TORBAY COUNCIL

TRANSPORT ASSET MANAGEMENT PLAN

STRATEGIC VERSION

Foreword by Portfolio Holder

I am very pleased to be able to introduce Torbay Council's first published Strategic Transport Asset Management Plan dealing with the Highway Asset which records our strategies and practices aimed at maintaining an efficient and effective network. The document indicates the manner in which our Highway Engineers have been obliged to prioritise and compare assets in order to best manage the network whilst struggling with tight budgets and lack of investment in this most important and valuable of all assets to the community.

It also gives further details of the framework within which Highway Maintenance is carried out and as such is an invaluable working document for use by elected members and officers of the Council. It should be read in conjunction with the previously published Highway Maintenance Plan.

Torbay's highway assets, which are used by all residents, businesses and visitors to the area, provide a vital contribution to the economic health of the community and reflect the quality of the environment. Ensuring the ongoing safety of all users of this network is a very high priority for this council.

I am sure that the information included will aid decision making in this complex area so that the interests and needs of the community are best served and the highway service is at the highest possible level.

Councillor Ray Hill, Portfolio Holder.

TORBAY COUNCIL
Transport Strategic Asset Management Plan

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Accompanying documents:

Highway Maintenance Plan (2009)

1. Introduction to Highway Asset Management

The introduction of a fully developed asset management plan is a task that will need to develop over a period of many years. However, it is essential that this initial plan is published to demonstrate that the operations associated with a plan's production are happening and to have a framework that can be developed progressively. This document in conjunction with other living documents such as the previously published Highway Maintenance Plan details the operational policies and procedures as adopted by Torbay Council's Streetscene Services.

The development process will be based on best practices already demonstrated and will incorporate the latest legislation and adopted procedures. However it will be continually reviewed and may affect current practices where these need to be improved to meet the term 'asset management approach'.

Improvement actions will be identified and detailed within the relevant appendices, which are where the main changes will be detailed.

1.1 Executive Summary:

Asset Management is essentially a tool to ensure that funding provided for highway maintenance is spent in the most cost effective manner. In simplistic terms, money spent on preventative treatments on roads that are in fair condition provides better overall coverage and value for money than treating roads that are already in a poor or very poor condition, where the only option becomes full depth reconstruction which is a process costing 20 times more than a preventative surface dressing. It is also when roads reach this very poor condition that the increased cost in reactive maintenance becomes prohibitive and obvious defects such as potholes, rutting and delaminating surfacing start to become safety hazards to road users.

Highway Authorities try to ensure that the money provided is spent in an efficient manner and that the overall condition of the network remains in at least a functional condition. The main dilemma facing Engineers or Asset Managers who are tasked with conducting this function is, whilst knowing that there is insufficient funding to treat the entire network in the manner that it requires, they are still obliged to ensure that efficiency and transparency in identifying sites is maintained. This highlights the simple fact that despite all the improvements and toolkits being provided for Asset Management there is still a large gap in the funding required, compared to the funding that is actually provided, to stabilise or improve the network.

In Torbay's case specifically, the 'Life Cycle Planning Toolkit' suggests that a major cash injection of £13m will be required before the principles of preventative treatments can be fully adopted. In fact, rather than a cash injection, since the removal of 'ring-fencing' from the capital highway maintenance grant (from the Department for Transport), a third of this money has been lost from the highway maintenance budget. Whilst the long term effect of losing this funding takes time to become clear, the fragile nature of Torbay's highway network is now only too obvious to residents and road users alike. Pothole numbers are increasing as are third party insurance claims and contractors are struggling to keep up with the increasing demands on urgent and emergency repairs.

The present level of funding is not sufficient to allow enough preventative maintenance to take place to keep the overall asset in a stable condition. In the current year, there will still be 30% allocated to surface dressing and micro-

asphalting treatments targeting ‘fair’ condition roads that are in danger of slipping into ‘poor’ condition if left untreated and although 60% will be used for resurfacing and reconstruction works, this is less that half of the sum that is actually needed to treat roads that are in real danger of being lost if recent adverse weather trends continue.

Torbay has always invested in preventative treatments hence its road network being less severely affected than some other highway authorities, but the continuing loss of the capital funding is restricting the ability to react in an appropriate manner and is directly contributing to the continuing deterioration of the highway network of which we are all aware.

Whilst the above statements are certainly emotive and thought producing, the facts are backed up in this Strategic version of the Transport Asset Management Plan, particularly when the information produced by the toolkits in Appendix ‘A’ are considered and the unchecked trend in the increasing ‘Depreciated Replacement Costs’ reported by the Council’s ‘Pavement Management System’.

Meanwhile, to place this in further context, an independent study commissioned by the ‘Highways Maintenance Efficiency Programme’ showed that Torbay Council’s Highways Service was run efficiently and that Torbay was the only authority in the study that managed to retain this accolade throughout the four year period covered.

1.2 Definition of Asset Management:

The following quote is contained within the County Surveyors Society Framework for Highway Asset Management:

Asset management is a strategic approach that identifies the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers.

The Torbay Council version recognises the following themes

Scope: The Asset Management Plan is primarily to optimise maintenance of the entire network. The asset encompasses all areas of adopted highway and public rights of way within the boundary of Torbay.

- Strategic approach – a systematic process that takes a long term view
- Whole of life - the whole of life / life cycle of an asset is considered
- Optimisation - maximising benefits by balancing competing demands
- Resource allocation - allocation of resources based on assessed needs
- Customer focus - explicit consideration of customer’s expectations

However, in adopting the principles of Asset Management it should be noted that the primary drivers in decision making processes depend on a detailed knowledge of the extent of the highway inventory and in particular its overall condition, but also that customer satisfaction must be considered within the end product.

1.3 Drivers

The two main drivers for the implementation of a Transport Asset Management Plan (TAMP) are:

- Making the best use of resources to maintain this important asset; and
- The introduction of Whole of Government Accounts

The TAMP will demonstrate that Torbay Council is making the best use of its assets.

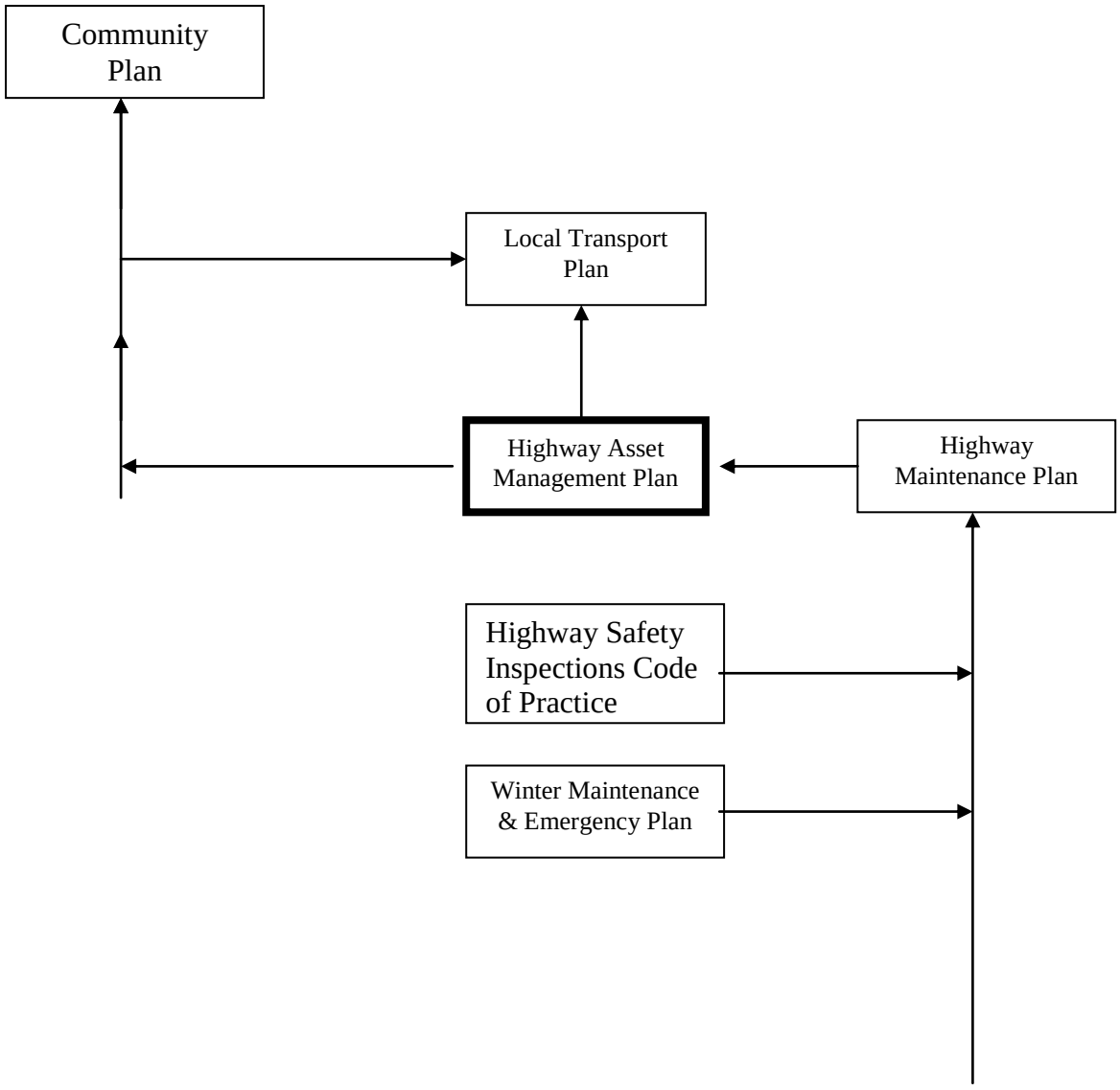
1.4 Key Stakeholders

The highway network as a whole is the Council's largest and most valuable asset with a current conservative gross replacement cost of £654,500,000. The proper management of this asset impacts directly on a broad range of stakeholders and users of the network including, amongst others:

- Elected Members – Who will be expected to sign up to an Infrastructure Asset Management Policy to look after the best interest of the highway users and to promote sustainable economic growth, produce a better environment and in the process improve the health and well-being of service users.
- Residents and Visitors – Who will expect the highway infrastructure to be maintained in an appropriate cost effective manner to meet local needs.
- Council Officers – Who strive to improve the condition of this valuable asset despite the present climate of national austerity and who have a public duty to keep the highway in a safe condition for all users.
- Utility Companies – Who wish to service the needs of their customers and by working with the highway authority endeavour to keep traffic flowing and avoid unnecessary damage to the highway infrastructure.
- Public Transport Companies – Who want to provide a punctual and sustainable service for their customers.
- Local Businesses – Who use the highway network for business commuting, deliveries and transport needs.

1.5 Relationship to other documents

With regards to the Highway Asset Management Plan, its relationship with the above strategy and policy documents is shown below:



2 INVENTORY AND CONDITION DATA

2.1 Introduction

Effective asset management requires knowledge of an asset including its condition and its use. This requires the collection and maintenance of asset data that can assist decision makers to assess, analyse and to report on performance and progress.

2.1.1 Types of Data

The following asset data details are required:

- Inventory: comprising details of the number, location, size, type, age and component make up of each asset.
- Condition: comprising measurement and observational rating of the condition of elements of the asset derived from either physical testing or visual inspection.
- Use: comprising details of the use of assets in the form of data such as traffic counts, heavy vehicle routes, etc.

Good data is the foundation on which asset management processes are built. The availability of appropriate data will allow a consistent management approach.

2.2 Asset Types

The highway network comprises a combination of many diverse and differing assets as listed within the Highway Maintenance Plan. The principles of asset management however apply to all of these components.

2.3 Current Status

A detailed highway inventory is an essential prerequisite of establishing a cost effective and adequate maintenance regime. An inventory survey was undertaken several years ago of the entire network but it is still anticipated that further data collection will be required for certain highway features. This information will be held on a specialised computer database which will allow maintenance personnel convenient access to information on any aspect of the network. This will be of use when preparing budgets or letting contracts for maintenance work.

2.3.1 Current Asset Data

The inventory data is contained in the Highway Maintenance Plan. However it includes the following:-
522.5 kilometres of roads
20 kilometres of green lanes
817 kilometres of footways
77 kilometres of public footpaths
460,000 sqm of grass verges and shrubberies
22,000 no. road gullies
Also many other assets including seats, shelters, bridges, retaining walls, signs and traffic signals. These assets are used or relied upon by all residents, businesses and visitors to the area on a daily basis.

2.3.2 Current Data Management Practices

There are a number of procedures in place for collecting and maintaining elements of data. However, there are gaps in some of the inventory data and a need to validate other data which already exists has been identified. Both of these issues need further consideration in the development of this TAMP. However, the recent purchase of an updated coring rig and access to training and accreditation of in house staff members, mean Torbay Council can become more self sufficient in specifying and obtaining survey data. This area of activity is a key function and one that will be expected to expand as Asset Management processes become established nationally.

2.4 Proposed Future status

2.4.1 Asset Data

It is recognised that it may not be cost effective to collect every piece of missing asset inventory data. However, trial surveys have been conducted using existing resources to fill some gaps. A particular example is the collection of types and locations of railings and guardrails. This information is now being gathered by using visual surveys and plotting locations by 'Global Positioning Satellite' technology (GPS). The information thenbeing transferred to a digital mapping layer on the Council's 'MapInfo' system. This system will provide a reliable base set of asset data on which need projections can be based. At the same time the UKPMS system is being updated and developed nationally with the intention that initially condition information will be able to be used to predict lifecycle stage of carriageways and footways. As Torbay Council possesses a full Pavement Management System suite this will be the cornerstone of the TAMP.

2.4.2 Data Management

All highway inventory additions must be recorded by an identified officer with a responsibility to assimilate the data set associated. Resources to undertake this task must be identified and allocated. The mechanism for data collection must be manageable and allow additional attributes to be added during the life of the TAMP.

