

**DERBYSHIRE COUNTY COUNCIL**

**CABINET MEETING**

**5 August 2014**

Report of the Strategic Director – Economy, Transport and Environment

**ACCELERATED HIGHWAY MAINTENANCE (JOBS, ECONOMY  
AND TRANSPORT)**

(1) **Purpose of the Report** To seek Cabinet approval to making additional funds available to highway maintenance to improve the condition of Derbyshire's roads to help fulfil the Council Plan pledge of A Derbyshire That Works.

(2) **Information and Analysis**

**Background**

The Council Plan identifies A Derbyshire That Works as one of the Council's five pledges, with Well Connected Communities being a key factor in delivering economic growth. Derbyshire's residents place a high priority on the condition of roads and pavements, and it is known that this impacts on the way people and businesses are able to get around the County.

As Members will be aware, the need to reduce the County Council budget has limited the ability of the County Council to undertake pro-active highway maintenance in accordance with the established asset management principles promoted by this Council and recommended by the Department for Transport. Reductions in revenue funding, together with the effects of both severe winter weather and flooding, has led to an increase in pothole formation and deterioration in the fabric, shape and structure of the highway. This has required more funds to be allocated to reactive maintenance to ensure that the highway remains safe.

Revenue budgets have been reduced by £10 million over the last four years which has to some extent, been offset by the use of capital funding to support more basic works than would have traditionally been the case, so the service level has not altered significantly as the Department has effectively off-set the reduction in revenue budgets with capital. However, the use of capital in this way restricts the number of more major schemes which can be funded and thus the ability to seek improvements in the network.

## **Public**

Reactive repairs are generally unplanned and only keep the highway safe for a short period of time, ideally until a more permanent job can be done. A reliance on reactive repairs is also expensive and often the same repairs have to be carried out more than once. However, the safety of the highway user remains the top priority and thus there is no choice but to allocate more funding to urgent repairs.

The citizens of Derbyshire consistently place a very high priority on the condition of the highway and, whilst the level of satisfaction in Derbyshire compared favourably with most other highway authorities, there has been a downward trend over the past five years in the public satisfaction with highway condition. In the 2014 budget consultation, roads and pavements were identified as the second highest priority, with jobs and economic growth being the highest.

In the 2013 National Highways and Transportation Survey, conducted by Ipsos Mori, road condition was identified as the area people were most dissatisfied with in Derbyshire. Condition of roads and pavements also scored highest when asked what the top four or five things within the local area need improving. When asked if compared to last year are there more potholes/damaged roads in the local area, the result indicated an increase of 11% compared to the previous year. Speed and quality of repair also scored low with dissatisfaction levels for speed of repair at 46% (+8% on last year) and 37% (+6% on last year) for the quality of repair.

Poor highway conditions have an adverse impact on business and commerce, and hence, the economic wellbeing of the County and the ability of Derbyshire to attract inward investment.

### **Proposal**

It is proposed to reverse the above trends by the injection of significant funding into highway maintenance over a period of three years to stem the deterioration to such an extent that the principles of asset management can be applied to the investment to maximise the long term benefit.

By treating significant lengths of highway with surface dressing, much of the deterioration can be slowed or stopped, creating a window of opportunity in which to make use of Department for Transport's block maintenance allocation (capital funding) to progress a sound programme of highways maintenance utilising the principles of asset management, evidence from condition and lifecycle planning, to deliver a programme targeted to reduce the need for the current excessive levels of reactive maintenance and restore the condition of the network.

Calculations indicate that a minimum investment of £23 million is needed to off-set further problems in the future, reduce the likelihood of insurance claims

## Public

and allow on-going maintenance costs to be reduced. Whilst this is a very large sum of money, a significant proportion of it can be financed without the need for additional borrowing, meaning that additional debt charges are kept to a minimum. Within the Economy, Transport and Environment department there are monies derived from sources which are hypothecated to highway maintenance. By amalgamating these “reserves” some £6 million of the total can be found. In addition, some capital funding is available in the form of unused Local Transport Plan capital grant which will not attract additional debt charges can be allocated. By use of these funds, a further £3.5 million can be made available. The remaining £13.5 million will need to be borrowed and will attract additional interest charges of approximately 10%.

