

Highway Infrastructure Asset Management Strategy

Contents

Highway Infrastructure Asset Management Strategy	1
Key Stakeholders	4
Training	4
Data capture.....	4
The Value of the Asset – Finance Heading	7
Strategic Document Framework.....	8
Whole Life Cycle Cost versus Worst First	9
Homogeneous Asset Group Strategies	9
Implementing Planned Works	10
Communications Strategy	11
Decision making and Governance	13
Integrated Highway Asset Management Systems.....	14
Funding	16
What will our highway infrastructure asset management strategy achieve?	17

Highway Infrastructure Asset Management Strategy

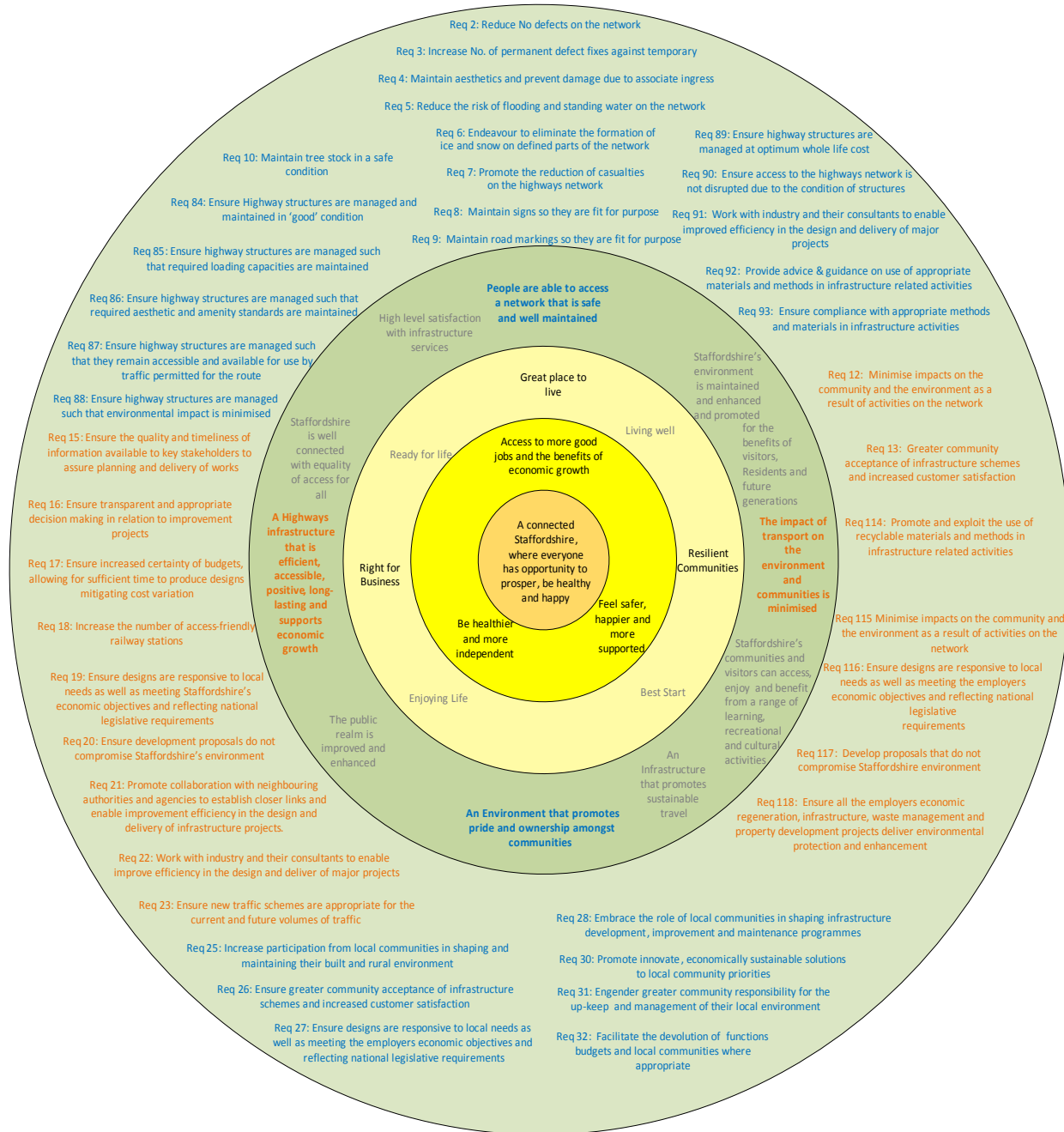
Staffordshire has an extensive highway asset valued at over £7 billion providing benefit to all as stakeholders. The adopted highway network is the largest and most visible community asset for which the county council is responsible. The way it is managed and maintained has a direct impact on the county councils ability to deliver on its priority and other outcomes. Residents, businesses and visitors all depend upon a good reliable service from our highway network to sustain our economic growth and transportation needs.

