

Report

Report to:	Community and Enterprise Resources Committee
Date of Meeting:	3 October 2017
Report by:	Executive Director (Community and Enterprise Resources)

Subject:	Roads Asset Management Plan – 2017 Update
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1. Purpose of Report

1.1. The purpose of the report is to:-

- ◆ Provide an update on the Roads Asset Management Plan (RAMP)

2. Recommendation(s)

2.1. The Committee is asked to approve the following recommendation(s):-

- (1) that the contents of the report be noted.

3. Background

3.1. The principles of asset management have developed at both a national and local level over recent decades to ensure that a sound understanding is available of investment needs and to provide a basis for associated investment decisions.

3.2. With the Roads Investment Plan due to end in March 2019, and pressures on Council budgets across the country, this is an opportune time to consider the financial landscape and the associated implications for asset condition and hence public safety.

3.3. Within the Council, the Corporate Asset Management Plan (AMP) is reviewed annually and, being the Council's single largest asset group, the RAMP is a key component of the corporate document.

3.4. At a national level, Audit Scotland has emphasised the need to ensure that elected members are informed of asset condition and understand the consequences of budgeting decisions. Such annual reports are advocated as good practice and have been presented to Committee each year in recent times.

3.5. The development of RAMPs across Scotland provides an excellent example of collaborative working across all thirty two councils. A four year project, in which all councils participated, was completed in 2016. The good progress achieved is now being developed further via a successor project in which all Scottish councils are again participating. This allows a consistent approach to road asset management across Scotland's councils.

3.6. The main purpose of developing the RAMP is to:-

- ♦ Ensure we have a sound knowledge of the extent and condition of our main asset groups
- ♦ Understand where any knowledge gaps exist and consider how these might be addressed
- ♦ Understand the level of current investment on each asset group and the associated condition trend

3.7. The road asset consists of the following main asset groups.

Asset Type	Asset Description and Components
Carriageway	The part of the road used by vehicles. This asset group includes drainage systems, lay-bys, bus lanes, traffic calming and verges.
Footway, Footpaths and Cycleways	Footway – used by pedestrians adjacent to the carriageway Footpaths – used by pedestrians remote from the carriageway Cycleways – used by both pedestrians and cyclists Pedestrianised Areas
Structures	Primarily bridges and culverts with a span greater than 0.9 metres and retaining walls with minimum retained height of 1.35 metres.
Street Lighting	Includes lamps, columns, ducts, cabling, control pillars, illuminated road signs and bollards and festive lighting
Traffic Management Systems	Signalised junctions and pedestrian crossings, detection equipment, ducts and cabling
Street Furniture	Vehicle restraint systems (safety fence)