This investment will enable the highway to be maintained in reasonable condition despite the significant reduction in revenue funding. It is anticipated that the base revenue budget for highway maintenance will need to be reduced by a further £2 million by 2017/18 (£1 million 2016/17 and £1 million 2017/18) to help meet the Council’s budget cuts.

In order to maximise the benefit of the investment, it is vital that those areas where works are undertaken are carefully selected such that the highway network improves in both durability and condition. The £23 million calculation relies heavily on the use of surface dressing and associated pre-patching on the network, particularly those roads in the classified non principal and unclassified network. The calculations assume that at least the majority of capital funding obtained through the Local Transport Plan will continue to be available to repair the principal roads and those areas where repair is essential but the conditions are such that surface dressing is not a suitable treatment. Members should note that the maximum benefit can only be realised if the works programme is strictly driven by technical assessment. It is necessary to halt the deterioration of roads in the most cost effective manner. This will mean treating some roads which currently appear in reasonable condition whilst leaving other areas which are demonstrably in a worse condition but where the treatment option is more expensive such that the rate of return in terms of reduced on-going costs is not met. Such a regime is likely to be subject to some question and indeed criticism from the general public. However, it is essential that the condition of the majority of the network is first restored such that the condition can be maintained through a more cost effective maintenance strategy. If funding is concentrated on the ‘worst first’, this would simply drain all of the available funds for little gain across the network as a whole. The lifespan of the treated roads is expected to be between 10 and 15 years on average.

Details of the principles of asset management as applied to highway maintenance are contained in the appendix to this report.

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Cabinet is asked to approve in principle the injection of £23 million into highway maintenance funded from a combination of funding held in Departmental reserves but hypothecated to highways works, capital grant and prudential borrowing. The reserves are made up largely from Commuted Sums and Section 74 income paid to the Council by third parties which is ring fenced to highway maintenance to cover future liabilities, and previous years' underspends which have been set aside to off-set the reduction in revenue budgets. Cabinet is further requested to allocate the funding as shown in the financial appendix to the accelerated highway maintenance project.

(3) **Financial Considerations** The proposal is for the investment of £23 million over a three year period. In year 1, the funding will be a combination of reserves hypothecated to highways and held within the Economy Transport and Environment Department (£6 million), together with capital grant (£1.5 million). Both these sources are currently available and will not attract any additional interest charges. Year 2 will be funded from further capital grant (£2 million) together with borrowing (£6 million). The borrowing element will attract debt charges at approximately 10%. Year 3 will be financed by borrowing (£7 million) which will attract debt charges. The table below summarises the financing proposals:

	2015/16	2016/17	2017/18	Total
<b>Reserves</b>	£6m	£0	£0	£6m
<b>Capital Grant</b>	£2m	£1.5m	£0	£3.5m
<b>Borrowing</b>	£0	£6.5m	£7m	£13.5m
<b>Total Investment</b>	<b>£8m</b>	<b>£8m</b>	<b>£7m</b>	<b>£23m</b>

It is anticipated that the investment will allow further reductions in base revenue budget of £1 million in year 2 and a further £1 million in year 3. The increase in debt charges means the net on-going saving is £650,000 per annum.

(4) **Legal Considerations** The Highway Authority has a duty under Section 41 of the Highways Act 1980 to maintain the fabric of the highway to a standard necessary to accommodate the type of traffic which would ordinarily expect to use the highway and to take measures to prevent the deterioration in that fabric to prevent dangers to highway users.

In preparing this report the relevance of the following factors has been considered: prevention of crime and disorder, equality and diversity, human resources, environmental, health, property and transport considerations.

(5) **Key Decision** Yes.

## **Public**

(6) **Call-In** Is it required that call-in be waived in respect of the decisions proposed in the report? No.

(7) **Background Papers** None. Officer contact details – Angela Glithero, extension 38043.

(8) **OFFICER'S RECOMMENDATIONS** That Cabinet approves:

- 8.1 The investment of £23 million to the Accelerated Highway Maintenance proposal, based on the principles of asset management as set out in the report.
- 8.2 The allocation of Economy, Transport and Environment reserves to the project.
- 8.3 The allocation of unallocated Local Transport Plan Capital Grant to the project.
- 8.4 The delegation of authority to the Cabinet Member for Jobs, Economy and Transport to approve the details of the programme.

