



**OXFORDSHIRE
COUNTY COUNCIL**

HIGHWAYS ASSET MANAGEMENT PLAN



**Oxfordshire County Council
Highways Asset Management Plan 2014 - 2019**

The strategy for managing highway assets in Oxfordshire

September 2014

The strategy for Managing Highway Assets in Oxfordshire






	Red	High Amber	Amber	Green
Classified Roads (all A, B & C Roads)	Roads that require urgent maintenance	Roads that will become 'Red' within 4 years	Roads that will become 'Red' within 4 to 9 years	Roads in a good state of repair
Example Photographs				
	Red	Amber		Green
Unclassified Roads	Roads that require urgent maintenance	Roads that require Investigation		Roads in a good state of repair
Example Photographs				

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Managing Highways in Oxfordshire

1.0 Vision

Oxfordshire County Council is responsible for managing the Council's highway infrastructure (carriageways, footways, bridges, street lighting, etc...). To do this we deliver the service to create 'A Thriving Oxfordshire' and enable the delivery of the corporate priorities, namely:

- Building a world-class economy
- Supporting healthy and thriving communities
- Enhancing the environment

1.1 Building a World Class Economy

We develop processes that allow us to make best use of available funding and resources. To achieve this we undertake investment planning which reconciles long-term performance with short-term spending and prioritises maintenance activities on the highways network accordingly. We will continue to embrace innovation to improve value for money.

1.2 Supporting and developing Healthy and Thriving Communities

Improve the safety and condition of local roads, footways and cycleways, including resilience to severe weather events. We will improve and maintain the condition of roads and highway related assets with systematic prioritisation where there are safety related issues, premium bus routes and high pedestrian and cycle usage whilst still maintaining the network as a whole. We will maintain the drainage and associated infrastructure to minimise flooding on and from the highway network.

1.3 We have developed baseline levels of service which meet our obligations to manage the highway network and contribute to network safety. To this end we collect information that supports effective and informed decision-making, and helps deliver a resilient, fit for purpose network. Acknowledging funding constraints, our aim is to maintain the overall road network at a similar condition to that which currently exists (steady state). We will prioritise investment in all other highway assets to manage deterioration using a risk based approach and consider the views of elected members where priorities are of equal importance.

1.4 Enhancing the Environment

We will make the best use of our natural mineral resources, planning for Oxfordshire's long-term minerals need whilst minimising waste going to landfill. We will invest in energy reducing technology for street lighting and associated electrical apparatus.

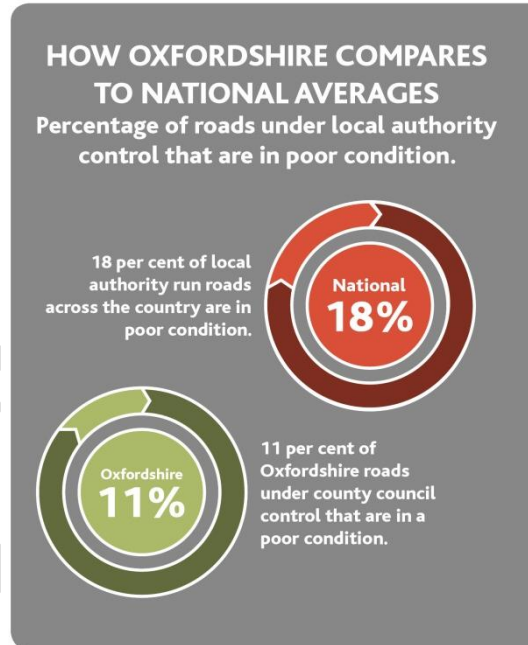
1.5 The Councils approach to maintaining the highway assets will follow the principles of Reduce, Reuse, Replace in its use and disposal of materials. This will be done by reducing the need to transfer waste material to landfill sites by reusing material where possible and by taking a whole life approach to asset management which optimises maintenance requirements.

1.6 Oxfordshire, in common with most Highway Authorities, is faced with a growing trend of needing to remove Coal Tar from existing roads, as and when they undergo major repair. Coal Tar was a commonly used material in the 1960's and 70's but is now considered to be carcinogenic and as such defined as hazardous waste requiring specialist disposal. Oxfordshire is leading the way in its approach to this problem and has worked closely with the Environment Agency to develop a method of treating removed material to enable it to be reused in certain circumstances and therefore reducing the disposal of such material to landfill to the absolute minimum.

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2.0 Why is an Asset Management Plan Needed?

