Highway Asset Management Plan 2014/15 – 2018/19

Second Edition – November 2014

Highways and Transport Service
West Berkshire Council

West Berkshire
COUNCIL

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Executive Summary

West Berkshire Council has a statutory duty to maintain and manage its highway network. A well-maintained network is not only a valuable asset to the community but is also fundamental to achieving the strategic objectives of the Council. It is also essential in order to deliver the transport goals of the Local Transport Plan.

Good transport is vital for a thriving economy, providing access to employment and education as well as to the services and supplies that people need. Maintenance of the highway network is essential to enable it to share the burden as a key part of the overall transport network.

This Highway Asset Management Plan (HAMP) provides guidance on the delivery of value for money highway maintenance services, consistent with the aims and ambitions of the Council Strategy 2013 - 2017 where 'Focus on carrying out essential highways maintenance' is defined as a key outcome under the 'Promoting a Vibrant District' priority. The HAMP seeks to do this by providing a safer highway network, improved travelling conditions for all highway users, and ensuring greater care of the local environment.

A 'sister' document – the Network Management Plan has also been developed to define the strategy for managing use of the road network. In combination with a detailed asset valuation of the road network, this suite of documents forms the Council's Transport Asset Management Plan (TAMP).

The West Berkshire Road network is regularly inspected to assess its safety, serviceability and integrity as well as to ensure that all works are carried out within the prescribed regulatory standards. Dependent upon the degree of deficiency found, defined processes are then followed to provide effective solutions. In the selection of materials and treatments, the HAMP considers the key issues of environment, quality and value. This aims to maximise the contribution made by highway maintenance to sustaining West Berkshire's biodiversity and character.

The HAMP acknowledges that highway maintenance does not operate in isolation and that there are a number of related functions that could affect, and be affected by, highway maintenance activities.

The HAMP's foundation strategy utilises a logical and systematic approach in accordance with 'value for money' and 'asset management principles', and continuous improvement. Essential elements include statutory obligations, responsiveness to needs of the community and maintaining asset value. Regard is given to the relevance of condition standards and the key issues of Safety, Serviceability and Sustainability. HAMP policies, objectives and standards have been formulated for each maintenance activity and will be reviewed on a periodic basis to ensure that they remain compliant with national objectives and respond to changes brought about by new legislation and technology.

The HAMP defines the key elements of the highway asset describing appropriate levels of service depending on the position in the network hierarchy and the understanding and management of the impact of risk. This enables priority for maintenance within the available budget to be established.

The funding of an appropriate highway maintenance service is made possible by the Council's Medium Term Financial Strategy, whilst larger scale highway improvement projects are funded through the Capital Programme and Strategy. These essential forward planning documents have enabled the Highway and Transport Service to develop a Three Year Highway Improvement Programme which not only enables its proposals for a better road network to be well publicised in advance, thus helping to manage expectations, but which has also resulted in a gradual improvement in road condition across the network.

Regular monitoring will enable the effectiveness of the HAMP to be judged in achieving its stated aims and periodic reviews will be completed. This approach will provide a clear history of the development, evaluation and quality delivered as the Council seeks to provide continuous improvement in the management of the West Berkshire road network for all its users.

The first version of the plan was adopted as Council Policy on 26 March 2012 by Councillor David Betts, Executive Member for Highways, Transport (operational) and ICT, under the Individual Decision process. This plan covers the period 2014/15 – 2018/19.

Mark Edwards
Head of Highways and Transport
West Berkshire Council
1 September 2014

1. Introduction

1.1 This is West Berkshire Council's second highway asset management plan, or HAMP. Proper asset management is essential and the Council has been following good practice in managing its transport assets for many years. However, this is the first truly systematic analysis, intended to identify the best maintenance practices to minimise whole-life costs of the assets and at the same time meet as far as is possible, the levels of service demanded by our customers within the funding likely to be available.

1.2 The data requirements for the production of the HAMP are complex, particularly gathering together data on the extent and condition of assets. This version therefore details only the four largest asset groups of:

- carriageways
- footways
- bridges
- street-lighting

1.3. Later editions of the HAMP will add the Council's other transport assets:

- highway drainage
- cycleways
- other highway structures
- safety fences
- traffic signals and signs
- street furniture
- public rights of way
- highway verges and areas of soft landscaping

1.4 Later editions will also reflect the results of further work to improve the data and analysis set out in this document. Areas where further work is required are detailed in Section 9.

1.5 The HAMP is a part of the Council's wider work on asset management and reflects input from many sources, including our own Local Transport Plan, the County Surveyors Society's 'Framework for Highway Asset Management' document, the Code of Practice – Well Maintained Highways and the recent CIPFA Code of Practice on Transport/Infrastructure Assets.

The Wider Context

1.6 The HAMP fits into a wider corporate initiative on asset management planning, reflecting the increasing importance given to the effective management of all our assets. A corporate asset management plan for the Council has been produced, detailing the five-year planning cycle, and in its role as local education authority the Council also produces an asset management plan for capital expenditure on school buildings and sites.

1.7 Initiatives in asset management planning are themselves part of the wider work of the Council and are intended to help the authority respond effectively to the many service and financial pressures on it and in doing so to deliver:

- continuous performance
- focused and clearly defined projects
- reduced bureaucracy and waste
- maximised economies of scale
- clear benefits of investment.

The Objectives of the HAMP

1.8 The HAMP builds on existing processes and systems, providing a continuous framework of review to help inform decisions on the optimisation of budgets and scheme programmes. The asset management approach is intended to produce:

- reduced whole-life costs, through better planning and review of techniques
- better customer satisfaction through defining and meeting levels of service
- better control of risks
- better informed, and more transparent, investment decision-making

1.9 In achieving this, the HAMP should be seen not as a stand-alone document but as a tactical plan which provides the linkage between the strategic goals of the Council and its detailed operational and service plans. For West Berkshire these include other key documents as follows:

- Sustainable Community Strategy
- Council Strategy 2013 -17
- Medium Term Financial Strategy, Revenue Budget and Capital Strategy & Programme
- Local Transport Plan
- Newbury 2026 – A Vision of Newbury Town Centre
- Local Service Plans

1.10 The HAMP objectives relate particularly to the local goals of the Local Transport Plan which are:

- to improve travel choice and encourage sustainable travel
- to support the economy and quality of life by minimising congestion and improving reliability on West Berkshire's transport networks
- to maintain, make best use of and improve West Berkshire's transport networks for all modes of travel
- to improve access to services and facilities
- to improve and promote opportunities for healthy and safe travel
- to minimise energy consumption and the impact of all forms of travel on the environment

Stakeholders

1.11 Stakeholders include:

- all road users, motorised and non motorised
- organisations representing different users, for example the West Berkshire cycle forum, Newbury Town Centre Partnership, Chambers of Commerce, Sovereign Housing.
- public transport operators
- road haulage companies
- Members of the Council and Parish and Town Councils
- local residents

Layout of the Document

1.12 Sections 2 to 4 act as an introduction to the core part of the document and the lifecycle plans for individual asset groups. Section 2 introduces the concept of levels of service to determine the required ‘output’ from the asset. Section 3 describes the funding available for asset maintenance and Section 4 examines how our assets are valued, with the initial asset valuation detailed in Appendix E. Section 5 introduces the lifecycle plans which are set out for the four asset groups covered in this first version of the HAMP in Appendices A to D.

1.13 The lifecycle plans describe the asset, assess the required levels of service, and analyse best practice maintenance techniques. They then define options for future investment to meet HAMP objectives, depending on future funding levels and taking note of predicted future changes affecting the quantity of the asset or the demand on it. Total funding must be balanced between the asset groups to ensure that overall performance across all assets is optimised.

1.14 Section 3 summarises the expenditure and expected outcomes for the four largest asset groups. Any changes to approaches or techniques revealed through the lifecycle plans are also summarised and together this forms the Asset Management Strategy. Section 7 summarises the risk analysis for the plan, which is set out initially in the lifecycle plans, and Section 8 describes the performance management regime put in place to ensure the implementation of the HAMP can be properly monitored. Section 9 details the improvement work which will be carried out to develop further editions of the HAMP.

2. Levels of Service

2.1 Levels of service describe both what the customer wants from the asset and what is necessary to ensure that a proper maintenance regime is in place. A clear understanding of customer views is therefore fundamental in defining them, as is a comprehensively planned maintenance regime. Both aspects will be influenced further by legislative requirements, the Council's objectives and policies, national best practice and more critically, funding.

2.2 Within this HAMP, the following four dimensions are used to define levels of service, where the first three dimensions reflect the requirements of the customer.

- safety
- availability
- serviceability
- condition

2.3 **Safety** describes the risk to the customer in using the asset and will in all cases be required to meet high standards. Road safety on the other hand depends substantially on the behaviour of road users, and in the wider context is not, therefore, covered by this dimension.

2.4 **Availability** is largely self-explanatory and will vary according to the asset and location. For example, a single street light not working is clearly unavailable, however, the fact that it is unavailable is only likely to cause a minor nuisance to road users and residents. Conversely, a shut bridge on an 'A' road closed due to structural weakness will result in major issues on the network.

2.5 **Serviceability** describes whether the asset actually delivers what service users and the Council require of it. For example, a road surface may be perfectly safe, available for use at all times and in good condition, but the fact that it is of concrete construction could be causing significant noise nuisance to people living nearby. The serviceability dimension also has the potential to bring into play much wider attributes of the asset, for example is the road congested, is the footway surface appropriate for the local environment, is the street lighting provided to adequate standards for local needs?

2.6 **Condition** is judged relative to minimising the long-term cost of maintaining the asset and not relative to customer requirements. For example, a rusting steel lamp column may be safe, working and acceptable in appearance to customers. The fact that it is in rusty condition is, in these circumstances, only of concern if the optimum maintenance regime to minimise whole-life costs would have had it repainted before rust appeared. Such an optimum maintenance regime will, for many assets, include periodic preventative maintenance before more extensive maintenance, or full replacement, is undertaken. A maintenance regime which involves little investment over many years followed by major renewals may be more expensive overall than a 'little and often' regime which applies regular preventative maintenance; hence the emphasis given to minimising whole-life cost.

2.7 Environmental sustainability is growing rapidly in importance and the Council already takes many steps to minimise the environmental impact caused by its management of highway assets. It is likely that this will be added as a specific additional dimension of levels of service in future editions of the HAMP.

2.8 All aspects of level of service include elements of risk. As examples, the collapse of a bridge immediately makes the service unavailable; inadequate monitoring of skid resistance may increase the risk of road accidents. The analysis of levels of service needs to take such risks into consideration.

3. Asset Management Finance

3.1 Funds for maintaining our assets are allocated from both the Local Transport Plan capital allocation and from the Council's revenue budget. The Council also receives external funding through targeted bids for additional Government grants, infrastructure development, sponsorship and fees and charges. Further information regarding funding and allocation may be found within the Council's Medium Term Financial Strategy, Revenue Budget and Capital Strategy & Programme and Local Transport Plan.

Local Transport Plan Capital Funding

3.2 Local Transport Plan capital funding is used for:

- carriageway renewal and preventative maintenance schemes:
  -reconstruction
  -resurfacing
  -surface dressing
  -machine patching
- footway renewal schemes
  -reconstruction
  -resurfacing
  -block/slab replacement.
- bridge renewal and upgrading works
  -concrete repairs
  -waterproofing
  -deck replacement
- lighting column replacement.

Revenue Funding

3.3 The Medium Term Financial Strategy (MTFS) sets the Council's approach to managing its revenue budget. The MTFS is set in the context of the Government's Spending Review and its resulting implication for local government. The Comprehensive Spending Review (CSR) announced in late 2010 set out the funding envelope for local Government over the period 2011-15.

3.4 The aim of the MTFS is to:

- summarise the financial context within which the Council is working;
- provide a stable financial framework for the Council over the period of the Plan, taking into account the need to address new statutory requirements, known financial pressures, and new Government initiatives;
- within that framework, ensure through a variety of means, that financial resources are made available to deliver the Council's Strategic Priorities as set out in the Council's Strategy 2013 – 17.

Funding Allocation

3.5 The allocation of budgets to different activities has been carried out on the basis of supporting the overall lifecycle planning described in the lifecycle plans and the need to undertake programmed maintenance repairs and is detailed in the Council's annual budget report. For the 2014/15 financial year, the following budget allocations have been made.

Table 1 Maintenance Revenue Funding 2014/15

	£'s
A339 De-trunking	205,680
Drainage	400,970
Reactive Maintenance	94,850
Bridge Maintenance	193,360
Hand Patchng	334,360
Safety Fences	66,880
Gulley Emptying	195,510
Grip Cutting	35,070
Signs and Road Markings	174,860
Emergencies	616,930
Street Lighting Maintenance and Energy	1,054,720
Total	**3,373,190**

Table 2 Capital Funding 2014/15

	£'s
Highway Reconditioning	2,816,003
Carriageway Patching	229,196
Footway Patching	40,297
Flood Damage Repairs	1,770,480
Pothole Repair Grant	798,707
Total	**5,655,976**

External Funding and Other Savings

3.6 The pressure on council budgets underlines the importance of exploring external funding and savings. Examples include:

- invest to save
- developer 'commuted sum' contributions to cover the extra future maintenance costs of unusual surfacing, lighting or other features of new development which will be adopted by the Council.
- engagement with the Council's Term Maintenance Contractor to minimise whole life costs through early and effective management of risk, methods, materials and programme (early contractor involvement).
- the use of alternative cost effective materials, for example, upvc drainage systems and recycled materials.
- The use of SUDS to manage drainage

The Role of the HAMP in Determining Future Funding Levels

3.7 Future total funding seems likely still to be heavily constrained, both for the highways service and for the Council as a whole. Within that constraint, the HAMP has two specific functions:

- to provide evidence based information to help inform decisions on the allocation of funds to the Highway and Transport Service.
- to provide evidence based information to help allocate budgets which align with the set levels of service.

