Stirling Council

Road Asset Management Plan

(RAMP)

2016 - 2020

Foreword

This plan sets out the Council's plans for the management of the Council's Road Asset for the next 5 years*. It has been produced in accordance with national guidance and recommended good practice developed through the SCOTS Asset Management Project with the assistance of exp consulting limited.

It is widely recognised that the application of modern asset management practices can enable improved value for money. In these challenging times it is essential that the Council embraces these methods and strives to ensure that every penny spent is invested as wisely as possible. This plan forms an important part of the Council's commitment to apply good asset management to roads.

The plan recognises the views of road users and residents and in particular the importance that is placed upon our Road Assets. Recent harsh winters have shown that our roads are susceptible to damage when bad weather occurs. It is essential that an appropriate level of investment is put into the road network to maintain and ultimately improve one of the main principles of the council, that of the economic wellbeing of the locality.

The plan supports three of the Council's eighteen key priorities:-

- **12. Adopt a pragmatic approach to sustainability that protects and enhances the local environment.**
- **13. Make resurfacing roads, paths and pavements the service priority across the whole Stirling area.**
- **17. Pursue a diverse high wage economy that delivers local jobs for people across Stirling and a procurement policy that supports this.**

Councillor Signature

Councillor Danny Gibson
Convener of Environment & Housing Committee

Document Control

Version Number	Amendments Made	Date
V2		January 2016
Next Review Due		January 2017

Council Approval

Version Number	Council Committee	Date
v1	Environment & Housing	Feb 2016

Responsibility for the Plan

The responsibility for the delivery of and updating of this plan are shown below

Council Officer	Responsible for
Kenny Donaldson	Maintaining the content of the plan

1. Introduction

Overview

This plan sets out the council's plans for the council's Road Assets for the period 2016-20. The Road Asset Management Plan (RAMP) records the council's plans for the maintenance of the Road Asset. The "Road Asset" comprises of carriageways, footways, structures, street lighting, traffic management systems and street furniture. **The plan supports three of the Council's eighteen key priorities:-**

- **12. Adopt a pragmatic approach to sustainability that protects and enhances the local environment.**
- **13. Make resurfacing roads, paths and pavements the service priority across the whole Stirling area.**
- **17. Pursue a diverse high wage economy that delivers local jobs for people across Stirling and a procurement policy that supports this.**

Strategic Asset Management

This Plan is consistent with the Council's approach to asset management as set out in the Strategic Asset Management Strategy.

The purpose of the RAMP is to:

- Formalise strategies for investment in Road Asset groups
- Define service standards

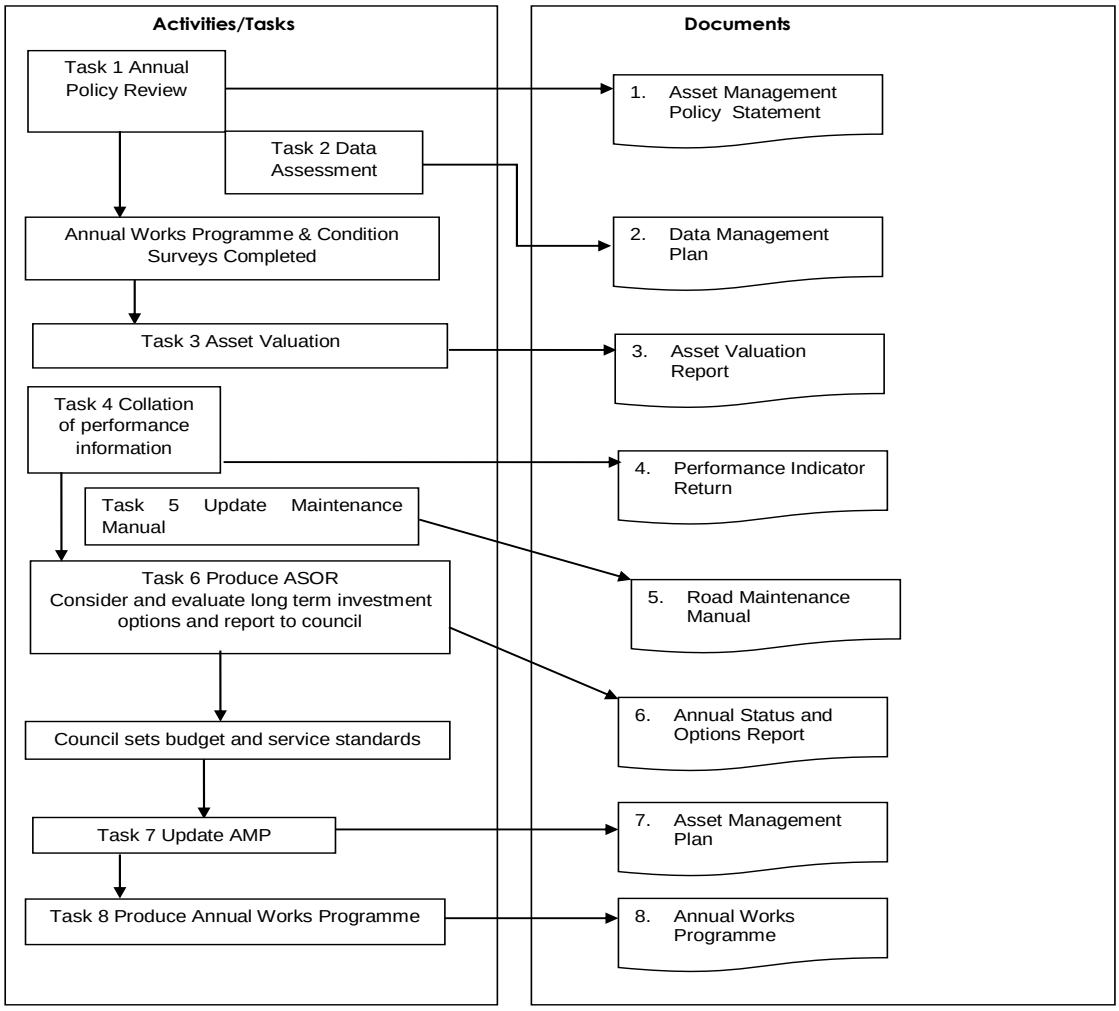
The plan aims to improve how the Road Asset is managed and to enable a better value for money roads service to be delivered.

Strategic Asset have responsibility for the operation, management and development of the Council's strategic asset management function, including:

- Capital programme planning
- Local settlement reviews,
- Property related health and safety management,
- Procurement management,
- Establishment of maintenance priorities (excluding housing stock),
- Energy efficiency and management of the schools PPP and Balfron PFI contracts

Society of Chief Officers for Transportation in Scotland (SCOTS) / County Surveyors Society Wales (CSSW)

This plan has been developed in accordance with the SCOTS/CSSW recommended asset management planning practices and is informed by the tasks and documents illustrated.



The RAMP relates to other council plans as illustrated below:

The RAMP is informed directly by a variety of associated asset management planning documents. Targets and strategies contained in the RAMP are used to develop annual works programmes based upon the council's Road budget allocation.

