Essex Highways

Essex County Council

Highways and Transportation Asset Management Strategy 2020-21

RINGWAY JACOBS
integrated expertise

Essex County Council

Foreword - the new vision and aims for Safer, Greener and Healthier Travel

Essex County Council maintains a vast network of highway assets: over 5,000 miles of roads, together with a footway network of 4,000 miles (including where footways are shared use with cycle routes), and 4,000 miles of public rights of way. In addition, there are over 1,500 bridges and other highway structures, and 130,000 street lights, 11,600 illuminated signs, 1,900 beacons, and 3,500 lit bollards, and nearly 500 Traffic Signals and Crossings owned by the Council. There are also other asset groups such as cycle tracks, highway gullies and drains, vehicle restraint systems and traffic signs.

We recognise the vital role that the highways network plays in the lives of the residents as well as the travelling public and local businesses. We are committed to long term efficient and cost-effective management of our highway assets to maximise the benefits of investment for all users whilst ensuring that everything we do supports the drive towards a Greener Essex.

The *Asset Management Strategy* is at the heart of the Council's investment planning, outlining how decisions are made relating to setting of Highways standards of service and how these are delivered. It also outlines how competing demands for investment across the asset groups are balanced in order to achieve the Council's Strategic Priorities.

The strategy also serves as the basis for the development and implementation of detailed asset management planning which embeds an approach of continuous improvement. This enables the organisation, through its technology and processes, to adapt readily to change.
This includes how national developments and best practice guidance are taken into consideration, such as the *Highways Maintenance Efficiency Programme (HMEP)*, *the Department for Transport Incentive Fund self-assessment criteria*, and the *Well-Managed Highway Infrastructure: a Code of Practice (UK Roads Liaison Group October 2016).* It also includes how we are adapting to the evolving Covid-19 pandemic in order to promote safety for our customers.

Through our commitment to robust asset management, we will continue to deliver our vision for Essex for Safer, Greener and Healthier Travel for current and future transport users; indeed, to deliver a transport system that supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex.

Delivery of this Strategy

The delivery of this strategy forms the keystone of the Essex Highways Strategic Partnership whose objective is to deliver the Council's Strategic Priorities. This Strategic Partnership not only makes us adaptive to change but positions us well to foster the benefits of change, such as the potential benefits promised by the plans of central government for devolution.

Both Essex County Council and Ringway Jacobs are committed to the delivery of this strategy and its associated principles, work practices and processes in order to deliver an efficient, effective and value for money highways service that also supports our vision for Safer, Greener and Healthier Travel.

Andrew Cook
Director for
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1. Context

1.1 Supporting the County Council Organisation Strategy 2017-21

The Council's Highways and Transportation Asset Management Policy recognises the vital role that its highway network plays in the lives of residents as well as the travelling public and local businesses. It sets out the importance of effective asset management of the highway network and its infrastructure, which is fundamental in supporting the Council's Strategic Priorities. In so doing it contributes to the Local Transport Plan and the Council's Vision of attracting sustainable economic growth that helps deliver the best quality of life for the residents of Essex.

The Highways and Transportation Asset Management Strategy (which will hereafter be referred to as the Asset Management Strategy or the Strategy) sets out how the Highways and Transportation Asset Management Policy is to be delivered and its desired outcomes realised. The Highways Asset Management Policy sets out four key outcomes for the Asset Management Strategy to ensure effective management of the Council's highways infrastructure assets. These asset management outcomes mirror the aims in the Essex County Council Organisation Strategy 2017-21:

- **Enable Inclusive Economic Growth**
- **Help People Get the Best Start and Age Well**
- **Help Create Great Places to Grow Up, Live and Work**
- **Transform the Council to Achieve More With Less**

Table 1 below shows how effective asset management helps support the Essex County Council Organisation Strategy 2017-21.

Essex County Council Strategic Aims	**Essex County Council Strategic Priorities**	**How the Asset Management Strategy supports the Strategic Aims and Priorities**
Enable Inclusive Economic Growth		Maintaining a safe, accessible, serviceable and sustainable highway network:
	Help people in Essex prosper by increasing their skills	- gives people the opportunity to travel to schools, colleges and libraries of their choice.
	Enable Essex to attract and grow large firms in high growth industries	- promotes journey time reliability and provides access to key national and international destinations, thereby creating the right environment to attract employers to the area. This encourages economic growth which provides opportunities for

		employment, training and development. - Supports the economic and social prosperity of Essex through joined up, accessible services
	Target economic development to areas of opportunity	- enables economic growth in identified areas.
Help People Get the Best Start and Age Well		Maintaining a safe, accessible, serviceable and sustainable highway network:
	Help keep vulnerable children safer and enable them to fulfil their potential	- provides access to key services such as social services, health care and education.
	Enable more vulnerable adults to live independent of social care	- provides access to health care, education and emergency services, helping vulnerable people to live independently
	Improve the health of people in Essex	- provides access to health care services. It also enables access to sports facilities, as well as access to entertainment and leisure facilities. It also provides opportunities for walking, cycling and jogging, as well as opportunities horse riding – especially via Public Rights of Way which provide access to the countryside and other open spaces. - Ensures everything we do promotes options that have a positive impact on everyone's health.
Help Create Great Places to Grow Up, Live and Work		Maintaining a safe, accessible, serviceable and sustainable highway network:
	Help to secure stronger, safer and more neighbourly communities	- Prioritises a safe environment for everyone travelling or working on our network, including safe design, delivery and use - promotes a safer environment through access to emergency services such as the fire, police and ambulance services. It

	Help secure sustainable development and protect the environment	provides access to community activities and other social opportunities. It also maintains essential links to communities with limited access. - ensures everything we do supports the drive towards a Greener Essex
	Facilitate growing communities and new homes	- enables access for the construction of new developments and provides growing communities with access to services. It also enables people choice in mode of travel, providing opportunities for reducing carbon footprint. It also provides access to waste collection services and recycling centres.
Transform the Council to Achieve More With Less	Limit cost and drive growth in revenue	Maintaining a well-managed highway network: - delivers timely and appropriate treatments over the life of the assets to minimise whole life maintenance costs that results in value for money - Optimises our resources through efficiency and innovation to deliver the best possible outcomes while continuing to build future service resilience
	Develop the capability, performance and engagement of our people	Maintaining a safe, accessible, serviceable and sustainable highway network: - provides access to development opportunities through providing access to services and by providing the appropriate environment to attract new investment and employers. - Includes engaging with our transport network users to provide them with the right information to help shape Essex priorities
		Maintaining a safe, accessible, serviceable and sustainable highway network:

	Re-imagine how residents' needs can be met in a digital world	- provides access for the delivery of goods requested on-line. It also enables access to the developing range of services that can be requested through digital communications.

The Asset Management Strategy acknowledges the importance of working within the legal, financial and environmental constraints currently faced by the Council which impact available budgets for the maintenance of highway infrastructure assets. This includes the adaption of working practices to comply with restrictions relating to the Covid-19 pandemic, in order to safeguard the health and welfare of operatives as well as the travelling public as far as practicable.

The Asset Management Strategy complements and supports other County Council highway maintenance and transportation related polices and strategies including: The Local Transport Plan, the Essex Highway Maintenance Policy & General Principles, Highway Maintenance and Inspection Strategies, Traffic Management Strategy, and Essex Design Guide.