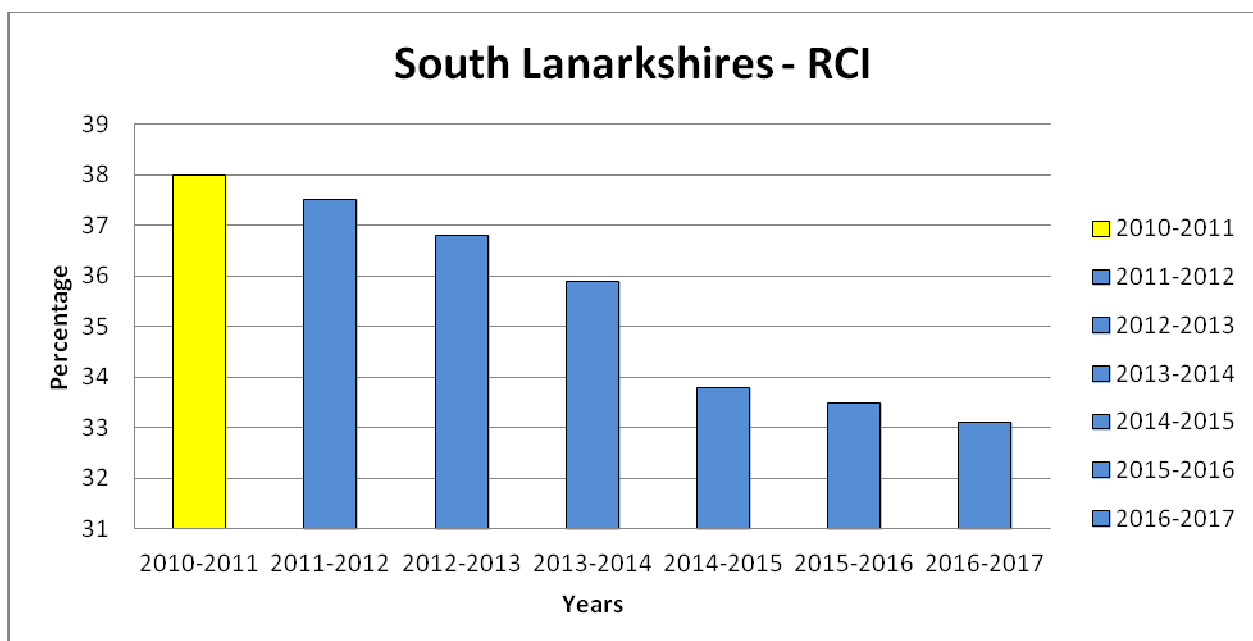
4. Carriageway Asset

4.1. The Council are responsible for a total of 1426 miles of carriageway. The Council's carriageway network is divided into four classifications A, B, C and Unclassified.

4.2. Inventory records are accurate for the lengths of road; however, the widths of the road are estimated based on classification of the road. Over time, these widths will be collected and added into our network management system and will aide with quantification and refinement of the valuation of the carriageway asset.

4.3. The carriageway asset Gross Replacement Cost of the recorded asset, as derived utilising the Asset Valuation tool developed by Society of Chief Officers of Transportation in Scotland (SCOTS), is £2.31 billion.

- 4.4. Safety inspections are carried out in accordance with the Guidance Document for Road Safety Inspections and Defect Categorisations. This manual takes cognisance of the guidance contained within Well-Maintained Highways, the national Code of Practice for Highway Maintenance Management. These safety inspections are carried out on a monthly basis (main roads), three monthly (link roads) or annual basis (minor roads). Defects identified during these inspections are then repaired within appropriate timescales dependent upon their severity.
- 4.5. In addition to these inspections, regulatory inspections to deliver our obligations under the New Roads and Street Works Act 1991 (NRSWA) and the Transport Scotland Act 2005 are also carried out. These involve inspection of public utility openings at various stages.
- 4.6. Annually, the Scottish Roads Maintenance Condition Survey (SRMCS) is undertaken on our road network by specialist contractor WDM Ltd. This exercise surveys 100% of our A class carriageways in one direction, with the other direction being surveyed the following year. 50% of our B and C class roads are surveyed with the whole of the B and C class network being surveyed over a four year period. Only 10% of our unclassified road network is completed each year. This survey produces our Road Condition Index (RCI) based on the percentages above and applied to the whole of the network. The survey identifies for each 10 metre section of road whether it falls into the red category (requires maintenance), amber (should be considered for maintenance) or green (serviceable). The RCI is published each year as a national performance indicator. The RCI value is the percentage of 'red' roads plus the percentage of 'amber' roads.
- 4.7. Periodically, usually every 2 years, a backlog figure is calculated for each roads authority. This is a theoretical figure which identifies the cost of returning all roads to a "green" (serviceable) condition. Our 2017 backlog figure has been calculated as £79M. This is a significant reduction on the 2015 figure of £125M and confirms improving road condition.
- 4.8. The condition of our carriageways has improved from an RCI of 38.0 in 2010/11 to 33.1 in 2016/17 as shown in the table below.



