

Highway Infrastructure Asset Management Plan (HIAMP)

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Contents

- 1. Document Purpose 4
- 2. Highways Asset Management..... 4
- 3. The Asset..... 5
 - 3.1. Asset Type & Group 5
 - 3.2. Inventory and Condition 6
 - 3.3. Asset Data Gaps & Action Plan..... 10
 - 3.4. Valuation 10
 - 3.5. Assets not covered by this plan..... 11
- 4. Life-cycle Planning & Whole Life Costing..... 12
 - 4.1. Purpose of Lifecycle Planning 13
 - 4.2. How Life-cycle plans are to be used 14
 - 4.3. Area’s where Life-cycle plans may not be considered; 14
 - 4.4. Lifecycle Plan Framework 15
- 5. Asset Group Status Reports (AGSR)..... 17
- 6. Levels of Service 18
 - 6.1. Service Standards 18
- 7. Core Areas 21
 - 7.1. Compliance 21
 - 7.2. Engagement 22
 - 7.3. Resilience 23
 - 7.4. Environment, Climate and Sustainability 24
 - 7.5. Condition 25
 - 7.6. Risk Management 26
- 8. Next Steps and Priorities for 2022 to 2027 27
 - 8.1. Next Steps 27
 - 8.2. Priorities - 2022 to 2027 27
- 9. Plan Review 28

1. Document Purpose

The Oxfordshire County Council's *Highway Infrastructure Asset Management Plan* (HIAMP) is intended to serve as a mid-range blueprint of service activity required to be undertaken to ensure our service is provided and matures in a way that supports the overriding strategy for the management of the highway asset as has been set out in the *Highway Infrastructure Asset Management Strategy (HIAMS)* document.

Whereas the HIAMS sets the high level, executive strategic direction for how the asset should be managed at a relatively abstract level, the HIAMP starts, as the name suggests, to meaningfully prescribe the plan of actions and commitments required, tightening the parameters within which subsequent activity will be exercised and resources employed.

Whilst the HIAMP is open to less interpretation than the HIAMS, it does allow for continued flexibility from the specific subject and asset management experts at each individual service level to determine the best way in which to achieve the HIAMP commitments.

Whilst this HIAMP is not intended to be a general repository for asset / service or Network information, it does set out some basic information on our key assets in the form of *Asset Group Status Reports*, which are intended to serve as quick reference guides on some of the most sought after information about our assets and how we are managing them. See *Section 3*, and *Annexe A* for more information.

2. Highways Asset Management

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

Asset management comprises the whole lifecycle of an asset from construction, through maintenance, to disposal.

In simple terms:

1. Working out “what you have”
2. How much is it worth?
3. How much will cost you, from now until...?
4. What will you get, for what you can currently afford.

5. What is **best** you can get, for what you *could* invest and how will this be of benefit in the long term?

The adoption of asset management approach means that we will:

- **Take A Strategic Approach**

Taking a longer-term view of how the authority manages its assets. Such a systematic approach may transcend annual budget cycles and is essential if we are to maximise the long-term benefits of the resources available.

- **Optimally Allocate Resources**

Local authorities have duty to make better use of resources. Expenditure must be prioritised to ensure corporate objectives can be effectively delivered within budgetary constraints. Asset management will assist us to invest the available budget effectively by enabling the allocation of resources based upon assessed need.

The use of lifecycle planning and decision making informed by an appreciation of risk and benefit are key asset management components that will help us to allocate our resources where they are likely to provide the best long-term benefits and help to reduce long term whole life costs.

For more information on Asset Management please refer to the HIAMS document.

3. The Asset

3.1. Asset Type & Group

Oxfordshire's highways assets are diverse and cover a wide range of specialisms. We know that the decisions made against one asset can have direct or unintended consequences on other, seemingly unrelated assets. The detrimental impact on a carriageway surface due to underinvestment in highway drainage serves as an easily relatable example. It is necessary ultimately therefore for us to consider all the assets that comprise the network as a singular holistic and homogenous asset.

However, Oxfordshire's highways assets are so diverse and cover such a wide range of specialisms that we need to first understand each of the assets in their own unique and discreet way.

Consequently, each of the assets have been divided initially by type, with a subordinate 'group' classification as detailed below in *Table 1*. Whilst not referenced here, further

subordinate categorisation is possible to include asset elements, components and specifications.

Asset Type	Asset Group
Carriageways	Principal, Classified, Unclassified
Footways / Cycleways	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, Cycle parking, Trees, Verge Marker Posts
Traffic Management Systems	Traffic Signals, Zebra Crossings, Vehicle Activated Signs, Information Systems, Safety Cameras, CCTV Cameras, ANPR Cameras, Real Time Passenger Information, Automatic Traffic Counter Sites
Drainage	Gullies, Balancing Ponds, Catchpits, Counterfort Drains, Culverts, Filter Drains, Grips, Manholes, Piped Grips, Pumping Stations
Ancillary Assets	Public Rights of Way & Bridges, Trees, Verges, Laybys, Car Parks (Park & Ride Sites)

Table 1 – Asset Types and Groups

3.2. Inventory and Condition

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.