4. Asset Valuation

4.1 Valuing roads, bridges and other transport assets is to some extent a theoretical exercise, given the nature of the assets, but it is an essential part of the management process and will be required under 'whole -life government accounting' rules. In terms of the HAMP, the asset valuation process can be used to measure the impact of alternative maintenance scenarios in terms of depreciated value and asset condition, allowing better informed decisions to be made on funding and allocations.

4.2 Calculating asset values can be a complex exercise. An initial 'gross replacement cost' approach has been calculated using the model detailed in the Code of Practice on Transport and Infrastructure Assets, where the gross replacement cost is the cost to provide a modern equivalent of the asset if it did not exist. The valuation framework will continue to be developed in line with national guidance and good practice.

4.3 The amount of service life of an asset that has been consumed is the depreciation and can be evaluated financially. This figure will be the expenditure required to return an asset to "as new" condition, if it can be repaired. Alternatively, it is the sum that should be set aside for the replacement of any asset that cannot be repaired. The current or net value of an asset is its gross replacement cost minus the financial depreciation.

4.4 Further details of the analytical method used are given in Appendix F. The value of the highway asset is summarised in Table 3 below.

Table 3 Asset Valuation (April 2014)

	Carriageways £000	Footways £000	Bridges £000	Street Lighting £000
Gross Replacement Cost	1,152,082	115,114	75,351	15,936
Depreciation	4,796	Not Available	Not Required	399
Net Value	**1,147,286**	**-**	**-**	**15,537**

5. Lifecycle Plans

5.1 The lifecycle plans for the four main asset groups are set out in Appendices A to D. Each details initially:

- the levels of service we wish the asset to meet
- the evidence on the extent of the asset and its characteristics
- the evidence on its present condition, and how that is measured
- the present valuation of the asset
- an assessment of future changes in demand for the asset
- the options available for treatment of the asset

5.2 This provides the basis for the analysis which follows in the remaining sections of each appendix:

- analysis of the best management strategy for minimising the whole-life cost of the asset whilst meeting service level aspirations
- identifying options within this strategy which deliver different levels of service, with different targets, depending on budget availability
- setting out the action plan necessary to ensure the effective delivery of the lifecycle plan
- identifying the specific risks which may affect the successful implementation of the lifecycle plan

6. Asset Management Strategy

6.1 Our techniques for managing assets are long-established and continue to be developed to align with national guidelines and current best practice through contact with organisations including CIPFA, HMEP and the South East Counties Service Improvements Group (SECSIG).

6.2 The asset management strategy draws on the analysis set out in the lifecycle plans to show:

- the way we will budget expenditure to provide the best overall maintenance of all assets, judged against desirable levels of service,

and

- the techniques we use to ensure that we manage the different assets in the most cost-effective way, and how we will improve those.

6.3 The strategy covers two main areas:

- The optimum allocation of the capital budgets available between the asset categories. This is intended to provide the background for decisions on future spending.
- The main areas for further investigation and analysis in taking forward our techniques for managing the individual assets.

Strategy to Improve Asset Management Performance.

6.4 In developing our techniques for managing assets, over the period of this plan, we will continue to focus on the technical elements of asset management including:

- improving asset data.
- the introduction of deterioration rates within our pavement condition assessment analysis.
- further investigation of service lives for different treatments.
- further investigation into new street lighting technology to reduce maintenance and energy costs.
- the inclusion of other key asset groups not currently covered by this HAMP that will provide a financial benefit to the Council with the introduction of an asset management approach.

6.5 Attention will be focussed more on technical aspects of our work in the second and future editions. The overall work we need to do is summarised in section 9 and, of that, those most important for the technical assessment work are:

- improving asset data
- further investigation of service lives for different treatments
- further research into treatment options for paved and flagged footways
- further investigation of the case for painting steel lighting columns

6.6 In addition, future versions of the HAMP need to include similar analysis for the other asset groups not included in this first version.

7. Risk Management

7.1 The Council has a corporate risk policy designed to manage risks in a structured manner. All change processes are risk assessed, and action plans prepared for risks of relatively high likelihood and high impact. Similar analysis is carried out for risks associated with continuing service delivery. The main processes for transport/highway asset management are therefore already covered by risk analyses, documented in the Highways & Transport service plan.

8. Performance Monitoring

8.1 The Council has in place a comprehensive performance monitoring system that provides high level performance related information in order to monitor the objectives/ commitments detailed within the Service plans and the national single list data set on which the Council is measured. This framework operates at all levels within the organisation.

8.2 The Local Transport Plan sets out specific indicators relating to transport and highway services and includes indicators associated with the condition of the highway/transport asset. These are also detailed in the lifecycle plans and cover not only carriageways and footways but also bridge condition and street lighting.

8.3 The performance of the Council's Term Maintenance Contractor, Volker Highways, is measured and reported monthly and quarterly and reviewed annually to ensure that they align with the Council's objectives. A partnership arrangement is in place to help deliver 'value for money' high quality services and continuous service improvement. A Strategic Management board comprising senior representatives from both organisations ensures the cost-effectiveness and delivery performance of the partnership.

9. Development and Updating the HAMP

Development

9.1 There are a number of other areas of work to complete before the HAMP can be considered a fully comprehensive document and these will continue to be developed over the course of this HAMP. Beyond this there will be further developments in analytical techniques in future years, as well as inevitable changes in the availability of funding. These will require further editions of the HAMP to be produced in later years, though with the core content perhaps little changed after 2015.

9.2 The responsibility for co-ordinating this work will initially lie with the Council's Highways Manager.

9.3 Future Development

Work Area	For later HAMPs
Complete asset inventory collection and lifecycle planning for remaining assets.	Y
Refine approach to asset valuation.	Y
More quantified analysis of customer views on serviceability for each asset category, based on specific customer surveys and NHT survey.	Y
More detailed examination of asset management strategies, including: • use of condition data • deterioration modelling • use of alternative materials/treatments/treatment options	Y

Updating

9.4 The arrangements for updating the HAMP will be decided by the Highway Manager.

10. Glossary of Terms and Abbreviations

BVPI	Best Value Performance Indicator
CIPFA	The Chartered Institute of Public Finance & Accountancy
CSS	County Surveyors Society
CVI	Coarse Visual Inspection
DfT	Department for Transport
DVI	Detailed Visual Inspection
FNS	Footway Network Survey
GIS	Geographical Information System
LTP	Local Transport Plan
NMP	Network Management Plan
NI	National Indicator
PI	Performance Indicators
SCANNER	Road condition measurement survey
SCRIM	Skid Resistance measurement survey
HAMP	Highways Management Plan
TAMP	Transport Asset Management Plan
UKPMS	United Kingdom Pavement Management System
WDM	Electronic Highways Management System
WGA	Whole Government Accounts

Appendix A

Carriageway Lifecycle Plan

Introduction

1. The background to lifecycle plans and the format of each are described in Section 5 of the HAMP. This appendix provides the lifecycle plan for carriageways.

2. For management purposes, the Council's highway network has been split into discrete maintenance categories based on the recommendations given within the national Code of Practice for "Well Maintained Highways". These categories reflect the type and use of different carriageways and are summarised in Table 1 below.

Table 1

Cat.	Hierarchy	Type of Road	Detailed Description
1	Motorway*	Limited access motorway regulations apply.	Routes for fast moving long distance traffic. Fully grade separated and restrictions on use
2	Strategic* Routes	Trunk and some Principal A roads between Primary Destinations.	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.
3a	Main Distributor	Non Principal A Roads.	Routes between strategic routes and linking urban centres to the strategic network.
3b	Secondary Distributor	Classified Roads (B and C Class) and Unclassified urban bus routes.	In rural areas, these roads link larger villages to strategic/main distributor network. In urban areas these roads usually have a 30 mph speed limit and high levels of pedestrian usage.
4a	Link Roads	Unclassified Roads linking into the main/ secondary distributor network with greater local significance in rural areas.	In rural areas provide inter-village links and connect to distributor network. In urban areas residential or industrial interconnecting roads.
4b	Local Access Roads	Unclassified urban cul-de-sacs and rural, lightly trafficked roads serving small settlements and single lane roads.	In rural areas these roads serve smaller villages and provide access to individual properties and land. In urban areas they are predominately residential.

** Motorways (Category 1) and Trunk Roads (Category 2) are the responsibility of the Highways Agency.*

Levels of Service

3. Since 2002, the Highways and Transport service has been carrying out a comprehensive programme of annual testing to determine the condition of the highway network and establish the Government's defined datasets for the condition of the Principal Classified, Non-Principal Classified and Unclassified Road networks and skid resistance. The current national datasets are defined as follows:
   - •130 – 01 Condition of Principal Roads
   - 130 – 02 Condition of Non Principal Roads
   - 130 – 03 SCRIM (Sideway-force Coefficient Routine Investigation Machine) – classified network
   - 130 – 04 Carriageway work completed.

4. The desirable levels of service for this asset category are set out in Table 2 below. By adopting a budget optimisation and depreciation modelling approach, using the historical condition data/deterioration rates, the Council has been able to set condition based service levels for different budget scenarios.

Table 2

Attribute	Desired Standard	Performance Measure
Safety	Maintain the following level of skid resistance*: 130 – 03 to remain at 90% +/- 3%	SCRIM (Sideway-force Coefficient Routine .Investigation Machine) survey results.
Availability	All roads available for use at all times excluding periods of essential road works and street works.	Journey times. Complaints. ELM Reports.
Serviceability	Appropriate standard of ride, signing and lining.	SCANNER survey. Complaints. NHT Survey. Council surveys. ELM Reports.
Condition	Maintain the following levels of condition**: 130 - 01 (formerly NI168): 6% +/- 1% 130 - 02 (formerly NI169): 9% +/- 1% LI224b (formerly BV224b): 13% +/- 2%	Single list national dataset*** Local Indicators (LI's).

** The percentage above the required investigatory level.*

*** The percentages represent the length of network that is in need of urgent maintenance (Condition Red).*

**** Whilst targeting red SCANNER sites should improve the national dataset, it does not necessarily promote good asset management. To maintain the asset, it is essential to target the high ambers and prevent these sites from deteriorating into the red. In providing a % range for the length requiring urgent maintenance, there should be sufficient flexibility to achieve both outcomes.*

***** ELM – West Berkshire Council's Enquiry Logging Manager system for recording enquiries and service requests.*

5. Failure to respond adequately to any of these four attributes of level of service could produce risk to the authority. Table 3 below, which details the main risks, underlines the importance of responding properly to each.

Table 3

Risk Type	Description Example
Physical	Accidents caused by asset defects.
Corporate	Legal proceedings for failure in duty of care.
Financial	Reduction in the value of the asset because of poor maintenance practice, reduced budgets and increased compensation payments following legal action.
Public Relations	Poor road condition reflects on the overall image of the Council.
Environmental	The use of premium aggregates, natural materials/resources, inappropriate materials/specifications, short lived resurfacing/ overlay materials and high consumption of energy per kilometre of treated network.
Network	Disruption to road users as a result of poor coordination and unplanned maintenance following poor maintenance practice and/ or reduced budget.

Asset Base and Characteristics

6. Using the national standard of road classification and maintenance category, the Council's highway network may be summarised as follows:

Table 4 - Road Class

	A Roads Lane1 kms	B Roads Lane1 kms	C Roads Lane1 kms	U Roads Lane1 kms	Total Lane 1 kms
Urban	46.7	22.3	112.5	559.5	741.0
Rural	158.9	125.6	731.0	740.7	1756.2
Total	205.6	147.9	843.5	1300.2	2497.2

Table 5 - Maintenance Category

Category	2	3a	3b	4a	4b	Total Lane 1 kms
Lane1 kms	104.2	101.4	1075.6	378	838	2497.2

Asset Condition and Assessment

7. The condition of the road network is assessed annually by SCANNER surveys. Although no longer a national indicator, 100% of the unclassified network is assessed annually to establish a local indicator (LI244b). Skid resistance is measured annually on the A, B and C roads using SCRIM. Digital video imagery is captured as part of the SCANNER surveys and is used to check condition, accessibility, serviceability and for asset inventory collection. The annual condition survey regime for West Berkshire is summarised in Table 6 below.

Table 6

	A Roads	B Roads	C Roads	U Roads
SCANNER	50% in both directions (national) Data set:130-01	100% in one direction (national) Data set:130-02	50% in one direction (national) Data set: 130-02	100% in one direction (local) LI224b
SCRIM	100% in both directions	100% in both directions	100% in one direction	Not surveyed
Digital Video Imagery	As part of SCANNER survey	As part of SCANNER survey	As part of SCANNER survey	As part of the SCANNER survey

8. In addition to condition surveys, the Council also carries out routine highway safety inspections where the frequency of inspection is based on the type of road and the amount and type of traffic using it. Adopting the guidelines given within the national Code of Practice for Maintenance Management "Well Maintained Highways" (July 2005), the standards for the frequency of safety inspections are summarised in Table 7 below.

Table 7

WBC Maintenance Group	Code of Practice Category and Description	Road Class	Frequency	Maximum Interval Between Inspections
Group 1	2, 3a and 3b	A, B and C roads. Urban bus routes on Unclassified roads	1 month (Driven)	6 weeks
Group 2	4a	U roads	3 months (Urban – Walked) (Rural – Driven)	16 weeks
Group 3	4b	U roads	12 months (Urban – Walked) (Rural – Driven)	56 weeks

9. There are national datasets for the classified road network. 130-01 and 130-02 are a direct application of the Road Condition Index (RCI) from the current UKPMS default rule set. For unclassified roads there is no longer a national indicator (previously BV224b), however the Council continues to provide a local indicator (LI224b) for these roads using the RCI methodology. A summary of road condition performance for the period 2005 to 2012 is shown in Table 8 below.

