Highway Asset Management Plan 2019 - 2024

DRAFT 0.8

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OXFORDSHIRE COUNTY COUNCIL

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1 Asset Management Principles

As described in our *Asset Management Policy*, our approach to asset management planning is based on two fundamental principles; whole life costing and risk-based decision making.

1.1 Whole life costing

Whole life costing, with reference to highways maintenance in Oxfordshire, is an investment and appraisal methodology, which assesses the total cost of an asset over its whole life. Oxfordshire County Council primarily considers the initial cost of the various maintenance treatment options and profiles the total cost of these treatment options, including intermediate maintenance, over a set analysis period. The main factors which will affect the whole life cost of an individual asset are:

- type and quality of construction
- degree and type of damage and degradation.
- use (e.g. for carriageways this will be type and volume of traffic)
- speed and quality of response to damage and degradation.

All assets will eventually require some form of maintenance treatment, irrespective of design life, initial construction type or importance. The questions are normally, "how frequently?" and "at what cost?" to restore the pavement back to a serviceable level.

In the concept of whole life costing, the lowest initial cost treatment may not always be the most cost effective option over the whole life of the asset. The maintenance strategy which is determined to be the most cost effective option over the entire life of the asset forms the basis of the *Lifecycle Plan*.

We consider whole life costs in the lifecycle planning process that we carry out to identify maintenance need for our individual assets. This information is a key input into the asset management planning process.

1.2 Risk based decision making

We consider risk in our asset management process at a number of levels:

- for individual assets, such as structures, we identify asset need on a risk basis
- where maintenance need exceeds available budget we prioritise on the basis of risk
- risk is a key input in our overall maintenance planning and prioritisation process and is used to help define the work programme for the next five years.

2 Asset Base

2.1 Asset inventory

As an authority, we manage nearly 4,500km of roads, more than 3,000km of footways, and more than one million individual assets.

Asset Group	Quantity (approx)	Unit
Roads	4,481	Km
Footways	3,170	Km
Bridges (excl PROW)	1,116	No.
Street Lights	80,000	No.
Illuminated Signs	3,627	No.
Illuminated Bollards	3,829	No.
Traffic Signal Sites	405	No.
Non-illuminated Signs	43,949	No.
Road Markings	3,001	Km
Drainage Assets	159,926	No.
Highway Trees	800,000	No.
Safety Barrier	116	Km
Public Rights of Way	4,200	Km

TABLE 1 - OXFORDSHIRE

2.2 Asset value

Our asset base has a total value of **£6.1 billion**, this is made up of the individual assets as shown in Figure 1.

[1] Note: Within Oxfordshire's current asset database cycle infrastructure is not identified as a separate asset group and is included within the carriageway and footway asset inventory. Oxfordshire is looking at ways to capture this information and add it to the asset database.