Whilst Highways England are responsible for the asset management of motorways and trunk roads in the county, we work with the other managing parties to plan a joined up approach that enables a seamless service to stakeholders throughout the county.

Staffordshire is committed to an asset management approach encompassing the outcome benefits of a whole cost lifecycle approach, ensuring the most efficient and effective use of the available highway budget and demonstrating the case for additional funding where this is appropriate. We will continue to use innovative treatments alongside tried and tested maintenance materials, ensuring the appropriate treatment is utilised at the right time.

Our Infrastructure+ Strategic Highway Partnership with Amey is a first for any local highway authority and demonstrates our forward thinking and determination to achieve the required outcomes for our county. Infrastructure+ has also enabled us to provide an end to end service for developers, attracting investment into Staffordshire and enabling us to retain engineering skills in the county whilst attracting the next generation of talent who will give us the foundations for continuous improvement and growth within this wonderful county. Continual service reviews through monthly development project team meetings is an integral part of the strategic partnership with outturn performance Indicators reported to the Operational Commissioning Board on a monthly basis along with actions required and/or implemented as a result of any under-performance.

Infrastructure plus and its outcomes strive to deliver a connected Staffordshire, where everyone has opportunity to prosper, be healthy and happy. Figure 1 displays the council and partnership vision, outcomes and priorities.



- Staffordshire County Council Vision
- Staffordshire County Council Commissioning Priorities, grey text links to wider corporate objectives
- Infrastructure Plus sub-outcomes listed in the service information and enabled through the HIAMP
- Staffordshire County Council Population Outcomes
- Infrastructure Plus required outcome Colour text indicates service information link



Staffordshire County Council appreciates the difference the quality of the highway Infrastructure and reliable journey times makes to residents, businesses and visitors to the county. It promotes jobs and growth, continued success for the future. We can only achieve our priority outcomes with a well maintained, accessible highway network, regardless of how stakeholders choose to travel around the county.

Our strategy details how we will manage the highway asset to ensure we achieve our priority outcomes, taking into account finance and the current asset condition, differing stakeholder needs, localised priorities and the benefits they provide.

Over the life time of our TAMP 2011-2016 (now HIAMP) we have developed systems which evaluate schemes against asset management criteria and community need. We have strived to improve our citizens' experience of preventative treatments by working with our supply chain to introduce innovative, cleaner and less disruptive treatment methods. Over the life time of this HIAMP we further aim to build on this and drive further innovation.

Staffordshire have and continue to be a leading highway authority regionally and nationally, sharing our good practice and continual improvement through the Highway Maintenance Efficiency Programme (HMEP), United Kingdom Roads Board (UKRB), Midland Service Improvement Group (MSIG), Midlands Highway Alliance (MHA) and Highway Asset Management Financial Information Group (HAMFIG).

Leadership and involvement with the above, 10 years of dedicated asset management and training for our asset managers, along with our additional £35m investment early in the life of the 2011-2016 TAMP has enabled us to not only maintain a steady state in highway condition but to improve it despite overall reductions in available finance for management of the asset.

The ongoing financial challenges mean we are moving into a period of greater prioritisation of overall funding across the authority; however, our strategy of preventative maintenance and whole lifecycle cost management will ensure the impact on the asset is proactively managed and we remain in an strong position in readiness for when the economic climate improves.