- 4.9. Our position in Scotland wide RCI ranking has improved from 19th in 13/14 to 13th in 16/17.
- 4.10. The road surface may wear over time dependant on type and level of usage and also the effect of the weather. To maintain the network in a reasonable condition requires appropriate investment levels. The “Steady State” is an estimate of the annual investment required to maintain the road network in its current condition, based on the network condition and treatment rates. This is an estimate, rather than an actual figure, informed by an assessment model. Our current steady state figure for carriageways is £11M.
- 4.11. Following on from the above, work has been undertaken to consider how road condition may react to a range of different funding scenarios. However, the key issue is the level of funding likely to be available after the current Road Investment Plan ends in March 2019. Road conditions may be affected in the medium term should investment fall below estimated steady state levels for an extended period of time. However this has to be considered against the significant investment already made into improving the road network. In addition, it is important to note, that the need to improve the condition of the road network is assessed on a individual basis to support and justify expenditure. The outputs from this assessment work is currently being considered to determine how future road maintenance will be delivered and prioritised.

5. Footway Asset

- 5.1. Inventory records indicate that the Council is responsible for a total of 2380 kilometres (1479 miles) of footway. The majority of the Council’s footway network is contained within the urban area.
- 5.2. Inventory records for footways are limited and the length of footway network is an estimated length based on there being two footways on each length of carriageway within the urban area. All of the footways have been estimated as having a two metre width.
- 5.3. The footway asset Gross Replacement Cost of the recorded asset is estimated at £497.6million.
- 5.4. Inspection arrangements and maintenance categories are similar to those for carriageways.
- 5.5. There is not a national condition survey for footways similar to that which is undertaken for carriageways. Rather, priorities for resurfacing are established via inspections by our inspectors taking into account, in particular, the condition of a footway and its level of use.
- 5.6. We do not currently have a sufficiently reliable assessment of the extent of the maintenance backlog on footways so the first steps have been taken to enhance backlog information. A total sample survey of 55.6% of our estimated footway length was undertaken in calendar years 2014, 2015 and 2016 which indicated that 17.1% of our footways should be considered for maintenance purposes. Further sample conditions surveys will be carried out each year to build upon, and update, this knowledge base. The estimated steady state figure for footway maintenance is £0.8million. This is based on assessment of the rate at which footways will deteriorate. We currently invest c.£0.5million annually on planned footway resurfacing.

- 5.7. The footway network has seen some additional investment of £14M as part of the overall road investment package, which is due to end in 2019. Since 2011, around 51 miles of footway has been resurfaced, which is approximately 3% of our estimated footway length. We have also seen a 39% reduction in footway related claims over the investment period. Reduction in investment on footway surfacing will, if sustained over time, result in a deteriorating condition which will impact on footway users of all ages, in particular the infirm.

6. Lighting Asset

- 6.1. The Council has 58,516 lighting columns, 64,432 luminaires, 2,157 Control Pillars and an estimated 1,873 kilometres (1164 miles) of cabling.
- 6.2. Inventory records for lighting columns, luminaires and control pillars are accurate. Inventory of the cabling network, and knowledge of its condition, is limited as most of it is underground.
- 6.3. Although no backlog model has been developed as yet, the percentage of lighting columns exceeding their design life (30 years) is 34.8%, giving the Council the seventh oldest lighting column stock in Scotland. The cost to replace all of these columns at current rates would be £43.963 million. The cost to maintain the lighting asset in its current condition (steady state) is £1.18million. This assumes we require to replace columns when they reach 70 years old. While this is a working assumption, the condition of individual columns is considered when formulating renewal programmes.
- 6.4. The trend in columns beyond their design life is improving due to the recent lighting investment programme. On 11 March 2015, the Executive Committee approved investment of £19.56m for the conversion of our existing street lighting to LED and further investment to replace 7,029 of our oldest lighting columns over a 5 year period.
- 6.5. During the first year of the Lighting Investment programme, we installed over 31,000 LEDs and over 2,500 lighting columns. Progress continued well in year two of the programme, with a further 4,175 lighting columns and 15,794 LED's installed. We are now in year three and expect to complete LED installations by March 2018.
- 6.6. The future issue for our Street Lighting infrastructure is medium term funding for planned replacement of age deteriorated columns.

7. Structures Asset

- 7.1. The Council is responsible for a total of 741 structures which includes road bridges, footbridges, culverts and subways.
- 7.2. Good records are held for the majority of these assets, however, there are currently limited records held by the Council in respect of road related retaining walls.
- 7.3. The current Gross Replacement Cost of the Structures asset is estimated at £235m. This figure does not include the replacement cost of any road related retaining walls.