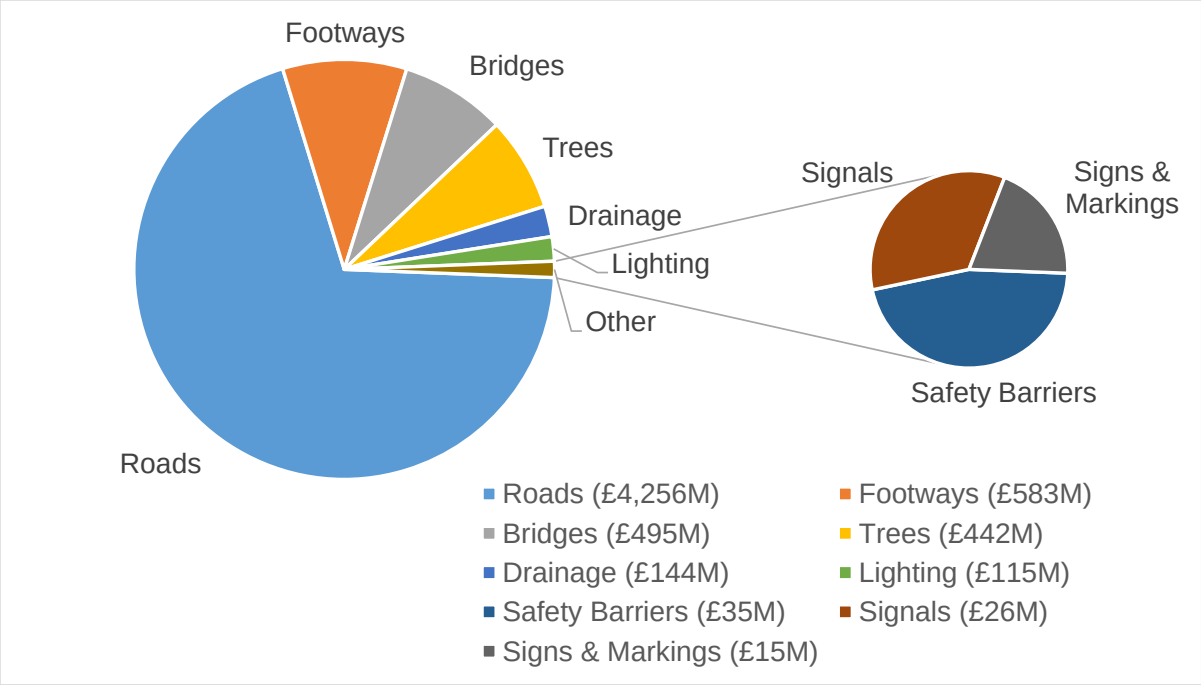

FIGURE 1 - ASSET VALUE

2.3 Expected service life

The expected service life of our assets ranges between five years (road markings) and one hundred and twenty years (structures and rural trees).

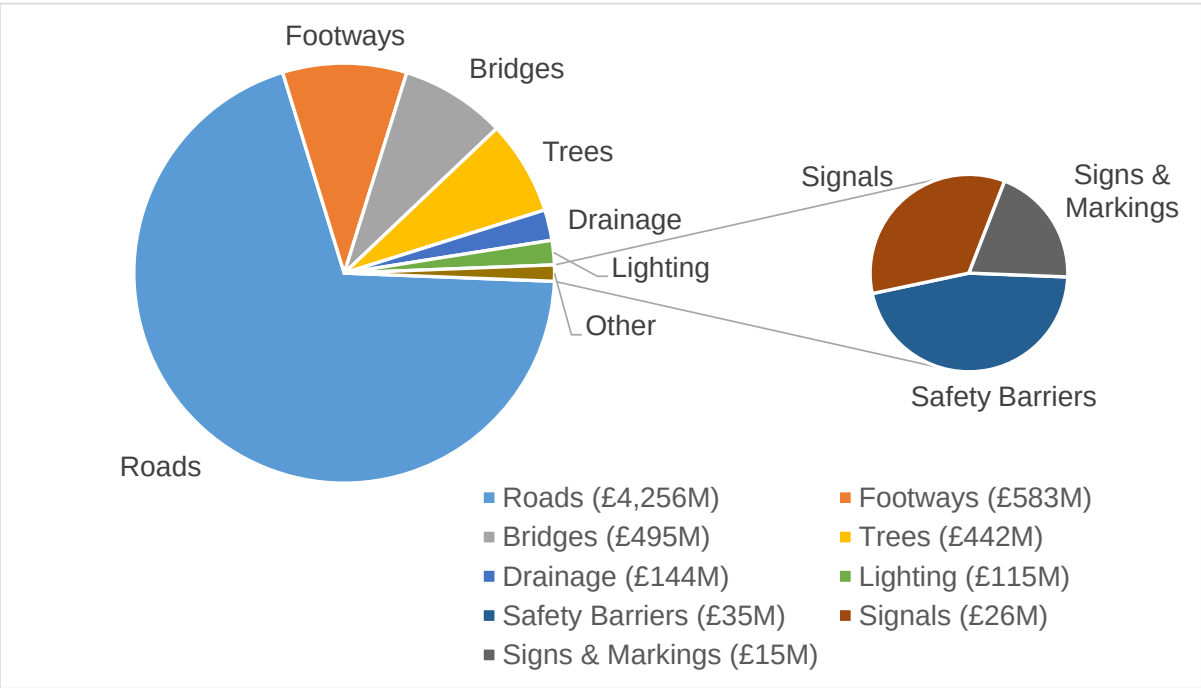

FIGURE 2 - EXPECTED SERVICE LIFE

3 Asset Management Planning Process

3.1 Planning process

The asset management planning process is illustrated in the following diagram. The key step in the process is our ***collaborative planning workshop(s)*** in which asset owners and our supply chain come together to consider and balance wide range of factors (including maintenance need, risks, councillor priorities and local needs for individual assets or areas) to come up with an indicative maintenance programme.