Table 8

Indicator/ Year	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
A Roads	BV 223	BV 223	NI 168	NI 168	NI 168	NI 168	130-01	130-01
	5%	7%	5%	6%	5%	5%	5%	4%
B & C Roads	BV224a	BV224a	NI 169	NI 169	NI 169	NI 169	130-02	130-02
	11%	9%	7%	9%	9%	9%	9%	6%
U Roads	BV224b	BV224b	LI224b	LI224b	LI224b	LI224b	LI224b	LI224b
	26%	20%	14%	21% *	12% *	11% *	12% *	3% **

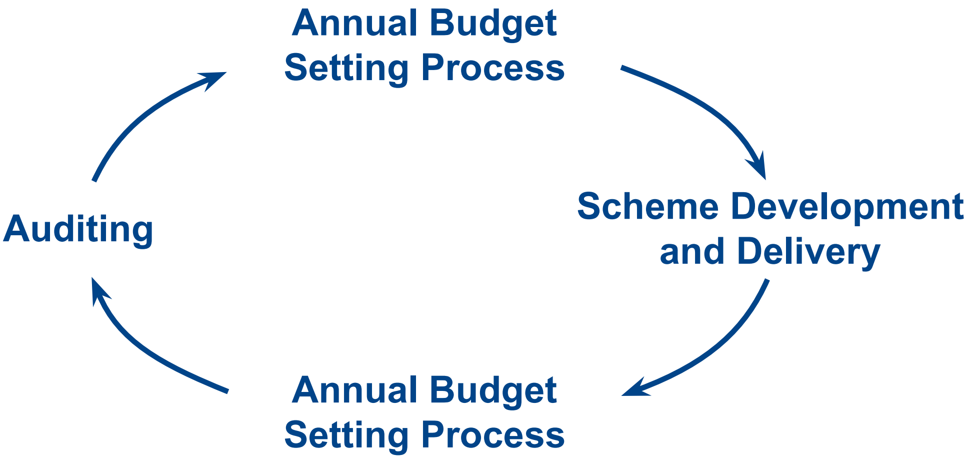
** Based on 100% network coverage.*

*** 50% of the U roads were not surveyed due to adverse snow (mainly rural roads) and as a result, not included as part of this calculation.*

Financial Management, Investment and Programming.

10. The Council's constitution provides a flexible mechanism for ensuring effective and fully accountable financial management of the Council's transport budgets, both capital and revenue.

The framework within which operational budgets are managed is as follows:



11. Day to day budget control is the responsibility of the budget manager, a senior officer reporting directly to the Head of Service. The Head of Service has overall responsibility for the department's financial situation, working very closely with the Directorate Group Accountant, who is a key member of the Directorate Management Team. Service budgets are monitored at Directorate Management Team level and a formal budget report presented monthly to Corporate Board.

12. To ensure compliance with the constitution, regular independent audits are undertaken particularly in areas of high cash turnover such as car parks and concessionary fares.

13. The process for managing capital expenditure is very similar but the Council's Capital Strategy Group plays a key role in monitoring scheme progress and cost. Whilst an overview is taken by the Directorate Management Team, the details are closely monitored by Capital Strategy Group using detailed monthly reports. This group is a good example of

cross service corporate working as it comprises representatives of all Council Services with a capital expenditure programme. A holistic view of the Council's overall position regarding capital can therefore be taken.

14. To ensure that value for money is being achieved across the entire range of transport related budgets, the Council undertook a Comprehensive Review in October and November 2005. In 2014, a Zero Based Budget (ZBB) approach was adopted within the Highways and Transport service to ensure that the Council's resources are used to the best effect by directing funds to the most needed areas.

Budget Optimisation and Depreciation Modelling

15. To carry out budget optimisation and depreciation modelling on the classified network, the Council applies a financial model that is able to predict the level of investment required to deliver any predefined level of service as measured by road condition surveys. The model is also used to assess the effect of treatments and budget strategies on the 130-01 and 130-02 data sets and the Depreciated Asset Value over selected time periods.

16. For the unclassified road network, a separate model was used to predict budgets required to achieve selected LV224b values using the results from past CVI surveys. However, in 2011, the mini-SCANNER was introduced to assess the unclassified network and this data has now been combined as part of the classified road network model.

17. The model is populated using the latest SCANNER and SCRIM survey data from the Principal, Non Principal Classified and the Unclassified road networks and a treatment decision matrix that links the individual condition parameters (rutting, longitudinal profile, cracking and texture etc) to specific maintenance treatments (reconstruction, resurfacing, surface dressing etc) is used to formalise treatments.

18. The model uses a deterioration rate to predict the future condition. The SCANNER road condition indicator (RCI) has been linked to a residual life which enables the life of the road to be determined from the condition data.

19. Using the financial model a number of scenarios can be run to enable West Berkshire Council to evaluate the effect of different budget allocations on the network condition and the resulting effect on the value of the asset.

20. The Council has developed a financial model that uses the latest road condition data and a deterioration model to help predict budget requirements to achieve target condition service levels over different timescales and future condition of the road network should investment levels change.

21. The financial model has also been used to target budget allocations to specific road hierarchies. Based on current model simulations using condition data and deterioration parameters, Table 9 below shows the average cost to achieve a “steady state” scenario, namely, the budget amounts required to deliver the set service levels over the next 25 years:

Table 9

Road Class	Average Annual Cost (25 Years)	Total Network Cost	% of the Total Cost
A Classified Rural	£389,759	£9,743,982	11%
A Classified Urban	£141,918	£3,547,950	4%
B Classified Rural	£227,180	£5,679,505	6%
B Classified Urban	£54,423	£1,360,571	1%
C Classified Rural	£1,060,637	£26,515,933	29%
C Classified Urban	£229,979	£5,749,471	6%
U Unclassified	£1,546,038	£38,650,961	43%
Urban and Rural	**£1,546,038**	**£38,650,961**	**43%**
TOTAL	**£3,649,934**	**£91,248,373**	**100%**

The above figures are based on the condition data and unit costs up to and including 2010

22. The above table has also been used to establish a budget allocation between the classified (60% of the budget) and non-classified networks (40% of the budget), enabling a more targeted maintenance regime based on existing network condition.

Condition Threshold Values and Availability of Condition Data

23. Condition threshold values represent the condition beyond which the road would be classified as in need of investigation and possible treatment. The condition is defined from SCANNER surveys, which now provide very high levels of network coverage.

24. Threshold levels from SCANNER surveys are defined in terms of a Road Condition Indicator (RCI), which combines defects together into a composite measure for every 10 metre subsection of road, and can range from 0 to 315 for the classified network and from 0 to 246 for the unclassified network. An RCI ≥ 100 indicates the section is in ‘need of maintenance’ and is classified as red for national indicator reporting. Amber is used to describe roads with an RCI > 40 and < 100.

25. However, in order to manage a network not only are the lengths of road with an RCI ≥ 100 considered for treatment but some of the roads with RCI values of between 80 and 100 are also considered because these are approaching a critical condition and early treatment is more cost effective as it is usually less extensive at this stage in the life cycle. The model therefore takes into account treatments that have been applied to the road in a “high” amber and red condition.

26. Tables 10, 11, 12 and 13 below highlight the parameters, thresholds, weightings and the subsequent “points” score used to calculate the RCI for A, B, C and U roads using condition data collected from SCANNER surveys. Each 10-metre section of surveyed road is allocated a condition ranking shown as green, amber, high amber or red depending on the value of the “points” scored. The total length of the red sections is reported as a percentage of the total network coverage to establish the national datasets 130-01 and 130-02 and the local indicator LI224b.

Table 10

Condition of Principal Roads (A Roads: Data set 130 - 01)

Parameter (defect)	Units	Lower Threshold	Upper Threshold	Weighting (Importance x Reliability)	Maximum Score (Points)
Rut depth (larger of LLRT or LRRT)	mm	10	20	1.0	100
3m profile Variance (LV3)	mm2	4	10	0.8	80*
10m profile Variance (LV10)	mm2	21	56	0.6	60*
Whole c/w cracking (LTRC)	% area	0.15	2.0	0.6	60
Texture depth (Urban roads) (LLTX)	mm	0.6	0.3	0.5	50
Texture depth (Rural roads) (LLTX)	mm	0.7	0.4	0.75	75
Maximum Scores (RCI)			**Urban Roads**		**290**
			Rural Roads		**315**

** Only the higher score from the two measures of longitudinal profile (3m and 10m profile variance) is counted in the overall score*

Glossary of Terms

LLRT	Left wheel path rut depth
LRRT	Right wheel path rut depth
LV3	3m moving average longitudinal profile variance
LV10	10m moving average longitudinal profile variance
LTRC	Whole carriageway cracking
LLTX	Left wheel path average texture depth

Table 11

Condition of Classified Roads (B Roads: Data set 130 - 02)

Parameter (defect)	Units	Lower Threshold	Upper Threshold	Weighting (Importance x Reliability)	Maximum Score (Points)
Rut depth (larger of LLRT or LRRT)	mm	10	20	1.0	100
3m profile Variance (LV3)	mm2	5	13	0.8	80*
10m profile Variance (LV10)	mm2	27	71	0.6	60*
Whole c/w cracking (LTRC)	% area	0.15	2.0	0.6	60
Texture depth (Urban roads) (LLTX)	mm	0.6	0.3	0.5	50
Texture depth (Rural roads) (LLTX)	mm	0.6	0.3	0.75	75
Maximum Scores (RCI)			**Urban Roads**		**290**
			Rural Roads		**315**

** Only the higher score from the two measures of longitudinal profile (3m and 10m profile variance) is counted in the overall score*

Table 12

Condition of Classified Roads (C Roads: Data set 130 - 02)

Parameter (defect)	Units	Lower Threshold	Upper Threshold	Weighting (Importance x Reliability)	Maximum Score (Points)
Rut depth (larger of LLRT or LRRT)	mm	10	20	1.0	100
3m profile Variance (LV3)	mm2	7	17	0.8	80*
10m profile Variance (LV10)	mm2	35	93	0.6	60*
Whole c/w cracking (LTRC)	% area	0.15	2.0	0.6	60
Texture depth (Urban roads) (LLTX)	mm	0.6	0.3	0.3	30
Texture depth (Rural roads) (LLTX)	mm	0.6	0.3	0.5	50
Maximum Scores (RCI)			**Urban Roads**		**270**
			Rural Roads		**290**

** Only the higher score from the two measures of longitudinal profile (3m and 10m profile variance) is counted in the overall score*

Table 13

Condition of Classified Roads (U Roads: Data set 130 - 02)					
Parameter (defect)	Units	Lower Threshold	Upper Threshold	Weighting (Importance x Reliability)	Maximum Score (Points)
Rut depth (larger of LLRT or LRRT)	mm	10	20	1.0	100
3m profile Variance (LV3)	mm2	10	20	0.6	60*
10m profile Variance (LV10)	mm2	50	95	0.5	50*
Whole c/w cracking (LTRC)	% area	0.15	2.0	0.36	36
Texture depth (Urban roads) (LLTX)	mm	0.6	0.3	0.3	30
Texture depth (Rural roads) (LLTX)	mm	0.6	0.3	0.5	50
Maximum Scores (RCI)			**Urban Roads**		**226**
			Rural Roads		**246**

** Only the higher score from the two measures of longitudinal profile (3m and 10m profile variance) is counted in the overall score*

27. The total number of points attributed to each 10 metre section of road is calculated based on the above tables. The Road Condition Indicator (RCI) is assigned a “condition” colour based on the RCI value as detailed in Table 14 below.

Table 14

RCI Range	Condition Colour
0 to 39	Green
40 to 79	Amber
80 to 99 (locally created range)	High Amber
greater than or equal to 100	Red

28. The nationally recognised definitions for the colour groupings shown above are as follows:

- •GREEN – Lengths where the carriageway is generally in a good state of repair.
- AMBER – Lengths where some deterioration is apparent which should be investigated to determine the optimum time for planned maintenance treatment.
- HIGH AMBER – (Locally created range) Lengths where the carriageway is in need of planned maintenance as soon as possible to justify carrying out a lesser maintenance treatment rather than a more extensive treatment later, in order to minimise whole life costs.
- RED – Lengths in poor overall condition which are likely to require planned maintenance soon (i.e. within a year or so) on a “worst first” basis. (Although there may be justification for postponing major repairs, and only carrying out minor repairs to keep the road safe and serviceable, in order to minimise whole life costs i.e. “economic prioritisation”).

Maintenance Treatments

29. Road surfaces can be renewed, repaired, protected or retextured.

    - •Renewal involves replacing some or all of the structural layers and in some cases the sub-base layer in order to restore strength and life expectancy.
    - Repairs include patching, permanent pothole repairs, crack sealing and resetting of ironwork.
    - Protection treatments restore the skid resistance and seal the surface of the road which prevents moisture and water ingress getting into the surface and oxidation of the binder. Treatments include surface dressing, micro-asphalts and slurry seals.
    - Retexturing increases the serviceable life of the surface course by removing excess binder and "roughing up" the polished aggregate, improving both macro and micro texture to increase skidding resistance in wet conditions and reduce aqua-planing.

30. A set of maintenance treatments for various defect conditions have been established along with unit costs and typical design lives for each road class. For the classified and unclassified networks, the treatment cost/life expectancy matrix is detailed in Table 15 below.

Table 15

Treatment	Design Life (Years)	Unit Cost (£/m2)			
		A Roads	B Roads	C Roads	D & U Roads
Reconstruction (450-525mm)	50	70.00	67.00	50.00	50.00
Thick Overlay (150mm)	50	32.00	32.00	30.00	30.00
Moderate Overlay (100mm)	40	24.00	24.00	23.00	23.00
Thin Overlay (40-60mm)	20	19.00	19.00	18.00	18.00
Thin Inlay (40mm)	15	21.00	21.00	20.00	20.00
Moderate Inlay (90-110mm)	20	26.00	26.00	25.00	25.00
Surface Dress/ Micro (10-25mm)	10	6.00	6.00	6.00	6.00
Retexturing	5	3.00	3.00	3.00	3.00

Linking Condition with Treatment

31. Using the latest national rules and parameters (RP 10.01), the parameters and thresholds tabulated in Section 26 are used to calculate national datasets 130-01 and 130-02. For local indicator (LI224b), local parameters have been established for the unclassified network based on engineering judgement, knowledge of network performance and the locally set thresholds as detailed in Table 13 of this appendix.