1.2 Supporting the new Essex Highways Vision and Aims:

A Safer, Greener and Healthier Travel for current and *future users of the transport network in Essex.*

The Asset Management Strategy will help:

- Deliver a common vision, working collaboratively, seamlessly and with integrity and transparency
- Engage with our transport network users and provide them with the right information to help shape Essex priorities
- Ensure everything we do supports the drive towards a greener Essex, promoting options that have a positive impact on everyone's health
- Prioritise a safe environment for everyone travelling or working on our network, including safe design, delivery and use
- Optimise our resources through efficiency and innovation to deliver the best possible outcomes while continuing to build future service resilience
- Support the economic and social prosperity of Essex through joined up, accessible services

The vision and aims are embedded in all our process and practices and will enable transport and infrastructure that encourages more people to walk and cycle, which is viewed as critical to recovery from the coronavirus pandemic. For example, an increase in walking and cycling for short trips in town will relieve congestion, reduce air pollution and increase health and wellbeing.

In Phase One of our programme, we have been working with other district councils in Essex to implement on-street measures designed to make city/town centre public spaces safer for people during the Covid-19 crisis.

Called 'Safer, Greener, Healthier', the schemes aim to provide bigger, safer spaces in key locations for city centre shoppers, residents, workers and visitors to social distance. These safety improvements were funded by national government from the Emergency Active Travel Fund Phase One as part of the national response to the Covid-19 situation.

The county council has also received £7,358,700 in an ambitious Phase Two bid to the Emergency Active Travel Fund which is in line with the latest thinking from Government which asks Local Authorities to:

- Create a road environment that is safer and provides greater capacity for both cyclists and pedestrians
- Help to relieve short-term overcrowding and reduced capacity on public transport
- Deliver long-term benefits for public health and environmental benefits

The schemes will transform key routes across Essex and represent the start of a long-term County plan to enable more walking and cycling for local trips, by providing high quality walking and cycling environments, where people feel safe and relaxed. The schemes will provide more space for people to get their minimum daily exercise, as they are going about their business, whilst enjoying every-day walking and cycling.

As we develop and introduce these schemes we will engage with residents and businesses on the routes affected. You can also follow the Essex Highways twitter account to see updates.

To find out more about what has been introduced already in different parts of the county, please have a look at the local sections accessible from the Essex Highways Service Information Centre: https://www.essexhighways.org/transport-and-roads/getting-around/safer-greener-healthier.aspx

2. The Asset Management Framework

Asset management is widely accepted as a means of delivering the performance requirements of the Council in the most effective, efficient and sustainable manner.

All assets decline in condition as they age, and therefore require maintenance if they are to remain fit for purpose. Assets also require a regime of inspection for their condition to be monitored so that defects requiring repair can be identified. A system is needed in which to record the asset inventory as well as the outcomes of the inspections, and to schedule repairs.

These activities reflect a few of the key principles that comprise an Asset Management Framework. Effective Asset Management comprises long term

planning over the whole lifecycle of an asset from construction, through maintenance, to replacement.

This process is called Lifecycle Planning, and it is used to demonstrate how standards are achieved through appropriate maintenance strategies and corresponding investment.

The Essex Highways Asset Management Framework is embedded and delivered in the activities and processes undertaken by the Essex Highways Partnership; processes which remain flexible and adaptive in order to respond to changes in demand and changes in Council priorities.

Whilst the approach outlined in this document largely refers to the maintenance and replacement of existing highways infrastructure, its principles of asset management are also applied to schemes which create new highway infrastructure.

3. Communication Strategy: People are at the Heart of what we do

Engagement with our customer is viewed as a vital decision-making tool.

The Highway Network can affect every one of us, therefore we are all customers and all have an interest in the Policies and Strategies which affect its management. The standards set for aspects of the Highways service are aligned to meet customer needs as far as practicable, therefore customer feed-back is an essential part of the decision-making process.

Our communications strategy sets out how we engage with our customers and other partners as we develop, improve and maintain the Highway network. This includes how we engage with County Members, residents, supply chain partners and employees, Parish Councils, City and District Councils, Utility companies, Emergency Services and other bodies with an interest in the Highway network.

This level of engagement places the organisation in a good position to foster the potential benefits from devolution promised by central government, such as strengthening collaboration and improving customer satisfaction by empowering Town and Parish Councils to address local priorities. This will also reduce costs by removing some of the complexity around governance, and will allow the Council to focus on more complex projects that have a wider impact, therefore enabling the Council to do more with less. The Council has already undertaken successful pilot schemes to devolve a range of highways maintenance responsibilities to Parish and Town councils, through its work with the Essex Association of Local Councils (EALC), which has resulted in quick delivery of a number of small but important schemes targeted by local residents.

It is important that customers understand the Council's asset management strategy, priorities and actions, as well as the important part played in the development of these documents through customer communication and consultation.

We provide communications in a range of accessible ways, across a variety of media but with a bias towards attractive, user-friendly digital channels, supporting the Council's desire to develop digital communications. For example, the Council makes

full use of its web-based Highways Service Information Centre and 'twitter' to provide information and advice on a wide range of highway related activities. Customer feedback is also encouraged through the Council's Contact Centre.

Our strategic approach to communications is detailed in the annual Essex Highways Communications Service Plan whose effectiveness is assessed through an annual review process which sustains a culture of continuous improvement.

Whether through using technology to engage proactively with customers through social media or the Council's Contact Centre or working with Members to help identify improvement schemes in local areas, Essex Highways is committed to effective customer service in all situations.

4. Road Safety – Keeping Highway Users Safe

Protecting the public from harm when using the highway network is an absolute priority.

Under the Highways Act 1980, Authorities have a general duty of care to users and the community to maintain the highway in a condition fit for its purpose. Road Safety engineering is a vital component of asset management. These activities include carrying out auditing of scheme designs where works will fundamentally alter the existing highway, to ensure all safety measures have been included.

Road safety activities also include analysis of road traffic collision information, and where identifiable patterns or clusters are evident these are investigated thoroughly. Where measures to improve the safety of the road user are identified then these are programmed and implemented.

Other, routine Asset Management activities, such as safety inspections and corresponding defect identification and repair priorities, as well as works prioritisation processes that consider safety risk, contribute to road safety by keeping assets in a serviceable condition that minimises safety risk.

4.1 The Safer Essex Roads Partnership

Essex County Council is a member of the Safer Essex Roads Partnership (SERP) comprising Essex County Council, Essex Police, Essex Fire & Rescue Service, Southend Borough Council, Thurrock Council, the Safer Roads Foundation, Highways England (Guildford & Bedford offices), Essex & Herts Air Ambulance Trust and the East of England Ambulance Service NHS Trust.

All SERP partner organisations have endorsed the primary focus of the SERP: to deliver Road Safety Services across the area of Essex, Southend and Thurrock, to meet casualty reduction targets as well as deliver the longer-term aspiration of *Vision Zero*. At the heart of *Vision Zero* is the belief that no one should be killed or seriously injured whilst using the road network within the SERP's area.

5. Network Hierarchies

Categorising assets with regard to their level of importance enables investment to be prioritised where outcomes will benefit the maximum number of users, thereby achieving value for money.

5.1 Road Hierarchy

A new road hierarchy was identified and introduced in 2013. This means that roads were divided into routes relative to their importance in terms of enabling economic activity and access to key services and destinations. This process created a strategic County Routes network comprising Priority 1 (PR1) and Priority 2 (PR2) roads, with the remaining network categorised as Local Roads. It is the County Routes network which provides the main arteries for the flow of commerce, goods and people, and therefore carries high volumes of traffic through and around the County.