2.4.3 Data Use

The collated data will support the following activities:

- Maintaining the inventory to demonstrate the extent of highway assets owned and maintained
- Routine Maintenance management; to enable us to demonstrate that inspections and repairs are undertaken in accordance with our policies.
- Customer Queries and Service requests; to enable us to track customer queries and to demonstrate that the appropriate actions have been taken.
- Performance Reporting; to enable National Indicators (NI) and local Best Value Performance Indicators (BVPI) to be collated and reported. This information being required for reporting to Department for Transport and for benchmarking purposes with peer group authorities within the south west region.

Data management will enable us to improve in the following areas.

- Our ability to predict future needs; enabling the creation of better coordinated and potentially more cost effective plans.
- Our ability to meet future government requirements for asset valuation.
- Our understanding of the risks associated with managing the road network and to make more informed decisions about the road network.

2.5 Condition data

2.5.1 Condition surveys

CARRIAGEWAY SCANNER SURVEYS

Currently condition surveys are required for reporting purposes to central government as used to generate performance indicators. However, the main purpose of this survey process is to drive the 'Pavement Management System' software, which in turn identifies lengths of highway that potentially require maintenance work. On classified roads 'A', 'B' and 'C' (and a few of the busier unclassified routes) the surveys are carried out in a vehicle operated by a recognised specialist contractor which is termed as a 'SCANNER' survey. The coverage of the classified highway carriageway network is approximately 80% of the total per annum, so it provides a good comparison year on year. However, the data collected by SCANNER surveys can be and is in fact altered by national rules and parameters to generate reports into a 'UKPMS' system, which then allows different authority's results to be compared in order to prove that the funding provided is being used in an effective manner. Unfortunately, by changing the survey calibration/intervention data in this way it can be difficult to trend condition data in a manner that enables a highway engineer to identify changes in condition versus expenditure which is an important part of the TAMP process. It is hoped that a steady state in reporting and surveying will eventually be achieved which will then make the asset management process more transparent and establish trends of expenditure versus condition.

CARRIAGEWAY COARSE VISUAL INSPECTION SURVEYING

In addition to the SCANNER surveys on the classified network, there are 'Coarse Visual Inspection' surveys (CVI) carried out on the unclassified network. The annual coverage of these surveys however, is only about 33% of the total network, thus meaning there is a 3 year gap between repeatable surveys, again making trending difficult to achieve,

As part of the TAMP process it is intended that localised surveys are to be conducted on all highways to ascertain the actual construction depths and material types that have been used. This is essential for long term planning, in particular where preventative maintenance treatments or in-situ recycling treatments are being considered. In turn the information held will also reduce the present dependence on historical knowledge of earlier maintenance schemes, or indeed obviate the need to make any assumptions concerning the expected residual life of the highway. Furthermore it is intended that condition surveys are to be carried out on all local roads by in house staff, in order that there is a starting point with 100% coverage of the highway network. By introducing our own repeatable survey we will be able to better monitor the effects of any decisions made on future changes in maintenance funding, whether this be positive or detrimental to the overall asset.

Notwithstanding the above, in order to initiate the Asset Management process it will be necessary to continue reporting on data obtained from third party commissioned Coarse Visual Inspections as UKPMS will be using this as part of its intended condition reporting mechanism. Fortunately Torbay Council continued to collect this data as part of its LTP reporting process, as at one time with the reduction in reportable performance indicators it was thought that these could be discontinued.

FOOTWAY DETAILED VISUAL SURVEYS

Although this section has been mainly relating to the carriageway network, similar measures are proposed for footways which currently only have 'Detailed Visual

Surveys' (DVI) carried out on the busier higher usage areas to validate a discontinued performance indicator BVPI 187. Current coverage of these footways is approximately 50% per annum; other local footways are not formally surveyed at all and rely solely on input from safety inspections. Other inspection and recording regimes are already in place for Highway Structures, which are to have their own dedicated management software introduced this year and Highway Street Lighting who operate a further version of the 'Mayrise' system. Two team members have received training for conducting Footway Network Surveys (FNS). They will be amongst the first fully accredited surveyors of this type nationally and survey results will be directly input into the UKPMS for recording against a new national performance indicator being developed for footways. The hardware and software associated with this process will also be evaluated to see if they can be utilised for some carriageway surveys in due course. However, the FNS surveys will mean that within four years all of the local footways that have not been reported on previously, will have had condition surveys carried out. This will enable us to make far more considered decisions as to which footways are to be prioritised for various types of treatment. This will reduce our current dependency on 'planned maintenance' assessments made during Safety Inspections or resulting from inordinate amounts of reactive maintenance being required on individual sections of footways.

A tabular summary of condition survey types is as follows:-

	SURVEY TYPE				
Road Class	**SCANNER**	**CVI**	**DVI**	**FNS**	**PI**
A	√				NI 168 CCI DRC
B	√				NI 169 CCI DRC
C	√1/2				
Unclassified	Selected sites	√1/3			HE 224b CCI DRC
Footway 1&2			√1/2	√1/4	HE 187
Footway 3&4				√1/4	New Footway

NI = National Indicator, CCI DRC=Carriageway Condition Index Depreciated Replacement Cost, HE=Highways and Engineering (Indicator)

The principal ability to be able to conduct readily repeatable surveys and to record asset condition to suitable parameters will make the TAMP reviews of much more use as a business tool, with the all important trending data being accessible to decision makers.

Specialist surveys of drainage assets using close circuit television cameras and testing of some of the highway safety barriers including post tension testing have also been commissioned and this type of exercise will need to be repeated as the plan develops.

The need for data collection has to be carefully judged and take into account staff and financial resources that are available. The drainage surveys were possible largely due to a one off cash injection being available from the Department for Transport to local authorities to encourage them to embrace the principles of asset management. Traditionally, Torbay Council has used its own staff resource to collect data such as the footway condition surveys (FNS) but in these more austere times may have to accept that the opportunities to expand this are limited. The footway exercise was conducted by a single in house surveyor and provided coverage of 24% of the network in a two year period. This shows the challenge of expanding the data requirements whilst reducing money and resources within local authorities.

As the FNS data has proved to be too much of a challenge for the resource provided, Torbay Council will now have to accept that complete network coverage is beyond our in house resources and await further advice from peers and the DfT to see how footway condition data is to be collected nationally. Pending this further advice the FNS surveys will have to be reactively targeted on footways where problems have been reported. The safety of pedestrians should not be affected as our Streetscene Inspectors will still conduct their all important safety inspections on the frequencies given in the Highway Maintenance Plan.

However, the Highway Maintenance Plan included areas where data is still required such as the location and condition of safety barriers. This exercise will be given priority over footway surveys as soon as staff resources are available.

3 Business Processes

3.1 Introduction

The potential benefits of implementing a robust asset management plan will be realised when all decisions relating to future and current works are related to the processes and procedures contained within the plan. Although it is felt that the broad application of this is undertaken with current service delivery the plan is required to demonstrate this to outside organisations.

The TAMP should lead to enhancement in the delivery of the highway service and show consequent benefits to all stakeholders through improvements in the efficiency or by financial savings.

This section describes key business processes influencing the outcomes of management decisions and discusses possible enhancements.

3.2 Customer Expectations

The historical process that was in place for collecting customer feedback was by the use of 'Viewpoint' surveys. There is now a further option afforded by Torbay's participation within a south west initiative within the 'National Highways and Transport Network' (NHT) where customer surveys have been conducted by MORI. The continuing participation in these latter surveys permits the trending of customer satisfaction or dissatisfaction. This process is carried out in Section 4 of this document.

The key to the use of this customer interaction is to ensure that data collected is used in a meaningful way to establish priorities and hence levels of service. The table in section 4.9 sets out this in more detail.

3.3 How Funding Need is Assessed

Current Practice

Funding needs are considered using condition assessment information and priorities are established to target performance indicators in particular. This information is available for the main assets such as carriageways and footways but some other areas need further work to be able to accurately predict demand.

Condition assessment information on other assets such as safety barriers, pedestrian railings and non illuminated signs will need to be developed further to enable better predictions for longer term planned maintenance operations.

A greater consideration of whole life costing for works programmes is needed to demonstrate that they meet best value principles.

Also a requirement for new funding that is to be increased year on year in line with demands generated by, amongst other factors;

- New adoptions and improvement schemes
- Increasing pressures from traffic growth
- Effects of major development projects
- Changes in regulations
- The effects of climate change

3.4 How Effectiveness of Spending is Assessed

Current Practice

The measurement of effectiveness of expenditure in a previous year relies on comparisons of local 'Performance Indicators' (PI's), National Indicators (NIs), 'Sideway—force Coefficient Routine Investigation Machine' (SCRIM) and condition surveys. However, by addressing these factors it is apparent that non classified roads are not so robustly surveyed or reported on and consequently are relatively overlooked. This is an area that is increasingly being mentioned in customer surveys and is one that the production and development of the TAMP should address. Torbay Council is awaiting the roll out of further UKPMS updates that will provide better access to depreciation data on the carriageway network and give a truer graphical representation of the residual value of the asset. Presently although the latest versions of the toolkits are in use and form the basis of the data provided in Appendix 'A' there are still assumptions required from Asset Managers. This has been recognised nationally and developments in UKPMS have been provided and evaluated as a result. Initially there will still be grey areas used in producing this information, such as suggesting a direct link between condition surveys and residual life of a carriageway, but as all UKPMS users will be reporting on a common baseline this will still produce useful comparisons.

The advances in UKPMS to estimate and indicate residual life of a carriageway are gradually becoming more available and depreciation models are in use this year. This now leads to the prospect of more useful information being made available for our own dedicated Pavement Management System. Other advances will then allow financial reporting to indicate the effects of progressing types of treatment schemes and permit better targeting of available funds. The reports that this system will generate will be invaluable for feedback to members and demonstrate the need to prioritise highway maintenance to get maximum value of this essential asset.

Interrogating the 'Depreciated Replacement Cost' (DRC) element of the UKPMS give us the following table:-

Year	Estimated Cost of Highway Maintenance
2007/08	£23,162,996
2008/09	£25,316,061
2009/10	£30,320,057
2010/11	£30,526,317
2011/12	£32,067,733
2012/13	£30,904,036

Please note that the DRC is the hypothetical figure that would be required to bring all of the highway network up to an as new condition. Realistically this is not attainable and would be a waste of financial resources.

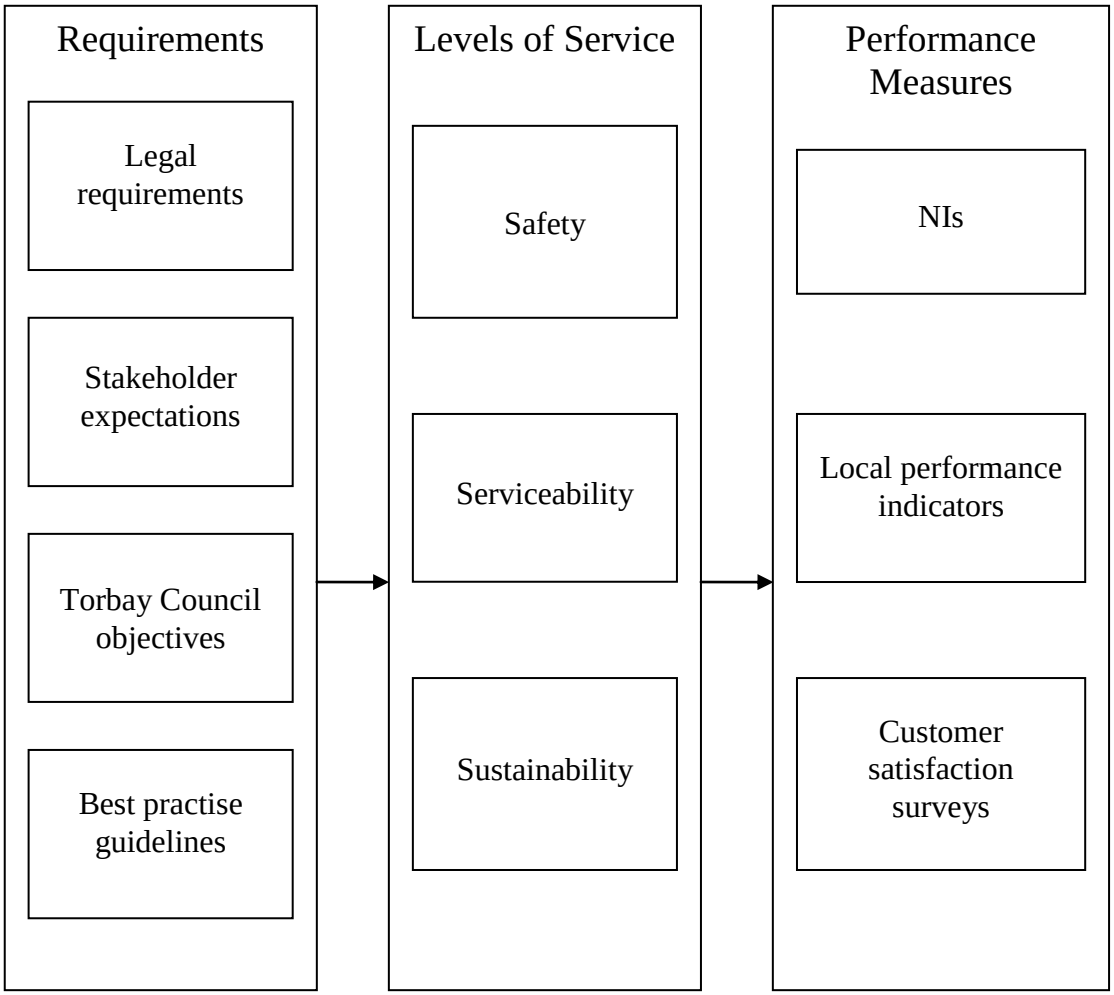
The table shows the magnitude of the outstanding maintenance works that the annual condition surveys have identified for Torbay in DRC terms. This is discussed in more detail in Section 9 'Performance Management'.

4 Levels of Service

4.1 Introduction

Levels of service are developed from both asset condition and demand aspirations. They can be described as “the defined service quality for a particular activity or service area against which performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost”.

A simple model for developing Service Delivery Levels in Torbay is shown in the diagram below:



A key challenge for the TAMP is to demonstrate a clear balance and link between customer expectations and asset integrity.