32. The four main defect mechanisms used to identify treatments are rut depth, texture depth, whole carriageway cracking and variance (ride quality). These are all recorded by the SCANNER surveys and are also used to establish the RCI and national datasets. There is a fifth defect mechanism which is the skidding resistance of the road surface as measured by SCRIM. Within the analysis, this data is combined with wet injury accidents and given the highest weighting when compared against the other four defect mechanisms.

33. When a road has been identified as in need of maintenance, the five defects will be analysed on an individual basis to establish the main defect mechanism causing the deterioration and the most suitable and cost effective treatment will be recommended. For example, a scheme that has a deep wheel track rutting problem would most likely require an inlay or thicker overlay of new material to remove the rutting. Surface dressing or a thin inlay/overlay would not eradicate the problem. If a road is deficient in texture depth and areas of cracking are evident, a surface dressing maybe the most cost effective treatment to improve texture, skidding resistance and seal the cracks to prevent water ingress.

Effectiveness of Treatment

34. By the very nature of the work, maintenance schemes will contain ‘non-defective’ sections and therefore treatments will be applied where they do not produce the full benefit of the treatment. The amount of non effective maintenance is defined as the effectiveness factor for the treatment and is a variable within the model. The distribution of RCI on the length where ‘non-effective’ maintenance is applied is based on the network distribution as a best estimate for forward projection of condition. An effectiveness factor of 50% has been assumed within the financial model.

Timing of Treatment

35. If defects are treated before they reach an RCI of 100, the cost of repair will tend to be less expensive than if they are left untreated and allowed to deteriorate into the “red”, resulting in the reduction of the whole life cost of the pavement. It is often not possible to treat all defects as they occur and, therefore, it is necessary to allow for the additional cost of repairs. Factors can be applied to increase treatment unit costs as the RCI increases beyond 100.

Scheme Identification and Prioritisation Framework

36. Schemes are identified in a number of ways and originate from a number of sources. Once a road has been identified as having a possible maintenance need, it is then analysed along with all the other schemes to establish a priority.

37. Initial scheme identification will normally come from one or more of the following sources:

Objective sources:

- •SCANNER data – identified from sections with a high concentration of “Red” or “High Amber” RCI values.
- SCRIM data – sections of carriageway which are both deficient in skidding resistance and have had an occurrence of wet injury accidents.

Subjective sources:

- •Visual condition reports in addition to the routine safety inspections from the Council’s inspectors who are on the network daily.
- Members of the public/Council Members/Parish Councils – Concern raised regarding poor condition of surfaces.
- Safety Inspections – Analysis of surface defect repairs where clusters and/or repeat reactive maintenance is occurring.

38. For each identified scheme, the available machine based condition data is analysed to establish its priority rating using the following criteria:
    - Skidding Resistance and Wet Accidents
    - Road Condition
    - Deterioration Trends
    - Road Classification

39. Table 16 shows how the points are allocated across each defect type. For any particular defect, the maximum possible priority rating is 620. This table is based on the format for RCI calculations shown in Tables 10, 11, 12 and 13.

Table 16

Defect Type	Units	Lower Threshold	Upper Threshold	Weighting (Importance / Reliability)	Max Score (Points)
Wet Injury Accidents in the past 3 years	Number	1	3	3.0	300
SCRIM (Worst 100m Average)	I.L minus MSSC	0	0.2	1.0	100
SCANNER RCI	Factor of RCI%	50	300	1.0	100
Deterioration Trending	Increase above expected RCI norm over 4 year period (High Amb. & Red only)	10	17	0.8	80
Road Classification	Class	D&U	A	0.4	40
				Maximum Score	**620**

Glossary of Terms:

I.L	Investigatory Level
MSSC	Mean Summer SCRIM Coefficient
RCI	Road Condition Index

Wet Injury Accidents

40. Wet accident score is only triggered if SCRIM shows the surface to be deficient. If the skidding resistance of the road surface is above the recommended investigatory level for that particular site, then no points for wet accidents will be added. Skidding resistance is combined with wet injury accidents to assign points based on the level of deficiency and the number of accidents which have occurred in the past 3 years. Points are allocated based on a sliding scale of skid deficiency i.e. the greater the deficiency the more the points gained, up to a maximum of 100. For each wet injury accident where the road surface has been identified as deficient within a scheme, 100 points are awarded up to a maximum of 3 wet accidents. This gives a possible maximum score of 300.

SCRIM

41. A SCRIM score is calculated using the Mean Summer SCRIM Coefficient (MSSC) and the Investigatory Level (IL). For any given scheme, the worst 100 metre section is taken and a value of deficiency is calculated by subtracting the MSSC from the IL. If the result is equal to or above zero, the surface is not deficient in skid resistance and as a consequence no points are added to the overall score. If the result is equal to or

Example:

42. A 100 metre length of A Class road has a MSSC of 0.27 and an investigatory level of 0.4, the value of deficiency would be -0.13. Applying this value to Table 17 below, the point score for the scheme would be 65.

Table 17

Deficiency	0 to -0.1	-0.11	-0.12	-0.13	-0.14	-0.15	-0.16	-0.17	-0.18	-0.19	>=0.20
Point Score	50	55	60	65	70	75	80	85	90	95	100

43 The above calculation is added to the scores from wet injury accidents, SCANNER, trend analysis and road classification to determine the overall score for the scheme. With this overall score, it is possible to compare schemes and set priorities in an objective manner.

SCANNER

44. A SCANNER RCI score is calculated based on the percentage of green, amber, high amber and red values there are for each individual scheme. These percentages are multiplied by the factors detailed in Table 18 to establish an overall rating where the weighting is biased towards high amber and red.

Table 18

Condition Colour	Multiplier
Green	0
Amber	1
High Amber	6
Red	5

This rating, between 50 and 300 is then converted into a points score up to a maximum score of 100.

Example

A section of urban A class road has the following condition data over a 10 metre section:

Defect Type	Units	Condition Data	RCI Score *
Rut Depth	mm	20	100
Profile variance**	mm2	10	80
Cracking	% area	0.175	30***
Texture Depth	mm	0.8	0
		Total RCI Score	**210**

* *The RCI scores have been calculated using the figures in Table 10*

** *The profile variance is the average of the 3m and 10m profile variance results*

*** *Calculated on a pro-rata basis using the figures in Table 10*

From Table 14, a score of 210 will place this 10 metre section into category RED as it is greater than 100. This calculation is then repeated for the whole length of the proposed scheme giving a consolidated set of results as tabled below.

Table 19

	% RCI GREEN	% RCI AMBER	% RCI HIGH AMBER	% RCI RED	
Consolidated RCI score % for scheme	14	42	18	26	
Multiplier*	0	1	6	5	
Overall Rating	0	42	108	130	**Total 280**

Using the overall rating total above and Table 20 below, the points score for the scheme is 95.

Rating	<=50	51-75	76-100	101-125	126-150	151-175	176-200	201-225	226-250	251-275	276-300	>300
Point Score	0	50	55	60	65	70	75	80	85	90	95	100

Table 20

Trending Analysis

45. Trending analysis is also carried out to establish how the road pavement within an identified scheme has performed over a period of time. Deterioration modelling can be unpredictable due to the high number of variables that have an effect on a road pavements residual life, for example, extreme weather, traffic levels, drainage, location etc. However, analysis of past RCI values and the changes that may have occurred over time, can give a good

indication of the rapid onset of failure. It can also identify road pavements that may have reached the high end of their RCI value (high amber), and have stabilised, indicating a slowing down of deterioration. This may offer the opportunity to delay maintenance for a year or two, enabling resources to be redirected to other schemes.

46. Deterioration trending analysis is carried out on each scheme by comparing the latest RCI SCANNER data for both high amber and red values with that of the previous 4 year's data. Average deterioration rates for each classification and environment have been calculated on specific sites where no maintenance improvements have been made in the past 10 years. These average/expected rates are then used to calculate the change in RCI when compared with the observed RCI over the 4 year period for each scheme. If there is an increase in the deterioration rate above the expected "average", points will be assigned linearly up to a maximum value of 60, similar to using the calculation method described above for SCRIM and SCANNER.

Road Classification

47. The final item contributing towards the priority points total is the road classification. A small number of points are awarded based on the usage of the road and environment it is situated in. Table 21 below highlights the allocation of points.

Table 21

Road Classification	Environment	
	Urban Points	Rural Points
Principal Roads (A Road)	40	30
Classified Roads (B Road)	30	25
Classified Roads (C Road)	20	15
Unclassified Roads (U Road)	10	0

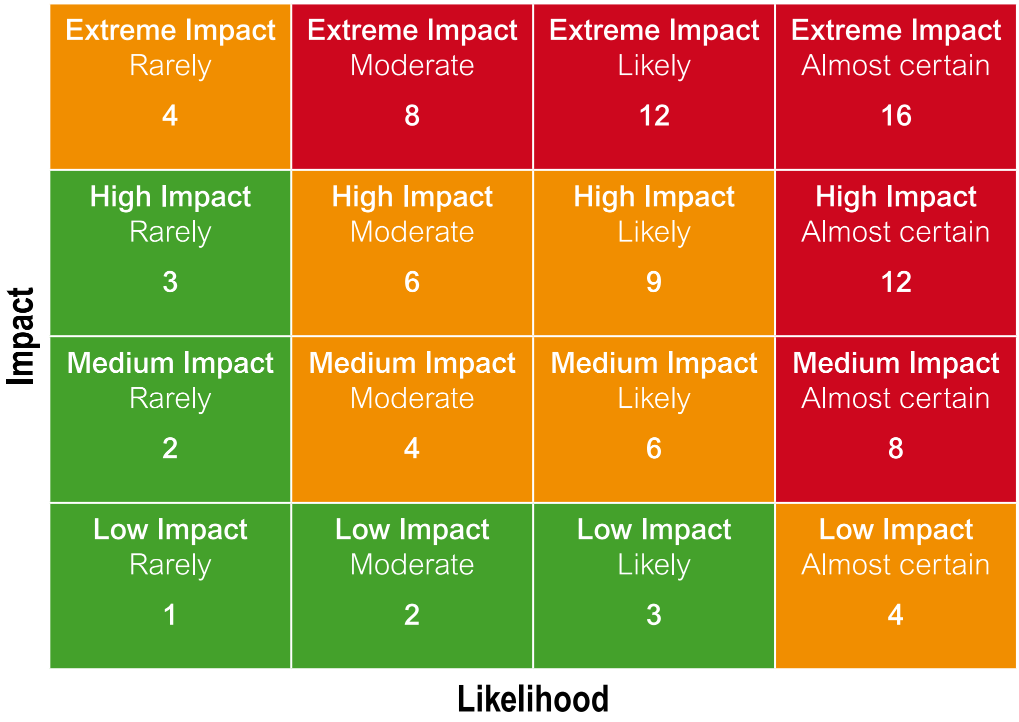
Scheme Prioritisation

48. By adding the point scores for each of the defect types shown above for each scheme, it is possible to compare schemes and set priorities in an objective manner. From this analysis, the Council is able to prepare it's budget based Three Year Highway Improvement Programme.

Risks

49 The risks involved in implementing this lifecycle action plan have been assessed against the Council's standard grid of likelihood versus impact and are detailed in Tables 22 and 23 below, with an outline of the mitigation to be planned. The 'red' risks from each lifecycle plan are documented in the Highways and Transport Service Plan and Risk Register.

Table 22



Impact	**Extreme Impact** Rarely 4	**Extreme Impact** Moderate 8	**Extreme Impact** Likely 12	**Extreme Impact** Almost certain 16
	High Impact Rarely 3	**High Impact** Moderate 6	**High Impact** Likely 9	**High Impact** Almost certain 12
	Medium Impact Rarely 2	**Medium Impact** Moderate 4	**Medium Impact** Likely 6	**Medium Impact** Almost certain 8
	Low Impact Rarely 1	**Low Impact** Moderate 2	**Low Impact** Likely 3	**Low Impact** Almost certain 4

Likelihood

Table 23

Risk	Level	Mitigation	Responsible
1. Insufficient staff resources.	6	Highlight in Service Plan and Risk Register. Present Business Case for additional support	Head of Highways and Transport Highways Manager
2. High materials/ labour/ plant/ staff costs	6	Ensure value for money is being achieved through market testing and targeted procurement.	Project Managers Contractors
3. Reduced capital funding	12	Prioritise key assets to minimise overall deterioration whilst maintaining safety	Head of Highways and Transport Highways Manager
4. Reduced revenue funding	12	Prioritise key assets to minimise overall deterioration whilst maintaining safety	Head of Highways and Transport Highways Manager

Appendix B

Footway, Footpath, Cycleway and Cycletrack Lifecycle Plan (Metalled)

Introduction

1. The background to lifecycle plans, and the format of each, are described in Section 5 of the HAMP. This appendix provides the lifecycle plan for footways, footpaths, cycleways and cycletracks that have hard surfaces (metalled). At this stage of development of the HAMP, footways are taken to exclude non-metalled public rights of way.

2. The condition of footways will be determined using Footway Network Surveys (FNS). These surveys are nationally recognised and will provide information for asset management and valuation purposes. A full survey was undertaken in 2012 across West Berkshire.

   Footways are defined in categories 1 to 4 as detailed in Table 1 below.

Table 1

Category	Category Name	Description
1	Primary Walking Route	Major town and village centres with +30 number shops.
2	Secondary Walking Route	Small retail shopping outlets +8 shops, large schools and industrial outlets +500 pupils or equivalent pedestrian movements.
3	Link Footways	Urban access, busy rural, all other schools.
4	Local Access Footways (metalled)	Rural footways, non-feeder footway in housing estates.

Notes:

Cycleways (those that form shared cycle/pedestrian thoroughfares on either the carriageway or footway)will be included as part of the carriageway/footway as detailed in Appendix A and B respectively.

Cycletrack (those that are remote from the carriageway/footway) will be treated as their own asset group.