This hierarchy achieves value for money by enabling inspection and maintenance resources to be prioritised to the most important roads, thereby delivering benefits to the greatest number of users within existing resource levels.

The development of this new hierarchy is in keeping with the recommendations within the 'UKRLG Well Managed Highway Infrastructure – A Code of Practice' published in October 2016.

5.2 The Resilient Network

Establishing network hierarchies is also in keeping with the recommendations within the Department for Transport (DfT) Transport Resilience Review published July 2014. The Transport Resilience review recognised that with continued public expenditure reductions some local authorities would be unable to maintain the condition of all of their roads, which inevitably would impact on the resilience of some of the less important roads. In view of this, it promoted the establishment of a 'resilient' network to which priority is given through maintenance and other measures

The PR1 routes network is the Council's 'Resilient' network.

Regular reviews of the County Routes network are conducted to ensure that the route hierarchy continues to meet the changing needs of Essex and incorporates additional routes created through the opening of new road schemes, improvement schemes and adoption of third-party developments.

Based on the success of this hierarchy, and in view of continued downward pressure on funding availability, we will continue to explore the benefits of further sub dividing the hierarchy with a view to safeguarding the Council's Strategic Priorities.

5.3 Footway Hierarchy

Not all asset groups follow the same hierarchy as roads, even though their level of importance follows broadly similar criteria. Essex defines its footway hierarchy into three categories: PF1, PF2 and PF3.

PFI footways are the most important footways as these are categorised as high footfall (high use), typically located in town centres.

PF2 footways typically are those that provide linkage between PF1 routes and local residential areas

PF3 footways are generally residential and low footfall (low use) footways.

5.4 Bridges Hierarchy

A hierarchy has also recently been identified for Bridges and other Structures. It recognises that communications to some communities is limited, and therefore where structures carry roads to these communities, they are included with those of high strategic importance. This is in keeping with Essex's Vision which emphasises the development of communities, recognising that Essex is not one community but many small, strong communities. The Structures hierarchy is:

STR1 - Structures that are the highest priority of the network. The majority of these structures endure a higher amount of usage through frequency of traffic and loads or provide essential links. They are vital to ensure the continued unhindered flow for commerce, goods and people.

STR2 - Structures that are of a high importance to ensure the continued unhindered flow for commerce, goods and people.

STR3 - Structures located mainly on the local road network.

STR4 - The lowest priority structures assets on the network.

A hierarchy for cycle routes, and a hierarchy for public rights of way are currently being developed.

5.5 Critical Assets

Some highway assets are regarded as critical infrastructure; i.e. assets whose failure would have a significant impact locally and possibly even nationally. For example, bridges which provide essential links to relatively remote communities. Accordingly, asset management planning identifies the levels of investment required to sustain appropriate levels of resilience for these assets.

6. Achieving Value for Money – Lifecycle Planning

Value for money flows from rigorous life cycle planning to identify interventions that minimise maintenance costs over the life of the asset

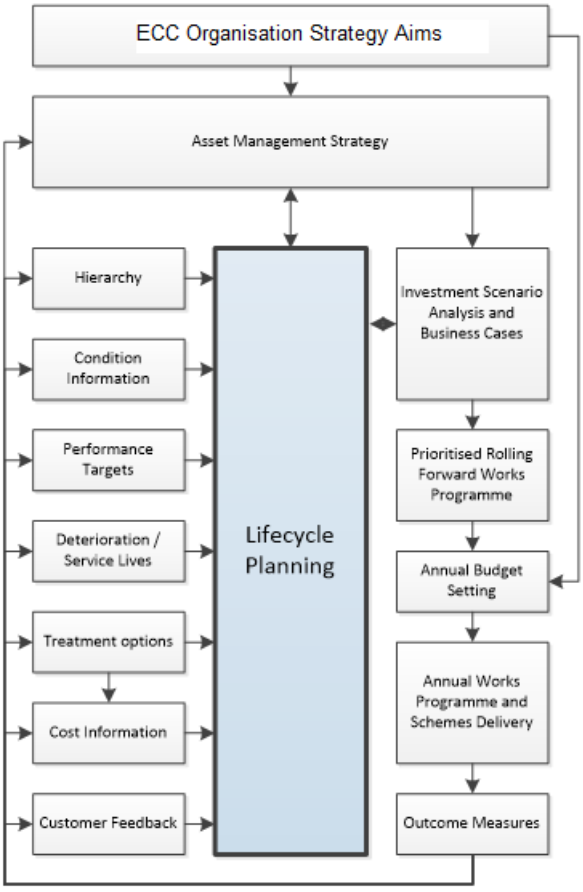
A key outcome of Asset Management is to provide the information required for investment decision making. Whilst the Council's budget setting is undertaken on an annual basis, investment planning information not only provides options for the short term (annul basis) but also the medium term (five years) and longer term (ten years).

Life cycle planning is undertaken for each major asset group to identify all the activities and associated costs over the life of the asset which are required to sustain accessibility, serviceability and safety. This considers all maintenance and renewals activities, including minor repairs such as addressing potholes, repointing masonry, or fixing electrical faults. It also includes environmental maintenance such as cleansing of gullies and drains, and cyclical maintenance such as grass cutting and weed spraying and other vegetation clearance. These activities combine into an overall strategic approach to maintaining the Highway infrastructure.

A variety of strategy scenarios are linked to separate Investment levels and corresponding standards of service. Recommendations are made to the Council regarding how to achieve the best balance of competing demands across all asset groups by suggesting investment levels that reflect best the Council's Strategic Priorities. The Council is then able to assess the benefits and risks of each investment scenario and make an informed decision.

Lifecycle planning sits at the heart of the Asset Management Framework as shown in Fig 1 below which shows a clear link between the Asset Management Strategy and the Council's

Fig 1 Lifecycle Planning



7. Promoting Improvement through Innovation

Efficiency savings will be achieved through exploring new treatments, materials and practices that reduce costs, as well as reduce waste, carbon footprint and energy consumption.

It is important that our asset management strategy and delivery processes remain up to date and reflect best practice, and that they have the flexibility to respond rapidly to change. We must meet the future challenges of economic growth, population growth, traffic growth and an ageing population demographic, and the impact all this will have on highway network demand.

We must also be prepared for climate change, especially more extremes of weather such as heatwaves, intense downpours and high winds. We have seen some evidence of such extreme events in recent years.

Our Asset Management Framework remains agile through the adoption and implementation of best practice guidance, such as HMEP guidance, the 2014 Transport Resilience Review, and National Codes of Practice such as Well-Managed Highway Infrastructure – A code of Practice, and Management of Electronic Traffic Equipment – a code of Practice.

Ringway Jacobs attained British Standard BS ISO 55001 in Asset Management in for Essex Highways in 2017; this standard was reviewed and sustained in 2018 and again in 2019. This will help the Council to demonstrate its competence when bidding for third party funding for asset investment schemes.

Essex Highways actively participates with other national and local groups and organisations, and attends regional forums and national conferences, to improve knowledge, share good practice and experience, and to benchmark our performance with other Authorities.