- 7.4. Bridge inspections are carried out in accordance with the guidance and recommendations of the Code of Practice "Management of Highway Structures" published by the UK Roads Liaison Group. General Inspections are carried out every two years and Principal Inspections every six years on all structures with a span in excess of 0.9m. More frequent Special Inspections are carried out on structures where more specific monitoring of condition is appropriate (e.g. where assessments have indicated potential load carrying capacity issues).
- 7.5. Routine repairs that are identified during the bridge inspection process are prioritised taking into account the severity and extent of the defect which has been observed.
- 7.6. There are 102 steel bridges within the structures asset. Properly specified and applied protective paint systems are expensive but serve to prolong the lifespan of steel structures and can substantially extend intervals between maintenance and repair operations. The introduction of a formalised maintenance painting regime for our steel bridges would be of significant benefit. Currently, this work is tackled on a needs basis as funding permits.
- 7.7. Current investment for 2016/17 is £0.77m per annum. This is broadly similar to previous years. The cost to maintain the structures asset in its current condition (steady state) is estimated £2.59million. The "steady state" level of funding was derived from advice provided in the report "Funding for Bridge Maintenance" published by the County Surveyors Society (now ADEPT) in February 2000. It recommends that the annual funding for bridge maintenance in order to achieve "steady state" is 1.1% of the gross replacement cost of the asset. The 1.1% figure includes an allowance for annual bridge inspection activity (0.1%).
- 7.8. In addition to the inspection process discussed above, a national assessment programme, carried out to determine the suitability (i.e. strength) of the bridge stock for the introduction of 40 / 44 tonne vehicles onto the road network, revealed 123 bridges to be below desirable load bearing standards. A comprehensive bridge strengthening programme has in recent years seen excellent progress in addressing the Council's weak bridges. Of the 123 bridges which failed the assessment, only 14 remain to be addressed.
- 7.9. These 14 structures are located within largely rural areas and are subject to an enhanced condition monitoring regime. They are inspected at more regular intervals than the remainder of the asset. We are considering implementing permanent vehicular weight restrictions at all 14 of these bridges. The consultation process has now been completed at four of the bridges, but the nature of them means that restrictions may not be acceptable (e.g. single access to rural properties). These issues require to be considered further.
- 7.10. Temporary vehicular restrictions at higher risk structures on more strategic and well used routes are already in place at Clyde Bridge by Pettinain and at Ponfeigh (Douglas Water) Bridge where the bridge has had to be closed. An enhanced monitoring regime has recently commenced at Craigend Bridge south of Coulter due to recent accelerated deterioration in condition of the structure. A project for the refurbishment and repair of this structure is currently being prepared.

- 7.11. The bridge assessment process included a risk analysis of vehicle containment characteristics at each bridge location. The results of the analysis revealed that, in terms of risk and containment, parapets on 8% of the Council's bridge stock require to be upgraded. A programme to improve vehicle containment capability at these structures has been initiated, but progress has been limited as a consequence of funding availability. As it stands, 60 structures have been identified as high priority for improvement measures. In terms of risk and containment, the need for upgrading works at the remaining 92% of bridges is currently considered low.
- 7.12. We propose to address this via the annual completion of eight containment upgrade schemes over the next eight years. Based on the average cost of recent similar projects, this would currently represent an annual additional capital investment of £250K. It is proposed that in 2018/19 this sum is vired from the Roads Investment Plan to address these issues. It should be borne in mind, however, that several of the structures involved are historic bridges with narrow carriageways and/or substandard verge widths where installation of lower cost enhancement measures are solutions such as high containment kerbing may not be possible. In addition, 16 bridges carrying public roads over railways are included in the "high priority" quota and may, therefore, require a substantially increased level of investment to complete the upgrade work.
- 7.13. The condition of all highway structures is determined following a General (visual, 2 yearly) or Principal Inspection (hands on, 6 yearly) and rated in accordance with the ADEPT Bridge Condition Index (BCI) Guidance. BCI values are generated from ratings apportioned to the severity and extent of defects recorded during a bridge inspection and can be interpreted broadly as the percentage condition score of a bridge or a group of bridges. Separate BCI figures are derived to account for the condition of all structural elements of a bridge (BCI_{av}) and for the condition of those elements defined as being of very high importance (BCI_{crit}). The condition indicators for the entire bridge stock as a single group over the past six years are as follows:

Year	BCI_{av}	BCI_{crit}
2011-12	86.03	73.47
2012-13	85.67	74.62
2013-14	85.68	74.60
2014-15	84.91	75.72
2015-16	84.49	75.14
2016-17	84.09	73.02

- 7.14. As noted from the above table, BCI_{av} and BCI_{crit} values for the entire asset fluctuate slightly over time but have remained within the range of "good condition" (BCI_{av} value 80-90) and "fair condition" (BCI_{crit} value 65-80) respectively throughout the last six years. It should be noted, however, that there was a decrease in the value of both indicators in 2016-17.

- 7.15. The apparent slow regression in average condition may be explained by the predominance of old, small and durable masonry structures which, by their very nature, deteriorate at a slow rate. In addition, protective paint systems applied in the past will have limited the rate of accelerated corrosion of most of our steel structure. Funding levels in recent years have precluded the implementation of any significant maintenance in terms of painting. Existing protective paint systems on many steel bridges will, therefore, now be nearing the end of their useful lifespan and corrosion rates may start to increase as a result.
- 7.16. The assembly of a register of road related retaining walls within South Lanarkshire was commenced in 2014/2015. The retaining wall asset will be significant and the formation of the database, which will contain several thousand items, is a long-term commitment for the Council. The code of practice suggests that all road related retaining walls should be subject to the same inspection regime as is currently carried out on bridges and culverts (see section 7.4).

8. Traffic Signals

- 8.1. The Council is responsible for 217 sets of traffic signals and controlled pedestrian crossings. The numbers and different types of installations are listed below: -
- ◆ 103 Traffic Signals
 - ◆ 76 Puffins
 - ◆ 13 Pelicans
 - ◆ 25 Toucans
- 8.2. Many of the traffic signals in South Lanarkshire are relatively old (over 15 years) utilise older computer technology and are energy inefficient. In recent years, the Council has initiated a programme to replace older traffic signals and pedestrian crossings with modern ones. The replacement of an average traffic signal junction costs in the region of £120k and a pedestrian crossing around £40k. Based upon the existing level of Council funding, we are able to renew one traffic signal junction per year or 2 pedestrian crossings. External funding does allow other infrastructure to be renewed but this is variable in terms of funding availability. These new installations both maximise the safety benefits to all road users and improve the flow of traffic using modern computer control systems.
- 8.3. We typically receive and respond to over 1000 traffic signal faults annually.
- 8.4. The gross replacement value of the all traffic signal apparatus is currently estimated at a value of £20.5 million. The cost to maintain the traffic signal asset in its current condition (steady state) is £0.73million.
- 8.5. In 2017/2018, funding of around £600k will be directed towards investment in traffic signal infrastructure but this is not guaranteed to any extent in future years and relies significantly on external funding, primarily via Scottish Government grant and Strathclyde Partnership for Transport.

- 8.6. At present, the Council is seeking to work to a 15 year lifecycle plan albeit each installation is assessed in terms of its individual condition to determine the need to replace. Any plan longer than this would result in reliability issues arising and over recent years some installations have failed, resulting in emergency replacement works being undertaken. (e.g. Southcroft Road, Rutherglen).
- 8.7. While some installations can last longer, it is good practice to try and replace on a planned and reactive basis and we aim to do this. For example, a planned replacement, phased during quieter traffic periods, is far more acceptable than a key installation failing at a critical time.
- 8.8. The Council currently has 30 sets of traffic signals and 11 pedestrian crossings that are 15 years old or older. This is an increase of 11 signalised junctions and 3 pedestrian crossings compared to the previous year. The age of the equipment is increasing quicker than replacement equipment is being installed, therefore, the trend for the overall condition of the asset continues to regress annually. Sudden failure of key installations obviously risks significant disruption to the network.