**Mike Ashworth**  
**Strategic Director – Economy, Transport and Environment**

## **Accelerated Highway Maintenance**

### **Appendix to the Report of the Strategic Director – Economy, Transport and Environment**

#### **Aim**

Accelerated Highways Maintenance will provide the capital injection to restore the Council's use of good Asset Management practice in maintaining the highway network.

#### **Background**

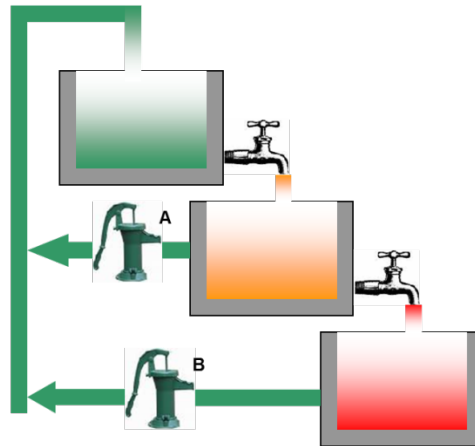
Successive cuts to capital and particularly revenue budgets over the last few years have meant that an increasing share of highways funding is being spent on reactive treatment of highways defects, such as potholes. This has reduced the capital available to undertake the type and scale of maintenance required to address the deterioration of our highways network.

#### **Asset Management**

What is now being proposed in Derbyshire is that, using the principles of asset management, a major injection of investment into the highways infrastructure to improve its condition would reduce the demand for reactive repairs and prevent substantial parts of the network deteriorating to a level such that more costly repairs are needed.

Derbyshire County Council uses asset management techniques in line with DfT Guidance and the Highways Management Efficiency Programme (HMEP) to manage the maintenance of gullies and this has already delivered savings and improved levels of service. It involves getting the most out of an asset by well-timed interventions that rely on good condition data, lifecycle planning and maximising the performance of our assets. This applies equally to the carriageways, structures and other highway assets that we maintain as Highway Authority. In the diagram below we could assume that the highway network starts in a green (good) condition and gradually runs out through the tap into amber (poor) and finally settles in the red (bad / worst) condition category.

## Flow from Green to Amber to Red



Clearly it is both cheaper and easier to pump the water (or restore the highway condition) using pump A rather than pump B and this is very similar to the problems faced in highways maintenance. Keeping the condition of the network in a green condition is much cheaper than restoring it from the red condition.

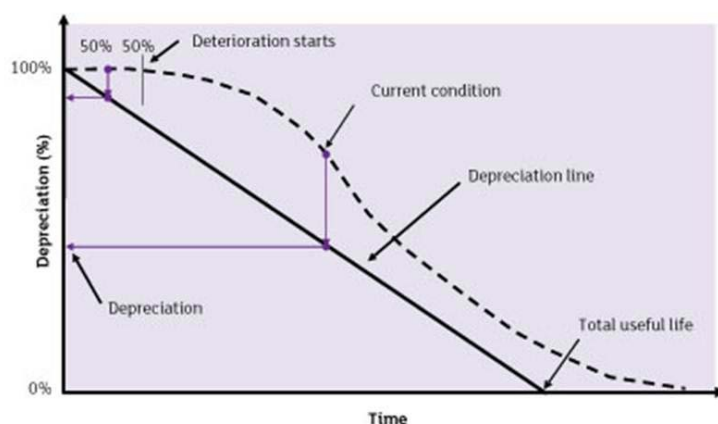
The Accelerated highways Maintenance proposal aims to do several things;

- It will stem the flow from green to amber by injecting sufficient capital to restore as much of the network to green as possible.
- This will in effect stop the flow into red, so the red will not increase, we still need to deal with it but we will come to that later.

### Controlling Road Deterioration

How do we stop roads deteriorating or at least stem the flow from green to amber?

As a road deteriorates then it tends to do so slowly for the first few years. The deterioration then accelerates, generally because the surface starts coming away, potholes form and water gets in to the fabric destroying the structure.