4.2 Current Practice

The Council concentrates its resources in targeting reportable activities that can influence future funding. By doing this although it is in line with most other highway authorities nationally, there is a danger of failing to meet local expectations. The TAMP must reflect whole life costing of work programmes and Members must be made aware of the potential funding issues if reportable targets fall as a result.

4.3 Legislative Requirements

Statutory requirements and other important legislative framework documents influence the delivery and management of transport assets. The table below is divided into three elements of legislation but they all apply and must be considered as part of carrying out all of the day to day highway authority's statutory functions.

The legislation essentially sets out rules for all of a highway authority's various activities, including locations and sizes of traffic signs, duties and responsibilities, levels of setting fines, how to deal with public utility companies, coordinating streetwork activities, liaison with railway operators, reducing congestion, setting rights for service users and maintaining reasonable access at all times. This list of activities is by no means exhaustive but gives a flavour of what is covered.

Highway Legislation	Highways Act 1980 Road Traffic Regulation Act 1984 Rights of way Act 1990 New Roads and Street Works Act 1991 Transport Act 2000 Traffic Signs Regulations and General Directions 2002 Railways and Transport Act 2003 Countryside and Rights of Way Act 2003 Traffic Management Act 2004
Environmental Legislation	Noxious Weeds Act 1959 Environmental Protection Act 1990 Wildlife and Countryside Act 1981 Clean Neighbourhoods and Environment Act 2005
Relevant General Legislation	Health and Safety at Work Act Construction (Design and Management) Regulation 2007 Human Rights act 1988 Management of Health and Safety at Work Regulations 1992 Disability and Discrimination Act 1995 and 2005 Freedom of Information Act 2000 The Local Government Act 2003 Audit Commission Comprehensive Performance Assessment – The Harder Test 2007

4.4 Customer Expectations

It is also intended that customer feedback and satisfaction surveys should feature more prominently in any future decision making processes. Torbay Council has access to customer feedback surveys conducted in 2001 and 2004 but more recently has subscribed to a MORI survey that was an initiative from a consortium of highway authorities in the south west known as the 'South West Highway Service

Improvement Group' (SWHSIG). This survey is also developing nationally with a number of highway authorities taking part in annual surveys arranged by MORI on behalf of the National Highways & Transport (NHT) Network. The results of these surveys is discussed further in section 4.9.

4.5 Organisational Objectives

The following objectives were quoted in the Local Transport Plan 2 and still apply:

"To provide range of measures that can be used to provide the greatest outcomes and which provide value for money to improve the Torbay transport network, in keeping with the priorities of the Plan".

- Ensure good access to all key services and facilities from all parts of Torbay
- Ensure good access to Torbay from outside and provide easily accessible information on travel options to and within Torbay
- Improve air quality in Torbay
- Relieve congestion at existing hot spots, improving conditions for all road users
- Ensure that Torbay Council continues to meet all of its casualty reduction targets
- Ensure a high standard of management of Torbay's transport assets, by implementing a Transport Asset Management strategy, the Network Management Duty, and a Highway Maintenance Strategy
- Support economic and social development initiatives in Torbay through the provision of good access by all modes
- Maintain and enhance the quality of the urban environment and the public realm by minimising the impact of transport on Torbay's heritage

4.6 Best Practice Guidelines

Codes of Practice for assets including highways, structures and street lighting provide a template to use in peer group comparisons, and as an indicator of good practice, against which we can judge our own performance. Whilst not statutory requirements, the codes are likely to be used as a point of reference in any legal proceedings, and should therefore, be instrumental in influencing and shaping desired Levels of Service.
Other national documents that may influence eventual standards include:

- Design Manual for Road and Bridges
- Specification for Highway Works
- Manual for Streets
- 'Highways Maintenance Efficiency Programme' (HMEP) Pothole Review
- HMEP Highways Infrastructure Asset Management Guidance

4.7 Organisational Constraints

The development of Levels of Service must reflect organisational constraints. While it may be possible to influence and reduce some of these, many will remain as permanent restrictions. These will include:

- Inadequate or unpredictable financial resources – the desired level of service may not be achievable
- Resource constraints – if financial constraints are removed it still may not be possible to resource short term fixes

- Procurement constraints – again a consideration if finance is not a factor
- Political constraints – this may affect the availability of funding
- If whole life costings are to be rigidly implemented it may lead to the appearance that roads that 'seem to be OK' take precedence over some residential roads that are 'falling apart'.

4.8 Current Performance

Torbay Council's current levels of service have been compared within the south west as a whole through the benchmarking organisation, South West Highways Service Improvement Group. In addition pending the opportunity to trend customer satisfaction surveys that are produced through the National Highways and Transportation Group (NHT) a one off exercise invoking the use of the previous 'Best Value Performance Indicators' has been undertaken. The results of these are in Appendix A. However, as many of these indicators will not be collected in the future this is seen as an interim stop gap analysis exercise, although benchmarking between the South West Authorities will continue in an effort to establish best practise that can then be disseminated to other Group members.

Previous annual reports from the SWHSIG are available online from the group's website at:-

http://swhsig.econtrack.co.uk/Content.aspx?186

Highlights from the last published annual report 2011/12 were that Torbay Council:-

- 2nd in satisfaction with local bus services
- 1st in percentage of principal roads with skidding resistance above investigation level.
- 1st in percentage of street lights working as planned.
- 2nd in average no. of days required to respond to street lighting faults.
- 2nd in percentage of principal roads not requiring maintenance.
- 2nd in percentage of classified non principal roads not requiring maintenance.
- 3rd in percentage of unclassified roads not requiring maintenance.
- 3rd in response to attending to traffic signal failures.

4.9 National Highways and Transportation (NHT) Survey

NHT Survey Analysis

The table below is the historic data relating to NHT survey returns for Torbay. It is reproduced from the NHT website with the colour coding referring to Key Benchmark Indicators (KBI's) nationally. The green shaded figures are national averages, yellow shows figures within 5% of the national average and red are figures that are at more than 5% lower than average.
The KBI data shown relates mainly to all highway functions, but the most significant in asset management terms is KBI 23 – Condition of highways.

Indicator Ref.	Benchmarking Indicator	2008	2009	2010	2011	2012
KBI 01	Overall satisfaction with Highways & Transport (against local importance)	56.09	54.63	55.92	55.35	53.73
KBI 02	Overall satisfaction with Highways &	56.01	54.66	55.96	55.38	53.81

	Transport (against national importance)					
KBI 03	Ease of Access to Key Services (All People)	73.54	75.56	76.83	77.35	76.11
KBI 04	Ease of Access to Key Services (People with disabilities)	69.16	67.09	72.36	71.54	71.23
KBI 05	Ease of Access to Key Services (No car households)	68.17	76.81	77.38	76.07	73.31
KBI 06	Overall Satisfaction with Local Bus Services	60.90	61.21	66.00	65.28	64.05
KBI 07	Satisfaction with Local Bus Services (BVPI 104)	59.64	62.86	71.79	68.73	68.82
KBI 08	Public Transport Information (BVPI 103)	52.83	52.17	54.66	54.64	50.93
KBI 09	Taxi/mini cab Services	73.39	70.05	69.99	71.79	70.43
KBI 10	Community Transport	59.43	57.44	56.86	61.20	58.23
KBI 11	Pavements & Footpaths	53.98	55.34	55.02	56.56	53.10
KBI 12	Pavements & Footpaths (aspects)	53.43	56.13	55.22	55.56	54.50
KBI 13	Cycle Routes & Facilities	51.20	48.50	48.46	50.62	49.07
KBI 14	Cycle Routes & Facilities (aspects)	44.37	43.47	46.03	51.31	51.60
KBI 15	Rights of Way	58.21	57.09	58.57	55.99	55.33
KBI 16	Satisfaction – Rights of Way (aspects)	50.41	50.64	52.51	52.71	53.12
KBI 17	Traffic Levels & Congestion	38.48	34.97	39.20	40.01	42.91
KBI 18	Management of Roadworks	43.82	48.24	50.38	45.03	50.99
KBI 19	Traffic Management	52.08	53.04	54.04	53.93	55.36
KBI 20	Road Safety Locally	59.08	58.56	60.46	61.05	59.77
KBI 21	Road Safety Environment	51.61	52.91	54.60	57.26	55.55
KBI 22	Road Safety Education	46.23	46.53	47.61	51.39	50.55
KBI 23	Condition of Highways	42.64	41.59	37.37	34.20	31.87
KBI 24	Highway Maintenance	50.25	52.95	51.00	49.44	47.12
KBI 25	Street Lighting	68.99	68.08	70.85	69.47	61.22
KBI 26	Highway Enforcement/Obstructions	46.99	50.40	50.22	49.41	48.46

KBI 23 shows that there has been a massive 10.77% decrease in customer satisfaction associated with the condition of highways over the 5 years that the survey data has been collected. This level of satisfaction has not only now dropped below the 'average' nationally; it is also a significant decrease that needs to be addressed. Conversely the red shaded data referring to KBI 17 measuring traffic levels and congestion seems to be mainly addressed to travelling to and from Torbay rather than congestion in towns. This has been assessed from feedback in free-text boxes within the survey forms. Similarly the KBI 18 'management of roadworks' can probably be put down to the major traffic management scheme at Tweenaway Cross and earlier gas main renewal works within Torbay.

At the time of writing this plan, there was research being undertaken at Leeds University comparing customer satisfaction levels against recorded service measurement (such as condition indicators) and the associated costs of the service. The completed analysis 'Customer Quality Cost' (CQC) was then produced in order that an authority can potentially identify any areas where too much investment was being made, on for instance a service area that the customer does not perceive to be important and then re-allocate some of this into areas of higher public expectation.

The highlight that the report produced was that Torbay was identified as being 'efficient' as a highway authority for all four years of the study period.

5 Life Cycle Plans

5.1 Introduction

The purpose of a life cycle plan is to document how a particular asset is managed and to identify current and future needs in terms of predicted works and anticipated funding availability.

Life cycle plans consider the condition of the asset and assess its future performance by applying agreed risk and investment policies. From this information it is possible to develop the works programmes and strategies that are necessary to achieve the specified levels of service.

Life cycle plans present a record, from creation to disposal, of available asset information and cover three main work activities used in the management of a highway network:

- Operations and Maintenance: Activities undertaken to ensure the efficient operation and serviceability of the asset.
- Renewal: Provision for progressive replacement of individual assets that have reached the end of their useful life and can not be sustained by routine maintenance alone.
- Development: Improvement of systems that currently perform below set target service standards or that need upgrading to meet future demand.

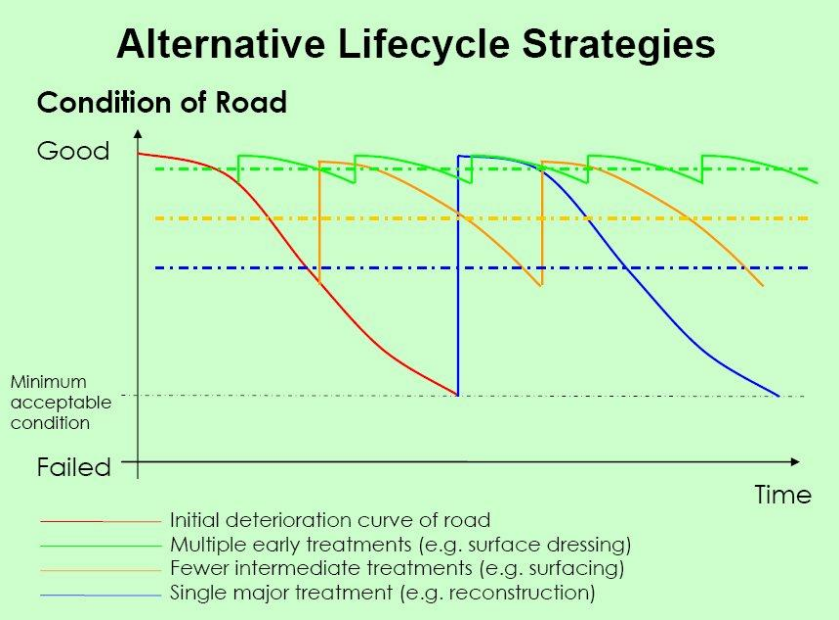
Lifecycle plans for each significant asset group are to be further developed as the plan's usage becomes established.

The identification and assessment of options is a critical part of asset management. Often individuals using their experience and judgements carry out this assessment using data from the Pavement Management System and historical knowledge. It is envisaged that Lifecycle Plans can be used as a more accurate tool to collect this knowledge for future reference and enhancement.

Future asset funding requirements, calculated from consideration of the life cycle, are determined by reference to several sources including:

- Asset condition and age data with reference to predictive deterioration models based on asset lives and historical rates of deterioration.
- Projects identified in the forward work programme.
- Long term financial strategy projections.
- Historical cost trends.
- Major changes in market costs relating to highway materials and equipment.
- Changes to Performance Indicators and methods of measuring condition data.

A basic diagram of the lifecycle process is demonstrated by the following diagram:-



The above diagram shows the various options available to extend the useful life of a carriageway. The condition axis also effectively represents the cost associated with the various treatment options.

The red line shows how the condition of a road will deteriorate with time if left unchecked.

The green line shows a series of 'preventative' treatments being applied at regular intervals and is the most cost effective option as long as the condition is suitable for this application.

The next option shown in yellow is a 'planned' maintenance involving a typical inlay or overlay surfacing treatment. Whilst the application of this type of treatment can be delayed beyond that of a 'preventative' alternative the cost is up to 10 times as expensive.

The blue line shows the effect of waiting until the carriageway has effectively failed before carrying out any treatment. This is far more expensive to remedy and in the current financial climate is all but unaffordable. It represents a full reconstruction treatment costing more than twice that of a planned surfacing option.

The challenge for asset management must remain as prioritising the most cost effective treatment and applying them at the correct intervals.

Lifecycle plans have been developed which indicate optimal treatment times for different assets.