Our Infrastructure+ strategic partnership has enabled us to utilise Amey's Asset Management system to identify whole lifecycle costed programmes of work prioritised using our locally developed asset value management prioritisation criteria that takes into account not only the condition of each length of highway but also managed risk and the benefit to the stakeholders using the highway. We can also predict the effect of funding strategy and budget decisions on each section of the highway rather than just at a network level. This allows us to calculate the whole cost of those decisions and other options using a mechanised approach that is extremely efficient.

Knowing the effects of various budgeting strategies on each asset group and how the performance of each asset affects our delivery of corporate priorities, along with the direct

links to stakeholder's satisfaction that they receive from the use of the network makes this paramount to customer satisfaction with our management of the highway asset.

Key Stakeholders

Ultimately everyone is a highway stakeholder to some extent; however, the needs of each stakeholder group and the way in which they use the highway asset vary to some degree. This variation in highway users needs requires an array of approaches to engagement and information dissemination, this has resulted in the identification of the following key stakeholder groups:

- Elected members
- Citizens of Staffordshire (cyclists/motorists/ footway users)
- Businesses and public facility organisations and services
- Visitors to Staffordshire
- Transiting network users
- Emergency services
- Utility apparatus owners
- Local Enterprise Partnership
- Members of Parliament
- Parish/town Councils

Training

Effective management of the highway network requires professional well trained staff. The strategic partnership ensures the experience and level of training required is developed through personal development plans. As a minimum, commissioners, asset managers and other senior staff to complete Highway Maintenance Efficiency Programme modules, with key staff undertaking ongoing training as approved by the Institute of Asset Management.

Data capture

Whilst it is important to collect inventory and condition data related to existing assets, new developments and integrated transport improvements that are taken into the adopted highway provide the ideal opportunity to put these assets onto whole lifecycle management. We therefore record all new assets in the asset register, ensuring procedures are in place internally and externally to capture these.

Table 1 : The Staffordshire Highway Infrastructure Assets

Highway Assets	
Asset Group	Elements
Carriageway	Carriageway - including lay-bys, bus lanes etc
Footway, Footpaths & Cycleways	Footways - adjacent to the carriageway
	Footways - remote from the carriageway
	Cycleways - constructed off-carriageway cycleways, shared cycle/footways and cycle/carriageways
Structures	Bridges, sign gantries, culverts, embankments, retaining walls and subways
Lighting (including illuminated signs and bollards)	lighting columns, lamps, cabling, ducts feeder pillars, subway lighting. Illuminated signs & posts, information boards
Integrated Transport Systems	Signalised junctions, signalised pedestrian crossings, detection equipment, cabling, ductwork, bollards and variable message signs
Safety Fences	Vehicle safety fences
Non-illuminated Signs	Non- illuminated signs, warning, regulatory and local direction/information posts, information boards
Closed Circuit Television	CCTV Installations & Monitoring Equipment
Drainage	Gullies & linear drainage channels, highway drains (including pipework, manholes & outfalls), land drainage ditches and watercourses, roadside ditches swales etc
Traffic Calming	Traffic Calming Features - including tables, humps chicanes etc
Road Markings	All road markings
Verges and Planted areas	verges, soft landscaped areas and trees
Street Furniture	Cycle stands, bollards etc