2.1. Across the country most authorities are maintaining a highway network in steady decline. This is due to a combination of severe weather issues, reducing budgets, increasing costs and increasing traffic levels and loads for which many roads were not originally designed to sustain. Whilst Oxfordshire is in a better position than the national average the County is similarly managing a network in decline and this is likely to continue given current levels of Government funding into Highway Maintenance. It is currently considered that to bring all roads within Oxfordshire alone up to a good state of repair would cost £165 million pound and then an on-going year on year investment of approximately £20m per year to maintain that condition level.

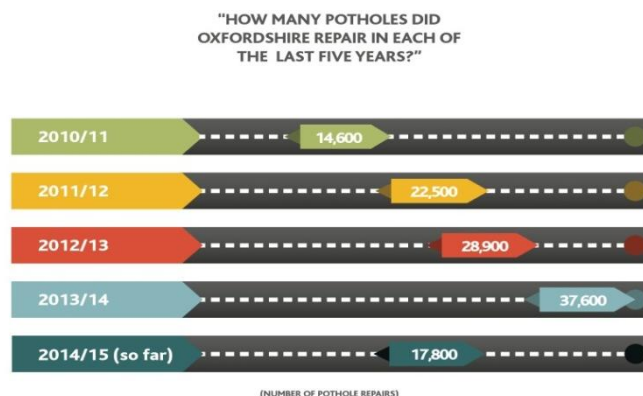


2.2. The ideal life and funding cycle of a highway asset, using a road as an example, is as follows

- Road is constructed from its foundations providing a life of approximately 40 years (capital investment)
- Planned annual routine and cyclical maintenance is undertaken to clear drains to prevent surface water damaging the road surface, clear the road of ice and snow (revenue budgets)
- Low-cost surface treatment to seal and retexture the road when approximately 10 years old
- As the road ages, reactive maintenance is undertaken to repair pot holes, large cracks and other potentially hazardous defects in the surface of the road soon after they appear. This also helps to prevent water ingress which can further damage the structural layers of the road (revenue budgets – by their nature reactive works are proportionally more expensive to undertake than planned works).
- Major maintenance to replace the surface layers of the road takes place after approximately 20 years to extend the life of the road (Capital investment)
- Low-cost surface treatment to seal and re-texture the road when approximately 10 years old
- Continuation of cyclical and reactive maintenance (revenue budgets)
- Road is resurfaced or reconstructed at the end of its useful life (capital budgets)

Capital budgets are funded from Government grants or from Council reserves. Revenue budgets are funded from the Local Government Settlement or Council tax.

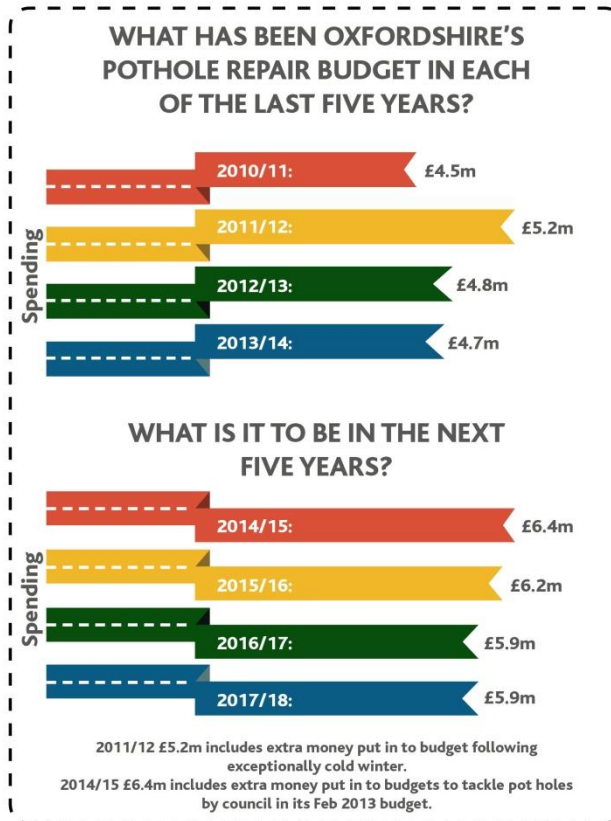
2.3. Oxfordshire maintains over 4500km of road in the County. Funding levels over the last 25 years have been such that roads are able to be rebuilt approximately every 255 years on average, as opposed to the optimal 40 years. As a result the County is experiencing a significant increase in pot holes following a period of



years of severe weather. The level and effectiveness of capital expenditure is therefore paramount to reducing the rate of decline of the highway network and the resultant pressure on revenue budgets.

2.4. Typically the funding directed to highway maintenance capital works is £14 million per annum. The cost of repairing potholes is increasing however and placing pressure on revenue budgets for

highway maintenance and diverting funding from more proactive activities.



