	80		£13,000	
B	Grahamdyke Road (cul-de-sac)	Bo'ness	1.1	80		£20,000	
B	Hadrian Way part	Bo'ness	1.1	80		£190,000	
B	Woodside Gardens	Brightons	1.1	80		£25,000	
C	Amberley Path	Grangemouth	1.1	80		£14,000	
C	Berryhill Crescent/Carbrook Place	Grangemouth	1.1	80		£35,000	
C	Main Street to Wilson Avenue	Polmont	1.1	80		£27,000	
D	A872, north of Dunipace	Dunipace	1.1	80		£30,000	
D	Kilsyth Road (part)	Banknock	1.1	80		£20,000	
B	Linlithgow Road	Grangemouth	1.1	80		£25,000	
B	Bo'ness Road	Bo'ness	1.1	80		£82,000	
B	Borrowstoun Mains (Remote Footpaths)	Bo'ness	1.1	80		£5,000	
A	Ladywell View	Falkirk	1.1	80		£31,000	
A	Wilson Drive (both sides)	Falkirk	1.1	80		£46,000	
A	Rennie Street (Major's Loan to no.36 Woodlands)	Falkirk	1.1	80		£9,000	
C	Calder Place, Hallglen	Falkirk	1.1	80		£33,000	
C	Westerton	Grangemouth	1.1	80		£5,000	
B	Balcastle Road (remaining areas)	Slamannan	1.1	80		£20,000	
B	Graham Crescent part	Bo'ness	1.1	80		£221	
B	Bantaskine Drive	Bo'ness	1.1	78		£14,000	
D	Willow Drive	Banknock	1.1	75		£4,000	
D	Hilary Road	Stenhousemuir	1.1	75		£30,000	
A	Alexander Avenue	Falkirk	1.1	75		£30,000	
A	Anson Avenue	Falkirk	1.1	75		£6,000	
A	Booth Place	Falkirk	1.1	75		£10,000	
A	Hawley Road	Falkirk	1.1	75		£56,000	
A	Seaton Place in conjunction with flats	Falkirk	1.1	75		£20,000	
B	Fir Grove	Westquarter	1.1	75		£12,000	
B	Rashiehill Road - west side	Slamannan	1.1	75		£17,500	
B	St. Laurence Crescent	Slamannan	1.1	75		£18,000	
B	The Rumlie	Slamannan	1.1	75		£13,000	
B	White Loan (cul-de-sac)	Westquarter	1.1	75		£10,000	
C	Sealock Court	Grangemouth	1.1	75		£73,000	
D	Ingleston Ave Area	Dunipace	1.1	75		£84,000	
D	Leech Estate (various)	Banknock	1.1	75		£200,000	
C	B816 Allandale (from motorway slip to football pitch)	Allandale	1.1	75		£8,000	
B	Memorial Drive	Bo'ness	1.1	75		£30,000	
A	Garhill Gardens	Falkirk	1.1	75		£95,000	
A	Windsor Avenue	Camelon	1.1	74		£140,000	
A	A9, Stirling Road	Falkirk	1.1	70		£11,000	
B	A706	Bo'ness	1.1	70		£20,000	
B	Laurel Grove	Westquarter	1.1	70		£9,000	
B	Main Street (part)	Avonbridge	1.1	70		£53,000	
B	Southfield Drive	Slamannan	1.1	70		£56,000	
B	Wholequarter Avenue	Redding	1.1	70		1000K	
D	Braes View	Denny	1.1	70		£196,000	
C	Brown Street (full length, both sides)	Grangemouth	1.1	70		£23,000	
B	Claret Road (f/w between no.37 & no.107 and f/w between no.109 & no.161)	Maddiston	1.1	70		£35,000	
B	Grassland, Main Rd and Cairnetmount	Bo'ness	1.1	68		£20,000	
B	A993/A904	Bo'ness	1.1	65		£150,000	
B	B825	Avonbridge	1.1	65		£17,000	
A	Braehead	Falkirk	1.1	65		£81,000	
A	Lochgreen Road (Stanalane to Lochgreen Roundabout - south side)	Falkirk	1.1	50			
C	Slamannan Road to Lionthorn footpath	Carronshore	1.1	0		£50,000	
A	Roughlands Drive	Falkirk		82		£7,500	
D	Slamannan Road at Railway Bridge	Larbert/Stenhousemuir	1.1	0		£7,000	

CARRIAGEWAY ASSET STRUCTURAL MAINTENANCE PROGRAMME 2018-19 and beyond							Appendix 7
		CONDITION/SRMCS	HIERARCHY	TRAFFIC	TOTAL	ROAD	
Ward		RATING	RATING	RATING	RATING	CLASS	£x000
				HGV			
	HIGH VOLUME - MEDIUM/HIGH RISK						
	Budget Allocation circa £750000						