Table 2 : The Staffordshire Highway Asset Inventory

Asset Type	Amount	Unit	Data Confidence	TAMP Reference
Carriageway	6060.6	km	High	Carriageway Lifecycle Plan (CWLCP)
Footway	4168	km	High	Footway, Footpaths & Cycleway Lifecycle Plan (FWLCP)
Cycleway	199	km	High	FWLCP
Bridges	1048	No.	High	Highway Structures Lifecycle Plan (HSLCP)
Culverts (1.0 - 1.5m span)	Unknown	No.	No Info	HSLCP
Retaining Walls	200	km	Low	HSLCP
Streetlights	92,656	No.	High	Street Lighting PFI
Illuminated Signs	22,741	No.	High	Street Lighting PFI
Illuminated Bollards	2076	No.	High	Street Lighting PFI
Subway Lights	675	No.	High	Street Lighting PFI
Zebra Crossings	347	No.	High	Traffic Signal Lifecycle Plan (TSLCP)
School Crossing Flashers	216	No.	High	TSLCP
Feeder Pillars	442	No.	High	TSLCP
Hatpins	311	No.	High	TSLCP
Car Park Monitoring Systems	112	No.	High	TSLCP
Traffic Signal Junctions	174	No.	High	TSLCP
Traffic Signal Pelican / Puffin / Toucan	353	No.	High	TSLCP
Dual Pelican / Puffin / Toucan	42	No.	High	TSLCP
Vehicle Actuated Signs (VAS)	128	No.	High	TSLCP
Variable Message Signs (VMS)	23	No.	High	TSLCP
Car Park Management Systems	6	No.	High	TSLCP
CCTV Cameras	12	No.	High	TSLCP
Non-illuminated Signs	Unknown	No.	No Info	HIAMP 2017
Road Gullies	148,000	No.	High	Drainage Lifecycle Plan (DLCP)
Footway Gullies	Unknown	No.	Medium	DLCP
Rural Verge	5762	km	Medium	HIAMP 2017
Urban Verge	2,240,036	m ²	Medium	HIAMP 2017
Kerb	Unknown	m	No Info	CWLCP
Culverts	Unknown	No.	No Info	DLCP
Offlet kerbs, bypass kerbs & kerb drain	Unknown	No.	No Info	DLCP
White and Yellow Lining	Unknown	m	No Info	HIAMP 2017
Safety Fencing	50,209	m	Medium	Safety Fence Lifecycle Plan (SFLCP)

Asset Type	Amount	Unit	Data Confidence	TAMP Reference
Pedestrian Guardrail	Unknown	m	No Info	SFLCP
Boundary Fencing	Unknown	m	No Info	HIAMP 2017
Visibility Fencing	Unknown	m	No Info	HIAMP 2017
Highway Drain	Unknown	m	No Info	DLCP
Bollards	Unknown	No.	No Info	HIAMP 2017
Fingerposts	Unknown	No.	No Info	HIAMP 2017
Trees	Unknown	No.	Low	HIAMP 2017
Bus Stop Flag Posts	Unknown	No.	No Info	HIAMP 2017
Street Furniture, bicycle racks etc	Unknown	No.	No Info	HIAMP 2017
Grit Bins	1774	No.	High	HIAMP 2017

Each asset group has its own lifecycle plan and schedule of works that come together to enable us to identify the optimum management strategy for each group and the highway assets as a whole.