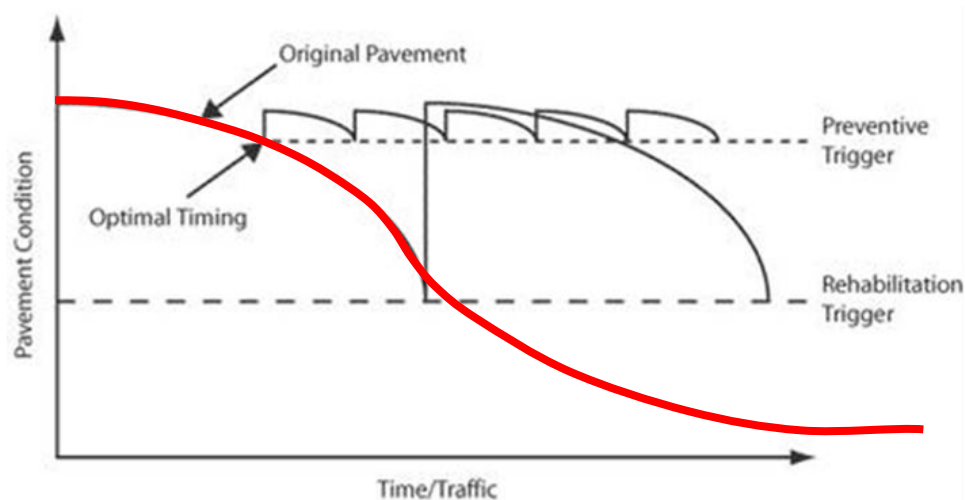
The key to good highways maintenance is early intervention, just on the border of green and amber, termed pre-amber, to prevent the onset of surface deterioration and water ingress.

Fortunately the treatment is relatively easy – a programme of surface dressing (SD) to restore the surface friction and seal the surface to prevent water ingress. If the condition has slipped a little further into amber, then this can be addressed by identifying the areas of failure, patching them and then applying a surface dress - often referred to as pre patch and surface dress (PPSD).

Derbyshire CC has not been doing this lately because the funding is being diverted to filling potholes. Highways revenue has traditionally been used for the potholes and other routine maintenance however reducing budgets and the need to keep pace with increasing numbers of potholes and emergency repairs has eaten into capital in order to keep the network serviceable.

This has led to less money for SD and PPSD and as a consequence the condition of the network has begun to deteriorate.

Injecting a significant amount of capital will redress the worsening condition and mean that less will have to be spent on reactive maintenance.

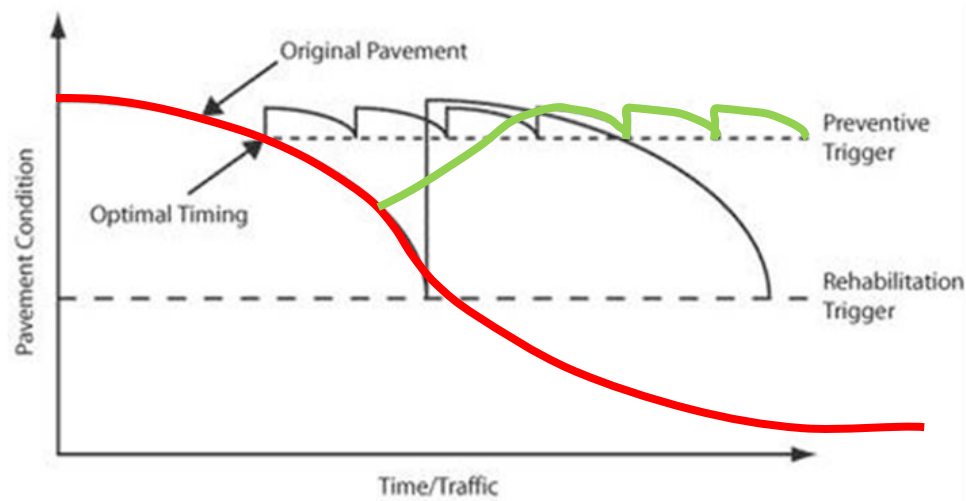


As can be seen from the diagram above, the deterioration curve of the road (red) crosses two lines of intervention, the Preventative trigger and the Rehabilitation trigger. The optimum maintenance strategy, which we have not been able to sustain because of reducing budgets, is the Preventative trigger and this is dealing with the pre-amber and stopping it from getting worse, a relatively inexpensive treatment. The second, the Rehabilitation trigger equates to the onset of red and this is where treatments become expensive.