	2018-19 PROGRAMME						
U Braes	A801 Avon Gorge carry over	99	1.5	1	148.5	A	70
Denny & Bk	A883 Bogton	90	1.5	1.0	135	A	60
Fk (N)	A803 3 Bridges Roundabout	95	1.4	1	133	A	72
G'mouth	B9143 Inchyra Rd, G'm (Wholeflats to Cadgers)	85	1.5	1	127.5	A	200
Fk (S)	B816 Tamfourhill Road (Glenfuir Rd to Ind Est) c/o	90	1.3	1.0	117	U	80
Denny & Bk	B816 Tamfourhill (Caravan Pk to Bonnyhill Farm) c/o	90	1.3	1	117	D	23
U Braes	B8028 Main Street, Avonbridge	90	1.3	1	117	B	50
Fk (S)	New Hallglen Road, Falkirk	90	1.3	1	117	U	35
Cs, Kin, Try	A905, Main Street, Airth - various	83	1.4	1	116.2	A	100
Fk (N)	A803 Callendar Road, Falkirk	80	1.4	1	112	A	16
L Braes	A803 Main Street, Polmont (east of Gilston Park jct)	80	1.4	1	112	A	11
Bbr & Lar	A803 High Street (Toll) Roundabout, Bonnybridge	80	1.4	1	112	A	24
							741
	CUT OFF POINT						
	2019-20 and beyond (provisional)						
G'mouth	A904 Earls Road G'mouth (Forrestwood to Evans)	80	1.4	1	112	U	96
Fk (S)	B8028 Glenbrae	85	1.3	1	110.5	B	125
Fk (S)	Ochiltree Terrace, Camelon	85	1.3	1	110.5	U	110
Denny & Bk	B818 Stoneywd (Mway o/bridge to Rbt at new dev)	85	1.3	1.0	110.5	B	30
Fk (S)	B803 Slamannan Road, Falkirk Phase 1	85	1.3	1	110.5	B	120
Fk (S)	Upper Newmarket Street, Falkirk	85	1.3	1	110.5	U	10.5
Fk (S)	B902 Grahams Road, Falkirk (3 sections)	85	1.3	1	110.5	B	50
Fk (S)	B902 Main Street, Bainsford	85	1.3	1	110.5	B	25
Bo'n & Bl	B903, A904 to Blackness (Phase 1)	85	1.3	1	110.5	B	100
Bo'n & Bl	B903, A904 to Blackness (Phase 2)	85	1.3	1	110.5	B	100
Bo'n & Bl	B903, A904 to Blackness (Phase 3)	85	1.3	1	110.5	B	100
Cs, Kin, Try	Webster Avenue, Carronshore	85	1.3	1	110.5	U	58
Cs, Kin, Try	B905 Main Street, Larbert (Foundry Loan to Dundarroch)	85	1.3	1	110.5	B	85
Bbr & Lar	B816 Church Street, High Bbridge (Lochinvar to Park)	85	1.3	1	110.5	B	45
U Braes	B803 Slamannan to Tods bught	85	1.3	1	110.5	B	40
Upper Br	B825 Bowhouse to Linlithgow Bridge	85	1.3	1	110.5	B	220
Fk (S)	A904 Grangemouth Road/C80 Thornhill Road, Falkirk	75	1.4	1	105	A	30
Denny & Bk	A883 Broad Street, Denny	75	1.4	1	105	A	20
Fk (N)	B902 New Carron Roundabout	80	1.3	1	104	B	
Fk (S)	B803 Slamannan Road, Falkirk Phase 2	80	1.3	1	104	B	65
Fk (S)	B8080 Corporation Street, Falkirk	80	1.3	1	104	B	27
Fk (S)	B816 Tamfourhill Rd (Howie's Place)	80	1.3	1	104	B	8
Bo'n & Bl	A904, Main Street, Bo'ness	80	1.3	1	104	A	60
G'mouth	A904 Bo'ness Road, Grangemouth	70	1.4	1	98	A	13.7
Bbr & Lar	A9 Larbert Viaduct to Cross	70	1.4	1	98	A	130
Bbr & Lar	A803 High Street, Bonnybridge	70	1.4	1	98	A	40
Fk (S)	New Hallglen Road, Falkirk (Phase 2 & 3)	75	1.3	1	97.5	U	168
Upper Br	B8028 Main Street, Shieldhill	70	1.3	1	91	B	4
U Braes	B810 Main Street, Shieldhill at Cladhan	70	1.3	1	91	B	5
U Braes	B803 Fit o' the Toon, Slamannan	70	1.3	1	91	B	20
Bo'n & Bl	Commissioner Street, Bo'ness	70	1.3	1	91	U	24.5
Bbr & Lar	B816 Broomhill Road	70	1.3	1	91	B	30
Bo'n & Bl	B9109 Mannerston Road (from A904 to B903)	65	1.3	1	84.5	B	0
Fk (S)	B803 at Seafield Bungalow	65	1.3	1	84.5	B	N/A
Upper Br	B8028, Linmill, Avonbridge	60	1.3	1	78	B	-