These datasets are key to understanding what assets we have and how much maintenance/resource is required throughout their lifecycle.

Additionally, good inventory data is also required for the calculation and reporting of annual valuations of the county highway infrastructure to the Department for Transport, as set out in national guidance.

Whilst in recent years Oxfordshire has invested significantly in the collection of asset data which has historically been absent, there remains much work to do.

Table 2 - Data Confidence - Highway Asset Inventory and Condition

Asset Group	Asset Type	Quantity	Unit	Data Confidence-Inventory	Data Confidence-Age/Condition	Source/Reference
Roads	Carriageways	4,655	km	V. High	V. High	NSG
	Kerbs	Unknown	Km	No Info	No Info	
Footway/ Cycleway	Footways	3,185	km	High	High	WDM PMS
	Cycleway	351	km	Low	No Info	FCLCP & Local Cycling & Walking Infrastructure Plan (LCWIP)
Structures	Pedestrian/Cycle Bridges	107	No.	Medium	High	Highway Structures Lifecycle Plan (HSLCP)
	Vehicular Bridges	728	No.	Medium	Medium	HSLCP
	Culverts	251	No.	Low	Low	HSLCP
	Underpasses	29	No.	Medium	High	HSLCP
	Retaining Walls	2,416	No.	Low	Low	HSLCP
	Embankments	Unknown	No.	Low	Low	Asset Management Files
Street Lighting & Electrical	Street lighting Columns, Poles & Posts	60,525	No.	V. High	V. High	Street Lighting & Lifecycle Plan (HSLCP)
	HID Lamps	37,396	No.	V. High	V. High	Alloy Asset Management System
	LED Lamps	22,729	No.	V. High	V. High	Alloy Asset Management System
	Illuminated Bollard	2,845	No.	V. High	V. High	Alloy Asset Management System
	Illuminated Signs	3680	No.	V. High	V. High	Alloy Asset Management System
	Belisha beacons	273	No.	V. High	V. High	Alloy Asset Management System
	Electrical Pumps	11	No.	High	High	Alloy Asset Management System
	Cables & Ducts	Unknown	?	Not Held	Not Held	Details Not currently held. Potential to collect within project

Traffic Signals	Traffic Signals - Junctions	157	No.	V. High	High	Traffic Signal Lifecycle Plan (TSLCP)
	Traffic Signals - Crossings	266	No.	V. High	High	TSLCP
	Traffic Signals - Dual Crossings	10	No.	V. High	High	TSLCP
	Vehicle actuated signs - (Over Height Warning)	2	No.	V High	High	TSLCP
Public Rights of Way	Footpath	2,820	Km	V. High	Low	CAMs
	Bridleway	1,095	Km	V. High	Low	CAMs
	Restricted Bridleway	255	Km	V. High	Low	CAMs
	Byway open to all traffic (BOAT)	79	Km	V. High	Low	CAMs
	Crossing/Bridge	695	No.	Low	Low	CAMs
	Crossing/Boardwalk	50	No.	Medium	Medium	CAMs
	Crossing/Deck	471	No.	Medium	Medium	CAMs
	Crossing/Beam	946	No.	Medium	Medium	CAMs
	Finger posts	5,816	No.	Low	Low	CAMs
	Styles	3,678	No.	Low	Low	CAMs
Signs & Lines	Non-illuminated Signs	43,949	No.	Low	Low	HIAMS?
	White and Yellow Lining	3,000	Km	Low	Low	HIAMS?
Safety Fences	Vehicle Restraint Systems	50,209	m	Medium	Low	HIAMS?
	Pedestrian Guardrails	Unknown	m	No Info	No Info	
Drainage	Gully	133,218	No.	High	Medium	Kaarbonatech
	Offset	13,022	No.	Medium	Low	Kaarbonatech
	Catchpit	21,571	No.	Low	Low	Kaarbonatech
	Ditches	Unknown	No.	No Info	No Info	
	Sustainable Urban Drainage Systems (SUDS)	Unknown	No.	No Info	No Info	
Green Assets	Trees	400,000	No.	Medium	Low	
	Verges	29,396,344	m ²	Low	No Info	OS Mastermap

Note: The level of data confidence shown in *Table 2* represents a combination of 'Extent', which represents the amount of data available and 'Accuracy'. Data is rated by five levels:

Data confidence	Description
Very High	Data held on greater than 95% of assets, which is less than 5 years old
High	Data held on greater than 95% of assets, which is less than 10 years old
Medium	Data held on 75% to 95% of assets, which is less than 10 years old
Low	Data held on less than 75% of assets, which is less than 10 years old
No Info	Insufficient asset information to determine an effective strategy

3.3. Asset Data Gaps & Action Plan

The Highways Asset Management Team in collaboration with Infrastructure Information Management Team is currently developing a detailed asset data gap register and associated action plan to improve the data confidence of all assets.