Some early lifecycle plans have been prepared for the following assets:

- Carriageways
- Bridges
- Other highway structures
- Drainage
- Traffic signals
- Safety fencing
- Earthworks / embankments

- Footways / cycleways
- Street lighting
- Signs
- Road markings / studs
- Verge and landscaped areas

Plans for each of the above assets are produced using a common framework by considering the following:

- Creation and acquisition
- Routine maintenance
- Renewal or replacement
- Upgrading
- Disposal
- Non asset options including demand management and amendment of standards and targets

The plans are to be periodically reviewed in the light of developing practices.

However, in order for all highway authorities to be able to report and compare their networks on a similar basis, the 'Transport Infrastructure Assets' code of practice developed by CIPFA and the 'Highways Asset Management Financial Information Group' (HAMFIG) has recommended the use of tools being developed within the UKPMS. This is a 'Pavement Management System' (PMS) that all highway authorities already utilise for Performance Indicator data purposes.

This is slightly at odds to original guidance where each authority was expected to use age related data and a thorough knowledge of road construction depths rather than condition data, in order to determine where each of its carriageways sits on the life cycle graphs shown previously in this section. Although inspirationally it is intended that eventually this type of information will be gained, initially the condition data and some default width values will be used as a referenced start point for future meaningful asset management plans.

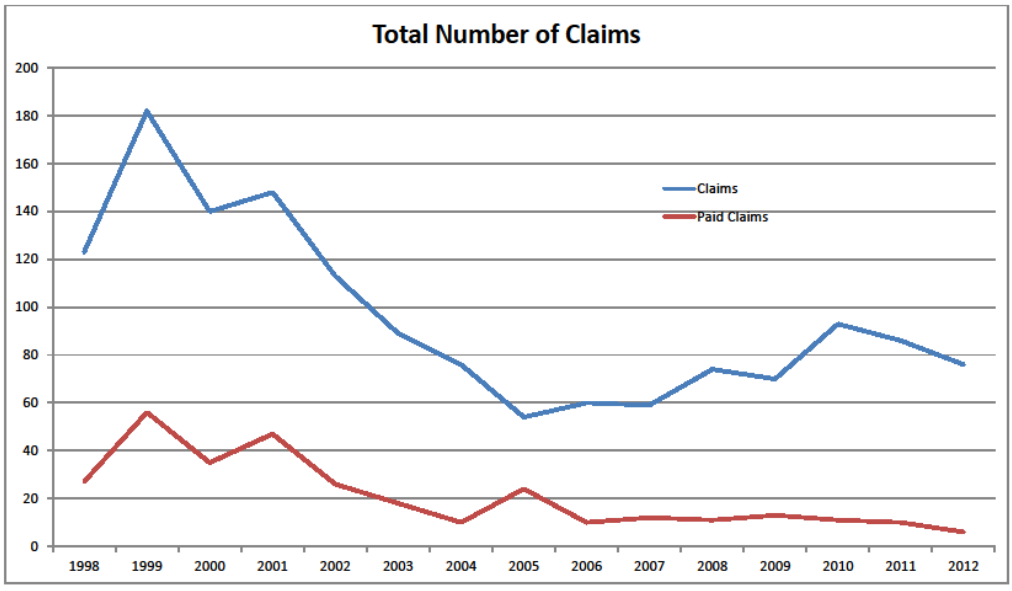
The CIPFA/HAMFIG Code was published in 2010 and refers to developments being introduced to UKPMS that were not released until May 2013. The developed toolkit within UKPMS is now being used to allow a full audited run of highway data to report on network valuations using both 'Gross Replacement Costs' and 'Depreciated Replacement Cost'. The difference between these two figures will represent the maintenance backlog that each authority will have to address. The tools will then be used to permit a national audit of highway authorities as part of the 'Whole Government Accounting' process.

6 Financial Summary

6.1 Introduction

The maintaining of a highway asset involves both proactive planned preventative treatments and reactive maintenance such as patching to keep it safe for users. This latter area involves Torbay Council conducting a rigorous regime of safety inspections to locate and identify various types of defects that could be a hazard for highway users. Details of the safety inspections are given in the Highway Maintenance Plan but this is backed up with a further document which is the 'Highway Safety Inspections Code of Practise' which identifies defects and intervention levels. The inspections are recorded and used to defend against third party claims using the 'special defence' contained in Section 58 of the Highways Act 1980.

However, defects identified during the course of the safety inspections are required to be repaired within deadlines stipulated in the code of practice for this defence to be successfully applied. The use of hand held data capture devices and the 'Mayrise' software package which records details and dates of defects and inspections is an excellent defence mechanism and has effectively brought down the costs of insurance claims against the authority. See the trend graphs below which shows a sustained reduction in claims paid out despite a significant increase in potholes being reported.



A well maintained highway asset would be expected to demonstrate a significantly higher proportion of spend against proactive maintenance than that attributed to reactive measures. Unfortunately with the recent spell of prolonged cold winters and associated freeze/thaw damage to any cracks in a carriageway surface has resulted is a rising propensity of pothole formation and record numbers of these now require treatment. The problems are particularly pronounced on the local unclassified road networks where the need to prioritise inadequate overall funding has lead to these being treated as poor relations to the classified primary network. It is becoming

increasing necessary to address the root cause of the deterioration of the unclassified network and in recent years more investment has been made on lower cost preventative treatments on these roads than was previously the case. Unfortunately though, the benefits of this type of investment are being masked by further deterioration caused by the severe winters. However, it is proposed to continue concentrating on getting the maximum coverage of the local network by making full use of preventative measures but this may be at the cost of seeing some condition deterioration in classified roads. This is discussed further in Appendix A.

However the need to continue to invest in preventative maintenance has been compromised to some degree in it now being necessary to conduct expensive intervention works on a number of roads that are now considered to be potentially dangerous. This will require almost £350,000 in the financial year 2014/15, this compares with £565,000 on preventative maintenance and only £300,000 on planned surfacing works.

In the March 2006 Local Transport Plan there was a section indicating the desired level of funding to achieve a standstill position with regard to highway condition trends. The figure quoted in this document was £6,037,000. It was claimed that this figure would by the end of 2011 prevent further deterioration in the network.

Actual funding provisions:-

	Capital Received (£)	Indicative Allocation (£)
2006/07	1,100,000	1,241,400
2007/08	880,000	1,241,400
2008/09	964,000	1,241,400
2009/10	1,035,000	1,241,400
2010/11	1,120,000	1,241,400
Total	5,099,000	6,207,000

In actual fact the various changes made in the UKPMS survey parameters and as a result of targeting available funding on classified roads, a significant indicative improvement in these areas was recorded. However, at the same time customer dissatisfaction with local unclassified roads was seen as being a particular issue of concern. This has been mirrored by our experiences of benchmarking this authority within the South West Highways Improvement Group (SWHSIG) where measured performance tended to be high, whereas the NHT Customer Satisfaction surveys carried out by MORI in the last two years rated this authority as being particularly poor. This suggested that more attention was required on local roads to address this imbalance.

Any cuts in the indicative maintenance budget oblige the authority to target resources on the measurable performance indicators to avoid any other financial penalties resulting. This potentially means neglecting still further the unclassified local roads. It is also expected that the standstill situation regarding recorded network condition will no longer be sustainable and that the backlog of maintenance schemes will become even more of an issue.

Key Maintenance Performance Indicators – Torbay (SCANNER based)

	BVPI 223 NI 168	BVPI 224A NI 169	BVPI 224B HE 224B	BVPI 187 HE 187	SA2 EN HE7
	Condition of principal roads	Condition – classified non principal	Condition – unclassified non principal	Condition of surface footway	Principal roads – skid resistance above investigatory
2005/06	8.00	22.00	10.59	12.01	74.80
2006/07	7.00	14.00	12.00	19.00	71.60
2007/08	4.00	7.00	5.00	27.01	88.52
2008/09	4.00	9.00	4.00	18.13	82.42
2009/10	9.00	13.00	6.00	9.00	82.69
2010/11	4.00	13.00	11.00	8.00	87.74
2011/12	4.00	12.00	12.00	N/A	92.03
2012/13	2.00	6.00	12.00	22.00	90.75
LTP2 Targets	20.00	30.00	10.00	10.00	95.00

Using information from the date that SCANNER data became standard the above performance indicators have been recorded. This shows that carriageway condition appears to have significantly improved whereas footways and skid resistance fall short of expectations. However, the target figures were set using different parameters than those that now exist within UKPMS and certainly do not reflect customer aspirations.

The simplest measure that can be read from the above data is the difference in condition data between 2007/08 & 2008/09 which represents the result of the £880,000 allotted in 07/08 and the period when SCANNER parameters remained stable, is as shown below. This period was subjected to a detailed analysis exercise to produce the following.

NI 168 - The principal roads condition depreciated from 3.95 % to 4.38 %
NI 169 - Classified non principal deteriorated from 7.35 % to 9.18 %
Whereas the unclassified non principal roads, that were measured differently, using Coarse Visual Surveys (CVI), mysteriously improved from 5% to 4%. (BVPI 224b)

Discounting the latter figure £880,000 appears to be significantly less than the absolute minimum required to wholly arrest deterioration.

Unfortunately the condition survey data for 2009/10 and 2010/11 have shown wild fluctuations that are not readily explainable, so it has not been practical to update this later data.

Prediction from Asset Management Plan

The above data is based on historic data whereas this later section is based on a more scientific exercise carried by interrogating our Pavement Management System. This gave the following results:-

With the Indicative funding estimate the trends for the 2 remaining National Indicators are:-

NI 168 to be 7% by 2013/14 (up from its current 2.00%)
NI 169 to be 15% by 2013/14 (up from its current 6.00%)

In addition to the above deterioration of overall classified road condition, the potential side effects on the authority would also be of concern. There would be increasing demands made on the revenue budget to carry out reactive works together with higher numbers of third party accident claims to defend. The local road network would be expected to deteriorate further and by being obliged to address failed sections of the highway network, less funding would be available to address preventative maintenance schemes. This latter measure would mean that the RCI would no longer be linear and that deterioration would increase progressively. Also customer satisfaction levels would fall even further and road safety may also suffer. Appendix A shows the Lifecycle Planning Toolkit's 10 year predictions on different expenditure profiles to bring the above statements into perspective.

7 Risk Management

7.1.1 Introduction

Managing risk is an integral part of managing our transport assets. All activities from management, identification and prioritisation of works to the establishment of budgets have risks associated with them. These risks need managing. The assessment of comparative risk is therefore a key asset management tool. It can be used at a tactical level within the asset management process, to assist with option appraisal and selection, via assessment of the comparative risks of:

- Providing differing levels of service;
- Funding works on different assets; or
- Funding network improvements as opposed to maintenance works.

7.1.2 Identifying risks

Tactical Risks

These risks can affect the Council's ability to deliver annual programmes to specified budgets, for example – weather, changes in customer perception, local political pressures, the consequences of changes in levels of service. The management of the affects of these factors will be part of the asset management planning process that should be identified during the TAMP's annual review. The most likely outcome of this process will be to vary the level of service or consider the effects of not being able to carry out all of the planned works. These tactical risks could adversely impact on medium term plans, typically being 3 – 10 years.

Operational Risks

These risks are those encountered on a day to day basis as the Council manages and operates the network, e.g. service delivery, repair failure etc. These risks will be identified and managed by the appropriate service delivery teams, as part of the day to day management of the network.

7.1.3 Assessing risks

Once risks are identified, an assessment of their likelihood and impact is undertaken as defined in the key below. Each risk identified should be monitored by an appropriate officer who can assess the appropriate action. This needs to be done in a consistent manner to give a balanced view of the risk levels associated with the different service options.

7.1.4 Dealing with risks

The mechanisms by which risks can be dealt with are:

- **Prevention** – Act to prevent the risk occurring or having an impact on a project;
- **Reduction** – Reduce the likelihood of the risk occurring or limit its impact;
- **Transference** – Pass the risk to a third party (e.g. use of insurance or penalty clauses);
- **Contingency** – Plan of action to come into force when a risk materialises;
- **Acceptance** – Accept the possibility that the risk may occur (believing that either the risk will not occur, or that countermeasures are too expensive).

One or more of these mechanisms should be identified in the action and controls column in the Risk Log, together with details of what action is to be taken.

7.1.5 Using the risk assessment matrix

When assessing a risk, the assessor shall have a knowledge of the actions or controls that are either in place or available, and can be guided by this information. Values should be assessed for the 'likelihood' of occurrence (A) and the severity of the 'impact' (B). By multiplying these factors together you get the rating score, which gives an indication of how important the risk is.

LIKELIHOOD (A)	Very Likely 5	5	10	15	20	25
	Likely 4	4	8	12	16	20
	Feasible 3	3	6	9	12	15
	Slight 2	2	4	6	8	10
	Very unlikely 1	1	2	3	4	5
		Insignificant 1	Minor 2	Significant 3	Major 4	Critical 5
	IMPACT (B)					

Likelihood of occurrence (A)		Severity of impact (B)	
1	Very unlikely (hasn't occurred before)	1	Insignificant (have no effect)
2	Slight (rarely occurs)	2	Minor (little effect)
3	Feasible (possible, but not common)	3	Significant (may pose a problem)
4	Likely (has before, will again)	4	Major (will pose a problem)
5	Very likely (occurs frequently)	5	Critical (immediate action required)

From the above a risk can be simply rated as described below:-

- Green risks (low) - are the least urgent risks; this does not mean that they can be discounted, as all 'green' risks have the potential to become 'amber' or even 'red' risks. These risks should be monitored and reviewed annually as part of the ongoing TAMP process.
- Amber risks (medium) – are potentially the red risks of the future. They have a higher likelihood and impact assessment potential and therefore monitoring should be more frequent. This ongoing monitoring should ensure that your mitigating actions are working.
- Red risks (high) – are high maintenance. All red risks need careful repeated monitoring if the objective or benefit is to be realised.

7.1.6 Recording and reporting risks

A Risk Log or Register will be maintained as an appendix to the TAMP. The TAMP management process will consider all recorded risks and encourage the development of appropriate Action Plans, These will describe how these risks are to be managed and identify control measures.

Action Plans will be periodically reviewed and revised as required to monitor changes in risks and to ensure that the control measures are still suitable. If new actions are to be adopted to better control the risk, this should be recorded in the risk log. As the risk management process is dynamic and constantly evolving, the periodic reviews shall be set at appropriate intervals, typically between 3 months and a year.