This indicative programme, along with the resulting outcome measures, is subject to engagement with councillors and other key stakeholders, before being presented to Cabinet for scrutiny and approval prior to delivery.

The process is illustrated in Figure 3 and is described in the subsequent sections.

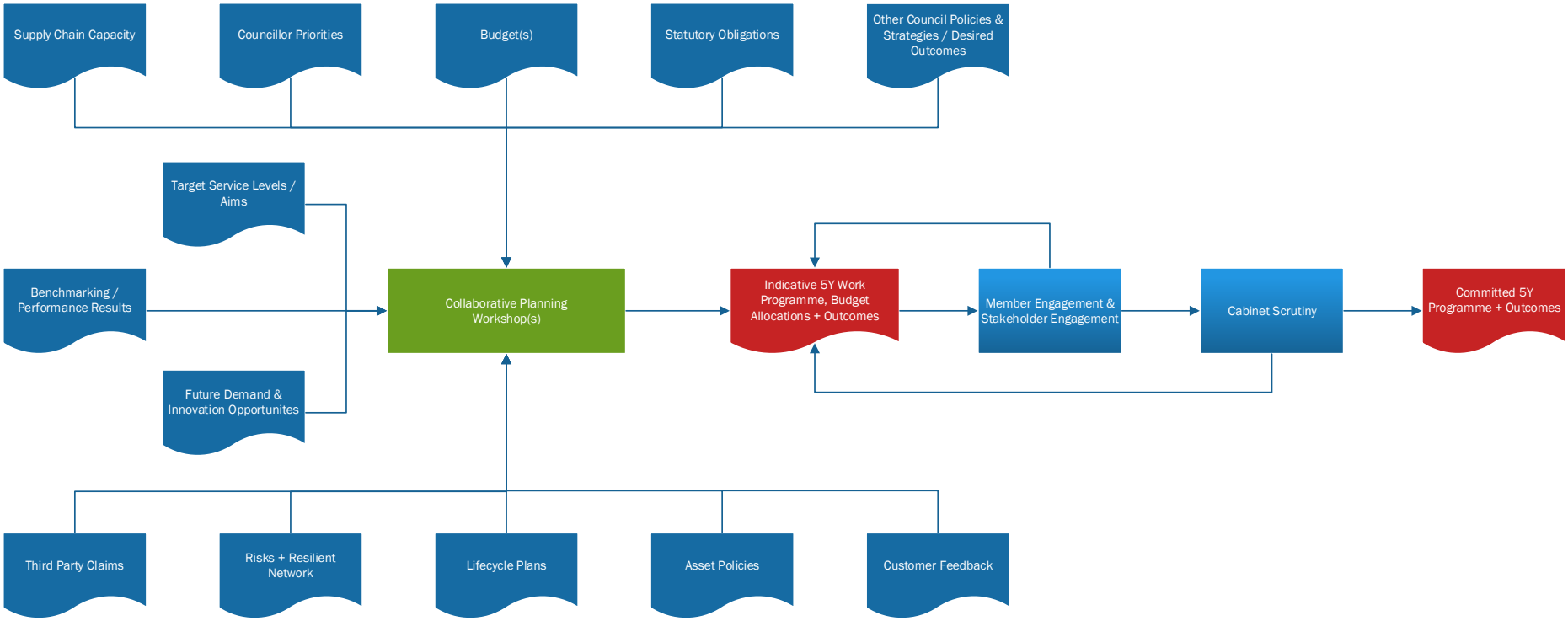

FIGURE 3 - ASSET MANAGEMENT PLANNING PROCESS

OXFORDSHIRE COUNTY COUNCIL

3.2 Inputs

The various inputs to the planning process are described in the following sections. Where possible, the information will be presented on a map using the output from our various asset management systems.

Statutory obligations

Oxfordshire has a number of legal obligations and powers that govern the way that it manages the road network.

- *Highways Act 1980* sets out the main statutory duties for the council, which include a duty to maintain roads in safe condition.
- *Traffic Management Act 2004* gives the council the duty to keep the traffic moving on the road network.
- *Flood and Water Management Act 2010* covers the management of flood risk associated with extreme weather.