Once that analysis is completed, the county council will be better positioned to prioritise investment with regards to surveys and inventory collection. The ultimate aim of creating parity of data knowledge across all assets groups and in maturing our lifecycle plans and maintenance strategies to deliver on the aims and objectives of the *Highways Infrastructure Asset Management Strategy*.

3.4. Valuation

Through a process known as Whole of Government Accounts (WGA) the government collects and consolidates the audited accounts of over 8,000 organisations across the public sector in order to produce a comprehensive, accounts-based picture of its financial position and in part to better understand its assets and liabilities.

A part of the county council's WGA submission requires various data pertaining to the valuation of our highway assets; which in Oxfordshire is valued at £6.1billion.

Whilst the valuation is a primarily theoretical, and widely believed to be conservative figure it serves to demonstrate the enormity of the absolute value of the road asset, before even considering its indirect value to the economy etc.

Figure 1 illustrates the proportion of value for the key highway assets in Oxfordshire

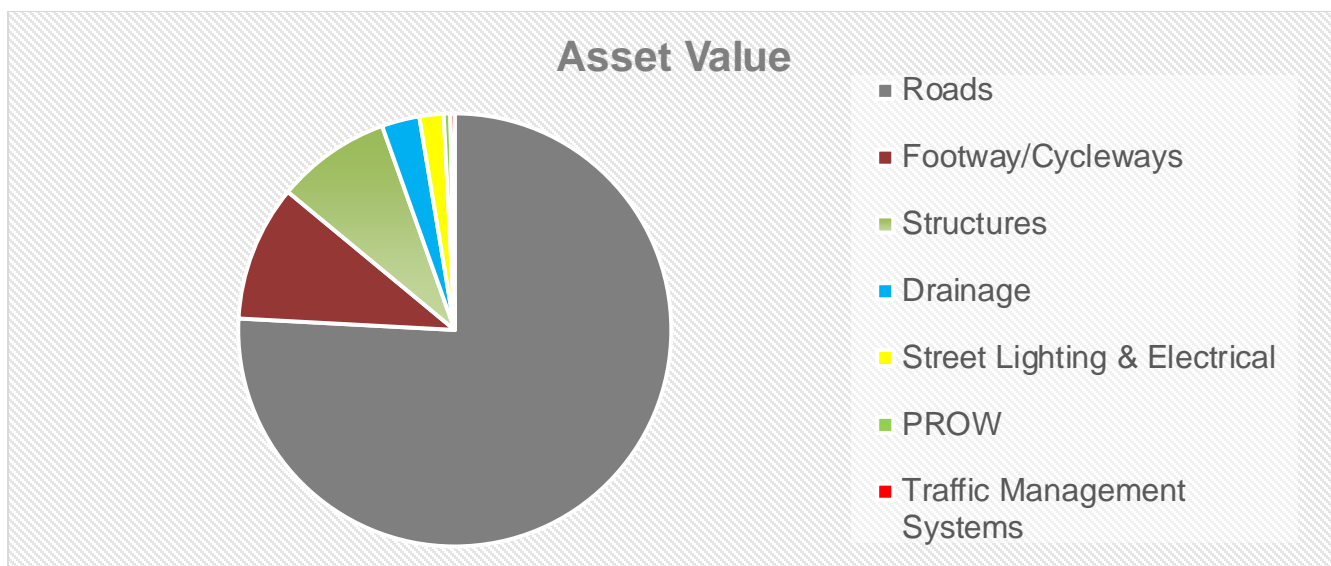


Figure 1 – Highways Asset Value

Oxfordshire’s current inventory and condition data is listed below, as illustrated in the pie chart and *Table 3*, roads make up over three quarters of the total asset value.

Table 3 – Highways Inventory and Asset Value

Asset Group	Inventory	Asset Value (M's)	% of Total Value
Roads	4,655 Km	£4,622	75.8%
Footways/Cycleways	3,185 Km	£619	10.2%
Structures	3,531 (No.)	£521	8.5%
Drainage	167,811 (No.)	£172	2.8%
Streetlighting & Electrical Assets	124,614 (No.)	£110	1.8%
PROW Structures	2,162 (No.)	£30	0.5%
Traffic Signals	435 (No.)	£20	0.3%
Total		£6,094	

3.5. Assets not covered by this plan

Whilst the county council may have some vicarious responsibility for the condition of every element within the extents of the public highway, a number those assets are actually the responsibility of third parties. Often, Parish/Town/District Councils, or Utility Companies.