The Value of the Asset – Finance Heading

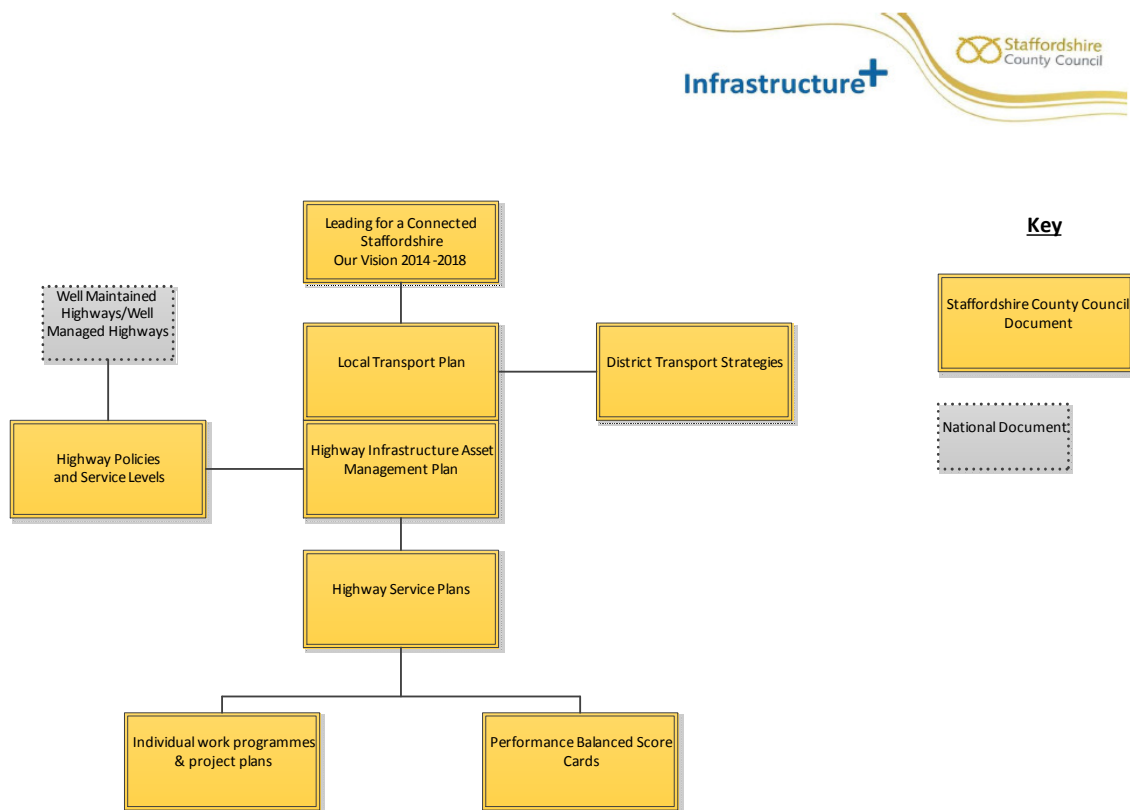
The highway asset has a current Gross Replacement cost of £7.576 billion, excluding land and a Depreciated Replacement cost of £6.474 billion. The annual depreciation is £38.6m i.e. the amount of annual funding required to maintain the highway asset in a steady state.

From 2015/16 onwards, it is necessary to value highway assets on a depreciated replacement cost basis to comply with Whole of Government accounts (WGA) and International financial reporting Standards (IFRS). In Staffordshire we have been voluntarily reporting highway asset values in accordance with WGA and IFRS since 2012.

Strategic Document Framework

The HIAMP forms part of a wider strategic document framework, Figure 2 below details how the HIAMP interlinks with various other strategic documents.

Figure 2 – Strategic Documents Framework



There are several policy documents that do or will form part of this HIAMP and ensure national guidance is adhered to and also that we can provide the most efficient and effective highway service possible.

These include but are not limited to:

The Highways Safety Inspection Policy

The Skid Resistance Strategy

The Winter Service Policy

The Management of Highway Trees Policy
The Management of Drainage Assets Policy
The Maintenance of Grass and Weed Control Policy
The Management of Commercial Obstructions Policy
The Development Design Guide
The Combined Specification
The Resilient Network

Whole Life Cycle Cost versus Worst First

There is no doubt that a whole lifecycle cost strategy is the most efficient method to maintain highway assets and we would ideally utilise all the available finance in this way. Over the medium to long term it improves road condition, stakeholder satisfaction, sustainability, economic development, social inclusion, certainty of required annual budgets and reduces Insurance claims for both property damage and personal injury. However, this has to be balanced against the issues caused by years of historical underfunding and the current condition of the network. Potholes, sub-standard drainage and blockages that cause danger and poor customer satisfaction have to be dealt with in the short term as part of a robust overall asset management strategy and as directed by the political administration. It is therefore necessary to take a risk based approach to these with an overall strategy of reducing expensive reactive maintenance that adds little or no value to the asset and utilising as much of the available finance as possible to implement whole life cycle costed maintenance schemes that will improve the network. To balance worst first against whole life cycle, defects reported by citizens will be given a high priority.

Homogeneous Asset Group Strategies

Different types of assets have their own asset management strategies that reflect national codes of practice and the individual needs of each asset. The contribution of each asset group to the corporate priority outcomes along with the relative risks of reduced maintenance on those assets links directly to the overall strategy for the maintenance of all highway assets.