2.5. Highway asset management is a way of running the 'business' of operating a highway network. A Highways Asset Management Plan (HAMP) identifies the current assets and develops a framework for Asset Management to enhance existing good practices and improve the management of the network. The 4500km highway network in Oxfordshire comprises a number of diverse assets and all of these need managing. An asset management approach also helps us to understand the value of the highway asset and the costs linked with maintaining that asset to avoid unnecessary deterioration and therefore further building up of maintenance backlogs.

2.6. The Council published its first HAMP in 2008. The first HAMP provided a good overview of the authority's highway asset

inventories and an action plan for moving the authority towards a more asset management based approach. The decision to review, revise and publish a more up to date HAMP reflects the significant improvements Oxfordshire has made over the last 6 years and recognises the asset management approach and process that has been adopted.

2.7. The revised HAMP document has been constructed around the most up to date guidance on asset management and follows the Highways Efficiency Maintenance Programme's (HMEP) Asset Management guidance, which has been developed by the Department for Transport in partnership with the Local Government Association, on what should be included in a highways asset management plan. It also recognises the most up to date standards set out in the highway codes of practice and recent national guidance documents on asset management and asset valuation, as well as taking into account local needs.

2.8. The benefits of adopting asset management practices are:

- Formalises and documents standards and processes.
- Helps us provide an informed response to budget pressures.
- Records what assets we have.

- Provides an understanding of the condition of the highway asset.
- Allows us to understand how much infrastructure is aged and the risk associated with it.
- Leads to consistency of practices.
- Provides an audit trail.
- Assists with managing and reflecting local expectations and needs.
- Acknowledges that future spending requirements are not always the same as historical ones.
- Maintenance levels reflect overarching local and regional transport needs and priorities.
- Provides evidence of highway management practice for public knowledge and challenge.

2.9. The goals and objectives of the authority guide the development of asset management processes and plans. The strong political and public support for investment in highway maintenance requires an assurance that highway maintenance is integrated with the authority's overall transport policy and is designed to link strategic objectives to operational delivery.

2.10 The revised HAMP has been developed around the following four key aspects of sound highway asset management; Levels of Service, Inventory, Life Cycle Plans and Asset Valuation.

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3.0 Value for money maintenance

3.1 Carriageways account for more than 70% of the total value of highway assets, as such, managing the maintenance of this asset is crucial. One of the keys to improving value for money in highways maintenance is knowing and understanding when and how to intervene. By considering an asset over a whole life cycle, it is possible to select the best time to intervene. This approach may be applied at a network level or to individual assets. This will determine a known programme of works which will enable the most effective use of resources.

3.2 Typically there are three options for prioritising capital spending on road maintenance:

Worst first – Focusing maintenance on the stretches of road in the poorest condition. This is a high cost approach because more remedial work is required to repair them although this can bring about public satisfaction to users of these particular roads it is not forward thinking as fewer roads are treated overall because of their high repair cost. This approach would result in many more roads reaching a poor condition over the longer term and increase pressure on revenue budgets to fill pot holes and other defects.

Whole-life cost – focusing maintenance to minimise the total maintenance costs over the lifetime of the road (typically analysis period is 15 to 20 years depending on the type of road). This strategy prioritises funding for proactive works and results in not repairing many of those roads already in a poor condition, unless reactive maintenance costs to these poor condition roads become so excessive that making a replacement is a viable solution. This approach is likely to see a deterioration in short term public satisfaction levels as roads in poor condition are seen to be left whilst others in a better condition are repaired. This is necessary, because the maintenance to extend the life of the road is much less at this stage. However, in the longer term, there is likely to be an improvement in public satisfaction as this approach reduces the occurrence of pot holes and other safety defects at a network level. It results in more roads receiving planned treatment at the optimum time whilst reducing pressure on revenue budgets.

Balanced approach – a balanced approach seeks to split monies between a worst first approach and a whole life cost approach to ensure that the backlog of maintenance is slowly reduced but investment in early intervention treatments is still undertaken. This approach is likely to maintain public satisfaction levels in the short to medium term but does not provide the most effective use of budgets.