Fk (N)	A803 Bellevue Street, Falkirk	50	1.4	1	70	A	N/A
Bbr & Lar	B816 Hillview Road	50	1.3	1	65	B	N/A
		CONDITION/SRMCS	HIERARCHY	TRAFFIC	TOTAL		
		RATING	RATING (1 - 5)	VOLUME	RATING		
				RATING			
	LOW VOLUME RURAL AND UNCLASSIFIED RESIDENTIAL ROADS (30% BUDGET ALLOCATION)						
	Budget Allocation £689000						
	2018-19 PROGRAMME						
G'mouth	Abbotsinch Road (near Spitfire Memorial)	95	1.2	1.1	125.4	U	30
Fk (S)	Merchiston Avenue, Falkirk (Phase 1)	90	1.2	1.1	118.8	U	74
Fk(N)	Wilson Avenue, Camelon	85	1.3	1	110.5	U	9
Fk (S)	Callendar Boulevard	90	1.1	1.1	108.9	U	24
G'mouth	Lime Street, Grangemouth (Newlands to Hawthorn)	99	1.1	1	108.9	U	15
L Braes	Brackenlees Road	90	1.2	1	108	U	20

Bbr & Lar	Broomage Avenue, Larbert	90	1.2	1	108	U	50
G'mouth	Oxgang Road, Grangemouth	90	1.2	1	108	U	55
Bbr & Lar	Dalnair Road, Bonnybridge	98	1.1	1	107.8	U	15
Fk (S)	Mansionhouse Road, Falkirk	95	1.1	1	104.5	U	12
Fk (S)	Wilson Drive, Camelon	95	1.1	1	104.5	U	11
L Braes	Sunnybrae Terrace, Maddiston (at entrance to golf club)	95	1.1	1	104.5	U	5
Bo'n & Bl	Borrowstoun Crescent and Place, Bo'ness	95	1.1	1	104.5	U	73
Denny & Bk	Roman Rd, Bonnybridge	95	1.1	1	104.5	U	46
G'mouth	Park Road, Grangemouth	95	1.1	1	104.5	U	50
G'mouth	Kenilworth Street, Grangemouth	95	1.1	1	104.5	U	30
L Braes	Dundas Crescent, Laurieston	95	1.1	1	104.5	U	10
G'mouth	Portal Road, Grangemouth (Phase 1)	95	1.1	1	104.5	U	20
							549
	RETREAD						
L Braes	Sandyloan, Laurieston	90	1.1	1	99	U	18
Fk (S)	Mariner Road, Camelon	90	1.1	1	99	U	20
Upper Br	Blackston Road (rural)	90	1.1	1	99	U	102
							140
	CUT OFF POINT						
	2019-20 and beyond (provisional)						
G'mouth	Portal Road, Grangemouth (Phase 2)	95	1.1	1	104.5	U	20
G'mouth	Portal Road, Grangemouth (Phase 3)	95	1.1	1	104.5	U	20
Bbr & Lar	Foundry Road, Bonnybridge	95	1.1	1	104.5	U	38
Fk(N)	Abbotsford Street, Falkirk	95	1.1	1	104.5	U	22
Upper Br	Mamre Drive, California	95	1.1	1	104.5	U	31
Bo'n & Bl	Graham Cres & Seton Terr, Bo'ness	95	1.1	1	104.5	U	18
Fk (S)	Carmuirs Drive, Camelon	95	1.1	1	104.5	U	24
Upper Br	Waggon Rd (2), Brightons	90	1.1	1	99	U	60
Denny & Bk	Garngrew Road, Haggs	90	1.1	1	99	U	25
G'mouth	Loanhead Avenue, Grangemouth	90	1.1	1	99	U	22
G'mouth	George St/Nelson St/Roxburgh Street, Grangemouth	90	1.1	1	99	U	84
Bo'n & Bl	A904 North St & Main St, Bo'ness (Seaview Pl - 17 Main St)	85	1.2	1	102	A	60
Denny & Bk	Walton Road, Castlecary	95	1.1	1	104.5	U	14
G'mouth	Burnbank Road (North) Newlands Rd to Stevenson St	85	1.2	1	102	U	80
G'mouth	Kersiebank Avenue, Grangemouth	85	1.2	1	102	U	50
Fk (S)	Merchiston Avenue, Falkirk (Phase 2)	85	1.2	1	102	U	34
Fk (S)	Hillcrest Road, Falkirk	90	1.1	1	99	U	21
Denny & Bk	Bridge Crescent, Denny	90	1.1	1	99	U	36
Upper Br	Balcastle Road, Slamannan	90	1.1	1	99	U	10.5
Upper Br	Culloch Road, Slamannan	90	1.1	1	99	U	28
G'mouth	Drummond Place and Henry Street, Grangemouth	90	1.1	1	99	U	36
G'mouth	Compton Road, Grangemouth	90	1.1	1	99	U	13
Fk (S)	Glasgow Road (Service Road), Camelon	90	1.1	1	99	U	63
Upper Br	Forgie Crescent, Maddiston	90	1.1	1	99	U	35