Each group of assets have their own asset manager and are managed in different ways to reflect their need. For example street lighting is managed under a 25 year PFI agreement, traffic signals and intelligent transport systems are managed in-house by the county council whereas all other highway maintenance is managed by Amey under the Infrastructure+ strategic partnership.

A major part of budget strategy is assessing the effect of budget decisions for an asset group on the delivery of corporate priority outcomes and customer satisfaction. We therefore ensure the effects of all strategic funding decisions are considered at an early stage to achieve the most efficient and effective outcome for the authority and our customers within the finance available for the service. Whilst all our required investment would produce the greatest outcomes the reality is that it is unlikely the levels required will be available in the short to medium term and we therefore have a duty to live within our means whilst reducing as far as is reasonably practical the effects on our corporate priority outcomes and directly on our customers.

The lifecycle plans for each asset group allow the effects of different budget strategies to be considered before implementing the most advantageous strategy for the authority's stakeholders.

The lifecycle planning approach also allows tracking of performance against investment for each group and thereby informs following future strategies to ensure the investment achieves the outcomes planned.

Implementing Planned Works

To ensure effective network management and co-ordination, our works programmes are planned up to 5 years in advance. This allows other 3rd parties with major infrastructure within the highway to have sight of planned works and to co-ordinate the sequence of works to both cause the least disruption for stakeholders and abortive works on the network that could be avoided.

Preventative works will generally cover between 1/10th and 1/12th of the network each year and as these works are seasonal to apply and usually require some civil preparation works their effective planning is key to their success for stakeholders and their required lifecycle. This early planning also enables our strategic partnership sub-contractor to plan works and material deliveries in the most economical and efficient way. This in turn ensures the sub-contractor can procure the required materials etc. in plenty of time to ensure they are available and at the most economically advantageous price that allows them to offer advantageous rates to the contract that could not be achieved without such detailed forward planning.

Whilst forward planning is essential, annual reviews are necessary to consider any changing needs of all the asset groups and thereby ensure efficiency and effectiveness are maintained within the management of the highway asset.

Our Infrastructure+ strategic partnership has collaboration between the county council and Amey at its heart to ensure the required outcomes are achieved. The partnership has been working towards formal recognition of this collaboration with BS11000 certification. This is

expected to be awarded in the early part of 2017. In addition we are also working with our key supply chain to formally extend collaboration recognition.

Communications Strategy

Communications and stakeholder engagement are co-ordinated across the partnership through the Community Liaison team. Communication is implemented in accordance with the Communications policy and stakeholders are consulted with regard to improvement and maintenance schemes. Elected members and other affected stakeholders will be engaged in the co-production exercises throughout the life cycle of the asset to create highways that add to the fabric of society.

In today's financial environment demand management must be practised, proactive communication is key to this, the partnership will manage expectations through clear sight of proposed works programmes and typical activity cycle times; in addition to this, the partnership will promote the use of community capacity via self-help groups within communities to complete minor tasks. An example of this is the well-established Ice Busters scheme.

To keep our communities and stakeholders informed, via digitisation the following works programmes will be published on the authority's websites:

- Annual maintenance programmes (Routine, reactive and cyclical)
- Scheme programmes (Integrated transport, highway structures, highways structural and preventative maintenance)
- Policy documents
- Performance figures
- Life cycle plans

All highway defects will be managed through the Operational Control Room (OCR) using the Standard Operating Model (SOM) allowing defects to be easily tracked. Citizens reporting defects digitally will be kept update with the defects remedial works via email. Through the same system, feedback will be sought regarding their experience of dealing with the authority.

Our communication strategy is supplemented by a communication guideline document which informs how we communicate highway works.