Related Documents include:

Single Outcome Agreement 2013-2023

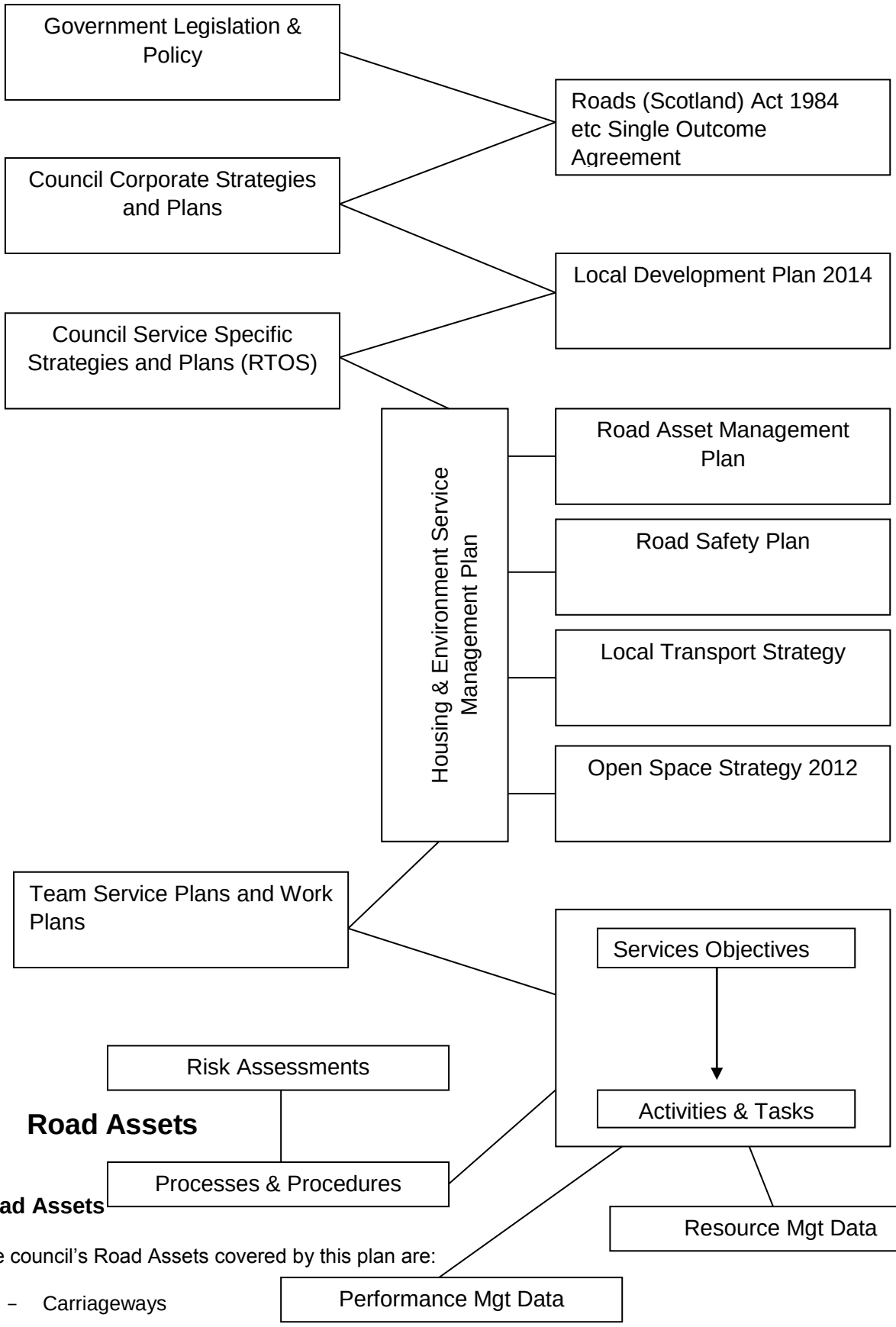
Working with you to shape Stirling's Future

Open Space Strategy

Sustainable Development Strategy 2006

Local Transport Plan

Road Safety Plan



2. Road Assets

Road Assets

The council's Road Assets covered by this plan are:

- Carriageways

– Footways, footpaths & cycleways	612 km
– Structures	352 Road Bridges, 12 Footbridges & 189 Culverts
– Street Lighting	14,766 Lighting Columns and Lighting Points
– Traffic Management Systems	46 Signalised Junctions and Pedestrian Crossings
– Street Furniture	Approximately 38,038 items

Assets Not Covered

Assets not in included in this plan but which will be included in a future revision to the plan:

- Road Drainage Infrastructure – Under Development
- Retaining Walls – Approximately 192. Survey started 2014
- Weather Stations
- Other Traffic Management Systems – Information Systems, Variable Message Signs, Vehicle Activated Signs

Some related assets that the Environment Service maintains are the responsibility of other council departments. The council owned Road Assets not covered in this RAMP are:

- Pay and display car parks
- Footpaths managed by Housing Association
- Bus Shelters
- Public Rights of Way

Assets that have been specifically excluded from this plan are:

- Private Roads
- Private Bridges
- Council owned bridges, not on or crossing the road network.
- Decorative, seasonal lighting
- Water related infrastructure that does not form part of the road network
- Assets relating to the other five key areas of Council asset ownership (e.g. Buildings and Property, Council Housing, Open Space, Vehicle Fleet and Information and Communications Technology)

Inventory Data

This plan is based upon currently available inventory data for Road Assets, i.e. carriageway, footway, structures, street lighting, traffic signals and street furniture. For some minor Road Assets inventory

data is not currently held, however, an attempt has been made to incorporate these assets within this plan using local estimates and sample surveys. A plan to improve asset data forms part of the council's Road Asset data management plan(4).

The Council's Key Priority with regard to carriageway maintenance:

13. Make resurfacing roads, paths and pavements the service priority across the whole Stirling area.

This achieved by:-

- Maximising road resurfacing from available budgets whilst considering the requirement to keep the overall roads network safe.
- Maximising paths and pavement resurfacing from available budgets whilst considering the requirement to keep the overall roads network safe.
- All resurfacing works will be prioritised using a matrix that considers network criticality, safety condition and residual life.

Street Lighting Replacement Programme

The Council's Key Priority with regard to street lighting is :

Adopt a pragmatic approach to sustainability that protects and enhances the local environment.

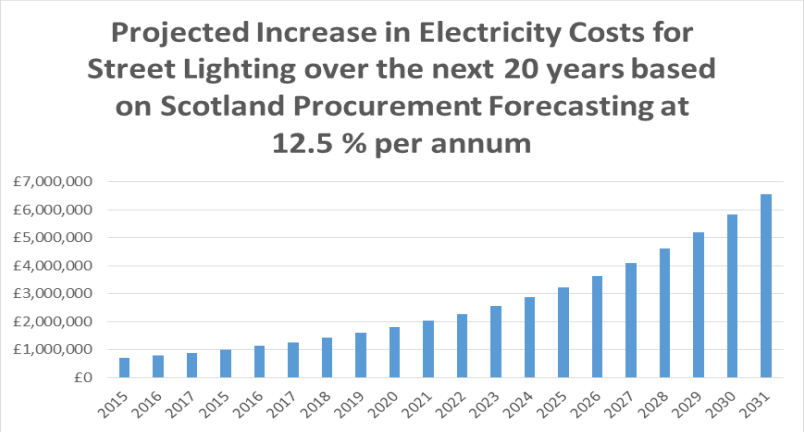
This achieved by:-

- Lamp replacement to modern efficiency LED lighting to reduce energy costs and ongoing maintenance costs.
- Column replacement where columns have reached or are close to reach the end of their expected service life or where their condition is such that they could be a\ danger to the public.

The biggest factor influencing future street lighting costs involves the price of electricity.

Over the last decade the cost of electricity has increased significantly, with increases in excess of 20% per annum experienced since 2004. In the latest Procurement Scotland forecasts, Electricity prices are likely to double by 2020. If this trend was to continue (with no reduction in street lighting energy demand) then this could add substantial costs to the street lighting service budget over the next 20 years.

In the example graph below the latest projected electricity price growth factor of 12.5% per annum (including the rate of inflation) has been used to illustrate the potential growth in street lighting electricity costs and adverse impact on the overall street lighting budget.



If this level of electricity cost increases were to eventuate then the total costs required to operate and maintain the asset per annum would increase significantly from £0.7 million (2014/15) to approx. £6.5million over the 20 year analysis period. The total additional expenditure which the council would have to find over this period could be in the region of £53 million.