Upper Br	Birnie Well Road, Slamannan	90	1.1	1	99	U	20
Upper Br	Woodside Gardens, Brightons	90	1.1	1	99	U	19
L Braes	Fir Grove, Westquarter	90	1.1	1	99	U	8
L Braes	Laurel Grove, Westquarter	90	1.1	1	99	U	11
L Braes	Dochart Crescent, Polmont	90	1.1	1	99	U	36
Denny & Bk	Kelly Drive, Denny	90	1.1	1	99	U	
Fk (S)	St Giles Square, Camelon	90	1.1	1	99	U	
Bo'n & Bl	Braehead, Bo'ness	90	1.1	1	99	U	16
Cs, Kin, Try	Cemetery Road, Airth	80	1.1	1.1	96.8	U	40
Fk (N)	Bank Street, Falkirk	80	1.1	1.1	96.8	U	36
Denny & Bk	Thistle Avenue, Dunipace	80	1.1	1.1	96.8	U	6.5
G'mouth	Tinto Drive, Grangemouth	80	1.2	1	96	U	15
Upper Br	C14 Sunnyside Road, Brightons	80	1.2	1	96	C	25
Upper Br	C2 from Cross Brae to Greenacres Cottage	80	1.2	1	96	C	25
G'mouth	West Mains, Grangemouth	80	1.2	1	96	U	25
G'mouth	Kingseat Avenue, Grangemouth (including Overton Ro	80	1.2	1	96	U	20
Cs, Kin, Try	Muirhall Road, Larbert (B905 to Balfour Cresc)	80	1.2	1	96	C	20
Fk(N)	Arnothill, Falkirk	85	1.1	1	93.5	U	18
Bbr & Lar	Acorn Crescent/Carronvale Avenue, Larbert	85	1.1	1	93.5	U	38
Bbr & Lar	C16 Glenyards Road, Bonnybridge	85	1.1	1	93.5	U	36
Bo'n & Bl	Stewart Avenue, Bo'ness	85	1.1	1	93.5	U	32
G'mouth	Kenilworth Drive, Laurieston	85	1.1	1	93.5	U	39
G'mouth	Marmion Road, Grangemouth	85	1.1	1	93.5	U	14
Fk (S)	Grangemouth Road (Service Road), Falkirk	85	1.1	1	93.5	U	50
Fk (S)	Nursery Road, Falkirk	85	1.1	1	93.5	U	22
Fk (S)	Osborne Street, Falkirk	85	1	1.1	93.5	U	6
Upper Br	Hazelhurst, Brightons	85	1.1	1	93.5	U	7.5
Bo'n & Bl	Liddle Drive, Bo'ness	85	1.1	1	93.5	U	47
Bo'n & Bl	C27 Borrowstoun Road, Bo'ness (rural)	85	1.1	1	93.5	U	106.5
Upper Br	Church Road, California	85	1.1	1	93.5	U	35
Upper Br	Whiteside Loan, Brightons	85	1.1	1	93.5	U	8

G'mouth	Claret Road, Grangemouth	85	1.1	1	93.5	U	27
G'mouth	Westerton Road, Grangemouth	85	1.1	1	93.5	U	30
L Braes	Kenmore Avenue, Polmont	85	1.1	1	93.5	U	29
L Braes	Jeffrey Terrace, Polmont	85	1.1	1	93.5	U	10
L Braes	Taymouth Road, Polmont	85	1.1	1	93.5	U	50
L Braes	Gilston Park, Polmont	85	1.1	1	93.5	U	10
L Braes	Lawers Crescent, Polmont phase 2	85	1.1	1	93.5	U	29
Cs, Kin, Try	Mclachlan Street, Stenhousemuir	85	1.1	1	93.5	U	4
Cs, Kin, Try	Elizabeth Avenue/Philip Drive, Stenhousemuir	85	1.1	1	93.5	U	44
Denny & Bk	West Boreland Road (South), Denny	85	1.1	1	93.5	U	19
Denny & Bk	Hollandbush Avenue, Banknock	85	1.1	1	93.5	U	14
Upper Br	Candie Lower	85	1.1	1	93.5	C	250
Fk (S)	Tiree Place, Falkirk	85	1.1	1	93.5	U	15
Fk (N)	Langlees Street, Falkirk	75	1.2	1	90	U	19
Fk (N)	Glenburn Road, Falkirk	75	1.2	1	90	U	
Bo'n & Bl	A904 South Street, Bo'ness	75	1.2	1	90	A	19
Bo'n & Bl	C27 at Upper Bonnytoun Crossroads	75	1.2	1	90	C	N/A
L Braes	Gilston Crescent, Polmont (Lathallan Dr to Miller Park)	75	1.2	1	90	U	31
Denny & Bk	C12 Overton Farm	75	1.2	1	90	C	21
Fk(N)	C103 Maggie Woods Loan	80	1.1	1	88	U	
Bo'n & Bl	Upper Kinneil - Lower Kinneil via Mile End	80	1.1	1	88	U	67
G'mouth	Brooke Lane, Grangemouth	80	1.1	1	88	U	8
Fk(N)	Merchiston Road, Falkirk	80	1.1	1	88	U	
Fk (S)	Newmarket Street	80	1.1	1	88	U	20
Fk (S)	Burnbrae Gardens, Falkirk	80	1.1	1	88	U	38