In addition to legal duties, there are a number of sources of national good practice guidance including in particular *Well-Managed Highway Infrastructure: A Code of Practice (2016).*

Council policies, strategies and outcomes

We will consider council policies and strategies that are pertinent to highway asset management. In particular this will include:

- *Active & Healthy Travel Strategy*
- *Air Quality Strategy*
- *Digital Infrastructure Policy*
- *Energy Strategy*
- *Rights of Way Management Plan*
- *Science Transit Strategy*

Budgets

Clearly the capital and revenue budgets are one of the main factors in determining the maintenance programme over the next five years.

The following table shows the indicative capital budget split between asset types and other expenditure areas.

Asset Group	2019-20	2020-2021	2021-22	2022-23	2023-24
Carriageways	£22,846	£22,200	£21,175	£19,674	£21,029
Footways	£750	£750	£750	£900	£1,000
Drainage	£1,400	£1,450	£1,600	£1,800	£1,800
Structures	£2,302	£2,300	£2,300	£3,100	£5,000
PROW	£200	£225	£250	£300	£350
Safety Fences	£0	£0	£0	£75	£750
Street Lighting	£775	£775	£775	£700	£973
Signals	£252	£283	£302	£302	£402
Agency Agreements	£1,700	£1,513	£1,470	£1,457	£2,745
Risk and Other Costs	£1,741	£756	£784	£825	£851
TOTAL	**£31,966**	**£30,252**	**£29,406**	**£29,132**	**£34,900**

TABLE 2 - ANNUAL CAPITAL BUDGET ALLOCATIONS (£,000S)

In addition to the capital budget, the annual revenue budget is expected to be in the order of **£16.5 million** over the same period. This is illustrated in Figure 4 below.

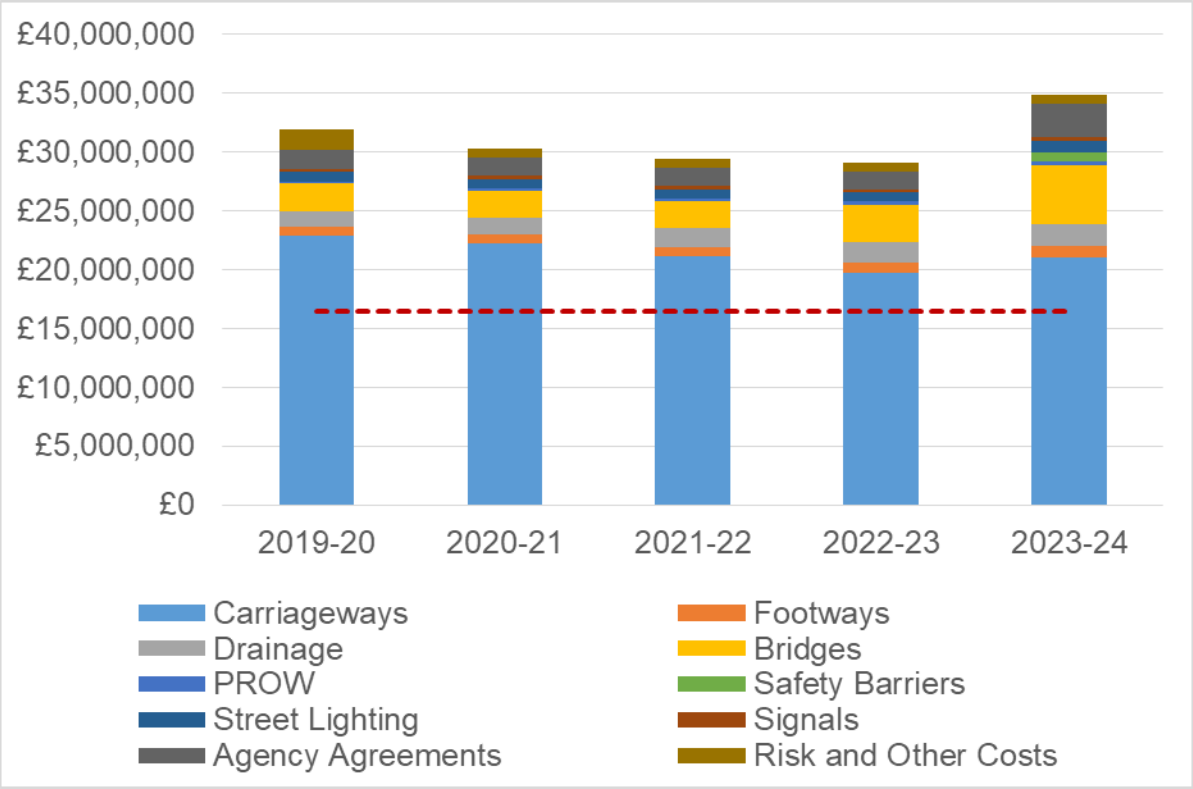

FIGURE 4 - ANNUAL CAPITAL & REVENUE BUDGET ALLOCATIONS

Maintenance need (from asset *Lifecycle Plans*)