A full overview of the register will be an integral part of the TAMP's annual review process.

7.1.7 Key risks

Whilst the TAMP will identify appropriate responses to deal with risk and levels of service issues, several risks that can affect the recommended actions are as follows:-

Risk	Summary Description
Financial	Availability of financing
Economic	Changes in budget provision
Political	Changes in political powers and policies
Legislative	Changes in legislation
Legal	Delays associated with procuring and awarding contracts
Professional/Managerial	Policy decisions inappropriate
Environmental	Environmental impacts and hazards/climate change
Technological	Engineering or design failure
Social	Major disruption
Customer/Citizen	No customer gain
Physical	Unforeseen difficulties
Partnership/Contractual	Higher operation and maintenance costs
Competitive	Delays due to competition
Construction	Faulty construction, cost escalation and delays
Safety	Poor maintenance decisions
Personnel	Inability to recruit staff and no appropriate skills in workplace

There is a short list of risks that have previously been assessed as part of the creation of this plan reproduced in an Appendix C. The list is not exhaustive and as this is a live document reviewed annually it is expected that it will grow significantly.

8 Forward Work Programme

8.1.1 Introduction

As the highway authority, Torbay Council complies with all current legislation including the 'Traffic Management Act' (TMA) concerning the expeditious movement of traffic, and the 'New Roads and Streetworks Act' (NRSWA) where there is a duty to co-ordinate works on the highway. There are regular meetings held with representatives from all of the utility companies and scheme proposal lists are discussed at these to allow the effective planning and coordination of works on the highway network.

In addition to these third party proposals, the Network Management team's 'Pavement Management System' (PMS) identifies an overall condition report of the entire highway network and also indicates carriageways and footways where intervention or maintenance works are required. This information is considered together with potential schemes that have been identified from either the 'Mayrise' suite as being potentially too expensive to continue to apply reactive maintenance measures to, as well as planned works recorded by the Highway Inspectors or as a result of customer reports.

Developments in the PMS and the national UKPMS are suggesting a correlation between condition data and the residual life of a carriageway. Torbay Council has already been interrogating the PMS in differing ways to endeavour to rationalise different types of treatments based on the condition reports with some promising results. This type of activity combined with in house condition surveys and local investigations will in theory provide us with a robust justification for our future work programmes.

The resultant list of candidate schemes is then broken down into sites where different forms of maintenance may be appropriate for, such as preventative treatments or further structural or resurfacing options. All sites are visited and assessed to determine the appropriate treatment and where necessary further investigation measures will be conducted such as trial holes or coring.

The lists represent the known backlog of schemes and the sites are monitored, reviewed and prioritised on a regular basis to create work programmes dependant on the sum of maintenance money that is anticipated. These lists are reviewed on at least an annual basis.

It is anticipated that the UKPMS developments will result in major changes to the early identification of candidate schemes and that this will strongly influence the works programme in future years for this plan. Early indications suggest that financial modelling and deterioration rate trending will enable far more detailed analysis of the effect of funding decisions on producing future scheme programmes.

Appendix A illustrates graphically the output from the latest Lifecycle Planning Toolkit giving 10 year trending the overall impact on the highway asset as a whole. Based on a number of different expenditure profiles.

8.1.2 Scheme Backlog

Physical Scheme Backlog (Discounting schemes issued 2013/14)

Presently there is a substantial backlog of schemes of all categories of treatment that are waiting for funding. The current lists based on visual and condition surveys are as follows:-

Preventative Maintenance Sites – Surface Dressing
60 individual roads, representing 23.5km of carriageway – estimate £345,000 (£14.68K per km)

Preventative Maintenance Sites – Micro-asphalt
199 individual roads, representing 55.5km of carriageway – estimate £2.0M (£36.04K per km)

Planned Maintenance Sites – Thin Overlay
151 individual roads, representing 19.5km of carriageway – estimate £3.8M (£194.87K per km)

Planned Maintenance Sites – Resurfacing and Reconstruction
60 individual roads, representing 10km of carriageway – estimate £4.8M (£480K per km)

At the time of writing the above categories of treatments required are considered to be accurate. However, as time passes the various identified roads can deteriorate beyond the point where the current indicative treatments are possible and then become more costly to repair. As well as this other roads that are not in immediate need of treatments will be added to the backlog.

The prioritisation of such sites against the available funding is the whole crux of the asset management challenge.

9 Performance Monitoring

9.1.1 Introduction

Asset Management is structured to support a process of continuous improvement in line with adequate funding provision. The performance monitoring and reporting regime will be used to review the plan and its processes. The review activities will include:-

- Ongoing Performance Review – looking at the results, the factors contributing to performance, and options for dealing with poor performance
- Annual Review – the TAMP will be reviewed and updated every year

9.1.2 Application

Traditionally performance monitoring has been reliant on having a repeatable series of data to enable the production of trending reports. Presently the only such data available that has remained relatively stable has been the various performance indicators that are used for audit reporting. The direct comparison with condition data against expenditure used may produce a rough guide but this does not really consider the overall rate of deterioration of an asset. The collection of relevant condition data using a simple repeatable survey, together with the determination of construction materials and depths used in the network should make future monitoring more readily achievable and reportable. This will be the key ingredient with the UKPMS developments that will make the TAMP a viable tool for decision making.

9.1.3 Review

The initial reviews will need to be conducted using the performance indicator data and using assumed construction types. As the PMS is updated with the newly acquired data and directions received on types of reporting that will be required for asset management, the review process will develop accordingly.

13.1.4 Pavement Management System Indications

Using the most recent additions to the PMS system which compares carriageway condition data to a 'Depreciated Replacement Cost' (DRC) produces the following breakdown:-

	Maintenance Investment (£)	**Depreciated Replacement Cost (£)**	**Net Change (£) Year on Year**
2007/2008	1,225,000	23,162,996	356,822 improve
2008/2009	885,000	25,316,061	2,153,065 deteriorate
2009/2010	969,000	30,320,057	5,003,996 deteriorate
2010/2011	783,500	30,526,317	206,260 deteriorate
2011/2012	1,169,400	32,067,733	1,541,416 deteriorate
2012/2013	615,600	30,904,036	1,163,697 improve ?
6yr total	**5,647,500**		**7,741,040 deterioration**

The above simplistic table indicates clearly the impact of an inadequate level of maintenance funding, as well as the immediate impact of two severe winters. It also shows how a conscious effort to increase the proportion of preventative maintenance used over the last two years is apparently slowing depreciation. However, the main message is that as already argued in the LTP2 submission the level of funding required to reach a standstill position has not been met. LTP2 demonstrated that typically £2M would be required annually to achieve this.

The other message from the table, as evidenced by the indicative DRC's is that it would require an investment of £31M to return all carriageways to an 'as new' condition. However it is estimated that approximately half of this sum would be required to return them to all 'good'.

Members should be aware that the Capital investment made by the Department for Transport is nationally recognised of being on the low side. Consequently it is necessary to concentrate on 'preventative' maintenance sites at the cost of having to defer some 'reactive' sites to a time when funding levels may increase. However, this is only delaying the inevitable and we already have a list of sites awaiting treatment that will require some £10M to address.

Some of these deferred sites are in high profile areas, such as Torwood Street, Torquay, Torbay Road, Paignton and Burton Street, Brixham. The recently reduced level of funding can only exacerbate this problem and public satisfaction of highway maintenance as a whole is reducing. The previous level of funding enabled the inclusion of a small programme of worse first type roads, but if we adhere rigorously to the principles of 'Asset Management', we should now only use low cost preventative treatments on carriageways that are suitable for such treatments and temporarily ignore the backlog of other sites.

This is not a desirable situation, but it is a realistic one, in that reducing already inadequate highway maintenance funding at such a time, will quickly increase the number of sites awaiting treatment and then require more substantial funding to rectify at a future date.

10 Improvement Action Plan

10.1.1 Introduction

This initial version of the TAMP is an introductory document. Improvement Actions will be developed over the coming years by obtaining missing data and using all available condition and feedback data that can be trended.
As things currently stand the Council have a list of schemes that need various forms of treatment, an overall condition rating based on surveys of up to three years age and an indication of what funding is to be made available for the next financial year. Therefore whilst it would be easy to state that we are to concentrate on lower cost preventative maintenance measures, in reality we still need to address reactive schemes at extremely short notice.
There are plans to improve the situation for Asset Managers and the DfT are intending to provide a higher level of funding to local authorities and to keep this at a steady state over the period of the next parliament. Whilst early indications are that the increased amount will still be insufficient this is still a welcome development for practitioners.
However the introduction of this document and its sister document Highway Maintenance Plan should assist engineers in presenting decisions and outcomes to elected members. This is the primary benefit of the asset management approach and is an opportunity welcomed by this authority.

10.1.2 Action Plan

The Council's priorities for maintaining this asset with the current levels of funding will be:-

- Prioritise the A & B road network that carries the higher levels of traffic
- Use preventative maintenance treatments on roads that are still in a condition to benefit from these.
- Maintain modern estate roads in accordance with lifecycle planning guidance with timed preventative intervention at the optimum times.
- Use additional DfT funding on preventative treatments of older estate roads to reduce further pothole proliferation and to seal vulnerable unbound road formations.
- Target worst first responses at shorter lengths of affected carriageways.

The Action Plan statement for the year following the adoption of this TAMP is therefore to continue to make the best use of the capital funding that was provided by the Department for Transport whilst appreciating that it is not yet acceptable to abandon some of the highway network that remains in need of major surface intervention works. This will mean that targeted sections of roads will receive structural maintenance treatments rather than the more desirable whole lengths treated previously.

This means that although there will still be an element of responding to 'worst first' situations on the classified road network that preventative maintenance levels will still be the preferred option on the rest of the network. The capital allocation will cover only 50% of the roads that are identified as being in need of immediate investment. This situation will be reviewed as the year progresses but it is anticipated that any additional grants for funding in response to pothole proliferation or repair to recent flood damage will be prioritised on preventative treatments on local roads. By continuing with this option the local road network can be sustained at an acceptable

condition pending the time that appropriate levels of investment are made to this national asset when circumstances permit.

Overall given the current financial situation practitioners in the field of highway maintenance have been obliged to accept that they are presiding over a deteriorating asset, but the toolkits that have now been adopted show that this situation requires a real determination by politicians to take up the mantle and allow engineers to tackle the backlog of maintenance schemes in a planned manner.

Meanwhile the 2014/15 version of Appendix ‘A’ associated with this plan sets out the latest situation and allows the reader to see the decisions that are all too necessary at the current time.

Asset Management Plan – Appendix A

Introduction

This appendix to the Torbay Asset Management Plan is to be reviewed on an annual basis to take account of advances in the associated 'Codes of Practice' and industry guidance. It relies on toolkits that were developed on behalf of the Department for Transport to enable a more evidence based approach to this process.

A series of charts and tables produced by running local highway condition data and construction costs in the toolkit have been included as visual aids to allow members and decision makers to be better aware of the financial issues that are present in the field of highway maintenance. The 'Carriageway Lifecycle Planning Toolkit' in its current form was released in May 2013 and assists in the strategic planning of carriageway maintenance over a minimum of 10 year cycles.

This toolkit enables highway engineers to demonstrate the predicted impact that financial restrictions will create to a highway network. It backs up what our customers have been saying in their various public satisfaction surveys that roads are deteriorating at an ever increasing rate, which is further evidenced by the presence of rapidly forming potholes and the very poor condition of some local estate roads.

The Network Management team hold an ever growing list of roads that are waiting for planned maintenance works with the backlog now totalling more than £10million. This list has been derived from a number of sources including condition surveys, walked safety inspections and third party reports or complaints and is reviewed periodically and validated whilst preparing design briefs for works programmes. It also has to take account of any planned work by the public utility companies and problems created by weather and accident damage. Whilst the list is a valuable local tactical aid it is not intended to replace decisions that are driven by the Council's 'Pavement Management System' (PMS) and all sites on the list are constantly reprioritised to allow the maximum use of the limited funds that are available.

The overriding principle that applies to our decisions on dealing with the works backlog is that wherever possible preventative low cost treatments will be applied in preference to the more expensive reactive resurfacing schemes that so much of our network already requires. We have retained and extended the use of surface dressing treatments onto both local and strategic roads in recent years. Whilst the fragility of the network has meant that there are some roads with maximum weight restrictions due to adjacent weak structures and poor surfaces on some of the more heavily trafficked routes, we have not yet reached the stage where we are only treating the 'worst first' roads or resorted to abandoning roads in their entirety.

The Council is obliged to consider the adoption of Asset Management techniques and to sign up to both a Policy and a Strategy for its full implementation. The Policy is included in the Transportation Working Party documents that are to be presented and the 'Strategy' will be developed before being considered by Full Council.