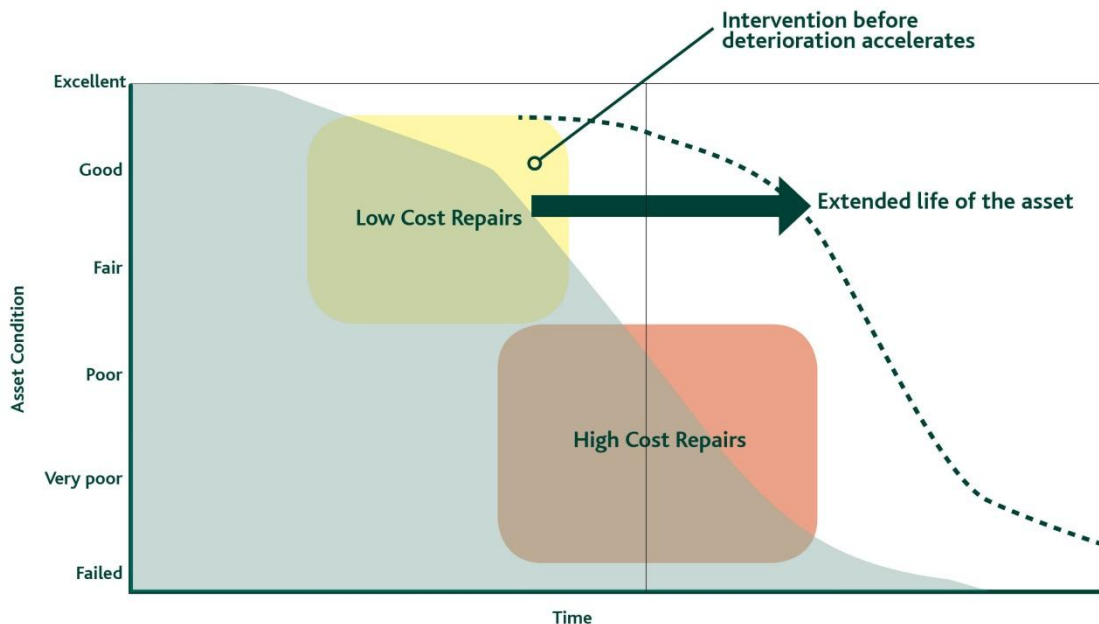
3.3. It must be recognised that there are already many areas on the network where the road condition is beyond that of cost effective intervention but where their strategic nature either as a result of being a bus route, cycle route or key distributor for businesses or local access means that they cannot be left to deteriorate to an unacceptable level. The County is ambitious in its goals to grow the local economy and confidence in the transport infrastructure plays a vital role in attracting such economic growth. It is recognised therefore that there is a need to adopt a pragmatic view and take a balanced approach to investment in highway maintenance.

3.4. The graph below and Appendix 1 illustrates the financial benefits of intervening at the right time in a roads' life cycle. Roads deteriorate over time depending on the volume of traffic they carry and the environmental conditions they are subject to (weathering). A road can often be cheaply restored

to 'nearly new' condition and its life extended by intervening at the right point in the life cycle. As roads deteriorate further, more expensive interventions may be required to restore the road. Allowing roads to deteriorate below the failure threshold therefore represents poor value for money.

3.5. Oxfordshire needs to prioritise long-term demands over short-term demands, to minimise long term costs and deliver improved value for money. Prior to 2008 the Council had given a greater priority to worst-first which has the biggest immediate impact for road users but with budget limitations, this approach had resulted in continued deterioration of the overall road network. In more recent years evidence has proven that we are able to best manage the network through an asset management approach and this is seen in the graph below.

Carriageway Asset Life Cycle



3.6. One of the key aims of this HAMP is to move towards a preventative approach to the maintenance of highway assets by prioritising roads for early treatment that have not yet fallen into the failure threshold. Whilst this may appear to be undertaking maintenance on roads that don't look to be in need of repair, and may seem unnecessary when there are roads in visually worse condition, this will often be the right choice and ultimately deliver the best value for the county in the long-term.

4.0 Fit for purpose roads and footways

4.1 Oxfordshire has a wide variety of roads and footways, from high volume dual carriageways, congested urban environments, to single lane rural roads connecting small farms or villages. It is not possible to maintain every road to a high standard, the backlog of deterioration and limited funding available simply make this impossible. However, the travelling public should expect to find a condition which is safe and consistent with the type and location of that particular road or footway.

4.2 A motorist would expect the condition of a Principal Class A road carrying high volumes of traffic at speed to be in a higher standard of repair without safety defects or significant depressions in the running lane; whereas the motorist using an unclassified road in a very rural environment should not be surprised to find a road surface that may have minor potholes, depressions or other deterioration. Therefore, a minor road may have some defects but can still be safe and fit for purpose and expectations for major roads are for a higher standard with few defects and a smooth ride.

4.3 The concept of fit for purpose roads is captured in practice by establishing a carriageway maintenance hierarchy and is key to providing a consistent maintenance strategy. This is found in the technical annex and although based on best practice is tailored for Oxfordshire to reflect the local road network and develop schemes to maintain it in the most effective way for the money available. A review of the current hierarchy has resulted in a new category covering very minor rural roads taking a common sense approach to maintenance.