The scale of future price increases is unknown. It is however highly probably that energy will become more expensive due to growing competition for resources and increased generation costs. It is therefore prudent to explore options for reducing street lighting energy usage while still maintaining an acceptable level of service for the residents and travelling public. Future reports will be developed to outline street lighting “invest to save” options.

3. Customer Expectations

3.1 Customer Consultation

The Council conducts a Residents' Survey every two to three years, using the Stirling Sounding Board. The survey keeps pace with changes in residents' views about issues relevant to the Council. The feedback helps the Council and its partners to continually improve services. To date, 6 surveys have been carried out in 2000, 2002, 2005, 2008, 2011 and 2013

In 2007 the RTOS Service commissioned research to identify those attributes that seemed most likely to be drivers of customer satisfaction specifically related to road maintenance and thus to be the prime candidates for managerial intervention. Mainly qualitative (discussion-based) approaches were used with members of the Stirling Sounding Board and key interest / consultative groups, to understand the drivers of customer satisfaction.

For the 2008 survey, residents were invited to have their say on Council Services and take part in an online version of the survey. This survey included general questions on the Council and what influences resident's views of it.

In the summer of 2013, the survey was distributed to the Stirling Sounding Board on their perceptions of, and satisfaction with, various aspects of road and transport services provided by Stirling Council.

The survey questionnaire was developed by Roads and Transport officers, to include a range of issues upon which insight was required, namely:

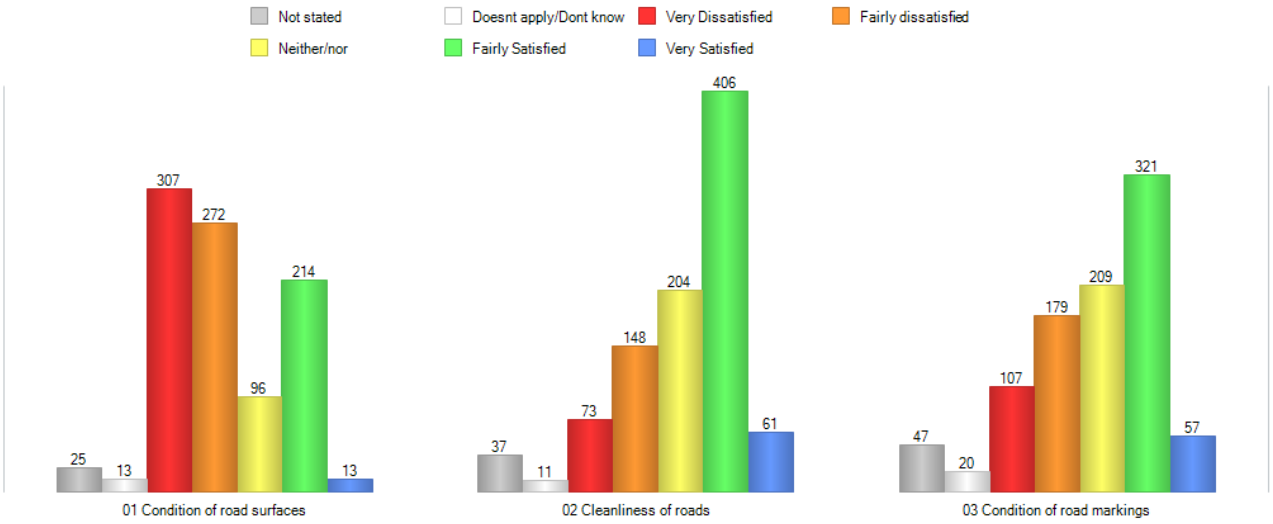
- Conditions of Different Parts of Roads (importance and satisfaction)
- Services provided by the Council to maintain roads and their environs
- Winter and other weather emergency services provided by the Council
- Road works carried out by utility companies and the Council
- Use of roads and transport services (importance and satisfaction)
- Understanding of transport planning
- Travel behaviour – ease of travel by mode and destination
- Cycling, Public Transport & Taxis - satisfaction
- Core paths – satisfaction
- Traffic Management – satisfaction with various aspects
- Unacceptable Congestion – frequency, cause and locations
- Measures to reduce car journeys
- Information/ contact with the Council and customer satisfaction.

In 2014 Stirling Council took part in the National Highways and Transport Networks survey. This unique survey measures public satisfaction with highways and transport services for Highways Authorities across the UK, with detailed questions by priority area (themes), as well as information on travel

behaviour. An annual survey running since 2008 with over 420,000 members of the public responding to date. A link to the NHT website can be found here. http://nhtsurvey.econtrack.co.uk/

Survey results, which are summarised by theme using Key Benchmarking Indicators (KBIs) and Benchmarking Indicators (BIs), are shared openly amongst the participants to drive improvement.

Shown below is an example of how Stirling residents responded to questions about Roads Maintenance in general.



3.2 Results of Consultation

Condition of Road Surface

The Survey highlighted that respondents are generally dissatisfied with the condition of the network.

Cleanliness of Roads

The Cleanliness of the Road scored high for satisfaction.

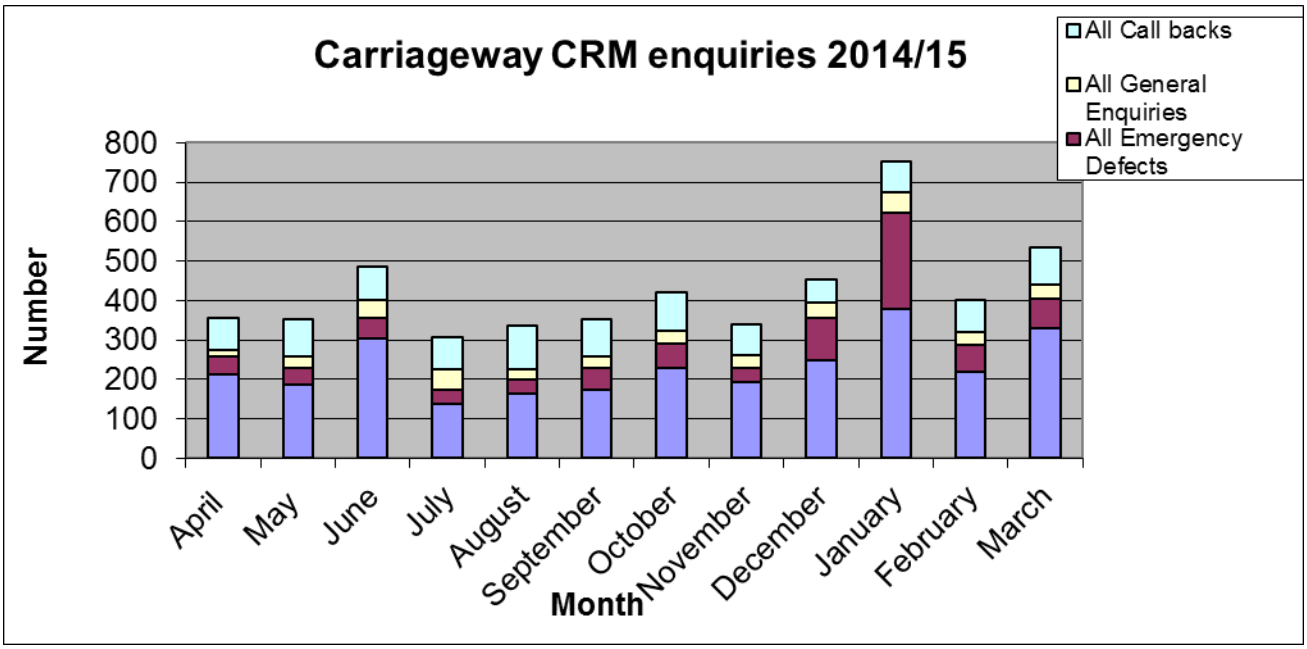
Condition of Road Markings

There are slightly more people satisfied with the condition of road markings with a large proportion of respondents neither satisfied nor dissatisfied.