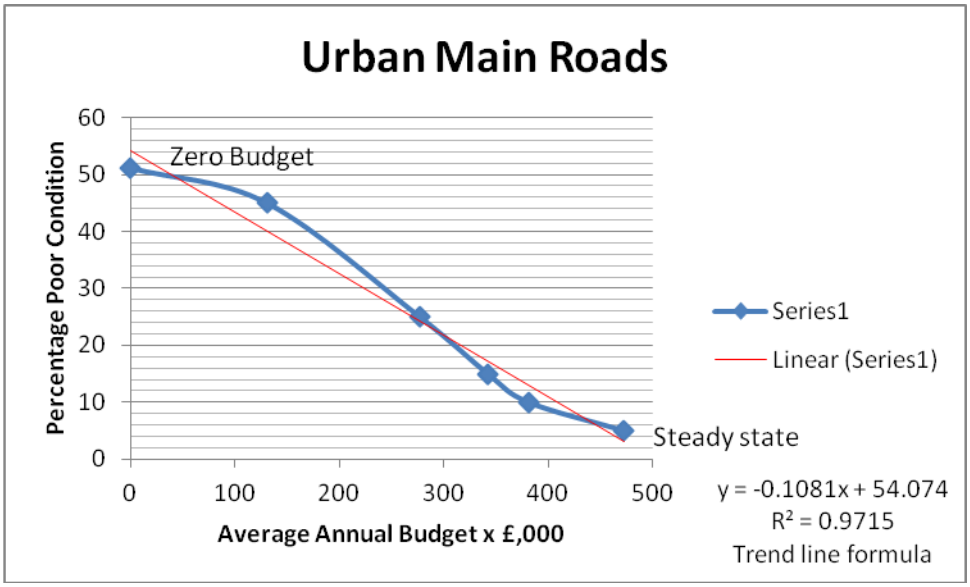
Carriageway Lifecycle Planning Toolkit

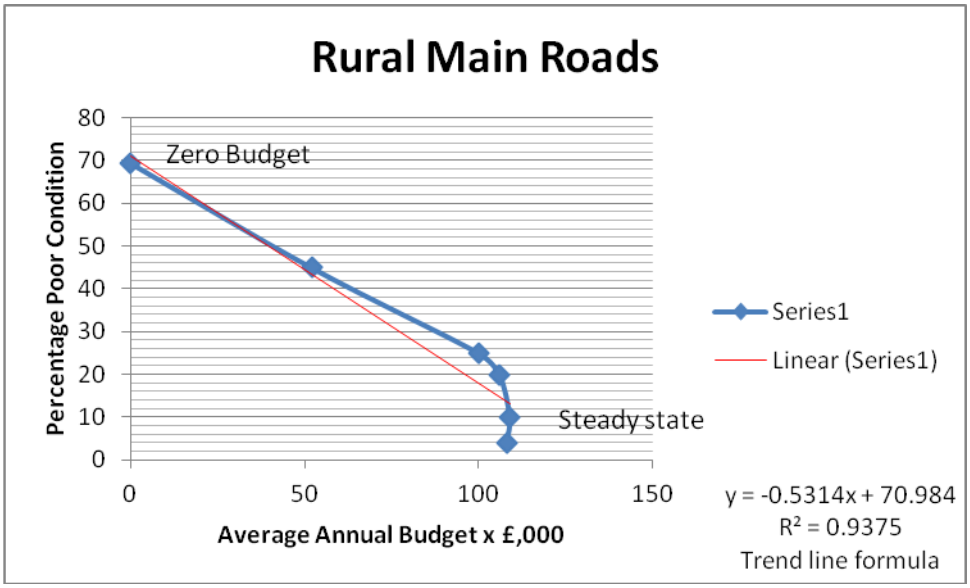
This tool is a predictive spreadsheet that was developed by the 'Highways Maintenance Efficiency Programme' (HMEP). The HMEP initiative aims to maximise returns from investment and deliver efficiencies in highway maintenance services.

The spreadsheet in its current form uses default carriageway deterioration models that are also used in the 'United Kingdom Pavement Management System' (UKPMS) to derive the 'Deteriorated Replacement Costs' (DRC) that are used for 'Whole Government Accounting' (WGA) returns. The model associated with these calculations is at an early stage and will be further validated with experience.

The Torbay scenarios have been run using the latest surveyed condition data and historic costs associated with different planned maintenance treatments. The outputs are for each of 5 different types of Asset Groups in 5 condition bands ranging from Very Good (as new) to Very Poor (in need of urgent attention). By running a series of iterations it has been attempted to indicate the level of average annual budget that would be required to achieve or maintain various percentage performance targets.

The headline result of this exercise is that in order to maintain the highway network in its current overall condition will require an investment of £39million over the next 10 years. Even more worrying is that if the current inadequate level of investment is maintained (£7million over 10 years), the network will have more than half of its length in Poor or Very Poor condition.


Urban Main Roads
Percentage Poor Condition
60
50
40
30
20
10
0
Zero Budget
Steady state
0
100
200
300
400
500
Average Annual Budget x £,000
Series1
Linear (Series1)
y = -0.1081x + 54.074
R² = 0.9715
Trend line formula


Rural Main Roads
Percentage Poor Condition
80
70
60
50
40
30
20
10
0
Zero Budget
Steady state
0
50
100
150
Average Annual Budget x £,000
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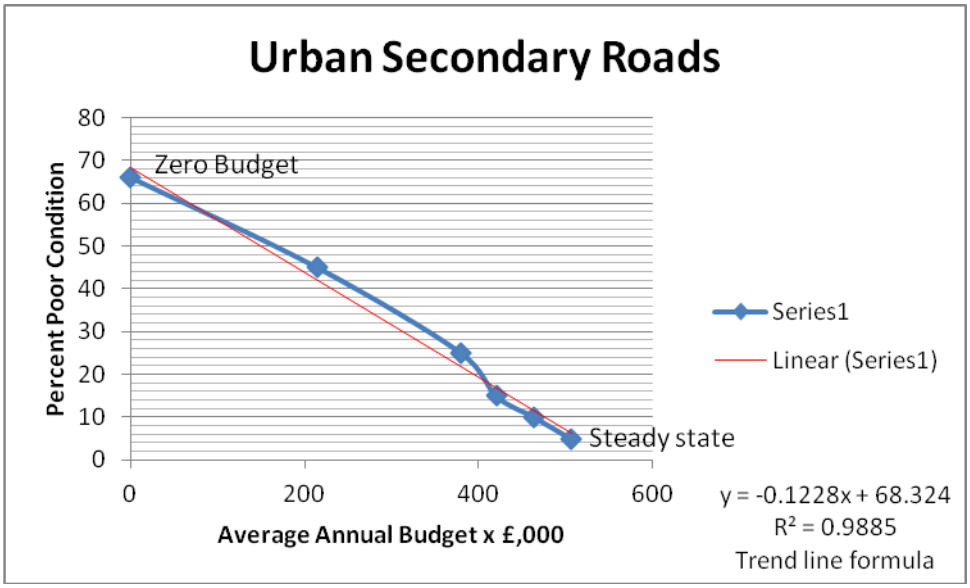
R² = 0.9375
Trend line formula


Urban Secondary Roads
Percent Poor Condition
80
70
60
50
40
30
20
10
0
Zero Budget
Steady state
0
200
400
600
Average Annual Budget x £,000
Series1
Linear (Series1)
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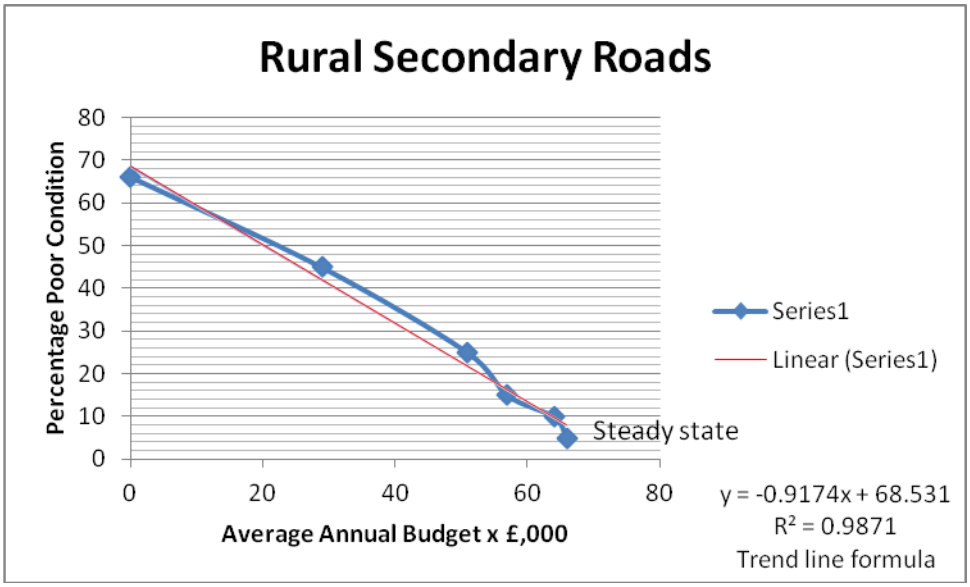
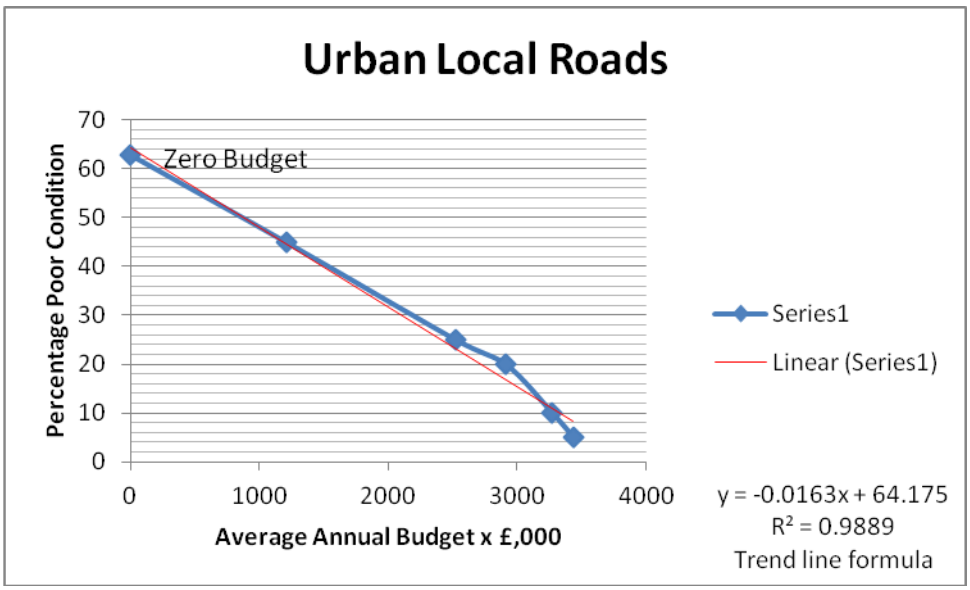
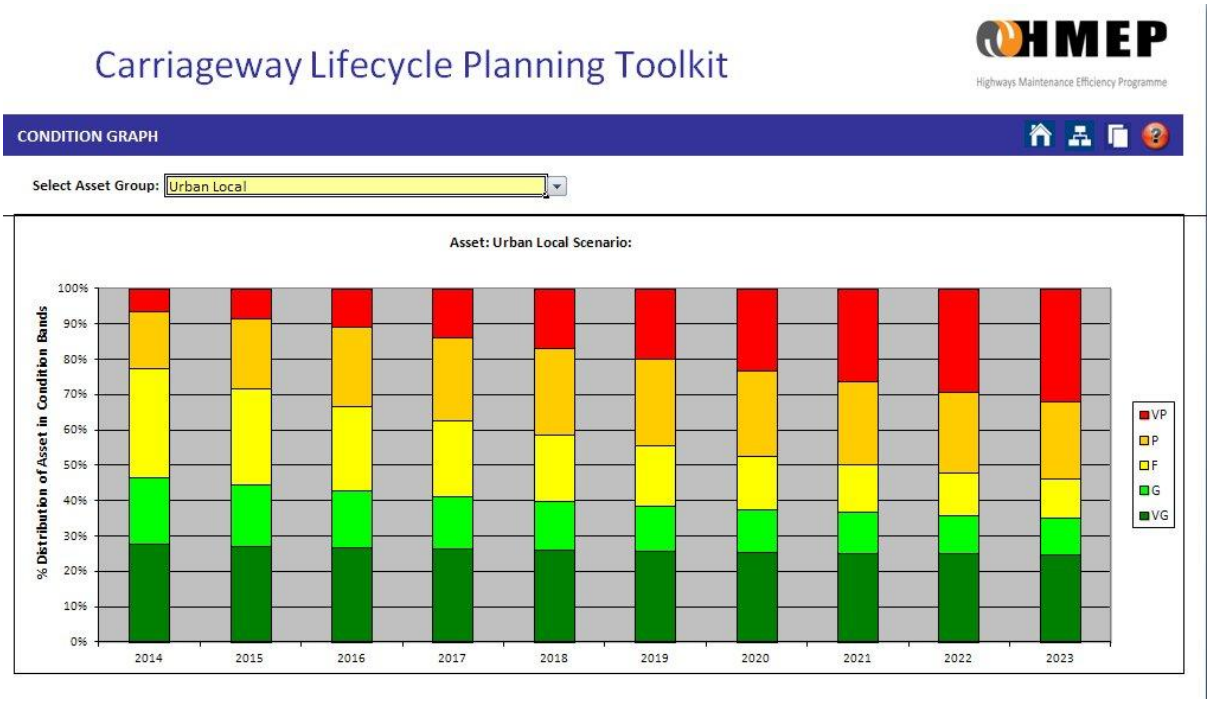
R² = 0.9885
Trend line formula





The series of graphs above indicate trends identified by using the new Life Cycle Planning toolkit provided by HMEP. The graphs enable the reader to see the average annual budget required to attain an overall highway condition. The lines are based on a 10 year planning cycle, therefore the graphs are showing what the percentage of poor or very poor condition roads will be present at the end of the 10 year period.

For direct comparison purposes the total actual capital budgets for the last two year have been less than £700,000 for all categories of road combined. If this budget is to continue at this level it is predicted that there would be more than 50% of our Urban Local Roads in a poor or very poor condition by 2024.