During the life of the 2011-2016 TAMP we have proactively participated in the National Highways and Transportation (NHT) survey, helping to mould the form which the survey takes. The results of the survey have provided a valuable insight into the services we deliver and areas where we can improve. Over the life of this HIAMP we will continue with

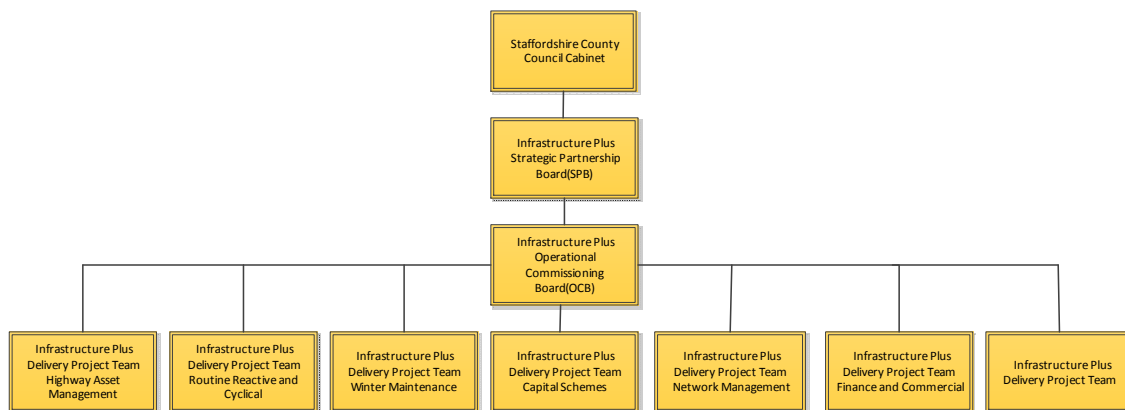
our involvement and aim to shape the process to provide the maximum value to ourselves and other authorities; using the findings to help further improve our services.

Decision making and Governance

The day to day implementation of asset management is undertaken by the Highway Asset Manager. Performance at this level is monitored by the Highway Asset Management delivery project team (DPT) of the I+ Governance structure.

Figure 3 illustrates the governance structure which is in place to drive and shape the partnership

Figure 3 - Infrastructure Plus Governance Structure



Staffordshire County Council Cabinet considers key decisions relating to the partnership; this is defined as decisions which are termed significant, either in financial terms or in its effects on communities or working in an area comprising two or more electoral divisions in the county area.

Strategic Partnership Board (SPB) comprises of Staffordshire County Council and Amey senior leadership teams and the portfolio holder for highways. The objective of the SPB is to lead the strategic direction of the partnership and determine how it shall meet the outcomes. It considers issues raised through the Operational Commissioning Board and disseminates decisions back

Operational Commissioning Board (OCB) comprises of Staffordshire County Council and Amey senior leadership team; its primary objective is to lead the performance of the services and contractual requirements involved in providing the services to enable the Partnership to meet the outcomes. It considers issues raised through the Delivery Project Teams (DPT) and disseminates decisions back.

DPTs deliver the services and enable the partnership to meet the outcomes whilst achieving best value for the county council.

The partnership is monitored at a number of board levels through a suite of key performance and operational performance indicators.

Integrated Highway Asset Management Systems

The collection and analysis of inventory and condition data enables us to make the right investment and priority decisions for each asset group. The storage, sharing and use of that data are therefore paramount to continued strategic planning and implementation of asset management works. As part of the Infrastructure+ strategic partnership we have implemented the Confirm integrated highway management system for our major asset groups, furthering our use of quality data in decision making. We have also implemented the use of Yotta Horizons asset management planning software to inform asset management strategy in relation to planned programmes of work on footways and carriageways, incorporating our asset value management prioritisations as shown in Figure 4.

Figure 4 – Asset Value Management Prioritisations

Prioritisation – Site Characteristics

INSPECTION: Site characteristics					
Drainage	ve working 1	ve not workin 3	no ve 4	no ve standing w: 5	
HGV Flows	Low <10% 1	Med <20% 3	High>20% 5		
Location	Urban 5	Rural 3			
Contribution to sustai	Town centre 5	School shops 4	Industrial Es 3	Main Dist 2	Other 1
Maintenance Hierarch	Cat1 5	Cat2 4	Cat3 3	Cat4 2	Cat5&6 1
Winter Maintenance/B route	Yes 5	No 3			