The Accelerated Highways Maintenance approach looks at dealing with that part of the network in the amber band and moving it up into the green, improving condition and stopping the flow to red.

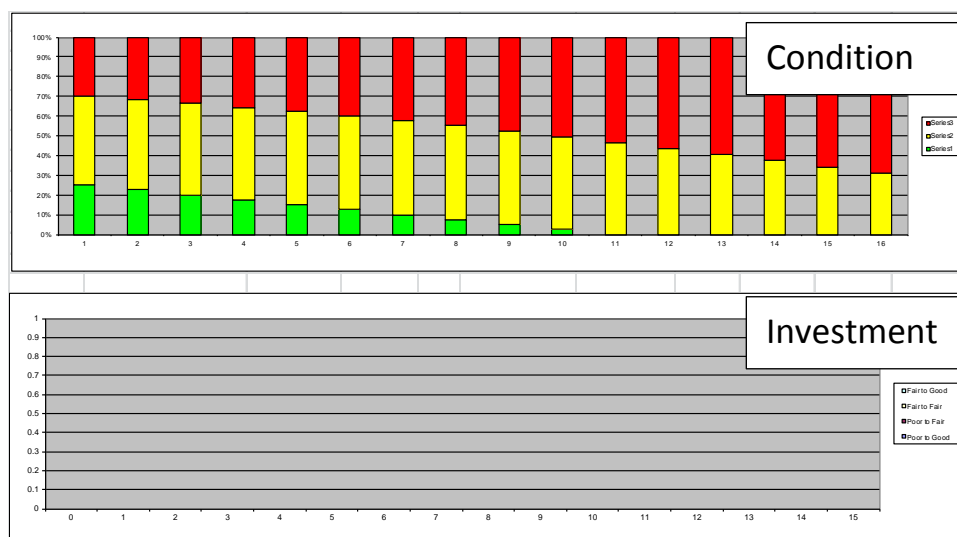
This is illustrated in the diagram below where the green line represents the Accelerated Highways Maintenance approach, returning the network to a condition state where it can be treated by Preventative rather than Rehabilitation maintenance.



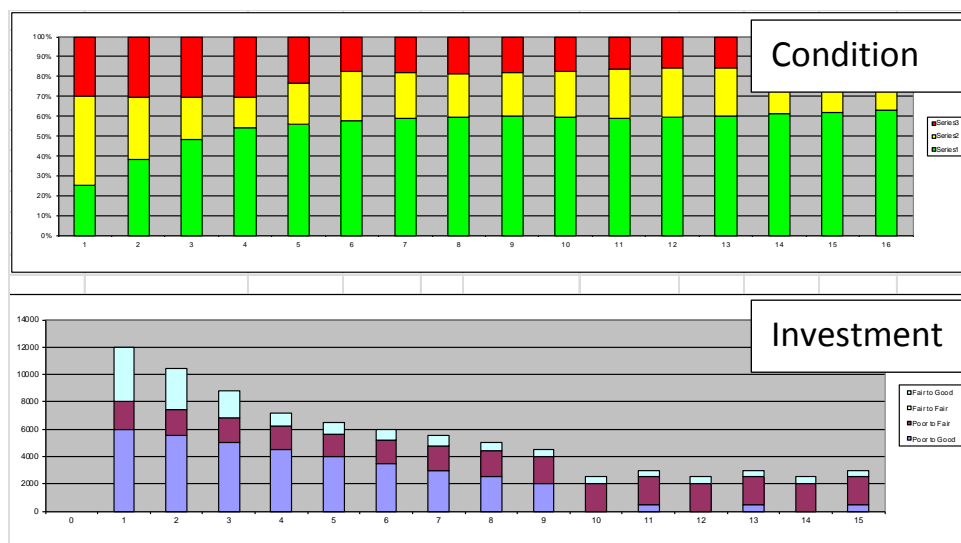
## Condition and Finance

The effects of this can be modelled financially using deterioration models used to predict the life of assets as recommended by DfT in their Highways Management Efficiency programme HMEP

The graph below indicates the deteriorating condition of the B and C Roads given a no funding scenario – the green roads will deteriorate rapidly leaving only roads in an amber / red condition



However with a capital injection, then the deterioration can be halted, the cycle reversed and the amber and red minimised



The initial large amounts of funding quickly increase the roads in green condition and as time goes on the benefits of the Preventative maintenance strategies take over and the funding required per year drops significantly. In addition the funding squeezes out the amber and leaves the red to be addressed over time using a percentage of the Capital LTP and DfT Highways Maintenance Block Funding Allocation.