Metalled Footpaths (those that are remote from the carriageway) will be treated as a Local Access Footway

Levels of Service

3. The desirable level of service for this asset category is set out in Table 2 overleaf.

Table 2

Attribute	Desired Standard		Performance Measure
Safety	Surface and profile should be safe for all users and free from obstruction.		Number of R1e and R1 defects. Accident record. Routine safety inspections.
Availability	90% of footways available for use at all times.		User Surveys. ELM Reports.
Serviceability	Category 1 and 2 footways to be clearly recognisable and signed as appropriate.		ELM Reports. Correspondence. Consultation.
Condition	Primary Walking Route	5% in need of intervention *	Number of recorded defects. Footway Network Survey (FNS) Data. Accident record. ELM Reports.
	Secondary Walking Route	9% in need of intervention *	
	Link Footways	12% in need of intervention *	
	Local Access Footways (metalled	15% in need of intervention *	

Notes.
** The set Service levels are initial estimates that will be refined over the course of this HAMP with the collection of FNS survey data.*

4. Failure to respond adequately to any of these four dimensions of level of service will produce risk to the authority. Table 3 below details the main risks and underlines the importance of responding properly to each.

Table 3

Risk Type	Description
Physical	Accidents caused by asset defects
Business	Legal proceedings for failure in duty of care
Financial	Reduction in asset value as a result of deteriorating condition; increase in settled claims and associated legal costs
Corporate Image	Poor condition of footways reflect on the overall image of the Council.
Network	Unnecessary disruption to users as a result of inadequate and unplanned maintenance.

Asset Base and Characteristics

5. A breakdown of the footway asset is shown in Table 4 below. The areas and types of construction are currently estimates, however, these will refined using FNS data. All asset data will be stored and managed within in the Council’s WDM UKPMS system.

Table 4

Description	km	Bituminous		Flags		Blocks		Concrete/ Unbound	
		km	m2	km	m2	km	m2	km	m2
Primary Walking Route	7	3	5400*	2.0	3600*	2.0	3600*	0.0	0
Secondary Walking Route	20	18	32400*	1.2	2160*	0.6	1080*	0.3	540*
Link Footways	252	248	446400*	1.2	2160*	1.8	3240*	1.4	2520*
Local Access Footways	546	540	972000*	0.8	1440*	2.0	3600*	3.6	6480*
Remote Metalled Cycletracks	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Notes

** The area is based on an assumed footway width of 1.8m. No footway width information is available at the time of publication.*

6. Following the full survey in 2012, FNS surveys are carried out on a sample basis on each footway class to facilitate asset management, programming and valuation. The sample coverage is detailed in Table 5 below.

Table 5

Description	Survey %
Primary Walking Route	20
Secondary Walking Route	20
Link Footways	10
Local Access Footways	10
Remote Metalled Cycletracks	TBC

Asset Condition and Assessment

7. To assess the extent to which the desirable levels of service are met requires measurements and for safety and condition, this is achieved through routine walked safety inspections and an annual footway network condition survey. Measures for availability and serviceability will be developed over later editions of the HAMP.

8. The Council’s standards for the frequency of footway inspections take into account national guidelines as detailed in the national Code of Practice for Maintenance Management “Well Maintained Highways” (July 2005) as detailed in Table 6 below.

Table 6

Category	Description	Frequency of Inspection
1	Primary walking route	Monthly
2	Secondary walking route	Every 3 months
3	Link footways	Every 6 months
4	All other metalled footways	Every 12 months

Asset Valuation

9. Currently the preset values as provided by HAMFIG have been used to calculate the value of the footway asset. The areas and unit rates will be developed and refined over the course of the HAMP as more detailed data is collected using FNS. Appendix E details the valuation and the initial gross replacement cost has been calculated to be £115 million.

Future Changes in Demand

10. A significant level of new development is planned in the District over the next ten years and this expansion will inevitably increase the length of the current carriageway and footway assets. This increase will, in the long term, present a maintenance expenditure pressure, however, in the short term, the rate of deterioration as a result of this increase in use is likely to be marginal.

Treatment Options and Costs

11. The limited number of types of footway construction, and ways in which they deteriorate, lead to a relatively short list of maintenance treatments. The frequency and use of these treatments are dictated by the category of the footway in question. In most instances category 1 and 2 footways require a higher level of maintenance to maintain the standards set out in the levels of service. Table 7 below summarises the list of maintenance treatments for footways.

Table 7

Treatment	Design Life (Years)	Unit Cost (£/m2)
Reactive Maintenance		
Bituminous (Patching etc)	5 -10	13.00
Blocked	10 *	25.00
Paved	10 *	20.00
Preventative Maintenance		
Bituminous (Slurry sealing)	8	1.40
Blocked	N/A	-
Paved	N/A	-
Renewal		
Bituminous(Resurfacing)	25	23.00
Blocked	30+	20.00
Paved	30+	17.00

** Maintenance requirement in many locations is likely to be negligible, but where the underlying construction is damaged by heavy vehicle overrun, utility works etc., relaying may be required.*

Linking Condition with Treatment, Scheme Identification and Prioritisation

12. On completion of the Footway Network Surveys, the data and the defined rules and parameters will be used to form a treatment matrix that will link condition with treatment. With this matrix, it will be possible to identify and prioritise treatments to ensure that the asset is maintained at minimum cost using the appropriate treatment. At present, footway condition is assessed using safety inspection and visual inspection data.

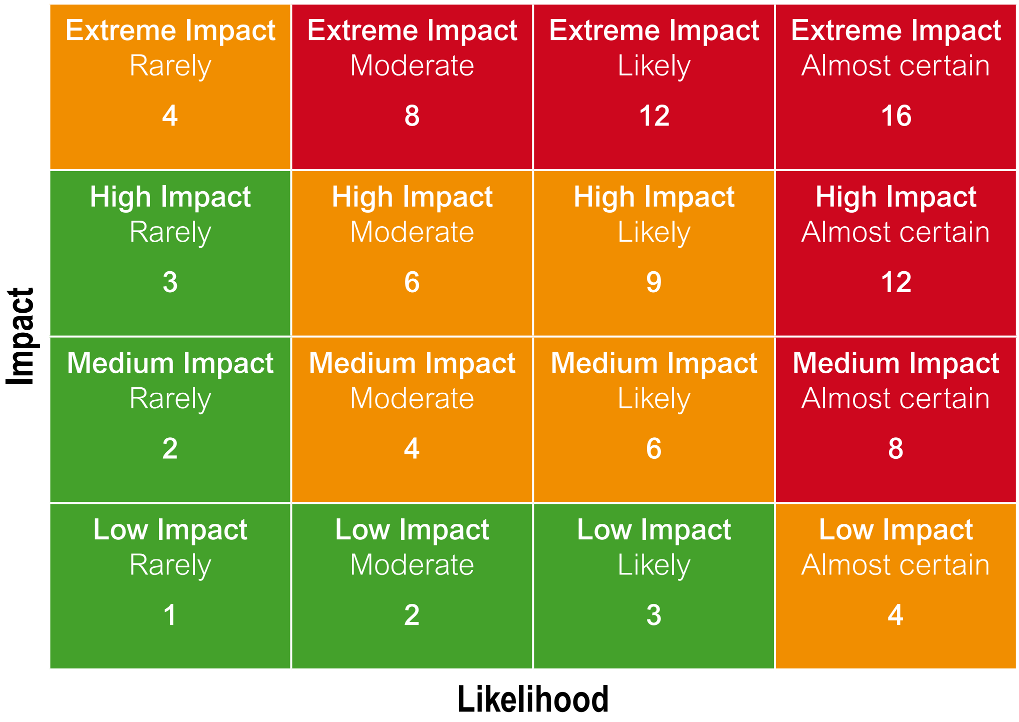
Lifecycle Action Plan

13. Please refer to Section 5 of the Highway Asset Management Plan.

Risks

14. The risks involved in implementing the lifecycle action plan have been assessed against the Council's standard grid of likelihood versus impact and are detailed in Tables 8 and 9 overleaf, with an outline of the mitigation to be planned. The 'red' risks from each lifecycle plan are documented in the Highways and Transport Service Plan.

Table 8



Impact	**Extreme Impact** Rarely 4	**Extreme Impact** Moderate 8	**Extreme Impact** Likely 12	**Extreme Impact** Almost certain 16
	High Impact Rarely 3	**High Impact** Moderate 6	**High Impact** Likely 9	**High Impact** Almost certain 12
	Medium Impact Rarely 2	**Medium Impact** Moderate 4	**Medium Impact** Likely 6	**Medium Impact** Almost certain 8
	Low Impact Rarely 1	**Low Impact** Moderate 2	**Low Impact** Likely 3	**Low Impact** Almost certain 4
	Likelihood			

Table 9

Risk		Level	Mitigation	Responsible
1.	Insufficient staff resources.	6	Highlight in Service Plan Present Business Case for additional support	Head of Highways and Transport Service Managers
2	High materials/ labour/ plant/ staff costs	6	Ensure value for money is being achieved through market testing and targeted procurement.	Project Managers, Contractors
3.	Reduced capital funding	6	Prioritise key assets to minimise overall deterioration whilst maintaining safety	Head of Highways and Transport Service Managers
4.	Reduced revenue funding	12	Prioritise key assets to minimise overall deterioration whilst maintaining safety	Head of Highways and Transport Service Managers

Appendix C

Structures Lifecycle Plan

Introduction

1. The background to lifecycle plans, and the format of each, is described in Section 5 of the HAMP. This lifecycle plan covers highway structures owned and maintained by the Council.

2. The highway structures covered under this appendix are bridges, culverts, retaining walls, sign gantries and subways.

3. A significant number of bridges on the highway network are the responsibility of other owners, such as the Highways Agency and Network Rail, and so are not included in this plan.

Levels of Service

4. The desirable levels of service for this asset category are set out in Table 1 below and Table 2 overleaf.

Table 1

Attribute	Service Level	Measure
Safety	Provide adequate containment for vehicles, pedestrians and livestock.	Principal (alternates with General Inspections) Inspections – every 6 years. General and superficial inspections – every 2 years. Special/safety – as required.
Availability	Provide adequate load-carrying capacity (which may include weight limits in lieu of strengthening at appropriate locations), width and headroom.	All bridges will be capable of carrying European standard 40/44T vehicles (except where weight limits have been imposed).
Serviceability	Maintain appropriate appearance, including removal of:- • offensive graffiti • debris in watercourse beneath bridges	Complaints. NHT Survey. Council surveys. ELM Reports.
Condition	At a level consistent with achieving minimum whole-life cost, that is SCICRIT for all bridges to be above 75.	Bridge Condition Indices (SCICRIT and SSCICRIT) monitored on an annual basis. (See Table 2)

Table 2 - Condition Related Service Levels

Service Level	Condition Index	Service Level
Target 1	SCICRIT	No bridge spans will have a SCICRIT value below 75
Target 2	SSCICRIT	The bridge stock will have a minimum SSCICRIT value of 86
Target 3	Strength Assessment	All bridges will be capable of carrying European standard 40/44T vehicles (except where weight limits have been imposed)
Target 4	Bridge Inspections	All bridges will be inspected on a 2-year cycle

5. Later sections of this life cycle plan show how different levels of available funding will influence the extent to which the desirable levels of service can be achieved.

6. Failure to respond adequately to any of these four levels of service will produce risk to the authority. Table 3 below, which details the main risks, underlines the importance of responding properly to each:-

Table 3

Risk Type	Description
Physical	Accidents caused by asset defects
Business	Legal proceedings for failure in duty of care
Financial	Reduction in the net book value of the asset and increase in eventual maintenance costs arising from lack of timely repairs
Corporate Image	Poor condition reflects on the overall image of the Council.
Environmental	Increased risk of flooding if watercourses beneath structures are not properly maintained.
Network	Increased disruption to highway users caused by emergency unplanned maintenance arising from suboptimal maintenance

Asset Base and Characteristics

7. The highway bridge stock comprises many different types of structures including masonry arches, concrete, and steel. They carry a wide range of highways from A Roads to Public Footpaths. The council holds information and data about the highway bridges and other highway structures on the WDM computerised structures asset management system. The WDM system is also able to interrogate the data held.

Highway Structures Inventory.

8. The Council's structures inventory is summarised in Table 4 below.

Table 4

Structure Type	Number of Structures
Bridges	224
Footbridges	232
Culverts	99
Subways	11
Retaining Walls	4

Asset Condition and Assessment

9. To asses the extent to which the desirable levels of service are met requires measurements covering the four dimensions of safety, availability, serviceability and condition.

10. Highway structures are subject to periodic inspection to determine their condition and to record any defects present. The regime is shown in Table 5 below.

Table 5

Type	Frequency	Assets Inspected
General Inspections	2 years	All bridges
Principal Inspections	6 years	All bridges except minor footbridges
Diving Inspections	Ad hoc	Bridges which have substructures in deep, often fast-flowing, watercourses
Special Inspections	Ad hoc	All structures as necessary
Superficial Inspections	2 years	Privately owned bridges

11 A Structure Condition Index (SCI) is determined for each individual structure, based on its condition at the time of the inspection. The SCI system is a nationally developed method, endorsed by ADEPT, with two SCI values calculated for each bridge:-

SCICRIT	the value when only the critical load-carrying elements are considered
SCIAV	the value when every element of the bridge is considered

12. How the SCI value relates to condition is shown in Table 6 below.

Table 6

SCI Range	Condition
100 – 95	Very Good condition
94 – 85	Good condition
84 – 65	Fair condition
64 – 40	Poor condition
39 – 0	Very Poor condition

13. An average value for the whole bridge stock, known as the Structure Stock Condition Index (SSCICRIT), is also calculated based on the individual SCICRIT values, and is weighted by area.

14. Bridge condition deteriorates at different rates according to the construction type, exposure conditions, traffic flows and maintenance regime adopted. It is a complex interaction of variables which makes forecasting trends very difficult.