9. Street Furniture - Vehicle Restraint Systems

- 9.1. Within South Lanarkshire Council, there are currently approximately 380 vehicle restraint systems, totalling approximately 34.6 Km. At present 320 vehicle restraint systems have been surveyed in detail as a consequence of a programme of special inspections being initiated. Approximately 20% of our systems have reached the end of their serviceable life due to having timber posts suffering from rot. Some systems have also suffered from extensive corrosion. Approximately 10% of existing systems are damaged.
- 9.2. The estimated gross replacement cost of the vehicle restraint systems which would bring the systems up to current standards is £8.89 million
- 9.3. The estimated cost to replace deteriorated and damaged systems is £2.12 million.
- 9.4. The estimated annual cost to maintain the asset in its current condition (steady state) is £0.4million.
- 9.5. The initial survey of vehicle restraint systems is expected to be concluded by October 2017. This initial survey will gather detailed information relating to vehicle restraint systems condition and will inform future prioritisation of resources.
- 9.6. A series of risk assessments will be undertaken to assess any existing vehicle restraint systems where the site is categorised as “low” priority. For each of these sites, the risk assessment will establish whether the removal of these vehicle restraint systems could be justified (if necessary with other measures such as signage to mitigate any remaining risk).
- 9.7. It is anticipated that the results from both processes will be used to form a prioritised strategy for the repair, maintenance and provision of vehicle restraint systems in the future.
- 9.8. To begin to address this issue in a meaningful way, it is proposed to vire £500k from the Roads Investment Plan in 2018/2019.

10. Summary of Roads Assets

- 10.1. Carriageway asset is in an improving condition as a result of the significant additional investment. Inventory of carriageway asset is good in terms of length of carriageway; however, continued investment will be required beyond 2019 if this progress is to be maintained and recent improvements protected. It should be noted that if investment levels fall significantly below “steady state” requirements in 2019, the condition of asset will be affected. Therefore as noted above, consideration is to be given to determine how future maintenance programme will be delivered/funded.
- 10.2. Footway asset inventory is limited both in terms of the asset itself and its condition. From the information we have, 17.1% of our network requires to be considered for maintenance. The most recent Household Survey makes it clear that the condition of our footway network is a matter of public concern. Funding levels are such that modest ongoing deterioration should be expected.
- 10.3. The lighting asset is aged in terms of columns, with an inefficient energy configuration. However, the lighting investment already approved will reduce energy use by half and replace 7000 of the oldest lighting columns representing significant progress. Medium term funding for column renewal is the key challenge.
- 10.4. Bridge condition is generally reasonable and static. Good progress has been made in dealing with bridges assessed as being inadequate for current loading standards; however, greater investment is required in repainting major steel bridges and attention is also required to the many bridges with potentially weak parapets.
- 10.5. The condition of traffic signal equipment is deteriorating as the current replacement programme is not sufficient to prevent regression of the asset age profile.
- 10.6. The condition of vehicle restraint systems is such that a significant number are beyond their design life. Again, future funding is a key issue given the specific risks associated with these assets.

11. Employee Implications

- 11.1. There are no employee implications associated with this report.

12. Financial Implications

- 12.1. There are no financial implications associated with this report. However, capital funding bids will be made as opportunities arise to seek to maintain or improve condition of key assets.

13. Other Implications

- 13.1. There are no implications in terms of sustainability or risk in relation to the information contained within this report.

14. Equality Impact Arrangements and Consultation Arrangements

- 14.1. This report does not introduce a new policy, function or strategy or recommend a change to an existing policy, function or strategy and therefore, no impact assessment is required.

Michael McGlynn
Executive Director (Community and Enterprise Resources)

20 September 2017

Link(s) to Council Objectives/Values

- ◆ Improve road network and influence improvements in public transport
- ◆ Improve community safety

Previous References

None

List of Background Papers

Roads Asset Management Plan 2017

Contact for Further Information

If you would like to inspect the background papers or want further information, please contact: - Gordon Mackay, Head of Roads and Transportation Services

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