## Developing a Programme of works for Accelerated highways Maintenance

Identifying the right schemes is a technical issue but we are well supported with the information with which to do this.

The Council collects data about the highway condition through a number of surveys, both mechanical and manual and these can be compiled to project a simple red, amber, green overview of the condition of the network.

Information sources include;

**SCANNER** – a machine survey of the A B and C (classified) Road networks undertaken using a laser scanning process that detects surface irregularities.

**CVI / DVI** (Course and Detailed Visual Inspection) – surveys are undertaken of the non-classified Road Network including all Footways, by trained surveyors who record the defects.

**SCRIM** (Sideway-force Coefficient Routine Investigation Machine) – a machine survey of all network roads to determine the level of the wet skidding resistance of a road surface

**Deflectograph** – a machine survey of the A, B, and C Road Network to measure the residual strength of the road construction

.. and these surveys are supplemented by data we collect through;

## Highway Inspectors

## Public Enquiries

The information collected is represented graphically on a map background and enables an assessment to be made of the network condition.



The parameters / weightings used to interpret the survey data as red, amber and green can be adjusted to identify highways maintenance / restoration work suitable for the differing types of highways maintenance making it easy to identify the location of work suitable for surface dress and pre-patch surface dress schemes for construction.

Following the above process will make a difference to the network;

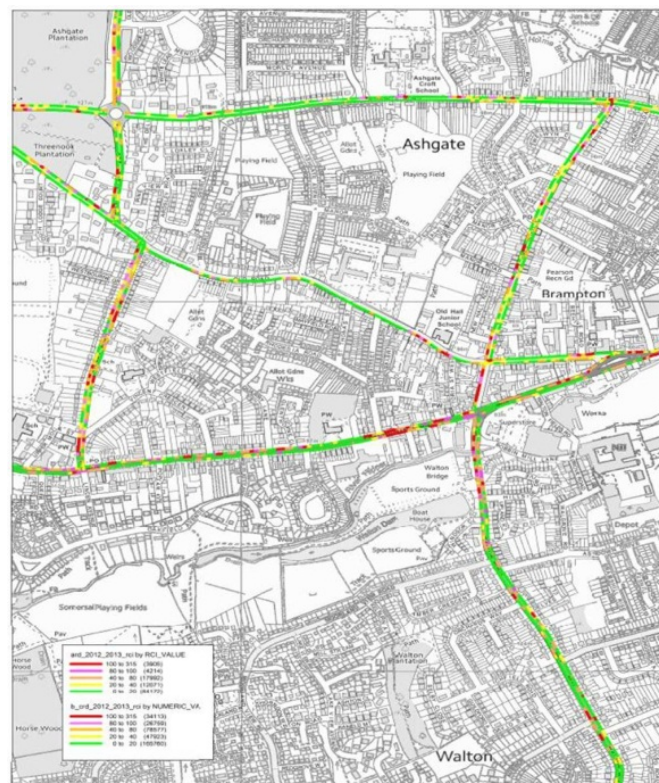
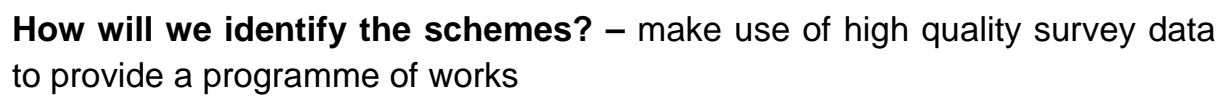
- It will reduce / stem the amount of the network falling into amber and red condition.
- It will provide the breathing space required to spend the capital promised by DfT through the Highways Maintenance Block Funding Allocation and to be used to redress parts of the network that cannot be simply addressed with surface dress.
- It will allow a percentage of the LTP and DfT Highways Maintenance Block Funding Allocation to be spent in reducing the reds, but it is essential that we do it this way for the benefit of the network as a whole

It would be easy to fall into the trap of addressing the red, worst roads first, but this will take the lion's share of the money and it won't turn off the taps. The condition of the network as a whole would continue to deteriorate and the value of the investment would be diminished.