Fk (S)	Garthill Lane, Falkirk	80	1.1	1	88	U	17
Fk (S)	Mariner Avenue, Falkirk	80	1.1	1	88	U	13
Upper Br	Torosay Avenue, Maddiston	80	1.1	1	88	U	6.5
Upper Br	Easter Whin Rd, Avonbridge (West), @ Linhouse	80	1.1	1	88	U	35
Upper Br	Drumtassie Road, Avonbridge	80	1.1	1	88	U	44
Upper Br	Anderson Crescent, Shieldhill	80	1.1	1	88	U	15.5
Bo'n & Bl	Kinneil Drive, Bo'ness	80	1.1	1	88	U	20
Bo'n & Bl	Erngath Road, Bo'ness	80	1.1	1	88	U	36.5
Upper Br	Waggon Rd (3), Brightons	80	1.1	1	88	U	35
L Braes	Main Street, Redding	80	1.1	1	88	C	45
G'mouth	Princes Street, Grangemouth	80	1.1	1	88	U	73.1
G'mouth	Mackenzie Terrace, Grangemouth	80	1.1	1	88	U	25
L Braes	Zetland Drive, Laurieston	80	1.1	1	88	U	7.5
G'mouth	Talbot Street, Grangemouth	80	1.1	1	88	U	20.5
G'mouth	Grangeburn Road, Grangemouth	80	1.1	1	88	U	25
G'mouth	Abbotsgrange Road, Grangemouth	80	1.1	1	88	U	32.5
Cs, Kin, Try	Union Street, Stenhousemuir	80	1.1	1	88	U	20
Bbr & Lar	Old Denny Road, Larbert	80	1.1	1	88	U	38
Fk (N)	James Street, Falkirk (2 sections)	80	1.1	1	88	U	26
Fk (N)	George Street, Falkirk	80	1.1	1	88	U	
Fk (N)	Watson Street, Falkirk	80	1.1	1	88	U	
Fk (N)	Russel Street, Falkirk	80	1.1	1	88	U	63
Upper Br	Kilbrennan Drive, Tamfourhill	70	1.2	1	84	U	N/A
Fk (N)	Grange Drive, Falkirk	70	1.2	1	84	U	25
Bo'n & Bl	C27 Borrowstoun Road, Bo'ness (urban)	70	1.2	1	84	C	30.5
Upper Br	C2 Darnrigg Road (Section 1)	70	1.2	1	84	C	10
Denny & Bk	C12 - Glenhead, Drove Loan	70	1.2	1	84	C	11
Denny & Bk	C12, Drove Road (from Road from Lawhill to C12 to My	70	1.2	1	84	C	51
Denny & Bk	C43 Drove Loan, Bonnybridge	70	1.2	1	84	C	65
Denny & Bk	Bog Road, Banknock	75	1.1	1	83	U	5
Denny & Bk	Hunter Gardens, Denny	75	1.1	1	82.5	U	12
Fk (S)	Mariner Drive, Camelon	75	1.1	1	82.5	U	
L Braes	Rainhill Ave, Maddiston	75	1.1	1	82.5	U	30
Upper Br	New Street, Slamannan	75	1.1	1	82.5	U	37
Bo'n & Bl	Grahamsdyke Avenue, Bo'ness	75	1.1	1	82.5	U	20
L Braes	Grahamsdyke Road, Bo'ness	75	1.1	1	82.5	U	11
Bo'n & Bl	Baker Street (Comrie Terrace), Bo'ness	75	1.1	1	82.5	U	7.5
L Braes	Langton Road, Westquarter	75	1.1	1	82.5	U	10
Upper Br	Thorn Loan, off B825	75	1.1	1	82.5	U	10.6
Bo'n & Bl	Pennelton Place, Bo'ness	75	1.1	1	82.5	U	20
Bo'n & Bl	From A904 at cottages to Jinkabout - Water Inns Road	75	1.1	1	82.5	U	59
L Braes	Erskine Hill, Polmont	75	1.1	1	82.5	U	25
G'mouth	Torwood Avenue, Grangemouth	75	1.1	1	82.5	U	25
Cs, Kin, Try	Dock Street, Carronshore	75	1.1	1	82.5	U	8
G'mouth	Burnbank Road (south), Grangemouth (phase 2) (Conc	75	1.1	1	82.5	U	21.5
Bbr & Lar	Victoria Road, Larbert	75	1.1	1	A904	U	10
L Braes	C51 Bo'ness Rd (Kirk Entry)	65	1.2	1	78	C	N/A
Denny & Bk	C12, Drumbowie	65	1.2	1	78	C	N/A
Fk (S)	Booth Place, Falkirk	70	1.1	1	77	U	9
Upper Br	C53 Boxton Road, B8028 to B825	70	1.1	1	77	C	0

Upper Br	Queens Drive, California	70	1.1	1	77	U	5
Upper Br	Hamilton Crescent, Maddiston	70	1.1	1	77	U	13.5
Upper Br	Windsor Crescent, Maddiston	70	1.1	1	77	U	14
L Braes	Dovecot, Westquarter	70	1.1	1	77	U	15
Bo'n & Bl	Jinkabout-Inveravon-Water Inns	70	1.1	1	77	U	15
Upper Br	Parkhall Drive, Maddiston	70	1.1	1	77	U	30