Individual *Lifecycle Plans* have been developed for the main asset types:

- carriageways
- structures
- drainage
- footways
- street lighting
- signals
- green estate
- safety barriers
- public rights of way
- embankments.

These have identified maintenance need based on a consideration of maintenance strategy and available options based on the most appropriate approach, i.e.:

- deterioration modelling
- expected service life
- risk.

We will also consider the relevant asset policies and associated service aims (the policies are included in Annex A), including:

- *Asset Management Policy*
- *Coloured Surfacing Policy*
- *Decluttering Policy*
- *Drainage Policy*
- *Grass Cutting Policy*
- *Highway Electrical Assets Policy*
- *Highway Safety Inspection Policy*
- *Highway Safety Policy*

- *Highway Tree and Vegetation Policy*
- *Safety Barriers & Fences Policy*
- *Public Rights of Way Policy*
- *Road Markings and Road Studs Policy*
- *Routine, Reactive and Cyclic Maintenance Policy*
- *Street Furniture and the Street Environment Policy*
- *Structures Policy*
- *Traffic Signs Policy*
- *Tree & Vegetation Policy*
- *Winter Service Policy*

Potential maintenance schemes

We will consider any lists of potential capital maintenance schemes, including outstanding schemes from previous years and programmes of non-urgent defect repairs.

Risks (e.g. flooding incidents, etc.)

A range of risk factors are considered including:

- accidents and incidents
- age and construction of asset
- bus routes and other sustainable transport corridors
- cycleways and commuter routes
- future demands (e.g. location of planned developments)
- historic flooding incidents
- resilient network
- socio-economic importance
- strategic importance or hierarchy
- the location of defects, including historic hot-spots or clusters
- traffic flow.

Third party claims

We will consider the location of third party claims, including historic hot spots or clusters.

Network intelligence

We will also consider knowledge of the network from:

- Local Area Teams
- Service Provider.

This will include qualitative and quantitative data driven intelligence about planned network improvement schemes, etc. as well as potential future developments or other changes that might impact on the highway asset over the next five years.

Benchmarking and Performance Results

Where relevant, we will consider:

- results from APSE, CQC, NHT surveys plus the results of other benchmarking exercises
- comparison with other authorities, including our partnering authorities in England's Economic Heartland.

Customer feedback

Customer feedback will be considered from complaints, service requests or other feedback specifically sought from the public through our stakeholder engagement process.

Councillor priorities

We will also consider knowledge of councillor priorities, local needs, historic issues, or feedback specifically sought through our stakeholder engagement process.

Target service levels

The *Asset Management Strategy* states that:

1. "Our aim is for the condition of the highway network in Oxfordshire [*based on the combined 'Red' and 'Amber' score for A&B Class Roads derived from the SCANNER RCI values*] to be better than average when compared to our regional neighbours in Buckinghamshire, Gloucestershire, Hampshire, Northamptonshire, Surrey and Warwickshire; and that
2. We also aim to achieve a level of customer satisfaction with the highway service that is better than the national average [based on the NHT Survey]".

We will therefore consider the nationally reported, as well as internal performance indicators and target service levels including:

- carriageway condition indicators (e.g. Single Data List 130-01, 130-02 and 130-03)
- structures condition indicators (BCI)
- footway condition indicator
- average age of lighting and signals stock
- number of flooding incidents
- number of defects
- average defect response
- customer satisfaction.

Lessons learned

We will formally consider the lessons identified from the past, including from the previous year's maintenance programme delivery.

Future demand and innovation

We will consider future developments and innovation opportunities to understand the potential impact on future maintenance priorities (e.g. through accelerated obsolescence), these may include:

- future growth
- changes in travel patterns
- technology and data
- treatments and materials
- automated vehicles
- electric vehicles and related infrastructure.