15. Condition values monitored over time are shown in Table 7 below.

Table 7

Date	SSCIAV	SSCICRIT	% below SCICRIT 75
2009	93.79	90.75	12.80
2010	93.01	87.92	17.55
2011	92.77	87.79	16.81
2012	92.70	87.80	17.19
2013	92.99	87.87	5.5

16. In addition highway bridges are assessed to establish their ability to carry the loads which are imposed upon them. The assessment provides valuable information for managing the safety and serviceability of highway bridges.

17. In accordance with current guidance bridge assessments will be reviewed at the following intervals:-

- a minimum of 12 years, to coincide with principal inspections;
- whenever there is a significant change in the bridge condition.

Asset Valuation

18. The background to Asset Valuation is described in Section 4 and Appendix E. The interim value of the highway bridge stock, based on the Gross Replacement Cost (GRC), is estimated to be approximately £ 137,537,159.

19. This valuation has been developed using the CIPFA Structures Asset Management Toolkit. This is a more advanced method of calculation than the unrefined method previously used which accounts for the considerable increase in GRC over previous calculations.

Treatment Options and Costs

20. Treatment options and costs are summaries in Table 8 below.

Table 8

	Maintenance Activity	Treatment Option
Reactive	Emergency and non-programmed essential maintenance.	Ad-hoc emergency repairs. Graffiti removal.
Regular	Routine and cyclic maintenance.	Vegetation removal. Re-pointing of brickwork. Re-painting of metalwork. Drainage cleansing.
	Management of sub-standard structures.	Weight restriction.
Programmed	Preventative maintenance.	Concrete repairs. Re-painting of metalwork.
	Component renewal/upgrading.	Waterproofing. Parapets Joints. Bearings.
	Replacement.	Replacement of Structure Replacement of deck Replacement of brick arches with precast concrete box culverts.

21. Table 9 overleaf shows the expected service life for the different bridge types and treatments with their respective estimated replacement costs.

Table 9

Structure	Work	Interval	Cost (£000s)
Masonry arch (span range 1.5m – 12.0m, average span – 4.6m, average area – 131m2)			
	Brickwork repairs	10 years	15
	Complete replacement(with modern equivalent)	120 years	249
Concrete bridge (span range 1.5m – 33.5m, average span – 5.0m, average area – 103m2)			
	Drainage/bearing shelf cleaning	5 years	0.5
	Parapet painting	15 years	7.5
	Deck re-waterproofing	20 years	25
	Expansion joint renewal	20 years	15
	Concrete repairs	30 years	15
	Bearing renewal	30 years	60
	Complete replacement	120 years	196
Steel bridge (span range 3.0m – 39.0m, average span – 8.6m, average area – 265m2)			
	Drainage/bearing shelf cleaning	5 years	0.5
	Structural metalwork painting	12 years	10
	Parapet painting	15 years	7.5
	Deck re-waterproofing	20 years	30
	Expansion joint renewal	20 years	15
	Bearing renewal	30 years	60
	Complete replacement	120 years	665

22. It should be noted that not all bridges will require each of the treatments shown.

Management Strategy for Minimising Whole-Life Costs

23. When considering whole life costs, account needs to be taken of the direct and indirect costs associated with the asset group, including works, design and supervision, and inspection. With bridges, which have a long life but are very expensive to replace at the end of that life, it is essential to plan preventative maintenance works in a timely manner, since delays will increase the whole life cost of the structure.

24. Currently, our work programme is determined using the data in the bridge management system, and priority is given to the following:

- structures with low SCICRIT values, i.e. those with structural defects which have a direct impact on their load-carrying capacity;
- structures with safety-related defects;
- structures with defects which, if not remedied, are likely to lead to more serious problems, for example failed waterproofing systems which will permit water ingress into decks, leading to corrosion of steel reinforcement.

25. The available funding is allocated to each of the above work-types on an annual basis to suit the importance or criticality of the works identified. This strategy is intended to deliver the identified levels of service.

26. Precedence is given to bridges on higher category roads and on roadscarrying higher volumes of traffic.

27. Currently, maintenance works are identified in an annual programme, although major schemes are planned up to two years ahead.

Options and Targets within the Management Strategy

28. The analysis which follows looks at levels of maintenance spending against predicted outcomes for structures condition. The impact of spending on condition and service levels will continue to be developed over the course of this HAMP.

Maintenance Budgets

29. The bridge maintenance budget is funded from Capital and Revenue budgets. Table 10 below shows the total level of funding over the last 5 years and how this funding has affected the condition of the bridge stock and service levels respectively.

Table 10 - Funding

Date	Total Funding (Capital and Revenue)	SSCIAV	SSCICRIT	% below SCICRIT 75
2009	£862,790	93.79	90.75	12.80
2010	£938,000	93.01	87.92	17.55
2011	£708,000	92.77	87.79	16.81
2012	£756,737	92.70	87.80	17.19
2013	£740,000	92.99	87.87	5.5

30. From the data collected to date, it has been established that the maintenance funding over the last five years has kept the condition of the bridge stock more or less stable. However, with reference to the set condition based service levels, Service Level 1 has not been met. Further development will take place over the course of this HAMP to refine the budget/ service level relationship to enable us to set appropriate service levels for different budget allocations.

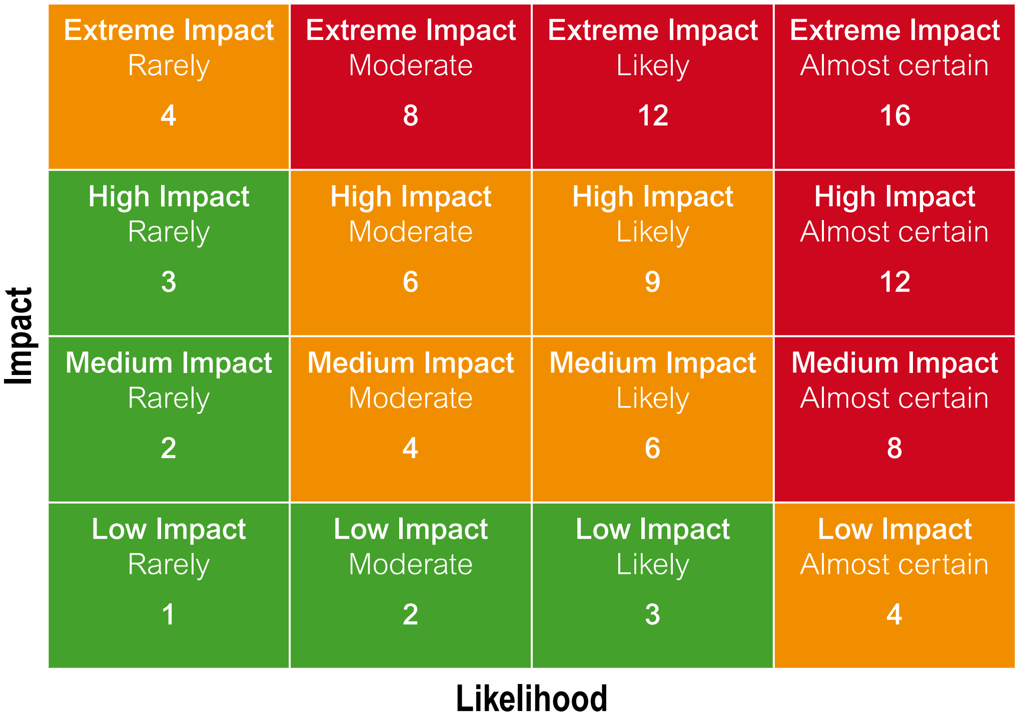
31. The Service Level Targets 2, 3 and 4 are all currently being achieved and there is a reasonable level of confidence that, with the same level of future funding, these service level will continue to be maintained.

32. Based on evidence currently available, minimum whole life cost is obtained if individual bridges have a SCICRIT value of 75 or above, i.e. in the ‘fair condition’ range. Reduced performance, that is lower SCICRIT values, will therefore lead to increased costs in the longer term. To achieve a level of condition which reflects minimum whole-life cost we need to reach a point where 100% of bridges meet this criteria. To achieve this may require some increased spending, though this can not be confirmed until more data is available to identify the correlation between maintenance spending and bridge condition.

Risks

33. The risks involved in implementing the lifecycle plan have been assessed against a standard grid of likelihood versus impact as shown in Tables 10 and 11 below, with an outline of the mitigation to be planned. The 'red' risks from each lifecycle plan are documented in the Highways and Transport Service Plan.

Table 10



Extreme Impact Rarely 4	**Extreme Impact** Moderate 8	**Extreme Impact** Likely 12	**Extreme Impact** Almost certain 16
High Impact Rarely 3	**High Impact** Moderate 6	**High Impact** Likely 9	**High Impact** Almost certain 12
Medium Impact Rarely 2	**Medium Impact** Moderate 4	**Medium Impact** Likely 6	**Medium Impact** Almost certain 8
Low Impact Rarely 1	**Low Impact** Moderate 2	**Low Impact** Likely 3	**Low Impact** Almost certain 4

Table 11

Risk	Level	Mitigation	Responsible
1. Insufficient staff resources.	6	Highlight in Service Plan Present Business Case for additional support	Head of Highways and Transport Highways Manager
2. High materials/ labour/ plant/ staff costs	6	Ensure value for money is being achieved through market testing and targeted procurement.	Project Managers Contractors
3. Reduced capital funding	12	Prioritise key assets to minimise overall deterioration whilst maintaining safety	Head of Highways and Transport Highways Manager
4. Reduced revenue funding	12	Prioritise key assets to minimise overall deterioration whilst maintaining safety	Head of Highways and Transport Highways Manager

Appendix D

Street Lighting Lifecycle Plan

Introduction

1. The background to lifecycle plans, and the format of each, are described in Section 5 of the HAMP. This appendix provides the lifecycle plan for street lighting. At this stage of development of the HAMP, feeder pillars, cabling etc have not been included in the life cycle plan.

2. Street lighting is divided into various categories for asset management purposes. The three main components of column, lantern and lamp have different requirements. The main consideration in terms of capital investment is column type. The following asset categories have been adopted:

Table 1

Category	Description
Aluminium (Cast)	Refers to columns with cast aluminium base/root section.
Aluminium (Extruded)	Refers to columns manufactured from a single piece extrusion.
Aluminium (Sheet)	Refers to columns which have been fabricated from sheet aluminium.
Cast Iron	Refers to cast iron columns.
Concrete	Refers to cast concrete columns.
Galvanised steel	Refers to galvanised/galvanised and painted columns.
Painted steel	Steel columns which are painted (may be zinc/aluminium sprayed)
Pole Bracket	Fixed to third party wooden distribution poles
Subway lighting	Fixed within pedestrian subways
Wall Brackets	Fixed to buildings

Levels of Service

3. In accordance with national guidelines, West Berkshire Council carries out a comprehensive programme of visual inspections and electrical testing. In addition to these inspections, the Council formally adopted a system of structural testing on steel columns in 2008.

4. Historically, condition/asset related data was collected and used to calculate national performance indicators, however, this has developed over the last two years and the data is now used to set budgets and priorities in accordance with the principles of asset management. Over the course of this HAMP, the management of the street lighting asset will continue to be developed in line with the recommendations given within the Institution of Lighting Engineers Technical Report 22 – Managing a Vital Asset; Lighting Supports and Well-lit Highways - Code of Practice for Highway Lighting Management 2004.

5. The desirable levels of service for this asset category are set out in Table 2 below.

Table 2

Attribute	Desired Standard	Performance measures
Safety	Road and footways lit to the recommended standards, to reduce accidents, crime and the fear of crime Installations physically and electrically safe.	Structural test results Electrical test results ELM reports* Term Contract performance indicators.
Availability	98% of all lights working 7 day average repair time.	LI98 LI215a
Serviceability	Minimise light pollution. Good visual appearance in high amenity areas.	ELM reports* Customer surveys**
Condition	Consistent with achieving minimum whole-life cost, in terms of preventative maintenance and column replacement.	Condition data.

** ELM – West Berkshire Council's enquiry logging manager.*

*** National Highway and Transport (IHT) survey 2009, 2010 and Council surveys*

6. Failure to respond adequately to any of these four attributes will produce risk to the authority. Table 3 below details the key risks and underlines the importance of responding properly to each risk.

Table 3

Risk type	Description example
Physical	Accidents caused by structural defects or failure to maintain adequate structure. Electrical risk to the public. Injury to an operative working in the highway due to incomplete records, particularly underground cable records.
Business/ Financial risk	Legal proceedings for failing in duty of care. Increase in compensation payouts due to a rising number of accidents and third party claims. Fines imposed on the authority as a result of legal proceedings. Reduction in the value of the asset. Higher un-metered energy charges
Corporate Image	Ineffective or defective lighting reflecting on the overall image of the Council.
Environmental	Higher energy use and light spillage from old equipment.

Asset Base and Characteristics

7. The street lighting asset group comprises street lighting, feeder pillars and cabling that is owned and maintained by West Berkshire Council. A summary of the street lighting asset is summarised in Tables 4, 5, 6 and 7 below.