G'mouth	Montgomery Street, Grangemouth	70	1.1	1	77	h	17.5
G'mouth	Haig Street, Grangemouth	70	1.1	1	77	U	55
L Braes	Keir Hardie Avenue, Laurieston	70	1.1	1	77	U	16.5
L Braes	Hornbeam Crescent, Laurieston	70	1.1	1	77	U	19.6
L Braes	Campbell Crescent, Laurieston	70	1.1	1	77	U	20
G'mouth	Kerse Road, Grangemouth	70	1.1	1	77	U	N/A
Cs, Kin, Try	Shore Road, Airth	70	1.1	1	77	U	N/A
Bbr & Lar	C15 Allandale to South Drum	70	1.1	1	77	C	-
Bbr & Lar	Duncairn Avenue, Bonnybridge	70	1.1	1	77	U	11
Bbr & Lar	Graham Avenue, Larbert	70	1.1	1	77	U	15
Denny & Bk	Balfour Street, Bonnybridge	70	1.1	1	77	U	16
Cs, Kin, Try	Hamilton Road, Stenhousemuir	70	1.1	1	77	C	52
U Braes	Belmont Avenue, Shieldhill	60	1.2	1	72	U	N/A
Upper Br	C2 Darnrigg Road (Section 2)	60	1.2	1	72	C	N/A
G'mouth	Wood Street, Grangemouth	60	1.2	1	72	U	N/A

L Braes	C51 Polmonthill at ski slope	65	1.1	1	71.5	C	0
Bo'n & Bl	Upper Bonnytoun at Bonhard Farm	65	1.1	1	71.5	U	0
L Braes	Alder Grove, Westquarter	65	1.1	1	71.5	U	5
Upper Br	Balmulzier Road, Slamannan	65	1.1	1	71.5	U	N/A
L Braes	Pine Grove, Westquarter	65	1.1	1	71.5	U	N/A
Cs, Kin, Try	Drum Road	65	1.1	1	71.5	U	N/A
Denny & Bk	C44, Castlerankine Road	65	1.1	1	71.5	C	N/A
	SURFACE TREATMENT/DRESSING SCHEMES						

	Budget Allocation £824,950						
	SURFACE DRESSING						
	Preparatory Works (All Areas)					All	
G'mouth	Newton Road, Skinflats	90	1.1	1	99	U	15
Cs, Kin, Try	B902 New Carron Rd (Carron Wks Rbt to Antonshill)	85	1.3	1	110.5	B	120
Fk (S)	B902 New Carron Rd, Falkirk (Old Carron Rd to Carron Wks Rbt)	80	1.3	1	104	B	20
L Braes	B805, Redding Rd, Redding (Main St to New Hglen Rd)	90	1.3	1	117	B	80
Upper Br	B8022 Avonbridge, east of Slamannan	75	1.3	1	97.5	B	50
Bbr & Lar	C46 Beam Road (B816 to South Drum)	90	1.2	1	108	C	35
G'mouth	B9132 Newlands Road, Grangemouth	85	1.2	1	102	U	30
Denny & Bk	C12 Drove Rd (New SW road to Lawhill) 18/19	90	1.2	1.0	108	C	10
Bbr & Lar	A803 Falkirk Rd, Bonnybridge	85	1.5	1	127.5	A	50
Upper Br	Roughriggs Road, Slamannan 18/19	90	1.1	1	99	U	22
Upper Br	Southfield Road, Slamannan 18/19	90	1.1	1	99	U	50
L Braes	B805 Old Redding Road, Laurieston	80	1.4	1	112	U	25
L Braes	Gilston Cresc, Polmont Glamis Gardens to Gilston Park)	80	1.2	1	96	U	50
							557
	Cut Off Point						
	DRESSING PREP WORK 19-20 and beyond						
L Braes	B9143 Inchyra Road, Grangemouth (Phase 1) HOLD	85	1.5	1	127.5	A	100
L Braes	B9143 Inchyra Road, Grangemouth (Phase 2) HOLD	80	1.5	1	120	A	100
Cs, Kin, Try	A9 Stirling Road, Larbert (Cross to N Broomage)	85	1.4	1	119	A	50
Fk (S)	Lionthorn Road, Falkirk	85	1.3	1	110.5	U	50
Upper Br	Blackston Rd (fr B8028 to jct B825 & to Candie-end)	85	1.1	1	93.5	U	30
Upper Br	C66 California Road, Maddiston to Standrigg	90	1.2	1	108	C	36
Denny & Bk	B816 Tamfourhill to Rowan Tree Burn further prep in 18/19	85	1.3	1	110.5	D	40
Fk (N)	Etna Road, Falkirk	80	1.3	1	104	U	30
Fk (S)	C50 Union Road, Camelon (Lock 16 to Baird St)	90	1.3	1.0	117	U	25
Cs, Kin, Try	C19 Main Street, Carronshore	80	1.2	1	96	C	30
Cs, Kin, Try	C19 North Main Street, Carronshore	80	1.2	1	96	C	20