Typical examples include, but are not limited to:

- Street Furniture
- Street Name Plates
- Litter Bins
- Benches
- Bus Stops
- Salt Bins
- Cycle Parking

Whilst such assets are outside the scope of this plan, the county council will, where necessary liaise with their respective owners/operators to ensure the safety of the public.

4. Life-cycle Planning & Whole Life Costing

A life-cycle plan (LCP) sets out all the key stages of an asset's life, from construction/acquisition to decommissioning/disposal.

The LCP details the ideal time for maintenance (based upon age, condition or wear) and what that maintenance should be. The minimum requirements for an effective life-cycle plan to be developed are knowing;

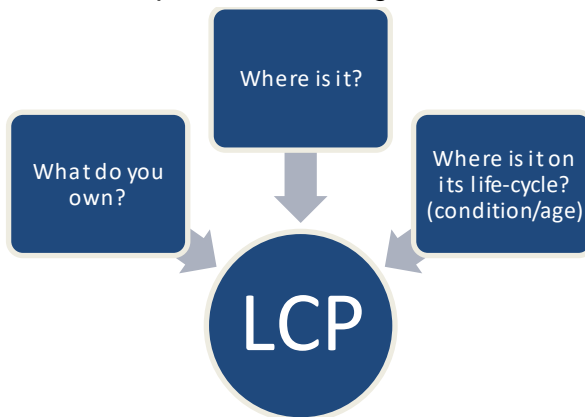


Figure 2 – Life-cycle plan inputs

Whereas life-cycle plans tend to be developed for an asset group on a macro level, whole-life costing (WLC) is employed on a micro level, to calculate what the cost of commissioning, maintaining and replacing an individual asset, as exemplified in Annex A.

Whole life costing is often used to determine which initial maintenance treatment and subsequent interventions would deliver the best value over the life of the asset, as illustrated in the figures below:

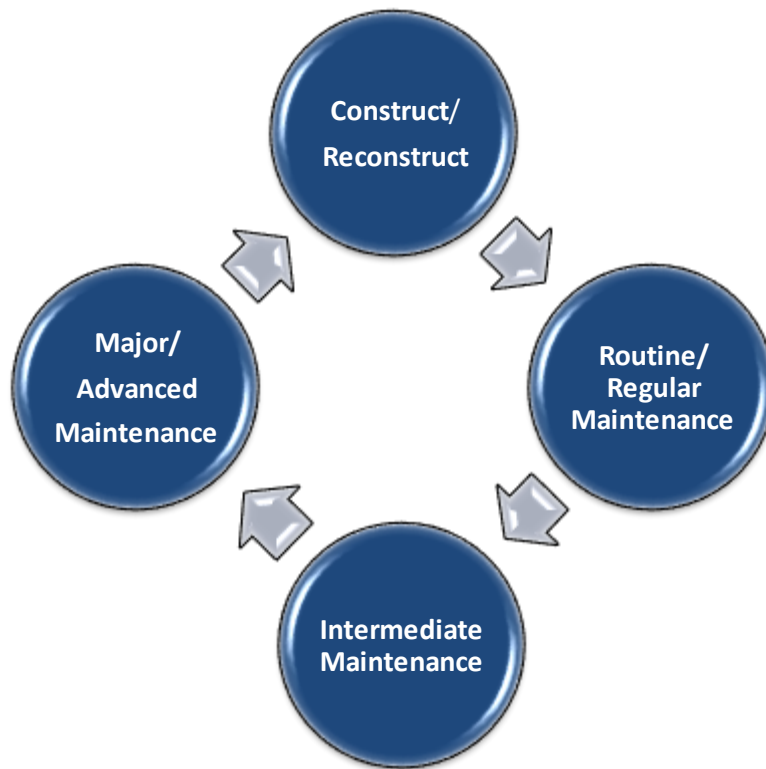


Figure 2 – Asset maintenance life-cycle

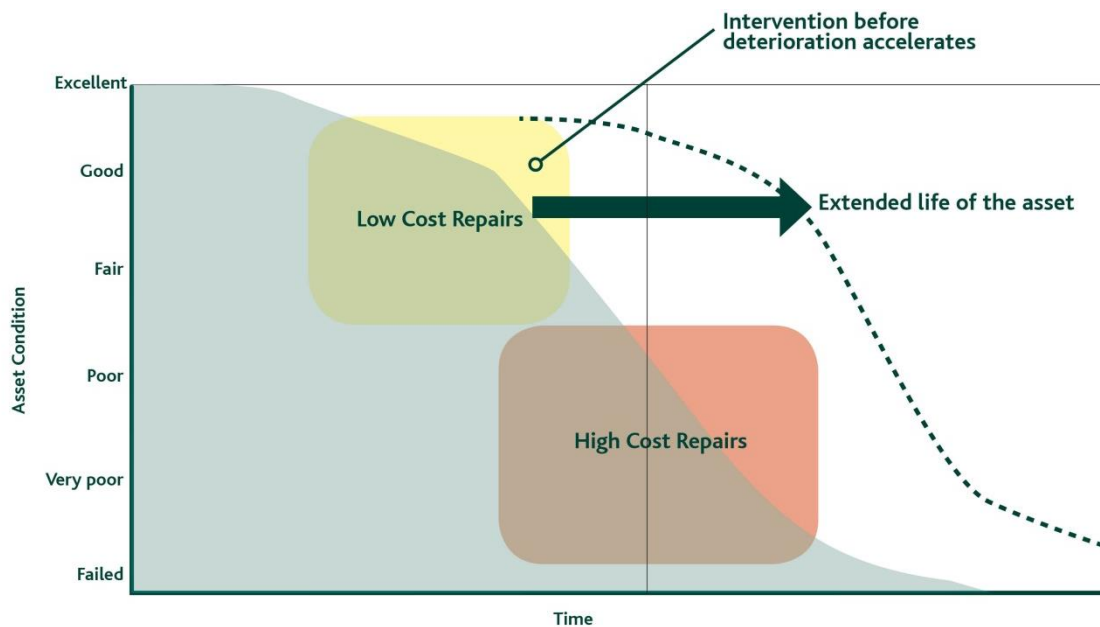


Figure 3 – Life-cycle deterioration curve

4.1. Purpose of Lifecycle Planning

The purpose of a life cycle plan is to document how a particular asset group 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 and age 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.

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.

As part of the development of this plan we have created lifecycle plans (LCP's) for assets where there is sufficient inventory and age/condition data to do so. This is to document how each of the asset groups that make up our highway infrastructure are managed. Each lifecycle plan provides a high-level overview of the standards that are applied to the management of the asset group in question and details of the processes that are used to ensure that those standards are delivered.

Documenting the LCPs has allowed us to capture the knowledge of individuals, to record this and enable it to be shared and developed.

4.2. How Life-cycle plans are to be used

LCP's are essentially an instruction manual on how an asset group should be managed and maintained. They should contain; key inventory and condition/age data, an estimation of outstanding work (backlog), how works are identified and prioritised, a maintenance strategy, risks and issues logs, and a programme of works. This will enable asset group owners to plan maintenance and identify future funding needs, to make the case for more funding or at least maintain it.

4.3. Area's where Life-cycle plans may not be considered;

Life-cycle plans are only as good as the information/data held on an asset. Where data confidence in an asset is low to non-existent, then a routine¹ and/or reactive² maintenance strategy should be employed until the data confidence in the asset is improved to a sufficient level.

¹ Routine maintenance providing works or services to a cyclical regular consistent schedule, generally for cleaning and landscape maintenance

² Reactive maintenance is in response to an issue or problem, defect repair for example

4.4. Lifecycle Plan Framework

Lifecycle plans are living documents, updated as we gather and analyse information on each asset group. When fully populated each LCP will contain the information detailed in *Table 3.3*.

Table 3 - Lifecycle Plan Contents

Section	Answers	Contains
The Asset	What assets do the council own?	<ul style="list-style-type: none"> • Inventory details (type size, etc) • Asset growth statistics
Service Expectations	What is each asset group is required to do?	<ul style="list-style-type: none"> • Customer expectations • Council objectives for transport • Specific user requirements • Safety considerations, • 3rd party use • Environmental requirements, • Network availability • Amenity considerations
Management Practices	How is this asset group managed?	<ul style="list-style-type: none"> • Policies • Inspection Regime • Condition Assessment • Asset Acquisition standards • Routine Maintenance standards • Operational/Cyclic Maintenance • Planned Maintenance standards • Disposal standards
Investment	How much should be and is spent on this asset group?	<ul style="list-style-type: none"> • Historical Investment • Output from historical investment Forecast • Financial Needs • Valuation: GRC, DRC & ADC
Works Programme	How are works programmed for this asset group?	<ul style="list-style-type: none"> • Existing forward works programme 3yrs+ • Works programme coordination • Option Appraisal: treatment selection <ul style="list-style-type: none"> ○ At a project level ○ At a budget category level

Risk	What are the risks associated with this asset group?	<ul style="list-style-type: none"> • Risk identification and mitigation • Major asset risks
Works and Service Delivery	How are works delivered or procured on this asset group?	<ul style="list-style-type: none"> • Details of how the contract arrangements in place enable works to be delivered
Performance Management	How is the performance of this asset group measured and managed?	<p>Performance indicators</p> <p>Current performance figures</p> <p>Target performance figures</p> <p>Performance Reporting</p>
Strategies	What strategies are there for the future management of this asset group?	Details of specific strategies that direct where investment is targeted and what is expected to be achieved from them.