7.1 New materials, treatments and technology

We have a long-established Technical Working Group within the Highways service to review and update current specifications and treatment options. This approach includes the exploration of the latest materials and technologies to achieve efficiency savings, but also includes reviewing and improving materials and processes which we have been using for many years. For example, we have successfully trialled the use of a 'warm asphalt' material, whose processing is around fifty degrees cooler than for conventional asphalt, thereby reducing greenhouse gas emissions by up to 40% as well as improving the durability and long-term performance of the treatment.

The Highways service also works closely with Ringway Jacobs shareholders, in particular with Eurovia's specialist pavement management consultancy John Lefebvre UK, to benefit from their extensive knowledge and expertise in this area across the UK and overseas. This provides insight into new products emerging from Eurovia's extensive pavement research and development facilities which may benefit the Essex Highways contract.

With Ringway Jacobs other shareholder, Jacobs, we are also exploring new structural analysis techniques to better understand the load capacity of our bridges and other structures assets. In this way weak structures will be more readily identified and assessed, and accordingly programmed for necessary remedial works.

8. The Performance Management Framework - turning the Council's Strategic Priorities into Outcomes

Aligning investment levels with required standards of service, and validating delivery of service outputs through measurement of performance, realises priority outcomes

Essex Highways activities are aligned to investment levels which reflect the standards of service desired by the Council. Standards are interpreted as 'performance standards' for which performance targets are set and duly monitored to

ensure that planned outcomes are realised. Monitoring of performance includes the measurement and reporting of performance on a frequency that is relevant for the service in question. Measurement of performance requires a regime of data collection and analysis which requires investment; therefore the regime needs to be practicable and provide value for money.

Having the appropriate information when it is needed is essential to any decision-making process, and the data collection regime is part of the Essex Highways Information Strategy. This supports the service through improving the way in which the need for data is identified, and by improving the way data it is collected, used, stored and shared.

An overall strategic approach to Highway service provision comprises a range of services, and therefore performance management can be expected to include a suite of performance targets. Accordingly, the Council has established a framework of performance indicators for measuring the delivery of the Asset Management Strategy, and this is monitored regularly by senior officers and Cabinet Members. Any over or under performance is investigated and, if necessary, improvement plans put in place to ensure delivery of the required performance. Figure 2 below shows the link between the Asset Management Strategy performance indicators and the Essex County Council Strategic Aims. All of these measures contribute to all of the aims by sustaining the safety, accessibility and serviceability of all highway infrastructure using an approach that results in value for money.

Indicator Number	Figure 2: Indicator Title	Performance Target Year 9 (2020/21)	Essex County Council Organisation Strategy Aims 2017-2021			
			Enable Inclusive Economic Growth	Help People Get the Best Start and Age Well	Help Create Great Places to Grow Up, Live and Work	Transform the Council to Achieve More With Less
AC01	Condition of PR1 Network	*On Hold for FY9	×	×	×	×
AC02	Condition of PR2 Network	*On Hold for FY9	×	×	×	×
AC03	Condition of Local Roads	*On Hold for FY9	×	×	×	×
AC04	SCANNER RCI. PR1 Mid Bands	*On Hold for FY9	×	×	×	×
AC05	SCANNER RCI. PR2 Mid Bands	*On Hold for FY9	×	×	×	×
AC06	Condition of heavily used Footways	Currently under review	×	×	×	×
AC07	Condition of lightly used Footways	Currently under review	×	×	×	×
AC08	Street lighting defects	34000	×	×	×	×
AC09	% of structural reviews completed to programme	80%	×	×	×	×
AC10	Repudiation rate of Highway Insurance Claims	90%	×	×	×	×
AC11	Timeliness of asset adoptions	80%	×	×	×	×
AC12	% P2 defects repaired / made safe within timescales	99.0%	×	×	×	×
AC14	Routine cleansing of drainage assets	93200	×	×	×	×
BM01	Scheme satisfaction surveys	70%	×	×	×	×
BM08	Supply Chain 360 Reviews	Currently under review	×	×	×	×
**BM10	% recovered vs. invoiced Green Claims	Currently under review	×	×	×	×
BM12	% defects repaired right first time	98%	×	×	×	×
BM14	Final Accounting in Time	90 days	×	×	×	×
BM17	Quality of Transportation Studies	80%	×	×	×	×
BM19	Task Order satisfaction survey	80%	×	×	×	×
BM20	Accuracy of application	98%	×	×	×	×
BM21	Contract Process Compliance	85%	×	×	×	×
BM22	Quality of Data in Confirm - Compliance	80%	×	×	×	×
BM23	Delivery of Capital and Revenue annual efficiency targets	Methodology as set forth in the revised Schedule 4 and measure to apply from implementation of the same	×	×	×	×
BM24	Job pack compliance	Currently under review	×	×	×	×
CP02	Development Management satisfaction survey	Agreed	×	×	×	×
CP07	Public rights of way that are easy to use	68%	×	×	×	×
CP08	Surface of roads in good condition- survey	Agreed	×	×	×	×
CP09	Surface of footways in good condition- survey	Currently under review	×	×	×	×
CP10	Development and delivery of road safety works	60%	×	×	×	×
JTR01	Timely completion of winter gritting routes	98%	×	×	×	×
JTR02	Average time to make network available following a P1 defect	1.5 Hours	×	×	×	×
JTR03	Journey Time Reliability - (10 specified and agreed routes)	92%	×	×	×	×
JTR04	Compliance to permitting requirements	80%	×	×	×	×
JTR05	Fault rate of ITS equipment	0.4	×	×	×	×
PD01	Delivery of the annual capital carriageways renewal programme	97%	×	×	×	×
PD02	Delivery of the annual ITS programme	90%	×	×	×	×
PD03	Delivery of the annual major projects programme	85%	×	×	×	×
PD04	Delivery of the annual structures programme	80%	×	×	×	×
PD05	Delivery of the annual Local Highways Panel (LHP) programme	90%	×	×	×	×
PD06	Delivery of the annual S106 Programme	90%	×	×	×	×
PD07	Delivery of the annual Capital Footways Renewal Programme	95%	×	×	×	×
PD08	Delivery of the annual SWAS programme	95%	×	×	×	×
SE01	Scheduled bridge inspections completed in time	98%	×	×	×	×
SE02	% P1 defects attended within 2 hours	98%	×	×	×	×
SE03	Number of KSI on Essex roads (Data January to December)	709	×	×	×	×
SE04	Number of Slight Injuries on Essex roads (Data January to December)	3124	×	×	×	×
SE05	Effectiveness of casualty reduction schemes	FYRR >100%	×	×	×	×
SE06	Timeliness of highway safety inspections	98%	×	×	×	×
SE08	Quality of Safety Inspections	97%	×	×	×	×
SE10	Use of recycled and secondary aggregate in construction	15%	×	×	×	×
MI1	Number of outstanding defects on PR1 and PR2 network	<1000	×	×	×	×
MI2	Number of outstanding defects on Local road network	<5000	×	×	×	×
MI3	% of lighting columns working as planned	95%	×	×	×	×
MI4	Keeping traffic signals maintained	60%	×	×	×	×
MI5	Responding to, and clearing road hazards	60%	×	×	×	×
MI6	General perception of the state of the roads in Essex	60%	×	×	×	×

*Currently on hold while opportunities of new technology are explored - refer to 9.1.2 Road Condition Information

Targets for all these measures are reviewed annually to take into any account changes in Council priorities and subsequent changes in investment and as an integral part of our culture to drive continuous service improvement.