L Braes	Gilston Cresc, Polmont Glamis Gardens to Gilston Park)	80	1.2	1	96	U	50
Bo'n & Bl	A904 Bo'nness Rd, Inveravon - Kinneil	85	1.4	1	119	A	14
Bo'n & Bl	Provost Road, Crawfield RoadBo'nness (A993 to Filter Hou	80	1.2	1	96	U	50
Fk(N)	Montgomery Street, Falkirk	70	1.3	1	91	U	10
Fk(N)	Woodburn Road, Falkirk	70	1.3	1	91	U	10
Upper Br	Lower Candie	80	1.1	1	88	C	10.1
	Dressing Works (All Areas)						
Denny & Bk	C12 Drove Rd (New SW road to Lawhill) 18/19	90	1.2	1.0	108	C	10
Bbr & Lar	A803 Falkirk Road Bonnybridge	85	1.5	1	127.5	A	52
Fk (S)	Alexander Avenue, Falkirk 18/19	80	1.3	1.0	104	U	16
Fk (S)	Lionthorn Road, Falkirk (B803 to Glengary Cresc) 18/19	80	1.3	1.0	104	U	16
G'mouth	Newton Rd, Skinflats (A905 to Brackenlees) 18/19	90	1.1	1	99	U	15
Fk (S)	B902 New Carron Rd, Falkirk (Old Carron Rd to Carron Wks Rbt)	80	1.3	1	104	B	10.5
Cs, Kin, Try	B902 New Carron Rd (Carron Wks Rbt to Antonshill)	80	1.3	1	104	B	35
L Braes	B805, Redding Rd, Redding (Main St to New Hglen Rd)	90	1.3	1	117	B	45
Upper Br	B8022 Avonbridge, east of Slamannan	75	1.3	1	97.5	B	35
Bbr & Lar	C46 Beam Road (B816 to South Drum)	90	1.2	1	108	C	26
G'mouth	B9132 Newlands Road, Grangemouth	85	1.2	1	102	U	13
							273
	Cut Off Point						
	Dressing Works (All Areas) 19-20 and beyond						
Upper Br	Roughriggs Road, Slamannan 19/20	90	1.1	1	99	U	5
Upper Br	Southfield Road, Slamannan 19/20	90	1.1	1	99	U	24
L Braes	B805 Old Redding Road, Laurieston 19/20	80	1.4	1	112	U	10.5
L Braes	Gilston Cresc, Polmont (Glamis Gardens to Gilston Park) 19/20	80	1.2	1	96	U	29
Upper Br	Blackston Rd (fr B8028 to jct B825 & to Candie-end)	85	1.1	1	93.5	U	72
Cs, Kin, Try	C19 Main Street, Carronshore	80	1.2	1	96	C	12
Fk (S)	C50 Union Road, Camelon (Lock 16 to Baird St)	90	1.3	1.0	117	U	40
Bo'n & Bl	A904 Bo'nness Rd, Inveravon - Kinneil	75	1.4	1	105	A	14
Upper Br	C66 California Road, Maddiston to Standrigg	90	1.2	1	108	C	30
Bo'n & Bl	Provost Road, Crawfield RoadBo'nness (A993 to Filter Hou	80	1.2	1	96	U	27.5
Cs, Kin, Try	C19 North Main Street, Carronshore	80	1.2	1	96	C	6
Fk (N)	Etna Road, Falkirk	80	1.3	1	104	U	4
Fk(N)	Montgomery Street, Falkirk	70	1.3	1	91	U	14
Fk(N)	Woodburn Road, Falkirk	70	1.3	1	91	U	15
Fk (S)	C15 Lochgreen Road, Falkirk	70	1.2	1	84	C	74
Denny & Bk	C26, Braeface Road	70	1.2	1	84	C	60
Upper Br	C62 Upper Candie	70	1.1	1	77	C	10
L Braes	B9143 Inchyra Road, Grangemouth (Phase 1) 18/19	85	1.5	1	127.5	A	100
L Braes	B9143 Inchyra Road, Grangemouth (Phase 2) 19/20	80	1.5	1	120	A	100
	DRAINAGE WORK - No allocation						
Bbr & Lar	A803 3 Bridges drainage works, Falkirk	90	1.4	1	126	A	10
Fk(N)	Windsor Road layby	90	1.1	1	99	C	15

Fk(N)	Cotland Way, New Carron Village	90	1.1	1	99	U	10
Denny & Bk	Walton Road, Castlecary	95	1.1	1	104.5	U	14
	SURFACE TREATMENT						
Bbr & Lar	Glenbervie Drive, Larbert	90	1.1	1	99	U	12.0
L Braes	C14 Standrigg Road, Wallacestone	80	1.2	1	96	C	20
Fk (S)	Aitken Gardens, Camelon	95	1.1	1	104.5	U	10
Bo'n & Bl	Cadzow Crescent Bo'ness	85	1.1	1	93.5	U	8.2
G'mouth	Abbotsgrange Road, Grangemouth	85	1.1	1	93.5	U	26
Bo'n & Bl	B903 Linlithgow Road, Blackness Memorial to Norrisom	70	1.3	1	91	B	3