Table 3 Lifecycle Plan Contents

5. Asset Group Status Reports (AGSR)

ASGRs summarise key details of the life-cycle plans and contain the latest customer satisfaction and financial data as listed below:

- Network/Inventory.
- Condition.
- Customer expectations (where available).
- Condition.
- Valuation (where available).
- Historical expenditure (Revenue & Capital).
- Medium-term financial plan budgets.
- Investment need.
- Risks associated of not investing in the asset.
- Current Risks & Issues.
- Asset specific maintenance strategy.

These reports not only provide a quick reference to the key information for each asset group but is a may be useful for identifying needs, risks, gaps in data, areas of poor performance and informing *Service Delivery Plans*. AGSRs should be reviewed in tandem with *Table 2.3: Highway Asset Inventory and Condition Data Confidence* when service planning. An ASGR has been developed for the following key assets listed below:

- Carriageways.
- Footways.
- Bridges & Structures.
- Streetlighting & Electrical.
- Traffic Signals.
- Public Rights of Way.

Refer to *HIAMP Annex A* for full reports.

Working with the Infrastructure Information Management Team and the Asset Management Team will prioritise improving the data confidence of cycle and drainage infrastructure, so a AGSR and meaningful maintenance can be developed.

6. Levels of Service

Levels of service describe the standard of services provided. We measure and monitor performance against the service standards in to determine if the levels of service being provided match up with the customer expectations, to benchmark how they align with national industry trends, and whether the asset / service is likely to be fulfilling their intended outcomes as a result.

6.1. Service Standards

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 are not exhaustive, and each service area will have further refined and tailored levels of service which in turn inform the performance management framework (*Key Performance and Management Indicators* etc).

For roads, footway and cycleways; we will:

- routinely inspect highways at pre-determined, risk-based frequencies
- respond to any reported highway defects in line with the *Highway Safety Inspection Policy* and procedure, 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 surface treatments where possible which are lower cost to stretch funding and intervene early to avoid costly deterioration of the network
- use more durable and stronger materials that better suited to the evolution in vehicle type (e.g. larger buses and electric vehicles)
- 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 two 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 the presence of abnormal loads transiting across our network
- plan works to minimise disruption.

For winter maintenance; we will:

- maintain salt stock levels in line with national guidance
- increase the amount of covered salt storage in the county

- 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
- monitor those structures considered to be below standard and deliver a programme of maintenance and improvements
- prioritise structures which interface with other transport networks and/or provide an essential link to a community.

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 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
- consider the use of sustainable urban drainage systems (SUDS) where these would reduce the impact of highway flooding and introduce SUDS as part of a highway drainage solution where appropriate.

For highway environment; we will:

- carry out verge cutting and highway shrub maintenance in a way that ensures network safety while positively contributing to biodiversity and limiting habitat loss

- continue to work with parish councils that wish to carry out their own or enhanced grass cutting and verge habitat management 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 programme of highway tree inspections every four years in line with the *Tree Policy*
- undertake reactive tree maintenance that will be prioritised to only trees that pose a hazard to highway users while adhering to the *Tree Policy*
- 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
- carry out a programme of removing/requiring the removal of vegetation/detritus encroaching into footways and cycleways.

For street lighting; we will:

- inspect any defective streetlight reported to us as not working within 7 working days and repair as appropriate, provided that it is not a power supply failure by the local network operator
- carry out quarterly 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 six 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 four year rolling programme
- focus capital spending on the use of new energy efficient technologies to expand LED and dimming projects to reduce future energy costs and social / environmental impacts.

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 four hours and non-emergencies within four days
- carry out a programme of non-LED bulk lamp changes every 12 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 fluorescent lamps on a two-yearly basis, unless these have replaced with an LED solution, then these will be similar to the LED street lighting maintenance
- focus capital spending on the use of new energy efficient technologies to expand LED projects to reduce future energy costs
- provide new signs or replace damaged signs only where necessary to keep sign clutter to a minimum
- 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 line and road stud replacement on an annual basis
- provide new lines or studs and renew existing lines or studs only where necessary on road safety grounds.

7. Core Areas

The theme and concept of core areas for consideration is continued from the HIAMS document, and it is here that the parameters around how those strategic intentions begin to take a more tangible form as service commitments.

7.1. Compliance

To ensure legal compliance and otherwise general conformity with best practice the county council will continually appraise the service and its individual work streams

against the recommendations of the 2016 Well Managed Highway Infrastructure Code of Practice.

Where gaps in the service offering are identified, and subject to local risk assessment, service improvement plans will be developed and implemented.