In addition to the above, the Council participates in the annual National Highways and Transport Network public satisfaction survey (NHT), which measures public views on a wide range of highways services. In the region of 139 Local Authorities

have participated in the survey, and comparative results provide useful benchmarking information for the Council.

The Council also participates in the Customer, Quality, Cost (CQC) annual survey, which provides a measure of the efficiency of its highways services and compares it with other Authorities.

Results from these surveys, and other customer feedback, is reviewed and analysed in detail in order to take them into account for process reviews, investment decisions and for influencing our communications strategy. The additional customer perception measures which support the Asset Management Strategy are shown in Fig 3 below.

Indicator Number	Figure 3: Indicator Title	Performance Target Year 9 (2020/21)	Essex County Council Organisation Strategy Aims 2017-2021			
			Enable Inclusive Economic Growth	Help People Get the Best Start and Age Well	Help Create Great Places to Grow Up, Live and Work	Transform the Council to Achieve More With Less
BM01	Scheme satisfaction surveys	70%	×	×	×	×
BM08	Supply Chain 360 Reviews	Currently under review	×	×	×	×
CP02	Development Management satisfaction survey	Agreed	×	×	×	×
CP08	Surface of roads in good condition- survey	Agreed	×	×	×	×
CP09	Surface of footways in good condition- survey	Currently under review	×	×	×	×
CP10	Development and delivery of road safety works	60%	×	×	×	×
MI6	General perception of the state of the roads in Essex	60%	×	×	×	×

9. Priorities for Main Asset Groups

Performance of the main asset groups is key to delivering the Council's strategic priorities

The main assets groups are those elements of highway infrastructure which represent the highest value of assets owned and maintained by the Council and represent the assets which are salient to supporting the Council's Strategic Priorities:

- **Roads**
- **Footways (including where shared use with cycle routes)**
- **Highway Bridges and other Structures**
- **Highway Lighting**
- **Intelligent Transportation Systems (ITS)**

The Council owns and maintains other highway assets such as off-road cycle tracks, cycle monitoring sites, drainage infrastructure, passenger transport infrastructure, public rights of way infrastructure, non-illuminated traffic signs and bollards, vehicle activated signs, vehicle restraint systems, pedestrian guard railing, winter management infrastructure, highway trees and other vegetation. These asset groups are also subject to this Asset Management Strategy and its outcome objectives. (Some of these assets are managed by Essex County Council rather than Essex Highways, but cross-team collaboration ensures consistency and continuity in asset management planning).

9.1 Roads

The condition of our priority routes was improved recently, contributing to the right environment to attract employers to the area. The aim now is to improve the condition of Local Roads in residential areas, whilst also sustaining the right environment to attract investment.

9.1.1 Desired outcomes

A significant improvement in standard of service (condition performance) was achieved on the Council's most important roads (PR1 and PR2 roads), following the increased investment which was made by the Council in recent past years. Combined with established journey time reliability this helps create the right environment to attract employers and encourage economic growth. This is in keeping with the Council's vision that prosperity leads to the realisation of outcomes for its strategic priorities.

Whilst the financial challenges now faced by the Council means that these levels of investment can no longer be sustained, our aim now is to improve the condition of Local Roads in residential areas as far as practicable. It is the requirement for improvement to these roads which has received sustained support from customer feed-back and has therefore realigned priority for investment.

At the same time, however, we will continue to undertake maintenance works to the PR1 and PR2 roads where these are urgently required, so that the right environment to attract investment to Essex can be sustained.

We will maximise our potential to achieve this by continuously driving down treatment costs through: exploring improvements to lifecycle planning via developments in existing data systems; innovative use of existing treatments; exploring new materials and techniques; efficiency gains from long term scheduling of resources, embracing emerging technologies, and investing in specialist engineering advice and consultation where this is needed to target these approaches to the correct areas of the network. We will also continue to explore the benefits of further subdivisions to the road hierarchy (refer also to 5. Network Hierarchies).

As with the asset management of all asset groups, efficiency gains will also be made by setting investment levels which best balance the different types of maintenance activities (refer also to 12 Making the Case for Investment).

9.1.2 Condition Information

The standards of service associated with our road's hierarchy is termed 'condition performance'. Historically, targets for road condition performance have been set annually to align investment levels and the associated standards of service with the Council's Strategic priorities. These performance targets have been set with reference to a machine-based survey process called SCANNER (**S**urface **A**ssessment of the **N**ational **N**etwork of **R**oads), which is a long established, national standard process for measuring the condition of roads. The Council has been undertaking SCANNER road condition surveys for around fifteen years, and in accordance with the DfT reporting requirements we continue to publish national road condition performance indicators NI130_01 for A classified roads, and NI130_02 for B and C classified roads. These measures are all outputs from SCANNER.

We have also measured the condition of our Unclassified roads via SCANNER for many years; a measure we have shared widely as well as benchmarked with other Local Authorities. Similarly, the annual condition performance for the Essex Hierarchy PR1, PR2 and Local Roads have also been routinely monitored against target performance via SCANNER.

Whilst the approach of setting and monitoring condition performance of roads will be rehabilitated going forward, rapid changes in technology within the industry have provided new opportunities for performance measurement which must be explored fully in the first instance. A thorough analysis and understanding of these new measures will be required so that target setting can recommence. For example, developments in artificial intelligence now provide automated recording, identification, interpretation and reporting of road defects. This process is cost effective when compared to SCANNER or other methods of condition assessment such as Course Visual Inspection surveys which have been undertaken by Essex in the past.

It is anticipated that this new technology will not only enable the Council to achieve more with less but has the potential to facilitate communication of road condition performance information in a manner which is less technical and therefore more readily understood by our customers. It also has the potential to improve the information referenced by our engineers for identifying potential sites requiring treatments.

During this period of information collection and analysis, our road condition measurement methodology will be reviewed on an annual basis whilst enabling us to continue to comply with government reporting requirements.

At present, PR1 routes are also subject to an additional annual condition performance survey which measures the ‘skid resistance’ of the road surface. This survey also conforms to national standards and methodologies. The results of skid resistance surveys reveal where skid resistance is below the standard required for the road geometry and traffic use for the site in question.

In addition to advances in technology relating to road condition assessment, new software systems and processes to enhance the use of the assessment data are also emerging. The Council is currently implementing a new asset management system called ‘Expert Assets’ (XA) which automatically generates prospective maintenance sites and associated treatments through detailed analysis of data. It also enables maintenance site prioritisation through flexible evaluation processes and predicts the future rate of deterioration of assets. This will facilitate the implementation of strategies designed to intervene at the optimum time to minimise whole life maintenance costs. The XA system will also assist with predicting the investment levels required for road maintenance in future years. This functionality is currently being configured for road assets but will be extended to other asset groups in due course.

9.1.3 Scheme Identification and Investment Prioritisation

Local defects such as potholes requiring urgent attention on grounds of safety can be addressed quickly. Broader scoped works, however, such as capital funded extensive road resurfacing, require forward planning and in some cases detailed design as part of preparations. There are comparatively limited resources within the industry in terms of machinery, materials and specialist operatives needed for such works delivery, therefore works are programmed ahead in order to obtain appropriate timing and economies of scale at favourable rates.

Prospective sites for road resurfacing are generated by the lifecycle planning process (refer to 6. Achieving value for Money – lifecycle planning), although sites are also identified through engineering knowledge and feed-back from customers. All prospective schemes are subject to a site inspection by an engineer to validate the treatment requirements and are subject to a value management process that brings together a range of data to assist with funding prioritisation. The value management data sets, such as number of localised defects on the road in question, number of requests for customer service, number of third party insurance claims, can be varied, and criteria tailored and weighted to identify the scenario which best reflects the Council's Strategic Priorities. The outcome is a 3-year forward capital works programme.