Addressing the amber and green and stemming the flow into amber / red:

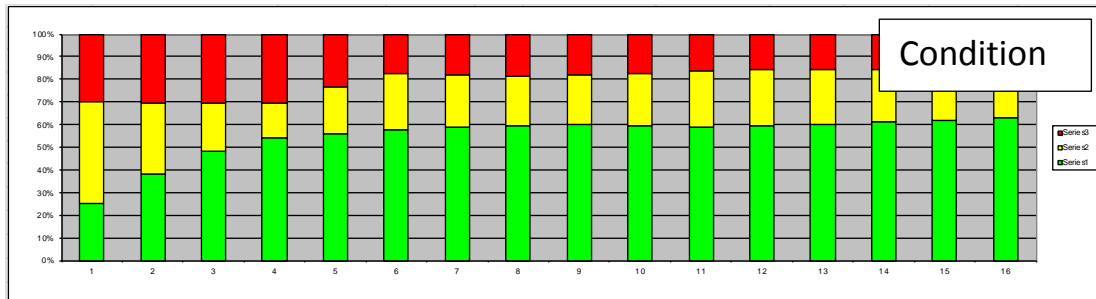
- puts the brakes on deterioration.
- stops the existing percentage of red increasing
- stabilises the network
- provides the opportunity to regain control
- manages the network using the principles of Asset Management

**What will we do?** - Reduce and where possible prevent further deterioration

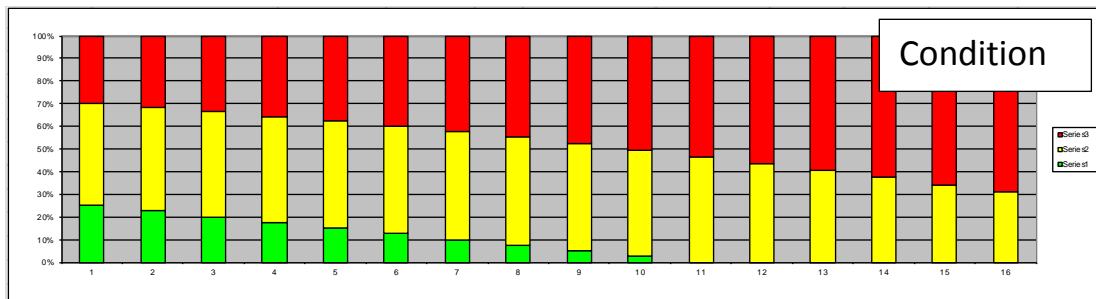


## What are the effects if we don't stick to the Technical Recommendations?

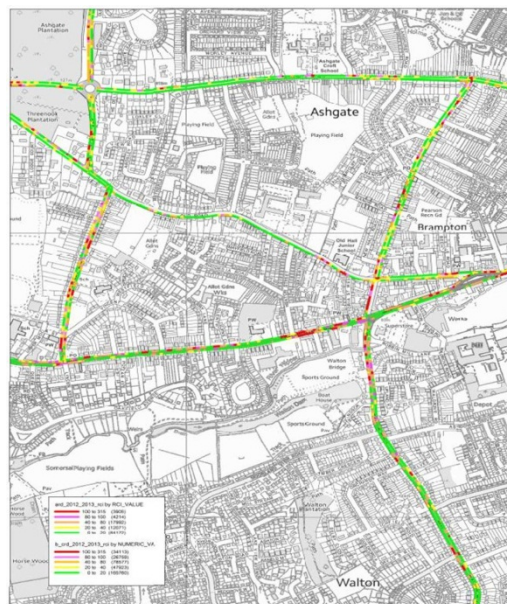
– we won't see the improvement in condition



and could be left with



How will we know how successful we've been? - The survey results



These are undertaken on a bi-annual schedule for B and C roads and so we should start seeing the effects during year two of the proposed timescale of the Accelerated Highways Maintenance programme, and of course, we should see them ourselves, as should the public.