Customer Contacts

Customer contacts in relation to the carriageway assets are recorded in Lagan, the council's customer relationship management system (CRM).

A summary of the contacts received by category is shown below for 2014/15



The results show that customer contacts to the council with regard to 'carriageway defects' are predominantly category 2 (mainly potholes), which reflects the current condition of the carriageway and the damage caused by the adverse winter conditions. Street lighting faults, the majority of which were dark lamps are also included in these figures.

Also of note is the number of contacts in regard to drainage problems, which is reflected in the customer satisfaction survey reported above. Although the customer satisfaction with street furniture appears to be quite low there has only been a small number of customer contacts in regard to this asset group in the past possibly meaning that this is not seen as a priority.

4. Demands

Asset Growth

The asset grows each year due to the adoption of new roads and construction of new road links. Between 2009 and 2014 the council adopted the following additional assets:

- Carriageways, 3.5 km
- Street Lighting, 1447 columns
- Structures – Made of adoptions, new builds and culverts discovered through excavation work

New assets create the need for maintenance, management and associated funding in future years as these additional assets age. This is particularly relevant to street lighting as energy costs increase immediately exacerbating the effect of rising energy prices.

Traffic Growth

Traffic growth places increasing pressure on the road network due to the significant increase in the general volume of traffic and in particular, large commercial vehicles. Many of the council's roads were not designed to accommodate this level of traffic. This creates a growing need for investment in maintenance.

Stirling Council faces a significant challenge in maintaining and enhancing the quality of life while trying to ensure that this growth takes place in a sustainable manner. The key transportation issues associated with this growth are congestion and the subsequent effects this has on the environment, the economy, integration, accessibility and safety that all contribute to a perceived quality of life. As part of the work to ensure that the existing transport network is adequately maintained and managed, the RTOS Service gathers and maintains records of traffic volumes from a number of permanent and temporary counter sites.

Data gathered indicates that, between 2007 and 2010 traffic volumes in Stirling decreased by 11.3%. Factors affecting this downturn include:

- The Stirling to Alloa rail line opened in 2008
- The Clackmannanshire Bridge opened in 2009
- The opening of park and ride schemes at Springkerse and Castleview
- City ring road and radial route improvements
- Overall downturn in the economy affecting future travel demands include:
- Between 2008 and 2025 a population growth of between 7.0% and 9.3% is expected across the Stirling Council area

- There is a net in-migration of people coming to work / study in Stirling
- Between 2005/06 and 2007/08 the number of people owning at least 1 car rose from 75% to 78% whilst the number of people without a car dropped from 25% to 22%.
- Upgrading of the A80/M80 Completed in 2011
- Edinburgh to Glasgow Rail Improvement Project (EGIP) (due for completion by 2016)

Environmental Conditions

Pressure is also being placed upon the asset as a result of environmental conditions including:

- Harsh winters: Changeable weather conditions have caused significant damage to road surfaces resulting from freeze/thaw action.
- Flooding: Areas around Callander and Aberfoyle are prone to flooding. Some areas are affected by fluvial flood events from the River Forth and Loch Ard. Several flood schemes are currently being developed.
- Climate change: Current projections indicate, on average, warmer, wetter winters and warmer, drier summers with what are currently considered to be exceptional heat and precipitation events becoming more common and severe events becoming more extreme. This has the potential to cause more rapid deterioration in the road network than planned.

5. Service Standards

This plan is based upon delivering the service standards below. The standards reflect the funding levels in section 6. They are the standards that users (customers) can expect from the council's Road Assets during the plan period. Details of how the specific measures shown below are calculated are included in the road maintenance manual.

Service	Measured By	Target Standard
	Carriageways	
Safety	Undertake routine safety inspections on Strategic Routes at intervals of	1 month
	Undertake routine safety inspections on Main Distributors at intervals of	1 month
	Undertake routine safety inspections on Secondary Distributors at intervals of	3 months
	Undertake routine safety inspections on Link Road at intervals of	1 year
	Undertake routine safety inspections on Local Access roads at intervals of	1 year
	Category 1 defects shall be rectified or made safe within	12 hours
	Category 2 defects shall be rectified or made safe within	20 Days
	Category 3 defects e.g. white lining, shall be rectified or made safe within	90 days
Condition	Maintain the condition of all 'A' roads such that the percentage in a RED condition remains below 4%. Currently level of funding means that 3.5% is a more realistic figure	4%
	Maintain the condition of all 'A' roads such that the percentage in a RED and AMBER condition remains below	36%
	Maintain the condition of all 'B' roads such that the percentage in a RED condition remains below 4%. Currently level of funding means that 3.5% is a more realistic figure	4%
	Maintain the condition of all 'B' roads such that the percentage in a RED and AMBER condition remains below	36%

	Maintain the condition of all 'C' roads such that the percentage in a RED condition remains below 4%. Currently level of funding means that 3.5% is a more realistic figure	4%
	Maintain the condition of all 'C' roads such that the percentage in a RED and AMBER condition remains below	36%
	Maintain the condition of all 'U' roads such that the percentage in a RED condition remains below 4%. Currently level of funding means that 3.5% is a more realistic figure	4%
	Maintain the condition of all 'U' roads such that the percentage in a RED and AMBER condition remains below	36%
Safety	Undertake routine safety inspections on Prestige Area footways at intervals as described	1 month
	Undertake routine safety inspections on Primary Walking Routes at intervals as described	1 month
	Category 1 defects shall be rectified or made safe within	12 hours
	Category 2 defects shall be rectified or made safe within	20 Days
Condition	Maintain the condition of all footways such that the percentage meeting the condition rating level 4 remains below	Not Set
	Maintain the condition of all footways such that the percentage meeting the condition rating level 3 & 4 remains below	Not Set

Service	Measured By	Target Standard
Street Lighting		
Safety	Electrical testing of all equipment shall be undertaken at a frequency of 6 years and at the date of installation for new columns and luminaires	6 years
	Emergency faults shall be made safe or repaired within 12 hours of notification	12
Condition	The percentage of street lights not working as planned at any one time should be no more than	1%
	The percentage of street light columns exceeding their expected service life should be no more than	20%
	A non-emergency fault shall be rectified within 20 working days (Single Outage)	20
	A non-emergency fault shall be rectified within 20 working days (Section Fault 3 lights or more)	20
	Night time scouting of the whole of the asset shall be undertaken at intervals of 2 weeks in winter	2 weeks
	Night time scouting of the whole of the asset shall be undertaken at intervals 4 weeks in summer	4 weeks

Service	Measured By	Target Standard
Structures		
Safety	Carry out General Inspections at a maximum frequency of 2 years. Excluding structures programmed for a Principal Inspection.	2 years
	Carry out Principal Inspections at a maximum frequency of 6 years.	6 years
	Carry out Scour Inspections at a maximum frequency of 6 years as part of Principal Inspection. Some structures require specialist inspectors.	6 years
	Make an assessment of the severity of emergency maintenance calls with 48 hours and programme works as required. Roads supervisors will make safe within 12 hours	48 hours
Condition	Make an assessment of the severity of non-emergency maintenance calls 48 hours and programme works as required Roads supervisors will make safe or repair within 20 working hours	48 hours
	Target figure for Average Bridge Stock Condition Indicator ($BSCI_{ave}$)	90
	Target figure for Critical Bridge Stock Condition Indicator ($BSCI_{crit}$)	90
	Date for completion of strengthening programme	2042

*dependent on available budget

Service	Measured By	Target Standard
Traffic Signals		
Safety	Attendance at Major faults shall be within the hours stated in the target column	4
	Attendance at Minor faults shall be within the hours stated in the target column	24
	Undertake electrical inspections for electrical assets at each installation within the years stated in the target column	6
Condition	Initial repair of major faults shall be within the hours stated in the target column	12
	Initial repair of minor faults shall be within the hours stated in the target column	48
	Complete repair all faults within the hours stated in the target column	48
	The percentage of traffic signal installations exceeding their ESL should be no more than	20 years
	Damage repair of major faults shall be within "1" days	1
	Damage repair of less urgent faults shall be within "14" days	14
	Failed lamps shall be replaced within "1" days	24 hours

6. Financial Summary

6.1 Planned Funding

Stirling Council requires to achieve an estimated £21 million of savings over the five years from 2015/16 to 2019/20. This is being brought about through Priority Based Budgeting (PBB) with options of transformational change, efficiency, or stop/reduce.