9.1.4 The Preventative Approach

At the heart of the capital works prioritisation process is the 'Preventative Approach'. Capital investment will, wherever appropriate, be prioritised towards roads in the early stages of deterioration where a lower cost treatment can be applied to prolong service life. Preventative maintenance typically comprises treatments such as crack sealing, surface dressing, slurry or micro-surfacing and thin and hot-mix asphalt overlay.

The preventative approach makes the network more resistant to the formation of localised defects, by sealing the road surface. This prevents the ingress of water which can lead to the breakdown of road construction layers that creates 'potholes'. The preventative approach can therefore result in a reduction in investment required for reactive maintenance.

The Preventative Approach, which aligns with HMEP guidance as well as the Well-Managed Highway Infrastructure: a Code of Practice (UK Roads Liaison Group October 2016), has been fundamental to the Council's Asset Management Strategy for many years.

9.1.5 Addressing preventable flooding incidents

Reducing incidents of flooding remains a high priority for the Council. Effective road drainage is also critical to sustaining asset condition, as the ingress of water leads to a fundamental break down in the construction of the road and other assets. It is also vital to reducing the risk of adjacent property flooding from carriageway run-off in extreme rainfall events, and for preventing road user safety risk associated with excess water on the road surface.

Our drainage infrastructure asset register will continue to be improved in accordance with HMEP guidance on the management relating to highway drainage. Drainage infrastructure records dating back many years have been collated from various sources and are being added to the digital register on a risk-based priority.

Drainage CCTV surveys are also undertaken where appropriate, and this survey information is added to the Council's comprehensive library of visual information available to Essex Highways staff. This data assists engineers in understanding the cause of accumulations of water on the highway, and thereby contributes to resolution of these issues.

There is a routine environmental maintenance programme for cleansing drainage assets, and reactive maintenance resolves drainage blockages and other minor repairs to restore systems to free flowing. During cleansing operations, gully inventory and silt levels are updated utilising mobile digital devices, and software systems are in place to exploit this information for reallocating resources to provide a more efficient value for money service. Gullies that are subject to higher silt level accumulations or are in known flooding sites will be cleansed more frequently through this process, and gullies cleansed less frequently in locations where silt levels or flood risk are low.

Maintenance for sites which regularly flood from surface water run-off and which require significant drainage improvement measures, are invariably the subject of detailed investigations and design which require forward works programming. These sites are identified and recorded within an on-line **S**urface **W**ater **A**lleviation **S**cheme risk register and are known as SWAS schemes.

The SWAS risk register incorporates a scoring and prioritisation process which takes into account a range of criteria which largely assesses sites based on their impact to road safety. However, it is acknowledged that property flooding, and the anxiety of potential property flooding, are the subjects of customer and Member feed-back and are the cause of much misery. The SWAS risk register therefore also takes into account property flooding, especially internal property flooding.

The SWAS programme is shared with the Council's Flood and Water Management Team which acts in accordance with the Authority's role as Lead Local Flood Authority. Where there are sites of mutual interest there are opportunities for partnership working which can also be extended to the Environment Agency, Anglian Water, Thames Water, as well as District, City and Borough Councils. This collaborative approach has successfully unlocked external funding historically, and new opportunities for additional investment will continue to be explored.

9.2 Footways (including where shared use with cycle routes)

Investment will be prioritised in a manner which will bring value for money solutions whilst taking in to account the needs of the most vulnerable across high and low use footways

9.2.1 Desired Outcomes

The PF1 High Footfall (high use) footways are subject to routine, safety inspection at a higher frequency than PF2 and PF3 footways, and therefore are likely to be the subject of more frequent routine maintenance - although safety related defects are addressed with equal urgency for all hierarchies. This approach results in investment benefitting the maximum number of users. (Refer to the Essex Highways Service Information Centre/Road Strategies for more information on inspection frequencies, defect identification and repair response times).

The Council's strategy, therefore, is to give priority of funding for broader scoped, capital works to improving the condition of its PF3 low footfall footways (low use) in residential areas, as well as allocating a proportion of the investment to PF2 footways. Capital works to PF1 footways will also be carried out, although only where important repairs are assessed as a priority. Performance targets and associated investment levels will be set annually to ensure delivery of the desired standards of service.

9.2.2 Condition Information - Structural Condition Assessment

There are currently no formal reporting measures required by central government relating to footway condition. Following a review of the current methodologies within the industry, and an investigation into the practice of other Authorities, the Council has developed a new, value for money visual condition survey. This is carried out by Highway Inspectors during routine safety inspections and is therefore subsumed within existing resource levels.

This relatively new condition data provides a measure of the condition of the footway in terms of safety and serviceability which is more readily understood by customers than some survey methodologies.

9.2.3 Scheme identification and investment prioritisation

Prospective sites for maintenance are identified through lifecycle planning (refer to 6. Achieving Value for Money – lifecycle planning) which will focus on the highway inspector's condition assessment data. However, sites are also identified through engineering knowledge and feed-back from customers.

The inclusion of prospective schemes into a forward works programme is dependent upon a site visit by an engineer to verify the condition characteristics and to determine the type of treatment required. Wherever practicable, areas that are not suitable for reactive repairs will be added to the forward programme for capital works and will follow the 'Preventative Approach'. This promotes the application of value for money low-cost treatments such as micro-surfacing (slurry sealing) before deterioration reaches the point where higher cost, strengthening treatments are required.

Priority for funding is based on a value management process similar to that employed for roads. (Refer to 9.1.3 Scheme Identification and Investment Prioritisation).

9.2.4 Alternative Modes of Transport – walking and cycling being developed strongly

The benefits of footways and cycle routes in providing alternative modes of travel contribute to well-being through exercise as well as improving air quality by alleviating traffic congestion.

The Essex Cycling Strategy (published November 2016) sets out the key elements of a long term plan that will lead to a significant and sustained increase in cycling in Essex, establishing it in the public's mind as a 'normal' mode of travel, especially for short a-to-b trips, and as a major participation activity and sport for all ages. The strategy has been produced in conjunction with Essex County Council, the 12 Essex Districts/City/Boroughs, and the two Unitary Authorities (Southend-on-Sea and Thurrock). It has taken account of UK policy and data on cycling levels within Essex and best practice from around the world. For more information refer to https://www.essexhighways.org/uploads/docs/ecc-cycling-strategy-novemeber-2016.pdf)

In support of these plans, investment for maintenance of cycleways has been increased significantly with schemes in the 2020/21 capital maintenance programme totalling approximately £500k. A comprehensive asset register, cycleway hierarchy and bespoke cycleway condition assessment survey are also being developed. Where cycleways share use with footways, these are taken into account in our asset management of footways – for more information refer to Section 9.2 Footways above.

Walking is a popular recreational pursuit and the greenest form of transport available. Regular walking can help improve one's health and we work in partnership with many other organisations to promote and encourage it.

These modes of travel have become ever more vital in our response to the Covid-19 pandemic, as we implement on-street measures designed to make city/town centre public spaces safer for people. For more information refer to the Essex Highways Service Information Centre regarding 'Safer, Greener, Healthier': https://www.essexhighways.org/safer-greener-healthier.aspx

9.3 Highway Bridges and Other Structures

Maintaining bridges and other structures to appropriate condition standards supports the efficiency of priority routes, thereby contributing directly to attracting investment to Essex. Applying this approach to sustaining links to communities with limited access also contributes to the development and strengthening of Essex communities.