Prioritisation – Carriageway Condition

CWAY CONDITION:					
Carriageway shape	Poor	Average	Good		
	5	3	1		
Safety Defects Cat 1&2 repairs	<5	<10	<20	<30	>30
	2	4	6	8	10
Ride Quality	Poor	Average	Good		
(take account Rd Class & location)	5	3	1		
Course Visual Inspection:					
Wheel Track Cracking	Local	Partial	General		
	1	3	5		
Wheel Track Rutting	Local	Partial	General		
	1	3	5		
Deterioration of the Surface Course					
Assess either:					
Wearing Course Deterioration	Local	Partial	General		
(Fretting-loss of material from SC not S1		3	5		
Surface Deterioration	Local	Partial	General		
("Fattening Up" embedment loss of SD ch1		3	5		
Settlement & Subsidence	Local	Partial	General		
(Inc patches, utility reinstates, heave)	1	3	5		
Edge Deterioration	Local	Partial	General		
(Length of edge deterioration)	1	3	5		

Prioritisation – Safety/Customer Focus

SAFETY:					
Accident Rates	1 Acc	<3 Acc	>3 Acc	1 KSI	>1 KSI
	2	4	6	8	10
SCRIM/GRIP Testing	>0.00	>-0.10 to -0.01	<-0.11		
	1	3	5		
CUSTOMER FOCUS					
Requests/Complaints	Cllr/Petitn	Resident Req	Eng Identified	Other	
	5	3	2	1	

Highway and structures condition information is collected at regular scheduled intervals to ensure the information held in the asset systems is up to date and supports the performance management framework in place as part of the Infrastructure+ strategic partnership. It also ensures the risk and value of premature failure associated with each asset is monitored and corrective actions at both a strategic and practical level can be instigated to prevent or minimise those risks in good time. By having foresight of potential risks at an early stage, investment decisions can be altered to ensure the efficiency and effectiveness of the overall management of the asset. New or accelerated risks are identified before they compromise delivery of the required outcomes.

Funding

The capital maintenance funding available over the last 6 years inclusive of any additional funding is shown in Table 4 below. By contrast, the funding for subsequent years is also shown and demonstrates the importance of ensuring our asset management approach minimises the impact of the authority's prioritisation of resources to at least 2020/21.

Table 4 – Capital Maintenance Highway Funding 2010/11 – 2020/21

<u>2010/11</u>	<u>2011/12</u>	<u>2012/13</u>	<u>2013/14</u>	<u>2014/15</u>	<u>2015/16</u>	<u>2016/17</u>	<u>2017/18</u>	<u>2018/19</u>	<u>2019/20</u>	<u>2020/21</u>
£(m)	£(m)	£(m)	£(m)	£(m)	£(m)	£(m)	£(m)	£(m)	£(m)	£(m)
32	34	30	28	16	15	14.75	14.5	14.25	14	13.75

In December 2014, the Secretary of State for Transport announced that £6 billion will be made available between 2015/16 and 2020/21 for local highways maintenance capital funding. In November 2015 he also announced a further £250 million for a dedicated Pothole Action Fund. From this funding, £578 million has been set aside for an Incentive

Fund scheme, to reward councils who demonstrate they are delivering value for money in carrying out cost effective improvements.

It is anticipated that in the near to medium term future the majority of funding will be provided by the above two mechanisms. As opportunities occur, further funding will be sought through various bidding mechanisms and the Stoke on Trent and Staffordshire Local Enterprise Partnership.

What will our highway infrastructure asset management strategy achieve?

The main purpose of our asset management strategy is to maintain the highway asset in the most effective and efficient manner to meet the corporate priority outcomes and the objectives that feed into these.

The strategy will:

Ensure all stakeholders are aware of what we will achieve and how they can influence decisions.

Enable us to change priorities as a result of the political cycle, resilience, economic shifts, weather and other emergencies.

Assist us in working with other public and private asset owners in the county, the midlands region and nationally.

Encourage the adoption of innovative techniques in the maintenance and operation of the highway asset.

Ensure a greater understanding of our stakeholders' needs and expectations of us and how we can accede to their requirements whilst providing an effective and efficient service.