When developing the maintenance programme we will also endeavour to co-ordinate maintenance activities with specific innovation developments.

Deliverability, coordination and supply chain capacity

Finally, we will consider the deliverability of the programme including:

- network impact and traffic management
- efficient working practices

- supply chain capacity
- future market and strategy directions.

3.3 Collaborative planning workshop(s)

A series of collaborative planning workshops will be held to consider the various inputs described in the previous section and identify:

i. any changes to budget allocations
ii. an indicative, prioritised work programme for the next five years
iii. outcomes to be delivered (e.g. outputs to be delivered, performance outcomes to be achieved).

Given the volume of information to be considered, and the number of different perspectives, the workshop may extend over a number of sessions.

Attendees

The attendees at the workshop will include the following:

- Service Lead - Highway Maintenance (Chair)
- Group Manager - Asset Renewals
- Principal Officer - Asset Renewals
- Asset Owners with responsibilities for:
  - carriageways
  - footways
  - structures
  - drainage
  - lighting
  - signals
  - green estate
  - public rights of way
  - safety barriers
  - embankments
- representatives from Area Teams
- representatives from Service Provider.

Prioritisation process

1. The first step is to review relevant council wide policies and strategies to understand how highway maintenance can contribute to achieving the desired outomes.
2. Next, review the current five year budget allocations against maintenance need and overall risks, and confirm any rebalancing that may be required.
3. Next, lessons learned from previous years that should be taken into account when developing the next five year programme will be discussed along with any future policy initiatives or other factors that may impact the network over the review period.
4. The maintenance need for each asset type, including any potential schemes, will be overlaid with the risk factors, third party claims, member priorities, network intelligence and customer feedback. This will identify the priority schemes for each asset type.
5. The priority schemes for all asset types will then be considered in terms of their impact on our Service Levels which will result in a further prioritisation.
6. Finally, the schemes will be allocated across the five years of the programme based on available budget and deliverability factors. Where possible, schemes on different assets in the same location will be combined to minimise disruption to road users.
7. The outputs of this process will be:
   (i) updated budget allocation
   (ii) indicative work programme for five years for each asset type
   (iii) outputs and outcomes

3.4 Stakeholder engagement

We will consult with key internal stakeholders once the indicative work programme has been produced. In particular, this will include the Digital Infrastructure Team, Energy Team, iHUB, etc. who will help ensure the programme reflects, and is co-ordinated with, future innovation opportunities and that, as far as possible, existing infrastructure remains fit-for-purpose.

In terms of programme delivery, stakeholders (internal or external) will be defined and engaged with from the pre-design stage of a scheme or works programme, depending on their level of involvement. These levels of involvement will be defined in tiers to ensure that the correct individuals and organisations are contacted at the appropriate time.

We will liaise with stakeholders as and when appropriate for the type of works. This will be done until the works are completed. In certain circumstances, i.e. where a lesson has identified stakeholders may be contacted post completion to identify what could have been done better (or what worked well).

3.5 Councillor engagement

As part of the review of governance and member engagement the council has created a number of localities within Oxfordshire. These localities are based around the main market towns and they align with the council's electoral divisions. There are two localities in each district for the rural districts with Oxford City comprising the final locality. Localities are an excellent way to engage with local councillors about issues affecting their locality or to work with them to develop new strategies and policies and keep them informed about local developments.

There is a councillor specifically dedicated as the Transport Portfolio Holder and they are engaged with on a regular basis to ensure that they are aware of any issues developments within the service.

On an annual basis the forward programme of works is taken to cabinet for sign off. This signed programme will then form the basis for the following year's programme of works.

3.7 Outputs

The outputs from the asset management planning process will be the following:

1. updated budget allocation between asset types (if necessary), including key changes since last five year plan
2. five year capital maintenance programme for all assets
3. service levels and outcomes (e.g. performance indicators to be achieved given level of funding)
4. maintenance outputs to be achieved (e.g. volume of treatments)
5. resource implications
6. delivery risks.

4 Performance Management

Throughout the five year period of the asset management plan, we will actively monitor our performance in delivering the plan

4.1 Benchmarking

We will carry out annual benchmarking of our performance against other authorities. This will include:

- asset condition
- NHT public satisfaction survey
- APSE performance network.