5.0 Levels of Service

5.1 Levels of service describe the standard of services provided. We measure and monitor performance against the service standards in order to determine if the levels of service being provided match up with the customer expectations and are in line with both national and local performance indicators. Therefore, there is a direct link between levels of service, corporate objectives, Local Transport Plan (LTP) priorities and funding levels. In addition, when setting and determining service levels the local authority must also consider its statutory obligations as the Highway Authority. Measuring risk and liability as well as the application of national standards at a local level must be taken into consideration when determining a set of baseline standards.

5.2 The following set of fundamental Service Standards summarises the Council's aims to deliver a road network which is as safe, reliable and as fit for purpose as possible within current funding and resource constraints. These service standards represent a baseline. Where possible and when funds allow, the council will always strive to achieve a higher level of service.

Service Standards

For roads and footway; we will:

- Routinely inspect highways at set frequencies
- Respond to any reported highway defects in line with the Highway Safety Inspection Policy, repairing or making safe any safety defects identified.
- Continue to review our maintenance hierarchy to ensure that the standards of maintenance are fit for purpose with the usage and type of road.
- Use patching and surface dressing treatments where possible which are lower cost to stretch funding and intervene early to avoid costly deterioration of the network and further build-up of backlogs.
- Where cost effective, to adopt practices that minimise the disposal of waste materials to landfill

To contribute to network safety and co-ordination of works on the highway; we will:

- Respond within 2 hours to any occurrence or incident so serious as to render the highway unusable or un-safe.
- Carry out annual investigations of road accident statistics and associated highway data to inform and prioritise the Combined Safety Schemes programme.
- Manage abnormal loads across our network.
- Plan works to minimise disruption where possible.

For winter maintenance; we will:

- Maintain salt stock levels in line with national guidance
- Increase the amount of covered salt storage in the county through the use of capital funds to build salt barns at Deddington and Drayton depots.
- Fully fill the salt bins at the start of the winter season.
- Adopt salt spreading rates in accordance with national guidance and recommendations.

- Operate a winter service of precautionary salting and snow clearance on strategic roads and when possible on secondary routes as laid out in our Adverse Weather Plan.

For highway structures (Retaining walls, Embankments, Culverts and Bridges); we will:

- Carry out inspections in accordance with the national code of practice.
- Prioritise routine maintenance works to bridges whilst aiming to keep the deterioration and build-up of backlog maintenance to a minimum.
- Monitor those structures considered to be below standard and deliver a programme of maintenance and improvements through the appropriate funding programme.
- Consider closing, disposing of or applying weight restrictions to some bridges or retaining wall assets where possible, to reduce maintenance liabilities and risk for the future.
- Monitor potentially high risk landslip sites and maximise opportunities to bid for grant funding to repair or maintain these sites to avoid further risk of network closures from landslides.

For drainage and surface water management; we will:

- Adopt a strategic approach to drainage and flood management countywide.
- Investigate reports of highway flooding and damaged or blocked highway drains and take appropriate measures to get water off of the highway, alleviate or mitigate flooding as appropriate.
- Prioritise this work where homes or properties at most risk of flooding.
- Cleanse gullies on risk based approach.
- Carry out more frequent cleansing of drainage assets at locations where the likelihood of ponding, flooding or blockage is higher.
- Collect condition data electronically on all gullies to facilitate repairs and to also inform future changes to gully emptying frequencies.
- Jet drainage systems on a reactive basis as fault are reported or found through inspection.
- Carry out a bi-annual programme of grip cleaning and cutting.
- Facilitate ditch maintenance by adjacent landowners.

For highway environment; we will:

- Carry out verge cutting, highway shrub and tree maintenance in line with the Highway Safety Inspection Policy and the Highway Tree Inspection and Maintenance Guide.
- Amenity grass cutting and annual swathe cuts will be reduced or stopped with funding prioritised to the cutting of visibility splays.
- Continue to work with Parish Councils that wish to carry out their own or enhanced grass cutting as part of helping communities to help themselves.
- Carry out minimal treatment of noxious weeds through reactive spraying and/or weed pulling as funding allows.
- Carry out a planned and reactive programme of highway tree inspections with frequencies of every five years in order to keep road users and pedestrians safe as well as manage the highway tree assets. Maintenance will be prioritised to only those tree defects considered as safety hazards.

- Endeavour to use recycled materials in our construction methods and recycle materials where possible to reduce our carbon footprint and meet waste reduction targets, where the use of these methods proves to be best value.
- Disposal of road materials containing coal tar will comply with OCC policy. Where feasible, investigatory testing for the presence of coal tar will be undertaken at scheme locations well in advance of the main works so that the cost implications are known.