Stop/reduce savings options will only be carried forward as a last resort where transformational and efficiency options are not capable of closing the budget gap.

In the draft budget the key areas within roads for considerations were proposed as shown below

Reference	Title	Description
ENV027	Capital Investment – Street Lighting Energy Efficiency	Stirling Council meeting 20th Feb 2014, approved the General Services Capital Programme for 2014/15 and agreed to fund investment in low energy street lighting to the value of £1.935m in 2014/15 with a further £6.540 approved in principle over the following 4 years. A total investment of £8.475m over 5 years.
ENV031	Reduce Bridge Maintenance Programme	This project is to reduce the maintenance budget for planned bridge maintenance.
ENV034	Review / Optimisation of Winter Service Priority 1 Routes	This option seeks to raise the current threshold for Priority 1 treatment (precautionary salt treatment and clearance of snow and ice accumulations 24hrs per day) from 800 vehicles per day. This continues to ensure that the most heavily trafficked routes receive the highest level of priority treatment. The exact locations and lengths of carriageway this will affect cannot be determined until a full optimisation exercise is undertaken by the Service but the reduction in treatment will be greatest on Rural roads because they have lower traffic flows
ENV035	Capital Investment in Road Surfacing to reduce spend on temporary repairs	This proposal is to increase the capital investment in road surfacing from £4m to £5.5m per annum to reduce the revenue budget for roads maintenance activities. This proposal uses the National Budget Forecasting Model and Road Maintenance Condition Survey as the base criteria. The

		current capital budget for Roads is £3.979m, which only manages to maintain the road network at current condition levels. By investing a further £1.521m, this would allow a positive improvement to the condition of the network thus reducing road repair costs.
ENV037	Review / Optimisation of Winter Service Priority Routes 2, 3 & Footways	This option seeks to raise the current threshold for Priority 2 & 3 treatment from 600 and 400 vehicles per day respectively to reduce treatment route lengths by 50%. The impact of doing this will be greatest on Rural roads because they have lower traffic flows. This option also considers reduction in footway treatment of 40%. A full route review and optimisation exercise will be undertaken by the Service.

ENV0027 Recommendation / Upgrade street lighting infrastructure in 2 stages

Stage 1 will deal with the already approved £8.475m over next 5 years. Investment will be largely focused on delivering maximum savings through replacement of energy inefficient lanterns. Only the most serious of at risk of failure lighting columns will be replaced in stage 1.

Stage 2 will be a capital bid to Council requesting a further £5.770m (at current values) to replace the remaining at risk columns and inefficient lanterns not addressed at stage 1, but formed the replacement proposals laid out in the original PBB saving option (ENV027). This bid will begin after completion of stage 1 (ie years 6 – 10)

Stage 2 identifies 2 possible financial scenarios. These are only given for illustrative purposes. Council will have to decide, if approving a second stage, how much of the core capital programme to commit as the larger this sum, the greater the revenue savings in the initial years. However this has to be balanced off with what other capital priorities the Council has to fund that may lose out.

Stage 2(a) - core capital programme funding £1m pa,, over 5 years, total borrowing £0.770m , savings after 10 years (ie after initial stage 1 five year period + stage 2 five year period) = £250k.

Stage 2(b) core capital programme funding £0.5m pa,, over 5 years, total borrowing £3.270m , savings after 10 years (ie after initial stage 1 five year period + stage 2 five year period) = £85k.

Outcome: This option was approved

ENV031 - Reduce Bridge Maintenance Programme

The Bridges planned maintenance budget has already been reduced and the £77K saving has been removed from the Roads Maintenance Team budget for 2014/15.

Outcome: This option was approved and has now been complete. The budget level has continued in to 2015/16

ENV034 Review / Optimisation of Winter Service Priority 1 Routes

This option was proposed and feedback from the public at the PBB Consultation events highlighted that this option was the subject of much debate and did not prove popular as this impacts on road safety and would have a significant impact on transportation.

Outcome: This option was rejected.

ENV035 Capital Investment in Road Surfacing to reduce spend on temporary repairs

This option was proposed and feedback from the public at the PBB Consultation events highlighted that this option was well received. There was a general consensus that the Council should invest more in capital resurfacing works and reduce spend on revenue works.

Outcome: This option was rejected.

ENV037 Review / Optimisation of Winter Service Priority Routes 2, 3 & Footways

This option was proposed and feedback from the public at the PBB Consultation events highlighted that this option was the subject of much debate and did not prove popular as this impacts on road and pedestrian safety.

Outcome: This option was rejected.

The service standard targets shown in section 5 are based upon the following predicted funding levels. In future years the cabinet will decide upon the level of funding for the road taking into account the information and options supplied in the complementary Asset Strategy and Options Reports (ASORs). Any updates required to the RAMP will then be made.

Section 5 of this RAMP is based upon the assumption that the funding levels remain the same for the next 3 years.

Asset	**Works**	**Proposed Funding Estimated beyond 15/16 £k**				**Long Term Funding Assumed £k**
		15/16	**16/17***	**17/18***	**18/19***	**2020 +**
Carriageways	Revenue (generally reactive maintenance)	2235	2133	2240	2140	2140
	Capital – generally planned improvements	3030	2,000	4500	4500	4,500
Footways	Revenue (generally reactive maintenance)	107	100	100	100	100
	Capital – generally planned improvements	500	500	500	500	500
Structures	Revenue (general maintenance & inspections)	185	185	185	185	185
	Capital – generally planned improvements	190	190	190	190	190
Street Lighting	Energy Costs	720	680	640	600	600
	Revenue (generally reactive maintenance)	370	350	350	350	350
	Capital – generally planned improvements	1,500	1,100	1,100	1,100	1,100
Traffic Signals	Energy/Communication Costs	Included in Street Lighting Energy Costs				
	Reactive	55	55	55	55	55
	Planned	0	0	0	0	0

Energy costs are shown at 2014 value although it is very likely that these will increase despite a significant spend to save programme.