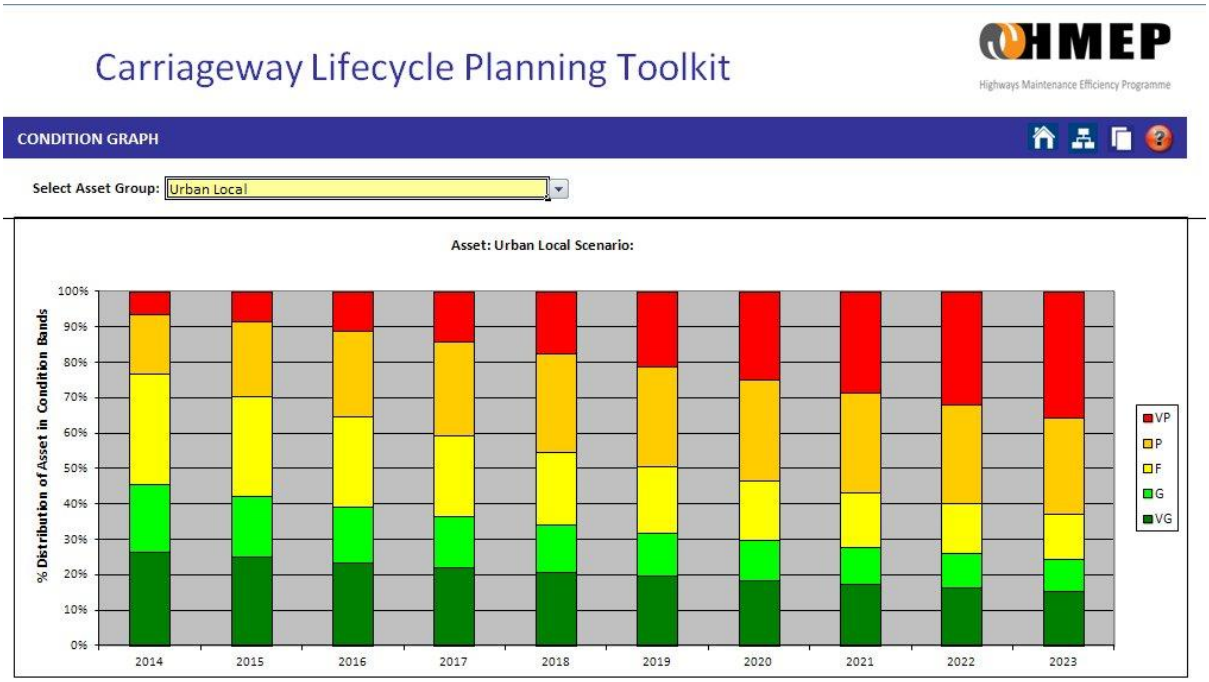


The above graph is part of the toolkit output associated with maintaining the present level of investment. The Urban Local Roads have been chosen to show the deterioration model as they represent 85% of the carriageway network length.

The colours on the graphs are:-

Red -	Very Poor Condition
Amber-	Poor Condition
Yellow -	Fair Condition
Green -	Good Condition
Dark green	Very Good Condition

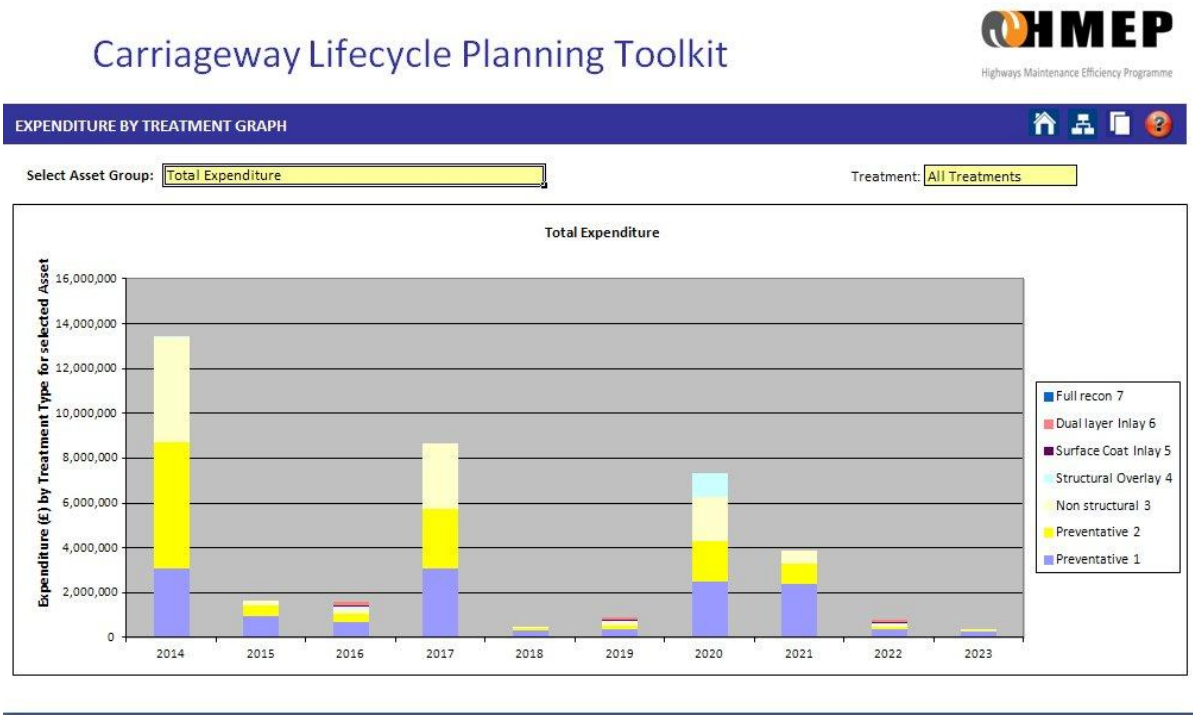
For direct comparison purposes, zero investment produces a very similar graph over the same 10 year period. This is shown below.



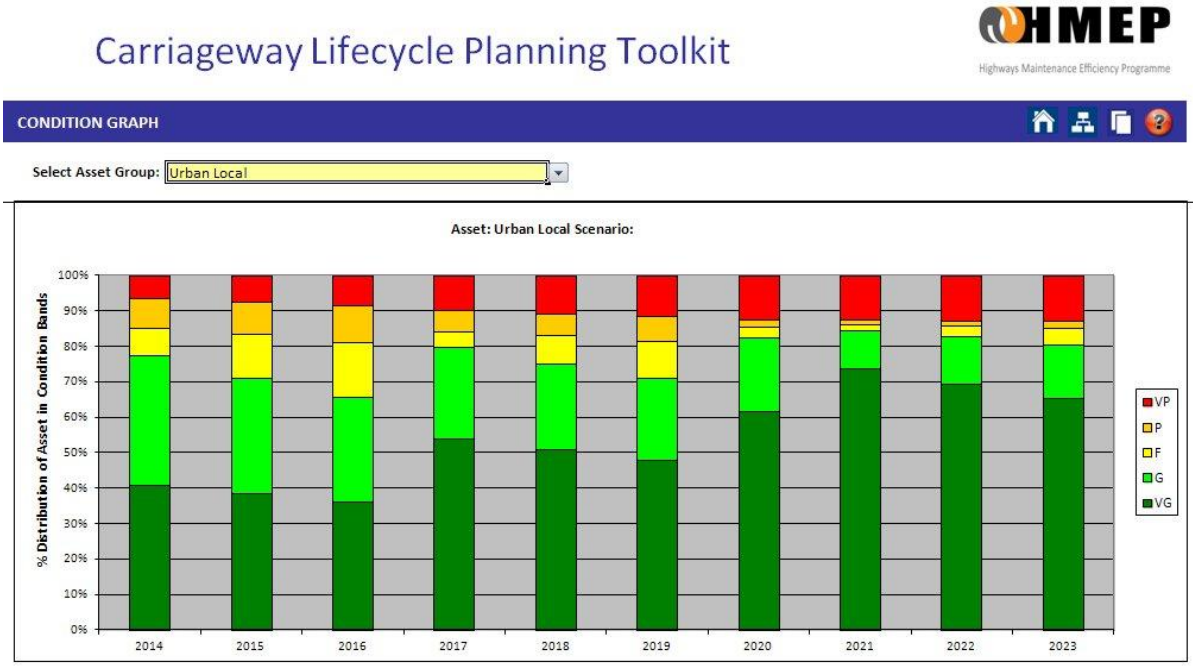
The differences between these two graphs are barely discernable but at the end of the 10 year period more than 60% of the local road network will be poor with 36% being very poor.

To avoid these scenarios, another iteration of the toolkit based on maintaining the current proportions of poor and very poor performance standards produced the £39million budget over the 10 year period. Whilst this option could be fine tuned further to produce indicative works programmes the required expenditure profile is shown on the following graphs.

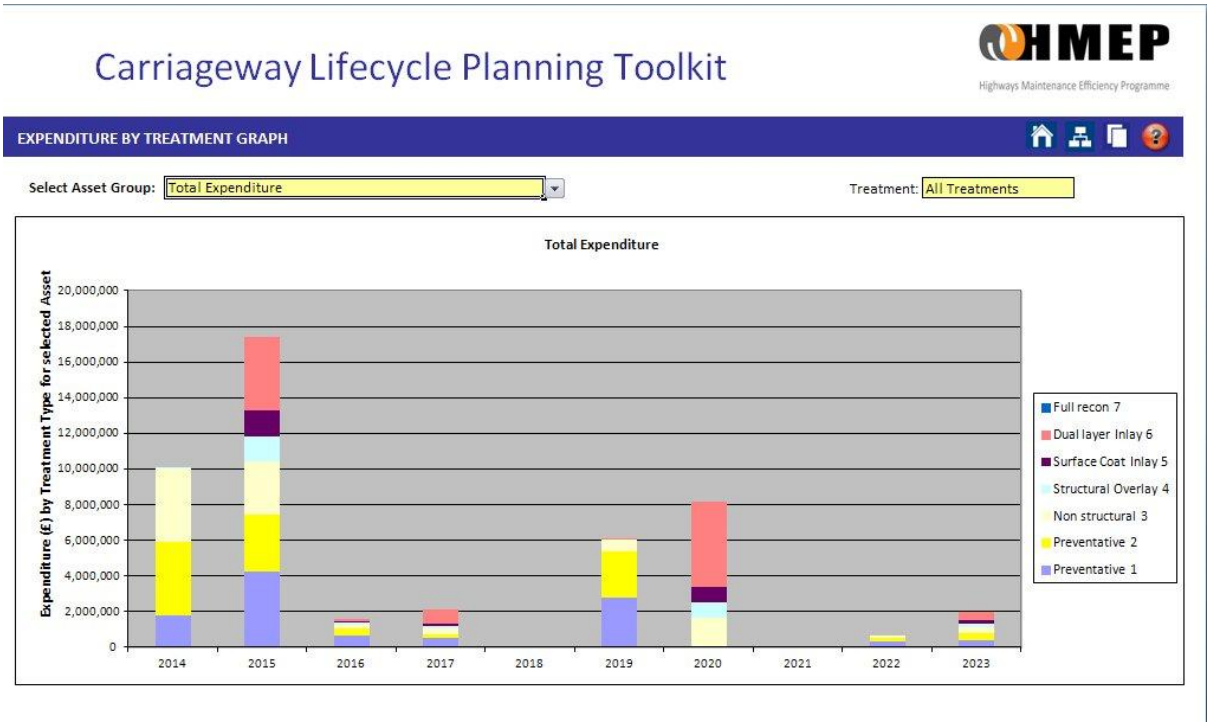
The bulk of the budgets would be targeted on the three lower cost preventative treatments (surface dressing, micro-asphalting and thin overlays). Admittedly the output options will need to be adjusted to reduce or remove the expenditure spikes from the scenario and some additional expenditure on the poor condition roads to stop them reaching the very poor category is desired, but the graph clearly indicates the scale of preventative maintenance that is required to reduce the maintenance backlog.



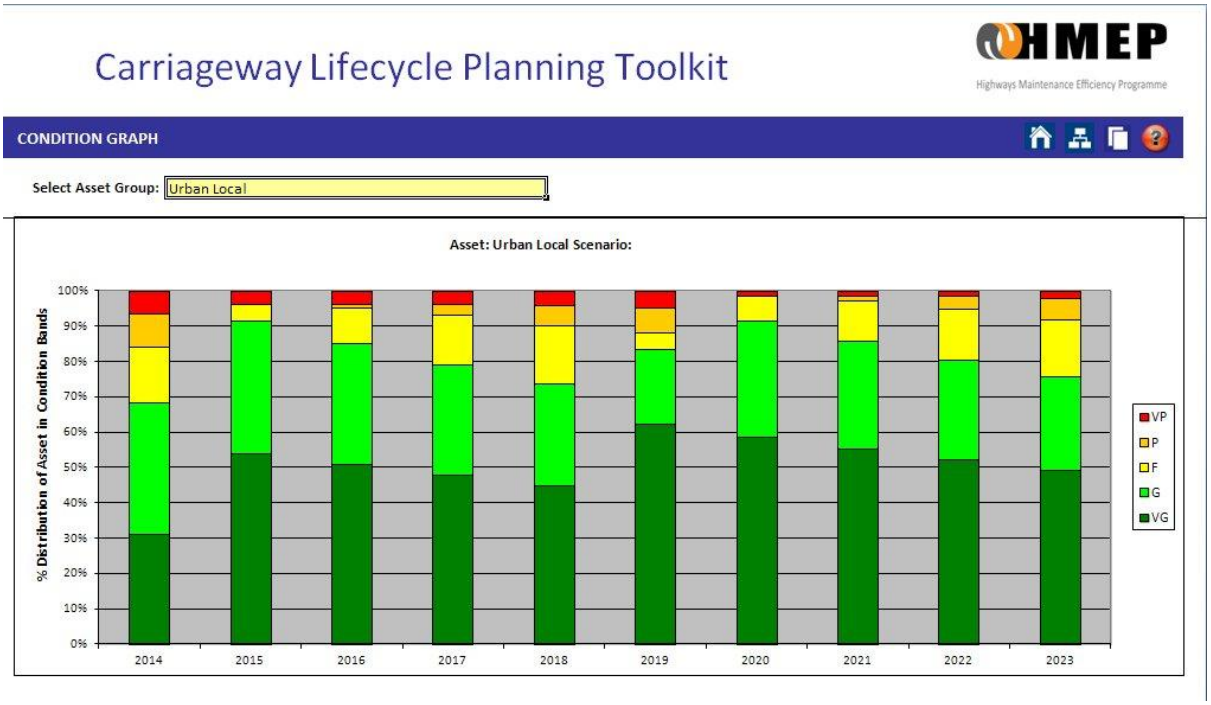
The above expenditure profile assumes a £13.5million investment in preventative maintenance in the first year with more expensive treatments being delayed. This has been the lowest cost standstill proposal produced from this toolkit (total budget £39M). The associated Urban Local Road condition graph is shown below.



This graph shows the outcome of concentrating resources predominantly on a preventative maintenance regime. It therefore shows the absolute minimum investment required to maintain this vital asset. However, it would probably not be acceptable to allow the proportion of very poor roads to increase in the manner shown, but it does establish a realistic base line for other scenarios to compare against.