For street lighting; we will:

- Inspect any defective streetlight reported to us as not working within 5 working days and repair as appropriate, provided that it is not a power supply failure by the local network operator.
- Carry out regular night time inspections on the strategic road network to identify faults, relying on the public to report faults on non-strategic roads and within residential areas.
- Carry out a planned programme of routine cyclical maintenance to replace lamps on a 3-yearly basis depending on lamp type/specification.
- Carry out an annual programme of non-destructive testing, only replacing those columns at greatest risk of collapse or that come to the end of their serviceable life prior to them collapsing.
- Focus capital spending on column replacement on a 5-year rolling programme.
- Focus capital spending on the use of new energy efficient technologies to expand LED and dimming projects to reduce energy costs.

For traffic signals; we will:

- Carry out an annual regime of inspections and maintenance of traffic signals in order to minimise the number of equipment failures.
- Operate a fault reporting system and respond to emergency faults within 4 hours and non-emergencies within 4 days.
- Carry out a programme of non-LED bulk lamp changes every 6 months to minimise faults.
- Wherever possible, replace signal lamps with LEDs in order to improve energy efficiency.
- Carry out a comprehensive refurbishment programme on older sites to minimise equipment failures.
- Ensure all sites meet the requirement for use by the disabled, promoting mobility and social inclusion.
- Operate an Urban Traffic Management and Control system (UTMC) to identify in real time where signal operation may need intervention to maximise network performance.

For signs and street furniture: we will:

- Annually inspect, clean and maintain all illuminated bollards.
- Carry out a planned programme of routine cyclical maintenance to replace all lamps on a 2-yearly basis.
- Provide new signs or replace damaged signs only where absolutely necessary to keep sign clutter to a minimum.

- Street furniture will be maintained in a safe condition and in a manner appropriate to its use and location.
- Redundant or obsolete street furniture will be removed aiming to reduce long term maintenance costs.

For Road Markings, we will:

- Build up a reactive programme of white and yellow line and road stud replacement on an annual basis.
- Provide new lines or studs and renew existing lines or studs only where absolutely necessary on road safety grounds.
- Honour access protection markings ('H' markings) only when they are compliant with current policy and repainting will be at the cost of the requester.

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6.0 Inventory and Data

6.1 Asset inventory is the foundation stone on which asset management processes should be built. It is only when appropriate inventory and condition data is available that an overall view and consistent management approach can be achieved.

6.2 In recent years Oxfordshire has invested significantly, collecting and managing asset data and filling many of the 'data gaps'. This has included video surveys to identify the extent of signs, lines, bollards, footway materials and other highway assets countywide. It has also involved innovative development of a drainage asset data collection database and hand held data capture devices which have been used to survey drainage assets in critical flooding hotspots. In addition, data capture devices used by highway safety inspectors are now enabling better planning and prioritisation of maintenance works.

6.3 Good inventory data is also required for the calculation and reporting of annual valuations of the county highway infrastructure, as set out in national guidance. Highway safety inspectors use data capture devices to accurately record defects condition data and materials.

The following table lists the main highway assets:

ASSET TYPE	ASSET GROUP
CARRIAGEWAYS	Principal, Classified, Unclassified
FOOTWAYS/CYCLETRACKS	Footways, Pedestrian Areas, Footpaths, Cycletracks
STRUCTURES	Bridges, Culverts, Footbridges, Retaining Walls, Embankments
HIGHWAY LIGHTING	Lighting Columns/Units, Heritage Columns, Illuminated Bollards, Illuminated Traffic Signs
STREET FURNITURE	Non-illuminated Traffic Signs, Safety Fences, Non-illuminated Bollards, Pedestrian Barriers, Other Fencing/Barriers, Bus Shelters, Grit Bins, Cattle Grids.
TRAFFIC MANAGEMENT SYSTEMS	Traffic Signals, Pedestrian Signals, Zebra Crossings, Vehicle Activated Signs, Information Systems, Safety Cameras, CCTV Cameras, ANPR Cameras, Real Time Passenger Information, Automatic Traffic Counter Sites
DRAINAGE SYSTEMS	Gullies, Balancing Ponds, Catchpits, Counterfort Drains, Culverts, Filter Drains, Grips, Manholes, Piped Grips, Pumping Stations
ANCILLARY ASSETS	Public Rights of Way & Bridges, Verges, Laybys, Car Parks (Park & Ride Sites)

7.0 Life Cycle Plans

7.1 The purpose of a life cycle plan is to document how a particular asset is managed, identify current and future needs in terms of predicted works and anticipated funding need with reference to the level of service required or that can be afforded. Life cycle plans consider the condition of the asset and assess its future performance by considering available monies, agreed risk and investment policies. From this information it is possible to develop the works programmes and strategies that are necessary to achieve the specified levels of service.