*Figures quoted are based on estimates projected from 2015/16

6.2 Historical Expenditure

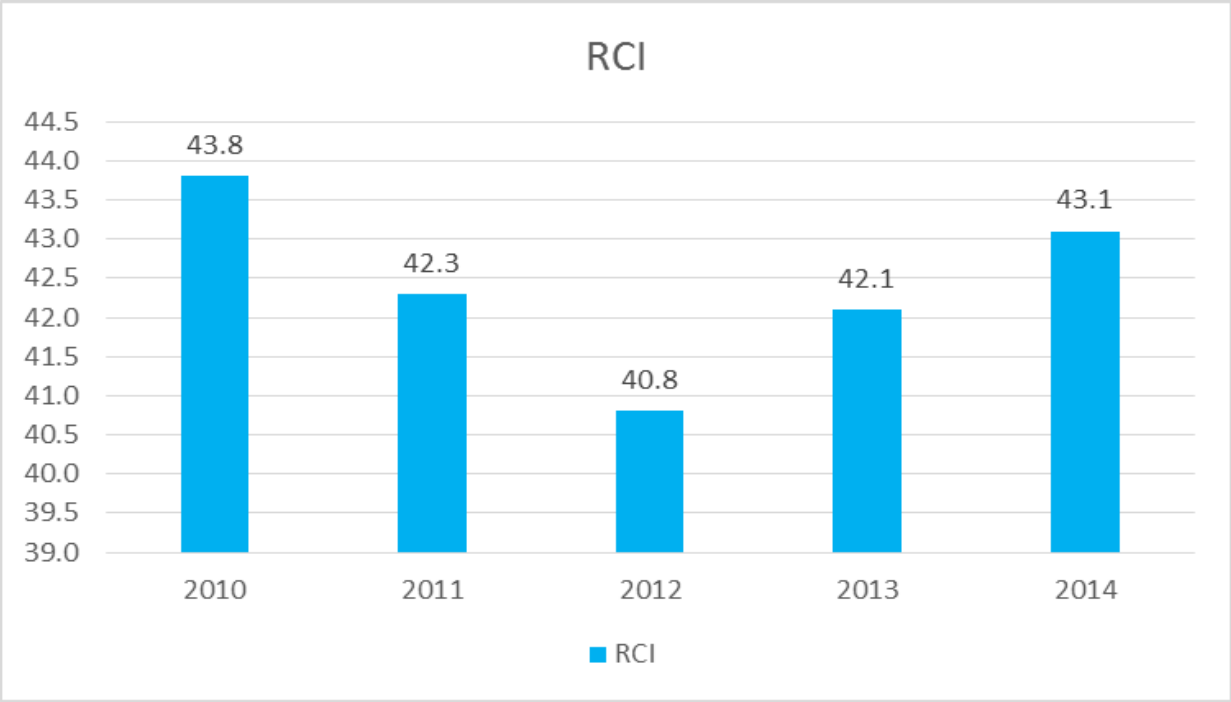
Historical expenditure invested in works on the Road Asset is shown below:

Asset	Works	Historical Expenditure £'000				
		10/11	11/12	12/13	13/14	14/15
Carriageways	Revenue (general maintenance)	2426	2590	2298	2309	1966
	Capital – generally planned improvements	2548	4141	4640	3319	4060
Footways	Revenue (general maintenance)	595	143	142	97	110
	Capital – generally planned improvements	565	623	584	476	622
Structures	Revenue (general maintenance)	252	248	234	159	175
	Capital – generally planned improvements	257	420	688	116	9
Street Lighting	Energy Costs	526	606	801	727	724
	Revenue (general maintenance)	934	402	409	386	394
	Capital – generally planned improvements	195	216	204	276	1531
Traffic Signals	Energy/Communication Costs	Energy Costs included in Street Lighting				
	Routine, Planned & Reactive	54	91	112	41	34
Totals:		8352	9480	10112	7906	9625

The above information shows a gradual increase in expenditure from 2010/11 and 2013/14 then a reduction in 13/14, which coincides with reducing budgets across the country. This trend is likely to continue downwards as councils are expected to find more savings in the coming years.

Carriageways

This graph clearly shows as spending is increased so the road condition is improved. The lower the Road Condition Index (RCI), the better. In 2013 there is a further reduction in spending resulting in the RCI becoming higher once again.



Structures

Investment in Highway Structures has declined over the past 5 years. Using methodology developed by the RAMP process for structures, it is estimated that Stirling Council structures asset deteriorates at £851,000 per annum. This is the amount of maintenance (Revenue) money required to maintain the highways structures stock in their current state. The current annual revenue budget is £185,000.

Due to this historic underfunding, in 2013/14, Stirling Council ranked 21st out of 23 Scottish Councils based on the condition of its Highway Structures. (A further 9 Councils did not provide information).

The figure of £9000 in table 6.2 above is a consequence of carry forward £260,000 future years for the Dunblane Bridge refurbishment project.

Street Lighting

Historically there have been low levels of funding available for street lighting with the majority of the allocation going to maintenance of an aging stock. Since 2013/14 Stirling is, like many other local authorities, investing heavily in column and lamp replacement programmes thanks to matched funding

becoming available and spend to save initiatives. The replacement of inefficient lamps with low energy LED lamps has already shown a fall in energy costs from £801,000 in 2012/13 to £724,000 in 2014/15.

Traffic Management

Traffic Management is used to help us work towards accident reduction, the efficient and safe movement of traffic on our main roads, assist those walking, cycling and using public transport in addition to helping improve the local environment.

Delivery of this function often involves provision of street furniture and equipment to help direct and control all traffic types. This can take the form of Traffic Signal installations, pedestrian crossing facilities, signage and lines. We will work towards preparation of a detailed inventory of all equipment in order that we may begin to accurately estimate the overall asset value and hence replacement costs.

This will be tackled in a phased approach over the life of this Asset Management Plan. As a first stage we have recorded all Traffic Signal equipment and its approximate age so that we can start to look at a coordinated approach to systematic renewal of equipment as it reaches the end of its working life cycle. We presently have 11 signalled controlled junctions with installation dates ranging from 2003-2011 and 46 signal controlled pedestrian crossings with installation dates of 1988-2013.

6.3 Asset Valuation

As at March 2014 the Road Asset is valued as follows:

Table 1.2 Road Asset Valuation Summary			
Asset Type	**Gross Replacement Cost £'000**	**Depreciated Replacement Cost £'000**	**Annualised Depreciation Charge £'000**
Carriageway	£1,140,358	£1,015,634	£8,959
Footway	£95,998	£80,970	£1,385
Structures	£145,700	£135,767	£948
Street Lighting	£14,619	£5,209	£554
Street Furniture	£6,518	£3,282	£323
Traffic Management Systems	£1,955	£1,036	£101
Land	£399,641	N/A	N/A
Total	**£1,804,790**	**£1,241,899**	**£12,270**

As at March 2015 the Road Asset is valued as follows:

Road Asset Valuation Summary			
Asset Type	**Gross Replacement Cost £'000**	**Depreciated Replacement Cost £'000**	**Annualised Depreciation Charge £'000**
Carriageway	£1,063,584	£938,389	£8,992
Footway	£84,526	£67,162	£769
Structures	£148,131	£138,232	£851
Street Lighting	£14,322	£5,136	£539
Street Furniture	£6,518	£3,282	£323
Traffic Management Systems	£1,955	£1,073	£98
Land	£430,347		
Total	**£1,749,383**	**£1,153,276**	**£11,572**

Although the road network has increased by 3.5 km the overall value has decreased This is primarily because the HAMFIG Regional Factor used in calculating GRC and DRC has been changed from 102 to 94 for the Stirling area.

Asset Investment Strategies

The strategies in this section have been determined using predictions of future condition over a 20 year period. The predictions enable strategies to be created to look at the whole life cost of maintaining the asset. Using long term predictions means that decisions about funding levels can be taken with due consideration of the future maintenance funding liabilities that are being created. Investment strategies for the major asset types are summarised below. These strategies are designed to enable the service standards in section 5 to be delivered.