The above scenario involves a combination of preventative treatments with the addition of planned intervention on sites requiring resurfacing and reconstruction. The total cost of this scenario over the 10 year period would be in excess of £48million.



The condition graph associated with the £48million version is shown above. This scale of investment over the 10 year period would theoretically produce a return to annual expenditure of less than £2million to maintain the roads in this condition.

Appendix B

National Highways and Transportation (NHT) – Customer Satisfaction Survey

Torbay Council has been participating in the NHT survey since its inception in 2008. Whilst we are not taking part in the 2013 survey on cost grounds, it is intended to return on at least a bi-annual basis to enable public satisfaction trends to be monitored. The survey is arranged and analysed by 'Measures 2 Improve' and Ipsos MORI and was originally developed with input from the 'South West Highways Service Improvement Group'. The survey involves comprehensive questionnaires being sent to random recipients in each authority area and asks respondents to rate their perceived performance.

Executive Summary – 2012 Survey

This was the fifth NHT Public Satisfaction Survey and the level of participation remains high in spite of the challenging economic climate and the pressures on budgets. The table below gives some overall national statistics on participation, sample size and response rates, comparing the figures over the five years of the survey.

Survey Statistics	**2008**	**2009**	**2010**	**2011**	**2012**
No of Authorities	33	76	95	70	75
Total Surveys Issued	148,500	371,026	479,300	325,200	377,500
Total Responses Received	27,682	69,310	81,614	60,626	60,624
Average Sample Size	4,500	4,882	5,045	5,028	5,026
Average No of Responses	839	912	859	886	808
Average Response Rate*	19.0%	18.7%	17.0%	17.6%	16%

Torbay Council's own survey scores were predominantly in the average to within 5% of average throughout the surveys with the notable exception of traffic levels and congestion being more than 5% below average. Further analysis of free text responses show that the congestion question and the lack of public satisfaction were mostly related to congestion on routes in and out of Torbay and frequent mention of need for the South Devon Link Road has been a feature throughout the survey's history.

A comparison of the overall levels of public importance and satisfaction from the 2012 survey is made in the table below; this quantifies the gap between importance and satisfaction for each of the
Key Highways and Transport issues raised in the Survey.

2012 Performance Gap		**Importance**	**Satisfaction**	**Gap**
01.	Pavements	70.17	53.38	**-16.78**
02.	Cycle Routes	52.14	53.19	**+1.04**
03.	Local Buses	65.64	61.43	**-4.21**
04.	Taxi Services	47.22	67.76	**+20.53**
05.	Community Transport	48.96	58.64	**+9.68**
06.	Responsive Transport	44.29	54.17	**+9.89**
07.	Safer Roads	72.30	61.07	**-11.24**
08.	Reducing Traffic	63.26	49.34	**-13.92**
09.	Street Lighting	62.97	68.12	**+5.15**
10.	Highway Condition	71.51	35.98	**-35.35**
11.	Rights of Way	57.18	59.05	**+1.88**
12.	Traffic Pollution	62.58	53.27	**-9.31**

This comparison shows there are large gaps between expected and actual performance both positive and negative. The biggest gap by far in 2012 is for Highway Condition, at minus 35%. This is a repeat of the 2011 results, although the performance gap is slightly smaller. There are also significant negative gaps for 'Pavements', 'Safer Roads' and 'Reducing Traffic'. While 'Taxi Services',
'Community and Responsive Transport' show satisfaction levels strongly exceeding expectations.
Within the context of the Asset Management Plan, the key statistics are whilst nationally 71.51% of respondents nationally feel that 'Highway Condition' is the most important factor, only 35.98% of people are happy with the condition.

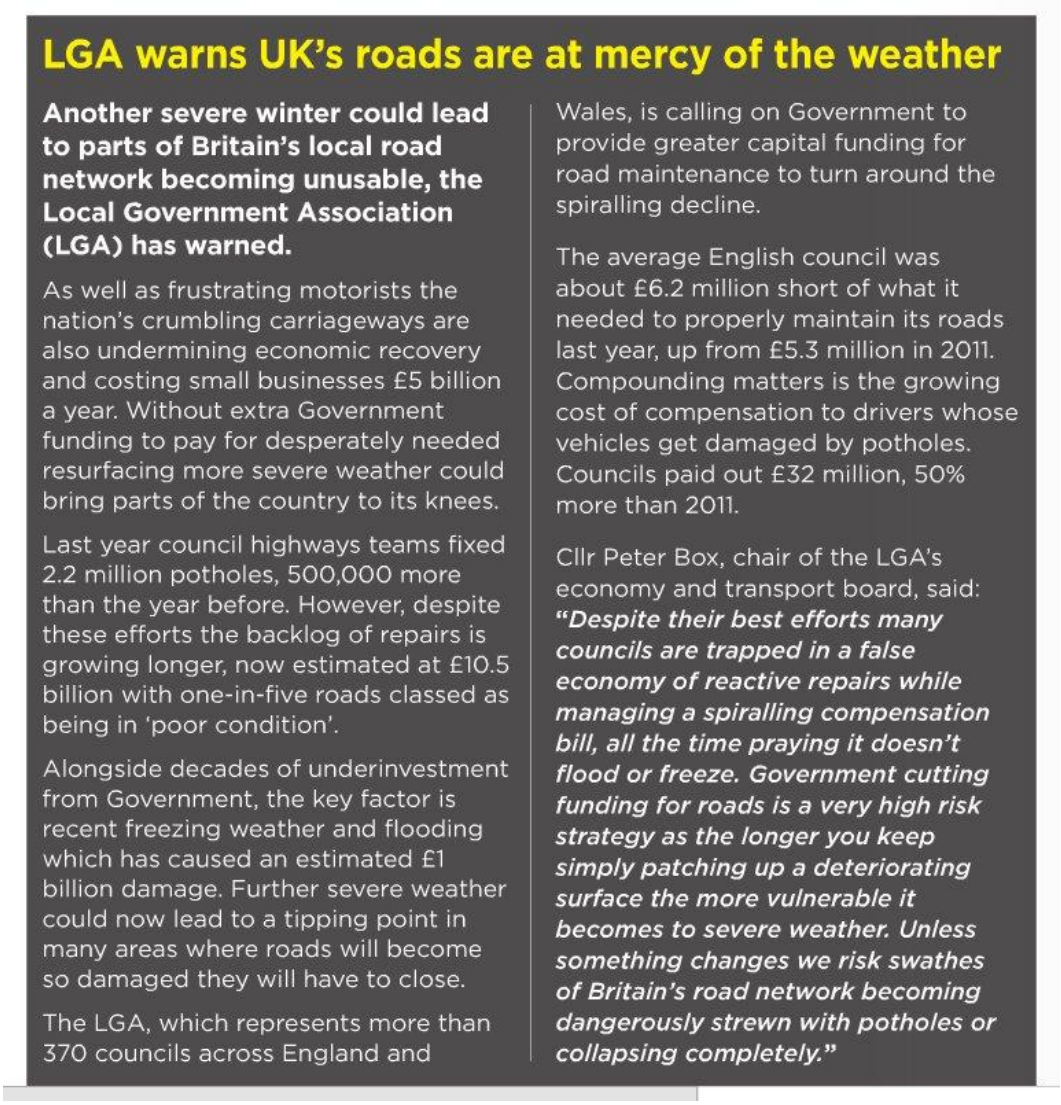
In Torbay for 2012 the figures were 72.00% importance and 31.87% satisfied with our performance, thus an even larger performance gap of -40.13% has been obtained. This shows that the expectations of our customers are higher than most other areas and indicates the high level of dissatisfaction with our present level of service delivery.

The table below shows the highway maintenance specific survey trends for Torbay Council. Whilst the yellow banding shows where Torbay is within 5% of the survey average figures, the public satisfaction for the 'Condition of Highways' is only 31.87% satisfied. This figure is shown as reducing from its 2008 level of 44.80% to its now current low of 30.35% in 2012. Whilst this figure is lower than that of the Key issues on the previous table the trend is undeniable and the results were obtained from different sections of the survey.

Highways Maintenance - Torbay Council Results

Question	2008	2009	2010	2011	2012
HMBI 01-Condition of road surfaces	44.80	45.24	37.25	32.95	30.35
HMBI 02-Cleanliness of roads	50.66	55.95	55.16	54.62	52.87
HMBI 03-Condition of road markings	59.74	63.29	59.82	59.24	57.88
HMBI 04-Condition and cleanliness of road signs	61.20	61.46	60.11	59.65	58.67
HMBI 05-Speed of repair to street lights	60.30	62.20	62.55	60.77	60.73
HMBI 06-Speed of repair to damaged roads/pavements	33.53	37.77	30.97	27.51	27.08
HMBI 07-Quality of repair to damaged roads/Pavement	No question in survey			32.53	33.16
HMBI 08-Maintenance of highway verges/trees/shrub	43.23	50.44	50.62	49.25	41.39
HMBI 09-Weed killing on pavements and roads	44.11	50.95	51.41	51.27	42.95
HMBI 10-Keeping drains clear and working	46.16	50.37	53.36	54.28	49.57
HMBI 11- Deals with Potholes and damaged roads	No question in survey				30.27
HMBI 12-Deals with obstructions on pavements	44.07	49.72	48.15	45.91	41.17
HMBI 13-Keeps roads clear of obstructions	55.68	59.28	57.04	58.40	55.74
HMBI 14-Deals with illegally parked cars	40.09	43.70	43.14	41.40	42.26
HMBI 15-Undertakes cold weather gritting	64.02	60.65	50.53	52.45	55.47
HMBI 16-Cuts back overgrown hedges	44.77	49.70	51.27	46.04	45.11
HMBI 17-Deals with mud on the road	50.68	52.27	52.65	52.90	53.58
HMBI 18-Deals with abandoned cars	46.64	47.75	49.05	51.84	52.89

The statement below is from an industry publication ‘Highways’ of July 2013. This article has been reproduced below as it clearly shows the national scale of this problem and suggests the potential consequence of continuing to ignore the under-funding issues.



LGA warns UK’s roads are at mercy of the weather

Another severe winter could lead to parts of Britain’s local road network becoming unusable, the Local Government Association (LGA) has warned.

As well as frustrating motorists the nation’s crumbling carriageways are also undermining economic recovery and costing small businesses £5 billion a year. Without extra Government funding to pay for desperately needed resurfacing more severe weather could bring parts of the country to its knees.

Last year council highways teams fixed 2.2 million potholes, 500,000 more than the year before. However, despite these efforts the backlog of repairs is growing longer, now estimated at £10.5 billion with one-in-five roads classed as being in ‘poor condition’.

Alongside decades of underinvestment from Government, the key factor is recent freezing weather and flooding which has caused an estimated £1 billion damage. Further severe weather could now lead to a tipping point in many areas where roads will become so damaged they will have to close.

The LGA, which represents more than 370 councils across England and Wales, is calling on Government to provide greater capital funding for road maintenance to turn around the spiralling decline.

The average English council was about £6.2 million short of what it needed to properly maintain its roads last year, up from £5.3 million in 2011. Compounding matters is the growing cost of compensation to drivers whose vehicles get damaged by potholes. Councils paid out £32 million, 50% more than 2011.

Cllr Peter Box, chair of the LGA’s economy and transport board, said: ***“Despite their best efforts many councils are trapped in a false economy of reactive repairs while managing a spiralling compensation bill, all the time praying it doesn’t flood or freeze. Government cutting funding for roads is a very high risk strategy as the longer you keep simply patching up a deteriorating surface the more vulnerable it becomes to severe weather. Unless something changes we risk swathes of Britain’s road network becoming dangerously strewn with potholes or collapsing completely.”***

The above statement evidences what we already know and represents the dilemma facing professionals in the field of highway maintenance. The move towards Whole Government Accounting and the adoption of asset management principles in this discipline is now allowing engineers to demonstrate and quantify the financial shortfalls in maintenance. In time it will allow more focussed decisions in remedying the situation when funding does become available.

Appendix C

South West Highway Improvement Group (SWHSIG)

Torbay Council has always been represented in the above organisation which traditionally benchmarks the members various performance indicators and tries to identify associated areas of best practice. This previously meant collating many of the available performance indicators (know as 'Best Value Performance Indicators' (BVPI's)) but more latterly National Indicators (NI's).
Therefore a simple comparison between Torbay Council and the average of 10 other Unitary Authorities in the Southwest using the group's data produces the results below:-

Percentage Deficient Carriageway by Road Category

	Principal		Classified non-principal		Unclassified	
	Torbay	Average	Torbay	Average	Torbay	Average
2009/10	9%	6%	13%	9%	6%	8%
2010/11	4%	5%	13%	9%	8%	10%
2011/12	4%	5%	12%	8%	12%	12%
2012/13	2%	NA	6%	NA	12%	NA

With the exception of classified non-principal roads (which we only have a small number of and most of which are rural lanes) and an abnormal result in principal roads for the year 2009/10, the measured condition of the carriageway network has always been better than average. However, this is not replicated in the customer satisfaction surveys indicating again that our customers have a higher service expectation than elsewhere.

This is a rather simplistic example and research involving Leeds University on behalf of the Highways Maintenance Efficiency Programme (HMEP) has recently been completed. Torbay Council supplied comprehensive data towards the research programme and the outcome results suggest that at least in the field of carriageway pavement management we have been providing this service in an efficient manner.

This independent study showed that Torbay Council's service efficiency was in the highest group throughout the whole of the study period. This indicates that our current strategy of concentrating on sites where preventative treatments are still possible, whilst identifying and treating pothole cluster sites on local roads with any additional DfT funding is an efficient and effective use of this money. The summary table from the 'Cost, Quality, Customer Satisfaction' (CQC) analysis is provided below:-

The following authorities are within the top 25% performance in the years highlighted blue:

Authority	2009	2010	2011	2012
Cheshire East				
Derbyshire				
Durham				
Hampshire				
Herefordshire				
Kingston upon Hull				
Leicestershire				
Lincolnshire				
Medway				
Northamptonshire				
Sunderland				
Swindon				
Torbay				