7.2 Ideally, life cycle plans present a record, from creation to disposal, of available asset information and cover key work activities used in the management of a highway network:

- Operations and maintenance of the asset: Activities undertaken to ensure the efficient operation and serviceability of the asset, typically referred to as routine maintenance. Routine maintenance activities are revenue funded and are either reactive, such as pothole repair and white line replacement, or cyclical such as gully emptying and grass cutting.
- Renewal or replacement of the asset: Provision for progressive replacement of individual assets that have reached the end of their useful life and cannot be sustained by routine maintenance alone. For carriageways, footways, drainage and bridges these activities are typically referred to as structural maintenance. These activities are funded by capital expenditure and include reconstruction, overlay, resurfacing, patching and surface dressing of carriageways or footways, remedial earth-works and replacement of highway drainage systems, i.e. pipe-work, manholes, etc., or major repairs to these systems.

7.3 For some of the key assets (carriageways, footways, bridges and highway lighting) the development of the life cycle plan is simply documenting current practice. Life cycle plans for some assets are less developed and will continue to evolve as the HAMP is updated. As the Council faces increasing revenue funding pressures it is important that life cycle plans are adjusted to reflect the impact of reduced revenue expenditure on the long-term planning and potential impacts on capital funding for the future.

8.0 Valuation

8.1 All authorities are required to produce a gross replacement valuation of their highway assets to support the Whole of Governments Accounts process. Initially authorities were required to produce a Gross Replacement Cost (GRC) by 2011, followed by Depreciated Replacement Cost (DRC) and Annual Depreciation (AD) by 2012. Oxfordshire's HAMP has used most current guidance on asset valuation to develop a gross replacement cost estimated at just over £7 billion.

8.2 The highway asset valuation has been completed using the CiPFA guidance criteria and conforms to national reporting requirements. The following diagram illustrates the value of highway assets in Oxfordshire.

Key Facts 1	Asset Information					
Asset Group	Quantity (approx)	unit	Value (approx)	2013/14 budget (capital [c] / revenue [r])	Budget as % of Asset Value	Av Lifespan (if routinely maintained) #
Roads	4,576	Km	£4597.4m	[c] £11.06m	0.24%	50 yrs
Footways	3,170	Km	£563.2m	[c] 1.35m	0.24%	30 yrs
Bridges (OCC)	2,900	No.	£494.6m	[c] 1.64m	0.33%	120 yrs
Lighting Columns	59,600	No.	£74.4m	[c] 0.50m	0.67%	30 yrs
Illuminated Signs	3,733	No.	£74.4m	[c] 0.50m	0.67%	15 yrs
Illuminated Bollards	2,199	No.	£74.4m	[c] 0.50m	0.67%	8 yrs
Signs & Lines	43,949	No.	£14.8m	[r] 0.29m	1.96%	10 yrs (signs)
	3,000	Km				5 yrs (lines)
Gully	105,275	No.	£144m	[r] 1.01m	0.70%	20 yrs
Offlet	13,022	No.				
Catchpit	21,629	No.				
Trees	800,000	No.	£442m	[r] 0.54m	0.12%	30 yrs Urban
						120 yrs Rural
Safety Barrier	116	Km	£35m	[r] 0.15m	0.44%	25 yrs

9.0 What's next for asset management in Oxfordshire?

9.1 The Council is already adopting asset management principles and has developed a strong approach to asset management as evidenced by the robust processes, policies and guidance that have been developed as part of our initial Highways Asset Management Plan. This Strategic HAMP document sets out our baseline service standards that are flexible enough to respond to future pressures.

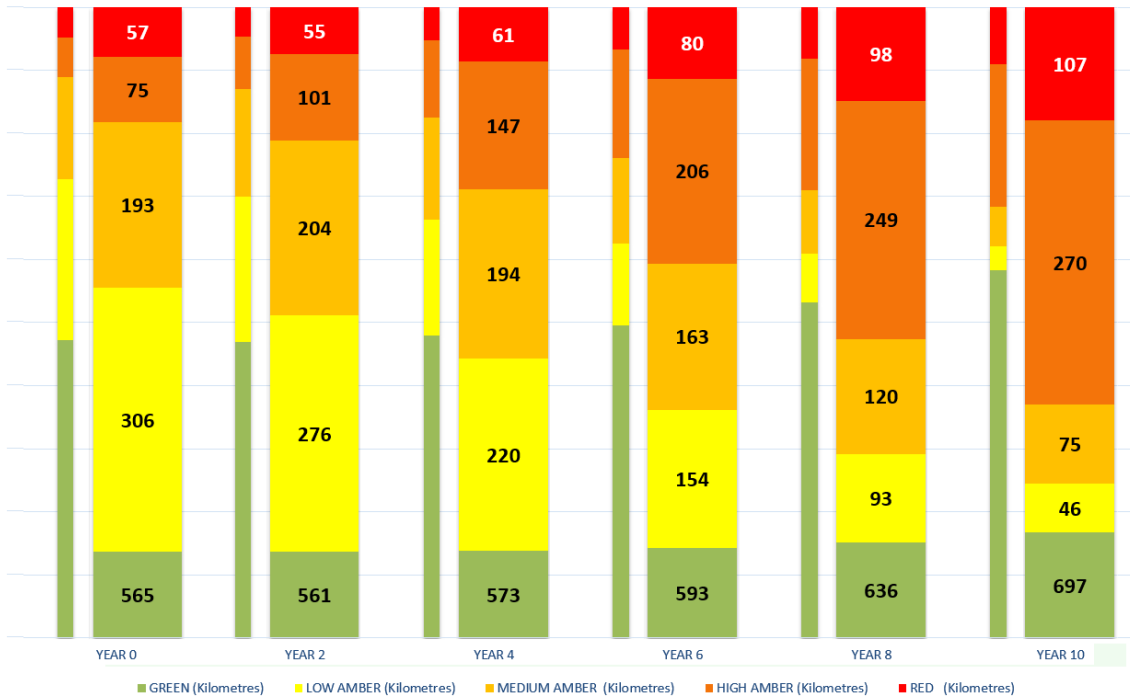
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APPENDIX 1