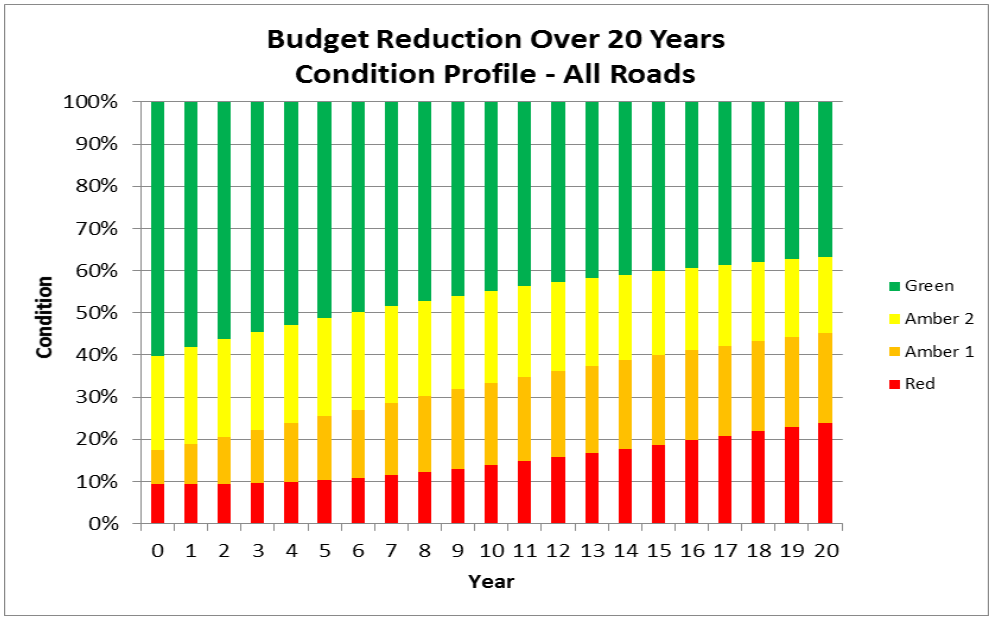
Investment between Asset Types

In comparison to historical investment future investment is planned to be:

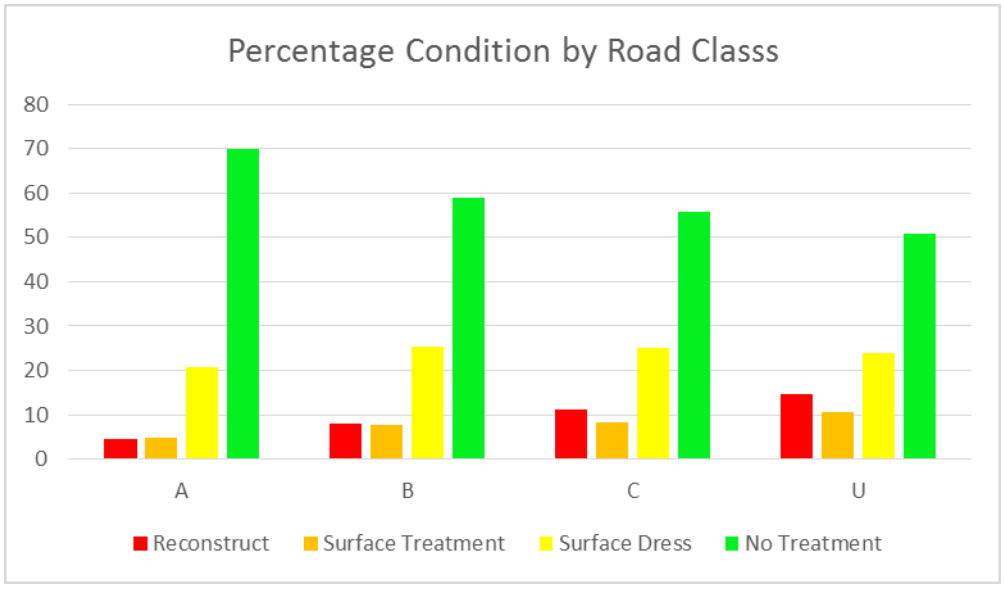
- Carriageways: level of investment will be reduced until 2016/17 and then stabilised until 2019.
- Footways: level of investment maintained at similar levels
- Structures: level of investment reduced from 12/13 onwards but expected to remain steady until 2019
- Street lighting: level of investment increased as part of a spend to save programme. This programme is primarily targeting the replacement of highly inefficient, energy hungry street lighting with modern high efficiency LED lighting. A column replacement programme is targeting columns over 30 years of age where deterioration has reached a potential dangerous level presenting a risk to the public.
- Traffic signals; level of investment maintained at similar levels

Carriageways

The revised strategy for carriageways is to invest the available funding in road surfacing schemes that are the highest priority. The allocated funding will not allow the council to implement preventative maintenance programmes and will not fully address the deterioration of the road network. As a result, over a period of 20 years the road condition is expected to deteriorate as shown below.



The condition information indicates that the A & B roads are generally in better condition than C and unclassified roads however as they are more network critical additional funding is allocated to them



The C and U roads will require a larger initial investment in resurfacing works in order to bring them up to the target standards prior to focussing on the preventative maintenance strategy, with some focus on

strengthening the worst condition roads in the rural areas where heavy traffic has caused substantial damage to the existing infrastructure.

Funding on routine and reactive repairs is expected to increase moderately as investment on surfacing programmes decreases significantly.

Category	Strategy	Comments
Routine and Reactive Repair	Repair of defects to current intervention standards and response times.	The strategy requires the continued deployment of quick response teams on emergency and non-emergency repairs such as patching and repairing potholes.
Planned Maintenance Preventative	Minimal preventative maintenance will be carried out to catch roads in the initial stages of deterioration and prevent further deterioration.	The strategy is predicted to require the following annual approximate length of surface treatment across all road class: 10 km which is approximately 25% of the budget
Planned Maintenance Corrective	Programme of resurfacing where the carriageway condition means a preventative treatment cannot be applied	The strategy is predicted to require the following annual approximate lengths of resurfacing: 30km which is approximately 73% of budget
	Programme of strengthening where the carriageway condition requires a more substantial repair	The strategy is predicted to require the following annual approximate lengths of strengthening: 200 to 300 meters approximating to 2 % of budget

The effect on continuing with the above strategies is likely to be a continued deterioration in the condition of carriageways and consideration should be given to an increase in preventative maintenance treatments.

Footways

The overarching strategy for footways is to invest where possible in preventative maintenance of bituminous footways in order to reduce the rate of deterioration of the asset.

The condition information indicates that the 67% of footways are generally in a good condition, 30% with minor deterioration and only 2% with major deterioration.

The bituminous footways will require an initial investment in resurfacing works in order to bring them up to the target standards prior to focussing on the preventative maintenance strategy. A small amount of strengthening works is required where constant overriding of the footway is causing severe damage and a higher standard of construction will reduce this.

Routine and reactive repairs are expected to continue at current levels and will require continued investment.

Category	Strategy	Comments				
Routine and Reactive Repair	Repair of defects to current intervention standards and response times.	The strategy requires the continued deployment of quick response teams on emergency and non-emergency repairs such as small areas of broken slab replacement and patching etc.				
Planned Maintenance Preventative	A programme of preventative treatment of bituminous footways in the initial stages of deterioration.	The strategy is predicted to require the following annual approximate lengths of footway surface treatments:				
		Footway Type	2015/16	2016/17	2017/18	2018/19
		All	100	100	100	100
Planned Maintenance Corrective	Programme of resurfacing/renewal and strengthening of footways.	The strategy is predicted to require the following annual approximate areas of footway renewals:				
		Footway Type	2015/16	2016/17	2017/18	2018/19
		All	500	500	500	500

Street Lighting

The aim of the maintenance strategy is to ensure that all street lights are operating 99% of the time and all columns are in a safe condition. The night time inspection process enables 'dark lamps' to be identified and repaired within a 20 day response time.

The structural testing programme enables columns in poor condition to be identified and replaced before an incident occurs.

The Council has developed a Carbon Management Plan which indicates CO_2 emissions from street lighting are 19% of emissions generated by Council activity (2013/14). This highlights that major CO_2 emission savings could be made through improved street lighting management. Street lights which meet the appropriate criteria are dimmed between dusk and dawn and a programme of lantern replacement with new energy efficient (LED) lanterns has been agreed.