The county council will invite independent peer scrutiny of our services from other authorities and where appropriate, commission focussed private sector 'stress testing' to provide surety, and to identify opportunities for improvement.

7.2. Engagement

How the county council engages is recognised to be a key area of importance, but unfortunately one that is easily overlooked. The council's strategy for engagement is one of transparency, enabling self-help, and to provide a welcome 'seat at the table' to our customers and partners that wish to actively participate in shaping our programmes of work for a shared benefit.

Engagement in the delivery of the highways service will see a marked improvement under the new strategy; formed around a new, concise communications plan.

The Communications Plan will include a matrix for our varying levels of intended consultation / notification / engagement for each of the workstreams we deliver, whilst also clearly signposting customers to where, how, and when they can contact us, including through established systems like 'Fix My Street'.

A key inclusion in the plan will be a published annual timeline of engagement that the service will use to proactively seek input from local communities, especially into the programmes of planned work in their areas.

We will reduce our reliance on broadcast communications in favour of more participative two-way communication that providing a meaningful and genuine opportunity to influence the decision-making process.

We will expand the methods by which we engage, blending the use of traditional media-based outlets with more contemporary digital channels such as 'social' media.

A specific emphasis will be placed upon reaching out to, and seeking the views of seldom-heard, hard to reach, or otherwise underrepresented people.

We will commit to that engagement moving away from broadcast communications.

We will embed into our contractual and service level agreements the provision for enhanced supply chain involvement beyond what would ordinarily be their 'core' offering, using the benefits of the council's recent framework alliance contract (FAC) as the proof of concept

We will consult with our neighbours on how the network is managed and ensure that users' reasonable requirements for consistency of service and integrated programming of works are considered

We will continue to participate on the regional and national stage, utilising those forums to:

- share best practice such as the Local Road Innovation Group (LCRIG), and the Midland Highway Alliance Plus (MHA+)
- gauge public satisfaction through participation in the National Highways and Transport (NHT) survey as well as through other more discreet and targeted local consultations
- benchmark our services against comparable peer authorities and the wider industry. Including through the Customer, Quality, Cost (CQC) Efficiency Network, and the Future Highways Research (benchmarking) Group.

The results/findings of our various engagements will be used to tailor the service offered. Particularly where we will objectively increase the prioritisation of investment in undertakings that found to be of demonstrable importance to the local community.

7.3. Resilience

Where highway assets are concerned, the county councils' strategic approach to resilience is to understand the role those assets play in maintaining economic activity and access to key services. With that knowledge we will tailor our approach to managing and maintaining those key assets. In doing so we will not only provide a network that enables and facilitates resilient communities, but also ensures those assets themselves have a heightened resilience to an unplanned loss of service.

To achieve this, we will need to significantly build upon our understanding of our assets from a community dependency/resilience perspective. Will we do this through continual collaboration with neighbouring/partner agencies/authorities and other

stakeholders either directly, or through membership of local, regional, and national working groups such as the Thames Valley Local Resilience Forum.

Those assets will be recorded and categorised in our asset register according to their 'resilience importance' and will be used to provide a greater level of maturity to the designation and management of a sub-set to the network hierarchy known as the resilient network.

We will continue to prioritise safeguarding against the severe and continually more prevalent extremes of climatic conditions; heat, cold, snow, flood, and wind that threaten our network resilience. However, we will also increase our planning and readiness for other non-climatic influences, including for example civil demonstration or industrial accidents.

That enhanced level of preparedness will come from developing and implementing by way of documented risk assessment a series of management, engineering, and training measures to enhance the resilience of that network of assets against any likely loss of service arising from disruptive occurrences whether they be climatic, accidental, or malicious.

7.4. Environment, Climate and Sustainability

Our *Highway Asset Infrastructure Management Strategy* sets out a clear intent; to re-imagine how our services are delivered and to increase the relative levels of investment in key assets and infrastructure to contribute to an improved environmental condition and a more sustainable network offering.

Our asset records on the location and the condition of our highway infrastructure will be improved. Specifically, that which supports active and more sustainable modes of transport, and infrastructure or assets that support the natural environment, biodiversity and/or the sequestration of carbon.

We will uniquely designate that infrastructure within our asset management systems, with a particular initial emphasis on cycle infrastructure and highway verges, so that we may better plan for their effective management and maintenance.

Wherever possible, and commensurate with other obligations, resources of all types will be redirected to provide a greater level of service to infrastructure supporting active and sustainable modes of transport and the enhancement of nature.

Importantly, the delivery of the service will be transformed to be smarter and cleaner, having the lowest possible environmental impact, with a particular emphasis on developing the circular economy of reusing resources already abundant in the network wherever possible.

We will do this by delivering environmental, carbon and sustainability improvement plans focussing on four key business areas of the service:

- a. Scheme Design.
- b. Plant & Fleet.
- c. Materials.
- d. Depots & Buildings.