Table 4 - Column Type

Column Material	Number
Aluminium (Cast)	1693
Aluminium (Extruded)	4464
Aluminium (Sheet)	122
Cast Iron	7
Concrete	722
Galvanised Steel	1461
Painted Steel	4033
Pole Bracket	96
Subway Lighting	171
Wall Brackets	70
Total	**12839**

Table 5 - Lamps

Lamp Description	Lamp Reference	Wattage	Number
Ceramic metal halide discharge lamp	CDO	50	6
		70	91
		100	37
		150	34
		250	2
Compact Fluorescent	PL	40	84
		55	4
Ceramic metal halide discharge lamp	Cosmopolis	45	26
		60	21
		90	2
		140	39
Fluorescent		40	1
		70	96

continued overleaf

Table 5
Lamps continued

Lamp Description	Lamp Reference	Wattage	Number
Light emitting diode	LED	13	10
		21	554
		28	16
		29	375
		31	7
		37	94
		42	35
		61	18
		65	6
		107	6
		133	27
		143	66
		170	7
		194	21
		226	20
Mercury Vapour	MBFU	80	4
High pressure sodium	SON	50	544
		70	1192
		100	1129
		150	105
		250	428
		400	1
Low pressure sodium	SOX	35	5454
		55	256
		90	392
		135	235
		180	30
Total			**12973**

Table 6 - Controls

Control Type	Number
Time switch – all night	51
Time switch – part night	12
Photo cell – all night	12580
Photo cell – part night	201
24 hour operation	129
Dimmed equipment	0
Total	**12973**

Table 7 - Column Age

Column Material	Age (Years)	Number of Columns by Mounting Height						
		< 5m	5m	6m	8m	10m	12m	**Total**
Aluminium (Cast)	0 – 20		9					**9**
	21 - 30		825					**825**
	31 – 40		833	3				**836**
	Over 40		23					**23**
	Total		1690	3				**1693**
Aluminium (Extruded)	0 – 20	2	1533	495	584	649	169	**3432**
	21 - 30		993					**993**
	31 – 40		38					**38**
	Over 40		1					**1**
	Total	2	2379	432	416	497	102	**4464**
Aluminium (Sheet)	0 – 20							
	21 - 30					37	35	**72**
	31 – 40					50		**50**
	Over 40							
	Total					87	35	**122**
Cast iron	0 – 20							
	21 - 30							
	31 – 40							
	Over 40	2	5					**7**
	Total	2	5					**7**
Concrete	0 – 20							
	21 – 30		20					**20**
	31 – 40		299					**299**
	Over 40		403					**403**
	Total		818					**722**
Galvanised Steel	0 – 20	21	365	5	145	55	9	**600**
	21 – 30		205	12	122	57	6	**402**
	31 – 40		210	20	42	121	31	**424**
	Over 40		15		8		12	**35**
	Total	21	795	37	317	233	58	**1461**

Table 7 - Column Age (continued)

Column Material	Age (Years)	Number of Columns by Mounting Height						
		< 5m	5m	6m	8m	10m	12m	**Total**
Painted Steel	0 – 20	5	733	177	511	296	41	**1763**
	21 – 30	2	139	154	313	82	35	**725**
	31 – 40		169	40	168	147	23	**547**
	Over 40		731		46	220	1	**998**
	Total	7	1772	371	1038	745	100	**4033**
Pole Bracket	0 – 20		8					**9**
	21 - 30		1					**1**
	31 – 40		1					**1**
	Over 40		80	6				**86**
	Total		90	6				**96**
Subway lighting	0 – 20	147						**147**
	21 - 30							
	31 – 40	10						**10**
	Over 40							
	Total	157						**157**
Wall Brackets	0 – 20	6	3	7	8	13		**21**
	21 – 30		2	1	2	1		**6**
	31 – 40	1	6	2	5			**14**
	Over 40		8	3	3			**14**
	Total	8	21	8	18	12		**67**
	Total	211	7685	924	1957	1727	362	**12839**

Asset Condition and Assessment

8. To deliver the desirable service level as detailed in Table 2 above, the following routine inspections and tests detailed in Table 8 below are carried out. Whilst there are no current measures for serviceability, every opportunity is taken to improve serviceability when new developments and highway improvements are delivered.

Table 8

Inspection/Test	Frequency
Clean, inspect and change lamp	2 & 4 years dependant on lamp type
Structural test	6 years or recommended next test date if sooner.
Electrical test	6 years
Visual condition inspection	Every visit (No greater than 2 years)
Scouting to check light operational	28 day cycle October - March

9. All street lighting columns receive a routine/cyclic visual inspection. A visual assessment of the structural condition of each lighting column is carried out on every visit. Lighting columns thought to be structurally unsound are further assessed and may be subject to an emergency "make safe" or are replaced. The visual inspection process will continue to be developed in accordance with recommendations given within TR22 Managing a Vital Asset: Lighting Supports over the course of this HAMP.

10. Steel street lighting columns over 12 years of age are structurally tested at least every 6 years. Eddy current material thickness testing is used along with ultra sonic testing for the swage joint. Visual inspections of all columns are carried out at least every 2 years, as are brackets mounted on electricity company wooden poles, bridges and other buildings and structures not owned by the Council. Maintenance of the structure itself is the responsibility of others.

11. Electrical testing of each lighting column, feeder pillar and council-owned cable network is carried out every six years in accordance with the IEE regulations. By applying the red/amber/green condition methodology, the test results are prioritised in order of importance and programmed accordingly subject to the nature and severity of the defect and the inherent level of risk

12. It has been established that concrete lighting columns vary in structural condition according to manufacturer and this is taken into account when the routine visual inspections are carried out. Because of the destructive and disruptive nature of the standard load test, visual inspections are the preferred method of identifying column condition using the green/amber/red condition criteria.

13. Aluminium columns also vary in structural condition according to the type of construction, for example, columns with a cast aluminium base suffer from corrosion of the underground base section and cracking of the casting. Columns of a fabricated sheet construction suffer from corrosion of the underground base section and columns of an extruded construction have to date shown no significant structural defects. With this knowledge, visual inspections are the preferred method of identifying column condition using the green/amber/red condition criteria.

Management of the Asset

14. In adopting the principles of asset management, the Council is able to assess and monitor the condition and the rate of degradation and to apply colour based condition indicators to highlight the level of risk. Using a simple Red, Amber and Green traffic light system it is possible to identify priorities and deliver timely and cost effective treatments. It can also be used to allocate budgets.

    This procedure is summarised in tables 11 and 12 overleaf.

Table 11 - Prioritisation of Steel Lighting Columns

Colour Code	Loss of Thickness	Visual inspection	Outcome
Red	> 50 %	Defects found that are a danger and/or affect structural integrity.	Immediate replacement of column.
High Amber	11 – 50 %	Defects found that affect structural integrity.	Next test/inspection set for 3 years.
Low Amber	0 – 10%	Aesthetic defects which do not affect structural integrity.	Next test/inspection set for 6 years.
Green	0 – 10 %	No Defects	Next test/inspection set for 6 years.

** As per Electrical Testing Ltd 'Dipstick' (eddy current) test results.*

Table 12 - Prioritisation of all other types of Lighting Column

Colour Code	Column Condition	Visual inspection (Score in area A, B or C of column*)	Visual inspection	Outcome
Red	Bad	4	Defects found that are a danger and/or affect structural integrity.	Immediate replacement of column.
High Amber	Poor	3	Defects found that show signs of deterioration.	Next visual inspection set for 2 years or next visit (whichever is sooner).
Low Amber	Fair	2	Aesthetic defects which do not affect structural integrity.	Next visual inspection set for 2 years or next visit (whichever is sooner).
Green	Good	1	No Defects	Next visual inspection set for 2 years or next visit (whichever is sooner).

** As per ILP TR22 Appendix B where Area A relates to column base, Area B relates to column shaft and area C relates to Column Bracket.*

15. Initial consideration is normally given to the high ambers in order to prevent these assets from deteriorating further and becoming red. However, because of the high safety risk associated with column failure, it is the Council's current policy to tackle the reds before the high ambers and budgets are set accordingly.

16. At the start of each financial year, all steel columns which will reach their recommended next structural test date are programmed for retesting. From the available asset data, it has been established that steel columns have the highest percentage failure rate where the primary cause of failure is through a loss of wall thickness to the root section up to ground level as a result of corrosion.

Strategy for Minimising Whole Life Cost

17. An asset's whole life cost includes the direct costs of works, design, supervision, testing and inspections. The main factors which affect the whole life cost of an individual installation are:
    - Specification and quality of materials and equipment.
    - Degree and type of damage and degradation.
    - Age of components.
    - Speed and quality of response to damage and degradation.
    - Timing of intervention and quality of medium and long term treatments.

18. Based on these factors, the Council has adopted the following strategy in order to maintain the value of the asset over its lifecycle at minimum cost:
    - To deliver a high standard of initial installation.
    - To specify high quality materials and equipment.
    - To carry out routine electrical and structural testing.
    - To inspect lighting systems on a regular basis such that defects are identified within a reasonable period.
    - To 'scout' for out of service lighting.
    - To undertake reactive maintenance works expeditiously to prevent short term deterioration and keep in a safe condition.
    - To maintain an up-to-date inventory of lighting stock to facilitate asset management and enable competitive purchase of energy.
    - To bulk-change lamps to maintain light output at satisfactory levels.
    - To replace end of service life columns.

    The above strategy is based on good practice and will continue to be developed over the course of this HAMP in accordance with national guidelines. .

19. To reduce the Council's carbon footprint and reduce energy and maintenance costs over the life cycle of the asset, consideration is also given to the replacement of aged and inefficient lanterns, lamps and control gear. Inefficient lanterns are being replaced with energy efficient LED lanterns on existing columns where the residual service life of the column allows. LED luminaires provide improved quality 'white' light which supports serviceability, and have an expected useful life of 25 years and so reducing our overall maintenance liability.

20. From time to time, additional budget is made available for the conversion to LED lanterns for energy saving reasons. This is considered to be outside the scope of this HAMP, however it does have a positive impact on the condition of the asset.

Budgets

21. The street lighting service is delivered using capital and revenue funding where capital is used to replace lanterns with low maintenance energy efficient LED types in an effort to reduce the Council's energy spend, carbon footprint and revenue maintenance costs and deliver street lighting improvements. In terms of revenue budget, approximately 50% of the budget is spent on routine maintenance functions (fault repairs/lamp changes/ inspections/ knock down columns etc) and the remaining 50% targeting those columns identified by routine inspections and structural testing as in need of replacement.

Table 13 – Treatment options/costs

Asset Type	Material	Treatment Type	Service Life Years	Height m	Unit Cost £
Columns	Steel**	Painting	7	All	50
		Replacement	40	5.0	750*
				6.0	800*
				8.0	1050*
				10.0	1350*
				12.0	1450*
	Concrete**	Replacement	40	5.0	750*
	Aluminium**	Replacement	40 +	5.0	750*
				6.0	800*
				8.0	1050*
				10.0	1350*
				12.0	1450*
Lamps****	SOX	Replacement	4		18.99
	SON	Replacement	4		6.83
	CDO	Replacement	3		27.60
	COSMO	Replacement	3		22.62
	Fluorescent	Replacement	2		1.55
Lanterns***	LED	Replacement	25		400.00
	SOX	Replacement	25		250.00
	SON	Replacement	25		250.00
	CDO	Replacement	25		250.00
	COSMO	Replacement	25		250.00
Electrical components	Under the present contract, electrical components are replaced as part of an annual maintenance lump sum. In addition, the lanterns include for all the main components apart from the isolator and photocell. Compared to the key assets, their replacement cost is small and therefore have been included within the replacement cost of a column.				

** Excluding DNO service transfer cost*

*** Concrete and Steel columns are replaced with extruded aluminium where design parameters allow.*

**** Lanterns are replaced with LED equivalents where designs parameter allow. Where it is not possible to fit an LED equivalent, the lantern will be replaced on a like for like basis. All replacement lanterns include lamps.*

***** To cover the various wattages, an average cost of a lamp has been calculated for valuation/assessment purposes.*

Maintenance Options

22. TR22 recommends that columns that have been identified as 'Threat 3' (Priority score of > 15, refer to table 16), should be programmed for replacement condition, however, local knowledge has shown that column age and type are not the only factors which dictate the life cycle of a column. In order to validate the TR22 deterioration predictions and target replacement with greater accuracy, structural testing is carried on all steel columns over 12 years old. In addition, full visual inspections in compliance with TR22 are carried out to all columns at least every two years.

23. The limited number of types of lighting installation and ways in which they deteriorate, lead to a relatively short list of maintenance treatments. The key assets are summarised in Table 13 overleaf. Short-term treatments are dictated by safety and serviceability requirements. Decisions on when to intervene with medium and long-term treatments are determined in accordance with the asset management strategy.

Column Painting

24. In 2002, the Council introduced a standard where extruded aluminium columns would be used for new installations and to replace existing columns. The benefits of using aluminium columns are::
    - To reduce routine maintenance costs
    - To reduce the whole life cost of the asset
    - To improve passive safety

25. Over time, aluminium columns will replace the current stock of steel columns, however, in managing the current stocks, unless painting is required for aesthetic reasons, the Council has adopted a non painting policy for the following reason. Whilst painting will arrest external corrosion, most corrosion occurs at or below ground level or internally and therefore painting of the exterior will not guarantee an extension to the service life of a column.

Lamp Replacement

26. Most non LED lamp types have an expected service life between 2 and 4 years. In order to meet the set service levels, it is deemed more economical to replace lamps at the recommended intervals in order to minimise expensive reactive replacements, for example, control gear and lamp failure.

Performance

27. Whilst there are no current national indicators for street lighting, the following national indicators have been retained as local indicators for reporting performance and for setting service levels:
    - BVPI 215a: Average number of days to repair a street light under the control of the Local Authority.
    - BVPI 98: The percentage of street lights not working as planned under the control of the Local Authority.

A summary of results for the period 2009 to 2013 is shown in Table 9 below.