<table>
<tr><th>Category</th><th>Strategy</th><th colspan="5">Comments</th></tr>
<tr><td>Routine and Reactive Repair</td><td>Repair of defects to current intervention standards and response times.</td><td colspan="5">The strategy requires the deployment of 1 electrical squad on emergency and non-emergency repairs.</td></tr>
<tr><td rowspan="3">Planned Maintenance Corrective</td><td rowspan="3">Programme of structural renewal</td><td colspan="5">The strategy is predicted to require the following approximate annual quantities of columns to be renewed. These figures are subject to change depending on the outcome of a funding bid:</td></tr>
<tr><td></td><td>2015/16</td><td>2016/17</td><td>2017/18</td><td>2018/19</td></tr>
<tr><td>Columns Renewals</td><td>400</td><td>400</td><td>400</td><td>400</td></tr>
<tr><td rowspan="3">Carbon / Energy Reduction</td><td rowspan="3">Programme of lantern replacement</td><td colspan="5">The strategy is predicted to require the following approximate annual quantities of lanterns to be replaced with LED units:</td></tr>
<tr><td></td><td>2015/16</td><td>2016/17</td><td>2017/18</td><td>2018/19</td></tr>
<tr><td>Lantern Renewals</td><td>2500</td><td>2500</td><td>2500</td><td>2500</td></tr>
</table>

Structures

The structures maintenance strategy is to use the available funding to ensure the safety of the travelling public by maintaining the structures in serviceable condition.

The methodology by which the Revenue and Capital funding is allocated is outlined below.

Revenue

Work carried out under the revenue budget can be classified as Reactive, Planned Preventative, Planned Corrective and Inspections/Survey in accordance with defined RAMP categories.

Reactive works, such as the collapse of a retaining wall, are generally identified by calls from members of the public. Once the structure is made safe the condition is assessed and any further remedial works put into the current years programme of works if necessary. Reactive works often takes priority over Preventative and Corrective works. A bridge stock in poor condition will have a much higher incidence of reactive works than a bridge stock in good condition.

Preventative and corrective works are identified from the inspection reports.
Corrective works are prioritised based on the condition of their critical elements such as arch barrel or concrete beams.

Preventative works are classed as repairs that if done now will prevent a more expensive repair in future. Examples of this include scour repairs and painting of steelwork elements.

Specialist inspections and survey are also important and this category covers tasks such as diving inspections and hire of specialist access equipment.

The aim of the maintenance strategy is to balance the need to complete essential reactive and corrective works, whilst still allocating a proportion to preventative works and inspections. The condition of Stirling Council bridge stock is such that reactive works (repairing failures) made up over 50% of the annual revenue budget in 14/15. This means that fewer preventative schemes can be carried out for the given budget, which in turn accelerated the rate of deterioration of the whole stock.

Capital

The Council have 25 bridges that have been assessed as weak. 10 of these have formal weight restrictions imposed on them and there are currently no plans to strengthen these structures. A further 13 weak structures have no weight restriction on them, but have in place other formal interim measure to allow them to be used with confidence until they can be strengthened. These measures include narrowing the bridge to a single lane to reduce the loading or increasing the frequency of inspections to monitor for any signs of deterioration. The capital budget is used to carry out these strengthening schemes to these weak bridges. In addition to strengthening weak structures, the capital budget is also used for major repair schemes.

A list of the bridges requiring strengthening or major repairs is listed below.

Weak bridges to be strengthened

Structure number	Structure Name	Estimated Cost
A821/040	Drunkie Bridge	£250,000
A811/240	Buchlyvie Burn	£50,000
A821/050	Allt Cham Ruidhe	£100,000
B8064/010	Allan Water	£450,000
A821/030	Allt a' Mhangam 2	£100,000

C10/010	Old Lade	£50,000
C3/020	South Bridgend	£310,000
C41/010	Carron Bridge	£100,000
A873/100	Ruskie	£250,000
B818/110	Gartcarron	£50,000
C3/030	Bridgend	£310,000
U050220/020	Over Disused Railway	£200,000
A875/020	Ballindalloch Field Bridge	£300,000

Additional Major schemes

Structure number	Structure Name	Estimated Cost
B8034/030	Cardross Bridge	£350,000
U020560/010	South Church Street footbridge	£2,500,000
A875	Catter Burn	£500,000
A905	Kerse Rd bridge	£300,000
A84	Drip bridge	£200,000

	TOTAL CAPITAL COST	**£5,610,000**

The annual capital budget for strengthening & replacement is **£190,000** therefore at the current funding levels it will take a further **26 years** (2042) to complete.

Special capital works

The replacement of A9/200 Stevenson bridge parapets is in addition to the above works and has been allocated a separate budget, currently assessed at £1.5m over 4 years.

Traffic Signals

The aim of the traffic signals maintenance strategy is to ensure that all traffic signals are operating 99% of the time and all equipment remains in a safe condition. Installations are replaced only following obsolescence due to life expiry or external damage.

Where possible installations are replaced as a whole rather than replacing individual items of equipment.

<table>
<tr><th>Category</th><th>Strategy</th><th>Comments</th></tr>
<tr><td>Routine and Reactive Repair</td><td>Repair of defect to current intervention standards and response times.</td><td>The strategy requires the use of an external maintenance contractor for emergency repairs and other non-emergency repairs.</td></tr>
<tr><td rowspan="3">Refurbishment of signalised junctions</td><td rowspan="3">Refurbishment of junction that have deteriorated or the equipment has become obsolete/unreliable</td><td>The strategy is predicted to require the approximate annual quantities of junctions to be renewed:</td></tr>
<tr><td><table>
<tr><td></td><td>2015/16</td><td>2016/17</td><td>2017/18</td><td>2018/19</td></tr>
<tr><td>Junction Renewals</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
</table></td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">Refurbishment of signalised crossings</td><td rowspan="3">Refurbishment of junction that have deteriorated or the equipment has become obsolete/unreliable</td><td>The strategy is predicted to require the approximate annual quantities of pedestrian crossings to be renewed:</td></tr>
<tr><td><table>
<tr><td></td><td>2015/16</td><td>2016/17</td><td>2017/18</td><td>2018/19</td></tr>
<tr><td>Pedestrian Crossing Renewals</td><td>1</td><td>1</td><td>2</td><td>1</td></tr>
</table></td></tr>
<tr><td></td></tr>
</table>

7. Risks to the Plan

The risks that could prevent achievement of the standards specified in this plan (section 6) are:

Plan Assumption	Risk	Action If Risk Occurs
The Plan is based on historical weather patterns	Climate change brings greater variability in weather patterns and a higher incidence of severe weather, causing higher levels of defects and more rapid deterioration than estimated.	Budgets and plans will be revised and the plan updated in response to climate change projections
Available budgets have been assumed as shown in section 7	External pressures mean that government reduce the funding available for roads	Target service standards will be revised to affordable levels
Construction inflation will remain at level similar to the last 5 years.	Construction inflation will increase the cost of works (particularly oil costs as they affect the cost of road surfacing materials)	Target service standards will be revised to affordable levels.
Levels of defect and deterioration are based on current data which is limited for some assets (e.g. footways)	Assets deteriorate more rapidly than predicted and the investment required to meet targets is insufficient.	Split between planned and reactive maintenance budgets will be revised.
Staff and material resources are available to deliver the improvement actions	Pressures on resources mean that staff are not allocated to service improvement tasks such that the predicted benefits cannot be fully achieved	Target dates will be revised and reported.

The risk has been evaluated in accordance with the council's corporate risk management strategy. In addition to the risks above a Road Asset risk register is maintained recording the risks associated with each asset type. A review of this register is carried out annually when programmes of works are developed.

References

1) Roads Asset Management Policy

2) Road Maintenance Manual – Under Development

3) Road Asset Data Management Plan

4) Service Improvement Action Plan

5) Road Safety Plan

6) Local Transport Plan

7) Carbon Management Plan

8) Sustainable Development Strategy Framework

9) Open Space Strategy

10) Single Outcome Agreement 2013-2023

11) Working with you to shape Stirling's Future