We will also compare our performance our neighbours in the South East and other members of England's Economic Heartland.

We will monitor our position in relation to our target service levels on an annual basis, and will take corrective actions if necessary.

4.2 Performance indicators

As described previously, we will set appropriate targets for a range of performance indicators relating to the asset and our wider highway maintenance service that are linked to the various budgets.

- carriageway condition indicators (e.g. Single Data List 130-01, 130-02 and 130-03)
- structures condition indicators (BCI)
- footway condition indicator
- average age of lighting and signals stock
- number of flooding incidents
- number of defects
- average defect response
- customer satisfaction.

We also have a number of Service Performance Indicators (SPIs) that form part of our maintenance contract that are used to monitor the performance of our Service Provider.

As described more fully in our *Performance Management Framework* we will monitor our performance on a monthly basis, and will take corrective actions if necessary.

4.3 Maintenance outputs

We will monitor delivery of the maintenance programme against the output targets defined in the planning process on a monthly basis and will take corrective action where necessary.

4.4 Efficiency gains

We will monitor efficiency gains on an annual basis through our involvement in the CQC Efficiency Network.

5 Continuous Improvement

5.1 Management and service review

Oxfordshire carried out a Lean review of its Highway Service in 2017. This helped to shape the current structure of the service. There are no further Lean reviews programmed for the service however the directorate's Service Improvement Team has been tasked with reviewing the outcomes of the 2017 review and they are looking at the wider transport service.

Our Service Lead - Highway Maintenance will conduct annual management reviews of the asset management planning process to identify any opportunities for improvement and any corrective actions that need to be taken. Operational processes are reviewed every six months (in conjunction with our term maintenance provider) to ensure they are current and fit for purpose.

5.2 Improvements to asset management planning process

Planned improvements to asset management system

We will continue to review our asset management practices in line with national guidance and best practice learned from other authorities as well as the various highways, asset management and benchmarking groups which we belong to, such as the Local Councils Roads Innovations Group (LCRIG), Midlands Service Improvement Group), Midlands Highways Alliance (MHA), Association for Public Service Excellence (APSE) and the National Highways and Transport (NHT) network.

We will also use *life cycle plans* for each asset group to identify areas for repair, maintenance and improvement and use these to guide our maintenance strategy and financial planning for the short term as well as the long term. In particular, this will seek to address current data gaps.

In terms of the prioritisation process, we will move to a more outcome based approach that also considers cross-asset costs and benefits as well as the impact on communities and the economy. The prioritisation process will also be improved through ongoing engagement with innovation opportunities and the sharing and implementation of good practice.

Asset-specific improvements

- cycleways
    - establish the extent of the cycleway network, including hierarchy (e.g. commuter routes)
    - identify and collect necessary inventory data
    - implement appropriate condition survey for cycleways
    - produce lifecycle plan for cycleways
- footways
    - complete footway condition survey
    - produce lifecycle plan for footways (using the *HMEP Footway Lifecycle Planning* Toolkit or otherwise)

- drainage
    - continuation of the programme of surveys and investigations to establish the extent, nature and condition of Oxfordshire's highway drainage network and associated assets
    - development of an appropriate estimate(s) of service life of the various components of the drainage system to support lifecycle planning
- embankments
    - establishment of a capital funding programme for delivery of works to mitigate the risks currently posed by the condition of embankments on the network
- safety barriers
    - implementation of recommendations of the recent study on safety barriers on the network, i.e.:
        - ensure asset inventory is complete, current and that appropriate attributes are collected
        - use the *HMEP Ancillary Asset Lifecycle Planning Toolkit* to develop predictive models to support lifecycle planning
        - Develop three to five year forward works programmes
    - The policy for will be reviewed for alignment with *Well managed highway infrastructure: A Code of Practice*.

6 Five-Year Work Programmes

The proposed 5-year programme set out below shows investment for different activity including identification of specific schemes over the next two years for the larger maintenance schemes. These will be incorporated into the Capital Programme 2019/20 – 2029/30 which will be approved by Council in February 2020.