9.3.1 Desired Outcomes

Structures are varied and complex assets which include bridges, footbridges, subways and underpasses, culverts, retaining walls, sign and signal gantries. Structures also comprise many different elements (components), all of which are critical to accessibility, serviceability and safety of the asset. Some structures are heritage listed assets whose protection requires special consideration and treatments.

The strategic outcome is to maintain structures in a safe, serviceable and sustainable condition. It is also to address weak structures where strengthening or reconstruction is required, thereby avoiding long term traffic management restrictions which can be disruptive to the travelling public and businesses. This is especially relevant where heavy goods vehicles are required to deliver essential goods and services to communities with limited access.

The management of risk is an essential part of asset management for structures, as structures will likely deteriorate in condition over time even when elements are replaced promptly at the end of their service life. Unlike roads and footways, however, the condition of structures is often not easily visible to the public, and the need for maintenance works or other rehabilitation measures may not be apparent or well understood. To address this we undertake effective communication to explain the need for structures maintenance works, especially where long term disruption or closure of roads and footways may be required to implement necessary schemes.

9.3.2 Condition Information

There is a sustained programme of data collection to gather information on the current condition of the structures stock. This is in keeping with the recommendations of the UKRLG Well-Maintained Highway Infrastructure – a Code of Practice (October 2016), although local priorities may result in departure from the Code of Practice in some instances.

General Inspections are carried out on all structures once every two years. General Inspections comprise a visual inspection of all parts of the structure that can be inspected without the need for special access or traffic management arrangements. There is also a risk-based programme of more detailed, Principal Inspections. Bridge Condition Index (BCI) scores are determined from condition inspections and where appropriate these are monitored annually as an asset management performance measure.

All inspections, testing and monitoring information is vital to asset management, as they identify the extent and severity of defects requiring repair and help identify any issues which may become a problem in the future. This information is not only important for risk management and for sustaining safety for the user but is also required for lifecycle planning (Refer to 6. Achieving Value for Money – Lifecycle Planning).

Assessments for structures are also carried out where deemed appropriate, in order to determine the ability or capacity of the structure to carry the loads which are or may reasonably be expected to be imposed upon it. The Assessment provides valuable information for managing the safety and serviceability of highway structures.

Structural reviews are also undertaken where deemed appropriate; these ascertain the adequacy of structures to carry the specified loads when there has been a significant change to the usage, loading, condition of the structure or the assessment standards relating to the structure in question.

This data informs minor works programmes as well as forward structures capital works programmes for broader scoped refurbishment works. It also assists with the routeing of abnormal loads. An abnormal load is a vehicle that is outside the classification of normal permitted traffic by virtue of its gross weight, length, width or

axle configuration according to current road vehicle regulations. The movement of abnormal loads on highways is carefully managed so that large and or heavy vehicles only use those parts of the network that can safely accommodate them.

There are now software tools within the industry which facilitate lifecycle planning, deterioration modelling, and asset valuation for structures, and these are being explored fully. Whilst use of these tools can never be expected to negate the need for engineering judgement, they will provide useful comparative data on investment levels and specific maintenance approaches relating to future performance of assets or specific elements of an asset. This information assists with risk management. It also provides an indication of potential future maintenance cost liabilities for the Council, which will help with setting investment levels and associated standards of service.

It is worth noting that a substantial number of structures that support the Council's Highway network are owned by other bodies such as Highways England and Network Rail, and by private landowners. Liaison with these owners will continue to be undertaken to ensure that the availability, condition and safety of these structures is consistent with the Council's own structures assets.

9.3.3 Weak bridges and culverts

The Council maintains a list of weak bridges and culverts ascertained from load capacity assessments. Weak bridges are those that fail to meet full load carrying capacity. This does not necessarily mean that their condition is poor; some assets which are assessed as weak can be in good condition. It should be noted, however, that much of the structures stock was built during times when current demands could not have been foreseen or considered.

While the risk of a structural failure is very low, its impact on road users and businesses can be very high and therefore a risk-based preventative approach is implemented. As a result, many weak bridges are subject to the development of long-term structural rehabilitation schemes, typically strengthening or reconstruction. A corresponding future works programme is in place and is subject to regular review following new inspection and assessment information. In the meantime, measures to mitigate the risk of those structural elements receiving loads greater than their assessed capacity are implemented where necessary via weight limits, propping, edge protection, traffic management, or increased inspection and monitoring frequency, as appropriate.

The Council is responsible for a large number of ageing watercourse culverts under the highway network. These need to be maintained in a serviceable condition to meet the Council's responsibilities under the Flood & Water Management Act 2010, and a programme of culvert strengthening works is included within the forward Structures capital maintenance programme. Such schemes may also be included in the SWAS risk register.

9.3.4 Scheme identification and investment prioritisation

The identification of capital refurbishment or replacement works is based on a lifecycle planning process that is augmented by the results of General and Principal Inspections and load capacity Assessments. Where need for a strengthening or reconstruction scheme is apparent, option studies are conducted where appropriate to assess alternative design solutions in terms of cost, risk, deliverability, timescale,

network disruption and other factors before a preferred option is selected to progress through to detailed design then implementation.

The rolling forward structures capital maintenance programme requires more advanced planning than other asset groups. This is because full implementation can take several years from identifying a need at Principal Inspection or Assessment stage through to implementation on site. Part of the reason for this is the inherent complexity of structures assets, but it is also due to the requirement for land acquisition or planning consents, or significant utility diversions. Joined programmes of work are therefore required and developed for Principal Inspections, Assessments, Option Studies, Detailed Design and Works, in order to have the correct information and resources at the appropriate time for implementing the scheme. Capital investment for Structures maintenance works is prioritised towards:

- Strengthening or reconstruction of weak bridges where risk mitigation measures would incur long term significant traffic delay and disruption
- Structures of strategic importance or providing singular access to communities as indicated by their position within the Structures hierarchy
- Bridges where the form of construction makes them vulnerable to sudden failure which is not easily detected through inspections
- Structures that are already assessed as poor condition and are deteriorating
- Damaged or blocked culverts at known flood risk sites
- Structures that support well used public rights of way routes where closure would significantly inconvenience users

However, investment will always be made to repair damage to structures from vehicle strikes and the like, where immediate attention is required in order to keep the asset safe for users.

Capital maintenance schemes on some large and or network critical structures, and on heritage structures, may be very expensive and beyond the normal levels of funding allocated to Local Authorities. In order to address asset condition deterioration on such structures we will continue to develop communications with central government with a view to making these structures special cases for investment.

9.4 Highway Lighting

Highway lighting contributes to the avoidance of driver confusion and therefore has a positive impact on road safety.

9.4.1 Desired Outcomes

Highway lighting assets are a significant element of highways infrastructure. The desired outcome is to maintain these assets in a safe, serviceable and sustainable condition, to maximise their service life on a value for money basis, and to reduce ongoing energy usage and reactive maintenance costs.

9.4.2 Condition Information - Inspections and Testing

All highway lighting assets are recorded in an asset register and are subject to an electrical test and inspection once every six years to ensure fitness of purpose. Lighting columns, illuminated signs and beacons are also subject to a structural test and inspection once every six years, with the exception of non-metallic lighting

columns/posts which are subject to a structural test and inspection once every three years.