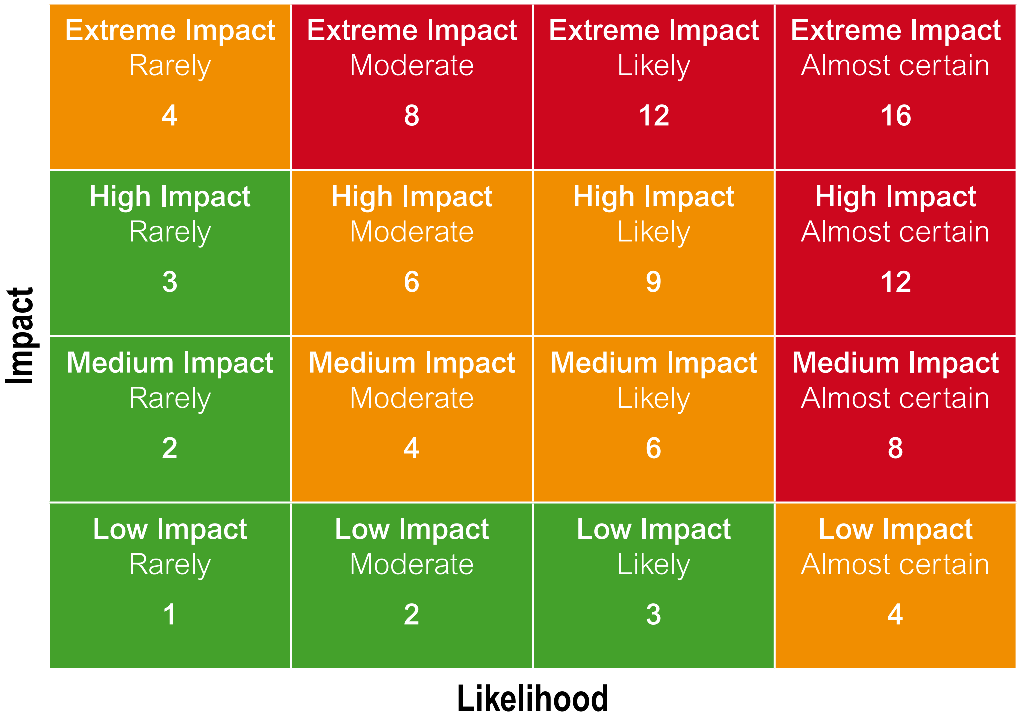
Table 9

	2009/10	2010/11	2011/12	2012/13	2013/14
LI 215a (formally BV 215a)	3.75	6.22	6.09	4.67	3.05
LI 98 (formally BV 98)	1.04	1.17	1.09	0.94	0.65

Risks

28. The risks involved in implementing the lifecycle action plan have been assessed against the Council's standard grid of likelihood versus impact and are detailed in Tables 14 and 15 below, with an outline of the mitigation to be planned. The 'red' risks from each lifecycle plan are documented in the Highways and Transport Service Plan.

Table 14



Extreme Impact Rarely 4	**Extreme Impact** Moderate 8	**Extreme Impact** Likely 12	**Extreme Impact** Almost certain 16
High Impact Rarely 3	**High Impact** Moderate 6	**High Impact** Likely 9	**High Impact** Almost certain 12
Medium Impact Rarely 2	**Medium Impact** Moderate 4	**Medium Impact** Likely 6	**Medium Impact** Almost certain 8
Low Impact Rarely 1	**Low Impact** Moderate 2	**Low Impact** Likely 3	**Low Impact** Almost certain 4

Table 15

Risk	Level	Mitigation	Responsible
1. Insufficient staff resources.	6	Highlight in Service Plan Present Business Case for additional support	Head of Service Service Managers
2. High Materials/ labour/ plant/ staff costs	6	Ensure value for money is being achieved through market testing and targeted procurement	Project Managers Contractors
3. Reduced capital funding	12	Prioritise key assets to maximise energy savings.	Head of Highways and Transport Highways Manager
4. Reduced revenue funding	12	Prioritise key assets through inspection and testing to minimise overall deterioration whilst maintaining safety Use of energy efficient components.	Head of Highways and Transport Highways Manager

Appendix E

SCRIM (Measurement of Skidding Resistance of the Road Surface)

Introduction

1. West Berkshire Council has a “Skid Resistance Related Accident Reduction Policy” to manage and maintain an appropriate level of skidding resistance on running surfaces, with the overall aim of reducing the frequency of skid related accidents in wet conditions on its classified road network (referred to as the ‘critical network’).

2. Whilst a high skid resistance will not prevent the emergency braking situation from arising or improve driver judgment, it can often alleviate the effects of driver error and reduce the risk of an accident occurring or at least reduce the severity of a collision. This will not only reduce the amount of suffering but also save considerable costs to the community. The implementation of a robust Skid Resistance policy will also provide a defence against litigation.

3. The intention of the policy is to provide procedures and guidance to assist the Engineer in measuring skid resistance and offer a methodology in assessing the need for and the prioritising of remedial works in order to maintain an appropriate level of skidding resistance on the highway network.

4. The term “skid resistance” refers to the frictional properties of the road surface, measured using an approved testing device, under controlled conditions. Measurements obtained from skid resistance testing of a road surface are analysed in conjunction with individual site characteristics and accident statistics to assess the need for maintenance.

5. The Highways Agency has produced a standard for skid resistance referred to as HD28/04. This standard describes how the provision of appropriate levels of skid resistance for trunk roads will be managed. There is also an interim advice note IAN98/07 which was issued in 2007 and overrules some of the statements in HD28/04. The HD28/04 standard has been revised and will be reissued in due course as HD28/09.

6. The Skid Resistance Policy for the West Berkshire Council is based on the Highways Agency Standard HD28/04 and also takes into account the information from the soon to be issued HD28/09. However, it should be noted that the Highways Agency standard is specifically for the management of skid resistance for Motorways and Trunk Roads within the UK. Therefore, the policy also considers advice from the following key documents, for managing skid resistance on the local road network:

   - County Surveyors Society (CSS) Guidance Note on Skidding Resistance
   - Horses and Highway Surfacing ENG 03/05
   - Code of Practice for Highway Maintenance Management
   - Interim Advice Note IAN 49/03
   - Skid resistance studies on Local Roads in the UK carried out by WDM®

Routine Testing (SCRIM)

7. Within West Berkshire, the SCRIM (Sideway-force Coefficient Routine Investigation Machine) is used for measuring skid resistance by measuring the force between a rubber tyre against a wetted road surface. The resulting value, referred to as the Sideway-force Coefficient, relates to the coefficient of friction and provides an indication of the polished state of a road surface.

8. The skid resistance policy only applies to the roads that are surveyed and this set of roads is referred to as the critical network. As a consequence, there is no formal skid resistance policy for the unclassified roads, however, there is a requirement for surfacing aggregates to meet minimum specified levels for Polished Stone Values to help maintain the skid resistance of the surface on the unclassified road network. The traffic levels on the unclassified roads are relatively low and so are the number of wet skidding accidents, therefore, this approach is considered an acceptable risk to achieve a cost effective output.

9. The Investigatory Level (IL) is a skid resistance warning level. If the skid resistance is found to be below the IL then an investigation is required to establish if treatment should be undertaken. The IL's have been specifically established for West Berkshire Council by using previous studies and comparing the accident rates to the skid resistance at various site categories across the critical network. It has been found that different sites present different risks and as a consequence, the IL varies depending on the site in an attempt to present an equal risk across the critical network. A summary of the IL bands is shown in Table 1 overleaf.

10. With reference to Table 1, the initial IL's are shown with an 'I' in the cell. The initial values will be applied to each site category but these initial values will be reviewed as each site is investigated.

Site Categories and Investigatory Levels

Site Category and Definition		Investigatory Level at 50 km/h							
		0.30	0.35	0.40	0.45	0.50	0.55	0,60	0.65
A	Motorway Class		I						
B	Dual Carriageway non-event		I						
C	Single Carriageway non-event			I					
Q1	Approaches to and across minor and major junctions				I				
Q2	Approaches to roundabouts					I			
K	Crossings and other high risk situations						I		
R	Roundabout				I				
G1	Gradient 5-10% longer that 50m				I				
G2	Gradient >=10% longer than 50m					I			
S1	Bend radius <=500m – dual carriageway				I				
S2<100	Bend radius <=100m – single carriageway					I			
S2>100	Bend radius > 100m and <=250m – single carriageway				I				
S2>250	Bend radius >250m and <500m – single carriageway				I				

Site-Investigation and Treatment

11. Once the SCRIM and accident data are processed, the information can be filtered and collated into lists that identify sites that are below the required SCRIM IL and or have disproportionately high accident rates. These sites will then be assessed and prioritised for investigation by a designated Site Investigator. In carrying out the investigation, the Site Investigator will carry out a risk assessment and make a recommendation based on the four options below for each site.

- The site requires a change in the investigatory level
- The site requires treatment to improve the skid resistance
- The site requires a treatment other than for the skid resistance
- The site does not require treatment.

12. The recommendation to treat sites for skid resistance will initially be made by the Site Investigator and then confirmed by the Highways Manager. The Highways Manager or his delegated representative will decide which sites are to be treated to improve the skid resistance and the time frame. If it is agreed that certain sites require treatment other than for the skid resistance, these sites will be considered as safety sites and passed over to the Traffic Services team within Highways and Transport.

13. If treatment for skid resistance is required and the work cannot be started within a reasonable period of time, slippery road signs may be erected if highlighted as a risk, for example if the site is significantly below the required skid resistance (typically -0.1 below Investigatory Level or less) and there is a history of wet injury accidents in the past 3 years. This policy provides a targeted use of signs and is designed to avoid a proliferation of signs that would undermine their effectiveness and would not make the best use of resources. If a site that has been signed but has not been treated due to timescale/budget constraints and wet injury accidents have decreased to zero within a 3 year period, signs will be removed. Once a site has been treated and on re-surveying, is found to be above the required IL, any slippery road signs will be removed as soon as is reasonably practicable.

Appendix F

Initial Asset Valuation for West Berkshire

1. Introduction

1.1 In 2010, CIPFA published the Code of Practice on Transport and Infrastructure Assets. This code provides guidance on the development and use of financial information to support asset management, financial management and reporting of local transport infrastructure assets.

1.2 The Code has been developed in collaboration with the Highways Asset Management Information Group (HAMFIG), whose work is supported by a number of government funded research projects.

1.3 This appendix describes the analysis carried out to produce the first valuation for our highways assets in accordance with the CIPFA guidance. The most detailed work has been carried out on carriageways and street lighting but simplified estimates have been made for footways, structures, traffic management and street furniture as detailed in the Gross Replacement Cost return on page F-4. The second version of the HAMP will include a more detailed analysis for these assets.

2. Carriageways, Footways and Cycletracks

2.1 The road lengths and categories are taken from R199B, an annual return of network length. The categories are A, B, C and unclassified roads, split between urban and rural, where rural is defined as roads with a speed limit of over 40 mph.

2.2 For each road class, the average carriageway width has been calculated using measurements from Ordnance Survey MasterMap data and the Council's United Kingdom Pavement Management System (UKPMS) as supplied by WDM Ltd.

2.3 The UKPMS specification provides a national standard for management systems for the assessment of local road network condition and for the planning of investment and maintenance on paved areas of roads, kerbs, footways and cycletracks on local roads within the UK.

2.4 The estimated Gross Replacement Cost (GRC) has been calculated using the Carriageway and Footway Gross Replacement Cost Calculator as published by CIPFA. This calculator uses default unit construction rates for all classes of road as developed by the Highways Asset Management Financial Information Group (HAMFIG).

2.5 Adopting the Code of Practice - Well Maintained Highways classifications and the urban/rural split in accordance with the CIPFA recommendations, the annual depreciation has been calculated for each asset group using UKPMS and combined to produce a gross depreciation value for the network.

Depreciation and Net Value of Carriageways

2.6 For all classes of road, the condition of the road network is determined using SCANNER surveys and the results are reported annually through national indicators. The condition indicators refer to the percentage of the road category that is exhibiting sufficient defects to merit repair. This is sometimes referred to as the "red" portion. The next level down is referred to as the "amber" portion, which suggests that it is acceptable at present, but will require attention in the future.

2.7 Depreciation parameters, including default renewal unit rates, total useful life and deterioration models for each road class are used to establish the Depreciated Replacement Cost (DRC). The calculation is carried out using the United Kingdom Pavement Management System (UKPMS) in accordance with the guidance given in the Code of Practice on Transport/ and Infrastructure Assets 2010 and UKPMS Technical Note TN46 Part 1 June 2010.

2.8 The net value of the carriageway asset can then be determined by deducting from the Gross Replacement Cost (GRC) the DRC, where the GRC is the total cost of renewing the asset.

2.9 A summary report detailing the current GRC and DRC is included within this appendix

Depreciation and Net Value of Footways

2.10 n 2008/9, BV187 was formally removed by the Government as a national indicator. This indicator was calculated in UKPMS using condition data collected from annual detailed visual inspection (DVI) surveys on the Category 1 and 2 footway networks.

2.11 Following this change and with the knowledge that the routine safety inspection process would continue to identify any defects on the footway network in its entirety, the asset inventory and machine based condition surveys on the carriageway became the main focus point.

2.12 Using the estimated areas of each footway category, it has been possible to calculate the GRC for the footway network. However, in order to calculate the DRC, a detailed survey of the footway network is required in order to determine the necessary asset data. To achieve this, the Council has embarked on a full Footway Network Survey (FNS) and the depreciation modelling will be developed over the life of the HAMP using the collected condition data.

2.13 A summary report detailing the current GRC and DRC is included within this appendix

3. Bridges

3.1 Although it was not a requirement to produce a valuation for bridges in 2010/11, the Council has estimated the GRC and DRC using the Roads Liaison Group’s Guidance Document for Highway Infrastructure Asset Valuation 2005 Edition. The methodology has been subsequently updated following the publication of CIPFA guidance in 2012.

3.2 This Asset Valuation includes all the following Asset Groups.

- bridges
- culverts
- subways
- footbridges

3.3 In West Berkshire, footbridges on surfaced and un-surfaced public rights of way are maintained as part of the highway infrastructure asset and so have been included in this valuation.

3.4 A summary report detailing the current GRC and DRC is included within this appendix.

4. Street Lights

4.1 This asset valuation includes all the following asset groups.

- columns
- bollards
- illuminated signs

4.2 A summary report detailing the current GRC and DRC is included at the back of this appendix.

5. Other Highway Assets including Land

5.1 In accordance with the CIPFA Code of Practice, the recommendation is for authorities to use rates broadly comparable to the two types of measures used in the Code until national rates have been published. Rural land will, therefore, be valued using the rates for mixed agricultural use and urban land at residential land values, which are at the upper end of the developed land values. These two measures are used because they are believed to provide good representative values for urban and rural land as a whole.

5.2 The urban/rural split has been determined using the standard local road urban/rural classification which is based on speed limits. This provides a good indicator of the nature of the adjacent land and it is one that can be applied readily and consistently.

If you require this information in an alternative format or translation,
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