Fk (S)	Glenbank, Glen Village	80	1.1	1	88	U	15
Bo'n & Bl	Deanfield Road, Bo'ness	85	1.1	1	93.5	U	40
Bo'n & Bl	Seton Terrace, Bo'ness	80	1.1	1	88	U	3
Bo'n & Bl	Cadzow Lane, Bo'ness	80	1.1	1	88	U	6
G'mouth	Glenbervie Road, Grangemouth	80	1.1	1	88	U	5.5
Denny & Bk	Garngrew Road, Haggs	80	1.1	1	88	U	13.5
Cs, Kin, Try	Church Street, Stenhousemuir	80	1.1	1	88	U	27.5
Fk (N)	Napier Place, Falkirk	75	1.1	1	82.5	U	9
Fk(N)	Alma Street, Falkirk	80	1.1	1	88	U	10
Fk (S)	Dumyat Drive, Falkirk	75	1.1	1	82.5	U	11
Bo'n & Bl	Mingle Place, Bo'ness	75	1.1	1	82.5	U	18
Upper Br	Blackmount Terrace, Maddiston	75	1.1	1	82.5	U	7.5
Bo'n & Bl	Cairns Lane/Victoria Place, Bo'ness	75	1.1	1	82.5	U	4.5
Bo'n & Bl	Deanfield Drive, Bo'ness	75	1.1	1	82.5	U	13.5
Bo'n & Bl	Panbrae Road, Bo'ness	75	1.1	1	82.5	U	19
L Braes	James Street, Laurieston	75	1.1	1	82.5	U	15.5
Cs, Kin, Try	Lomond Crescent, Stenhousemuir	75	1.1	1	82.5	U	16
Denny & Bk	Bonnywood Avenue, Bonnybridge	75	1.1	1	82.5	U	22
Denny & Bk	Annet Road, Head of Muir	75	1.1	1	82.5	U	10
Denny & Bk	Dickburn Crescent, Bonnybridge	75	1.1	1	82.5	U	5
Denny & Bk	Milton Row, Dunipace	75	1.1	1	82.5	U	28
Denny & Bk	Souillac Drive, Denny	75	1.1	1	82.5	U	13
Fk(N)	Hendry Street, Falkirk	70	1.1	1	77	U	13
Fk(N)	Cross Street, Falkirk	70	1.1	1	77	U	9
Fk (S)	Telford Square, Camelon	70	1.1	1	77	U	7
Fk (S)	Bantaskine Road, Falkirk	70	1.1	1	77	U	6
Fk (S)	Blairdennon Crescent, Falkirk	70	1.1	1	77	U	16
Fk(N)	Braemar Drive, Falkirk	70	1.1	1	77	U	20
Fk (S)	Culvain Place Hallglen	90	1.1	1	99	U	41
Fk(N)	Forbes Road, Falkirk	70	1.1	1	77	U	5
Fk (S)	Oliver Road, Falkirk	70	1.1	1	77	U	15
L Braes	Muirepark Court, Bo'ness	70	1.1	1	77	U	11.5
Bo'n & Bl	Carribber Avenue, Whitecross	70	1.1	1	77	U	8
U Braes	Crawford Dr & Elderslie Dr, Shieldhill	70	1.1	1	77	U	12
Upper Br	Battock Road, Brightons	70	1.1	1	77	U	12
Bo'n & Bl	Cuffabouts, Bo'ness	70	1.1	1	77	U	7
Bo'n & Bl	Douglas Road, Bo'ness	70	1.1	1	77	U	N/A
Bo'n & Bl	Grahamsdyke Lane, Bo'ness	85	1.1	1	93.5	U	8
G'mouth	Smallburn Place, Grangemouth	70	1.1	1	77	U	3
L Braes	Dundas Road, Laurieston	70	1.1	1	77	U	7.4
L Braes	Grahamsdyke Street, Laurieston	70	1.1	1	77	U	11.5
Denny & Bk	Braes View, Denny	70	1.1	1	77	U	17
Denny & Bk	Castle Terrace, Denny	70	1.1	1	77	U	10
Bbr & Lar	Park Street, High Bonnybridge	85	1.1	1	93.5	U	10
Fk (S)	Cochrane Street, Falkirk	65	1.1	1	71.5	U	4.5
Fk (S)	The Hedges, Camelon	65	1.1	1	71.5	U	5
Fk (S)	Hamilton Street	65	1.1	1	71.5	U	8
Bo'n & Bl	School Brae, Bo'ness	65	1.1	1	71.5	U	N/A
Upper Br	Roselea Drive, Brightons	65	1.1	1	71.5	U	10
G'mouth	Thistle Avenue, Grangemouth	65	1.1	1	71.5	U	N/A
Cs, Kin, Try	Elphinstone Crescent, Airth	65	1.1	1	71.5	U	—
Denny & Bk	Brewster Place, Denny	65	1.1	1	71.5	U	5.2
Fk(N)	Cobblebrae Crescent, Falkirk	60	1.1	1	66	U	17
Fk (S)	Elizabeth Crescent/St Giles Square/St Giles Way, Falkirk	60	1.1	1	66	U	31
Cs, Kin, Try	Cortachy Avenue/Craigievar Avenue, Carron	60	1.1	1	66	U	N/A
	SAFETY BARRIER - No allocation - consult Design on requirements						
G'mouth	A905 Skinflats	100	1.3	1	130	A	20