Alternative Road Treatment Strategies (High Amber v Worst First approach)

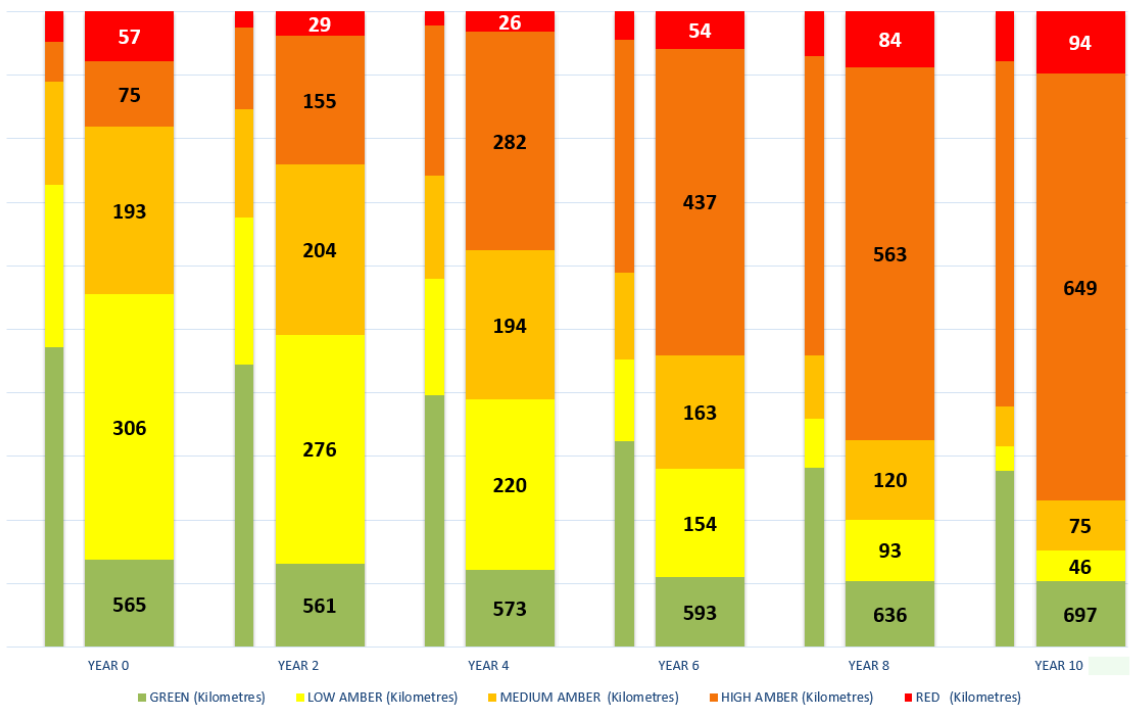
Scenario A (High Amber approach)

10 year Scenario - 25% Budget spent on RED CONDITION / 75% Budget spent on HIGH AMBER



Scenario B (Worst First approach)

10 year Scenario - 100% Budget spent on RED CONDITION / 0% Budget spent on HIGH AMBER



Forecast uses current budget allocations for the particular road class. Defective road condition is represented by colour bands (red being worst condition, then high, medium and low amber). The length of defective road in each band is shown in kilometres. [The thin columns indicate the relative proportions]. After 10 years, there are less red roads with the Worst- First approach, but significantly more high amber roads that are about to become red. By contrast, the High Amber approach reduces the future maintenance liability, by improving overall condition and reducing the cost of pothole repairs.

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