		TOTAL	£30,646,510	£29,301,191	£28,252,302	£32,552,500	£18,064,120
Programme Group	**Project**	**Current Stage**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Carriageways	Major Resurfacing Schemes	2	£2,020,000	£1,875,000	£1,875,000	£2,955,000	
Carriageways	Resurfacing Schemes	2	£2,875,500	£2,875,500	£2,875,500	£3,875,500	£2,875,500
Carriageways	Edge Strengthening Schemes	2	£400,000	£400,000	£400,000	£400,000	£200,000
Carriageways	Overlay Schemes	2	£200,000	£200,000	£300,000	£400,000	£200,000
Carriageways	Recycling Schemes	2	£312,000	£375,000	£450,322	£500,000	£300,000
Carriageways	Combined Safety Schemes	2	£1,350,500	£1,350,000	£1,350,000	£1,350,000	£1,350,000
Carriageways	Advance Design/Site Investigation	1	£451,637	£523,455	£777,357		
Carriageways	Imaterial and method innovation	0	£300,000	£300,000	£300,000	£300,000	£300,000
Surface Treatments	Surface Dressing	2	£3,255,949	£3,005,949	£2,755,949	£2,527,620	£1,927,620
Surface Treatments	Iron work strengthening programme	2	£200,000	£200,000	£200,000	£200,000	£90,000
Surface Treatments	Preventative repair programme (dragon patching treatment)	2	£1,300,000	£1,300,000	£1,300,000	£1,300,000	£380,000
Surface Treatments	Micro Asphalt Programme	2	£757,100	£838,100	£919,100	£1,000,100	£276,100
Surface Treatments	Retexturing Programme	2	£137,900	£137,900	£137,900	£137,900	£137,900
Structural Highway Improvements	Surface Dressing Pre-Patching Schemes	2	£975,000	£900,000	£825,000	£842,540	£400,000
Structural Highway Improvements	Structural Patching	2	£3,205,849	£2,930,307	£2,360,041	£2,506,940	£1,800,000
Structural Highway Improvements	Minor Patching	2	£4,230,000	£3,097,500	£1,965,000	£1,965,000	£550,000
Footway and Cycleway Works	Footway and Cycleway Programme	2	£750,000	£750,000	£900,000	£1,000,000	£750,000
Drainage	Drainage Programme	2	£1,450,000	£1,450,000	£1,800,000	£1,800,000	£1,100,000
Bridges	Structures Programme	2	£2,300,000	£2,300,000	£3,100,000	£5,000,000	£2,300,000
Public Rights of Way Foot Bridges	PROW Programme	2	£225,000	£225,000	£300,000	£350,000	£100,000
Electrical	Street Lighting Programme	2	£979,000	£775,000	£775,000	£775,000	£775,000
Electrical	Traffic Signals Programme	2	£533,074	£533,074	£552,000	£652,000	£552,000
Safety Fences	Safety Fence Renewal	2			£75,000	£750,000	
City Contribution (Section 42 & 101)	City Contribution	2	£1,700,000	£1,700,000	£1,700,000	£1,700,000	£1,700,000
Minor Works	Parish Support Programme	2	£230,000	£230,000	£230,000	£230,000	
Major Projects	Kennington Railway Bridge (previous commitment / assumption)	1	£500,000				
Major Projects	Tetsworth	1	£8,000	£1,000,000			

		TOTAL	£31,105,404	£18,603,008	£23,768,762	£23,408,251	£3,000,000
Programme Group	**Project**	**Current Stage**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**
Major Projects	Kennington Railway Bridge (new funding)	1	£4,051,851	£12,329,008	£17,768,762	£17,408,251	£1,442,112
Major Projects	Street Lighting LED replacement	2	£9,000,000	£9,000,000	£12,000,000	£3,168,000	
Major Projects	Drayton Depot (EA permit)	0	£1,000,000				
Major Projects	Network Rail Electrification Bridge Betterment Programme	2	£250,000	£250,000	£500,000	£600,000	
Integrated Transport	Accessibility, Health & Road Safety Schemes	1	£5,051,851	£2,000,000	£2,000,000	£2,000,000	£2,000,000
Integrated Transport	Bus Journey time reliability	1	£1,000,000	£1,000,000	£1,000,000	£1,000,000	£1,000,000
Local Growth Fund	Oxford, Rising Bollards	2	£221,000				
Local Growth Fund	Old Greyfriars School signal change	2	£15,000				
Minor Projects	Small schemes (developer and other funded)	2	£412,000	£274,000	tbc	tbc	tbc
New Inclusions			**£11,103,702**	**£15,329,008**	**£20,768,762**	**£20,408,251**	**£4,442,112**