We will set ambitious targets, consolidate all our previous individual efforts relating to environmental betterment into a single reporting area and invite inward scrutiny by recording and publishing our annual performance.

7.5. Condition

Knowing the current condition and/or age of an asset is key to developing a plan on how to maintain it, either by creating a life-cycle plan or a risk-based maintenance strategy. Having total current and historical condition records, combined with construction and asset age data is the silver bullet for developing the perfect life-cycle plan.

However as demonstrated in *Table 2 – Asset Data Confidence*, this is difficult to achieve and almost impossible for some heritage assets, which may be over a hundred years old. Therefore, condition and age information may only reach a certain level of data confidence, which is governed by what an authority can reasonably expected to know and whether the cost of condition surveys and inspections, outweighs the cost of renewal.

With regards to target condition of an asset what is deemed an acceptable level of condition will be determined by:

- a) Customer Expectations.
- b) Corporate Priorities.
- c) Finance and Budgets.
- d) Best Value.
- e) Safety/Risk.
- f) What is “fit for purpose”.

We will better understand through data collection, not only the current condition of our assets, but how that condition is affected by certain treatment strategies.

We will accept a declining condition of certain assets if it is to the overall benefit of the *Highway Asset Management Strategy* and without compromising our statutory functions.

Each service area will be required to prepare plans for the management of a declining condition in their asset stock for consideration to relieve service resource pressures elsewhere.

7.6. Risk Management

In line with the recommendations in *Well Managed Highway Infrastructure: A Code of Practice*, we have adopted a risk-based approach in the development of maintenance hierarchies and the resilient network. This is to ensure that asset networks and inventory reflect current functional use and need and will use these to establish appropriate inspection and maintenance regimes. These hierarchies will be regularly reviewed, particularly in areas of the county where new developments have resulted in changes to travel patterns and volumes.

In addition to the asset maintenance risk approach, this is supplemented at a project level with the use of quantified risk assessments (QRA) to assign risk owners, mitigation, and generally allow for better informed decisions to be made and a higher level of confidence in our actions.

The significant difference of the QRA is to assign cost and time to the risk with along with mitigation. Project Risk registers are completed at key milestones and updated through the life of the project and used to inform the design and construction process.

Working closely with the supply chain risks can be effectively managed and realistic risk allowances considered and included in project budgets.

Lessons learnt from projects will be captured either through a dedicated lessons learnt exercise and/or added to the lessons learnt log. The escalation process for project risk is through the governance structure

We will continue to work to ensure that a risk-based approach is embedded within our culture and our overall approach to asset management and will make sure that lessons learned from our successes and failures are incorporated within our risk management process.

8. Next Steps and Priorities for 2022 to 2027

As highlighted within *Table 2.3: Highways Inventory and Condition Data Confidence*, there are multiple areas where our asset data requires improvement. By improving asset data confidence to at least a Medium level will enable asset managers identify what they have and the condition it's in and will provide sufficient level of data confidence to identify what the asset need is, develop life-cycle plans and develop a strategy for future maintenance.

Considering the scale of data collection improvement required for all assets, it is not practical or affordable to bring all asset up to a medium level of data confidence within a single survey programme. Therefore, we must prioritise based upon; risk, likely return on survey investment/benefits and corporate objectives and priorities.

8.1. Next Steps

Working with the Infrastructure Information team, asset owners and relevant stakeholders we will take the following steps to improve our asset data confidence and management of the asset:

- Agree asset need prioritisation methodology.
- Prioritise which assets for inventory and condition surveys.
- Determine scope and specification for surveys.
- Secure funding.
- Determine surveys programme.
- Carry out surveys.
- Data analysis.
- Develop LCP and maintenance strategies.
- Identify resource and funding requirements to maintain the asset.
- Develop programmes of maintenance.

8.2. Priorities - 2022 to 2027

A number of highway priorities have been identified throughout 2021/22 through member engagement, asset life-cycle plan development workshops and the review of highways network data confidence. We will continue to work with members and internal stakeholders to develop the following priorities:

- Production of an asset data gap analysis and action plan with programme for delivery.
- Development of new processes for scheme identification and prioritisation, for each programme.
- Production of three to five year maintenance programme for all key assets.
- Calculate Oxfordshire's carbon use and storage in highways.
- Develop a highways strategy for carbon reduction and sequestration.
- Review of all highways performance measures and service levels.
- Creation of a digital cycle network.
- Development of a cycleway life-cycle plan and maintenance strategy.
- Development of a drainage life-cycle plan and maintenance strategy.

9. Plan Review

This plan shall be formally reviewed no less frequently than once every two years from the date of its formal ascent.

However, interim reviews of the plan, either wholly or in part may take place at more regular intervals if deemed necessary due to any other change in circumstance that might warrant it.