The structural inspection of a lighting column is a ‘top to toe’ assessment of a column above and below ground via a risk assessment procedure. Visual external inspection of the column’s bracket, shaft and base section is augmented where appropriate by the use of a probe for the internal examination of the column’s shaft, base section and underground root section. The condition of the root section of a metal street lighting column is assessed via the direct measurement of metal wall thickness within the underground section down to depths of 2.0 metres.

The overall, combined results of the structural assessment define the asset in question as either:

- Structural Red = high priority for asset replacement
- *Structural Amber = medium to high priority for asset replacement or re-test in three years
- Maintenance Red = high priority for asset repair (repairable)
- Maintenance Amber = medium to high priority for asset repair (repairable)
- Green = acceptable until next scheduled test

*Structural Amber assets are non-repairable and will become Structural Red over time.

9.4.3 Investment prioritisation

A weighted prioritisation process which combines visual assessment data with structural test data, and takes into account the hierarchy of the road in question, produces an overall risk score for structural assessment which assists with prioritising asset replacement. However, funding allocations will always be made to repair damage to highway lighting from vehicle strikes and the like, where immediate attention is required in order to keep the asset safe.

There are various software tools now available within the industry which assist with lifecycle planning for ancillary assets of this type, and we will continue to explore these fully where this is cost effective. We will also continue to explore the potential of our significant volume of historic structural and visual inspection data to improve our understanding of how assets deteriorate over time, in order to pursue alternative means of quantifying future potential maintenance liability for the Council.

9.4.4 Central Management System

Increases in electrical energy charges place additional burdens on Local Authority budgets. As a result, the Council has installed remotely controlled ‘Telecells’ in each lighting column which link each column to an on-line central management system. This system facilitates individual control of the time periods in which the lighting columns are switched on. The system also registers the presence of a fault when a street light ceases working and enables the Council to plan repairs or replacement. The Central Management System facilitates efficient management of highway lighting with a view to reducing overall energy costs.

9.4.5 LED Lighting

The County Council has long been aware of the potential benefits of using LED lighting technology to reduce energy consumption, improve service reliability and service life, and reduce light pollution. Following the success of an initial trial of sites in Essex market towns carried out some years ago, a substantial capital asset replacement programme has been in progress to replace existing sodium/mercury lamp technology (for which availability is significantly reducing within the industry) with LED technology.

Illuminated bollards and signs, as well as approximately one third of the lighting columns have already been converted to LED technology. Current plans are to convert remaining assets to LED over a four-year programme commencing in 2021/22. After this programme, any assets still using sodium/mercury lamp technology will be converted to LED technology during maintenance operations over time.

9.5 Intelligent Transport Systems (ITS)

Enabling the efficient movement of traffic supports journey time reliability and makes a significant contribution to creating the right environment to attract investment to Essex.

9.5.1 Desired outcomes

This asset group includes traffic signal equipment and controllers, traffic safety cameras, bus lane enforcement cameras, variable message signs, vehicle-activated signs, school crossing lights, traffic count sites, bus telematics, CCTV, and other system infrastructure. The desired outcomes are to maintain the assets in a safe, serviceable and sustainable condition, and to safeguard journey time reliability by reducing equipment failures and occurrence of out of service ‘down time’. (Some of these assets are managed by Essex County Council rather than Essex Highways, but cross-team working ensures consistency and continuity in asset management planning).

9.5.2 Condition Information - Inspection and Monitoring

All ITS assets are recorded in asset registers which include date of installation and corresponding age of asset. Key ITS assets are linked electronically to sophisticated software systems which monitor operation in real time and register occurrence of faults. Equipment installations are inspected annually for electrical integrity and general condition, and physical infrastructure is also included within the routine safety inspections undertaken by Highway Inspectors.

9.5.3 Scheme identification and investment prioritisation

Reactive maintenance addresses relatively minor operational faults as well as any minor component replacement such as renewals of poles. More complex refurbishment requirements to replace components and assets reaching the end of their service life are included in a 3-year forward works programme for capital works.

Lifecycle planning to identify and prioritise schemes utilises a matrix of information about the asset in question; i.e. age of asset, anticipated service life, number of

faults logged over time, time needed to effect repairs, and road hierarchy of site in question.

A new Service Level Agreement for Maintenance activities was successfully negotiated at the commencement of the 2019/20 financial year, and this is realising improved value for money for the Council, enabling it to achieve more with less. Investment is also focussed on the developing deployment of LED technology in order to reduce energy consumption, improve electrical safety through extra low voltage operation, and to reduce costs associated with signal lamp replacement. Currently around 50% of assets managed by Essex Highways have been converted to LED technology.

In recent years, investments in new technology have brought benefits of improved energy efficiency, operational efficiency and reduced 'down time'. This has resulted in reduced congestion and improved journey time reliability. This not only contributes to the realisation of the Council's strategic priority to create the right environment to attract employers to the area but has also enhanced public perception of the service.

Essex Highways will continue to recommend investment in new ITS technology to the Council where clear benefits can be evidenced with sound data. For example, in recent years safety camera systems have been converted from wet film to digital data, with the benefits of automated real time transfer to a central data system, improved data security, and the avoidance of costs associated with loading, retrieving, and processing wet film. It has also significantly reduced the risk associated with site visits and working on the highway. Note that this digital conversion project was also crucial to the sustainability of the Safer Essex Roads Partnership and its road safety goals.

10. Risk Management

The management of risk is paramount to addressing highway user safety as well as to addressing the safety of operatives working on the highway. It also mitigates the possibility of asset failure, thereby reducing incidents of traffic disruption.

A risk is a potential event which may result in an undesired consequence or impact. The possibility of the event occurring is termed a likelihood. There are many kinds of risks, and every one of us encounters risks to various degrees in our daily lives. We learn to evaluate the importance of the risk, and based on levels of importance either to tolerate the risk, take steps to avoid the risk altogether, or find means to mitigate the risk so the impact or likelihood is reduced to a level that we find tolerable.

From the point of view of Asset Management there are many kinds of risk: there are high level risks that affect the whole organisation; there are operational risks relating to operational activities such as working on the highway, and there are strategic and tactical risks that affect the highways infrastructure and its users. Risks to highway user safety are addressed through the Council's general duty of care to maintain the highway in a condition fit for its purpose. (Refer to Essex Highways Service Information Centre/Road Strategies for more information on inspection frequencies, defect identification and repair response times).

Risk Management is an important aspect of Asset Management. Salient risks are recorded in risk registers so that they can be reviewed, updated, analysed and reported in order to facilitate their management.

11. Data Management and Systems

Having the right information is critical to decision making. Data is also used to demonstrate that investment is being used in an efficient and effective way that delivers value for money, and to demonstrate how the anticipated outcomes of the investment are being realised.

The maintenance of robust asset registers for recording and updating asset inventory, asset condition information and treatment cost information is essential to the asset management lifecycle planning process. These systems and data are also fundamental to the formulation of strategy scenarios which link different standards of service with corresponding investment levels. The Council's investment decisions are based on the appraisal of how the outcome of each of these scenarios will deliver strategic priorities.

Data is also required for other asset management purposes such as Highways Network Asset Valuation which is a reporting requirement for Local Authorities under Whole of Government Accounts.

The data held in our systems includes:

- Customer contact data and correspondence
- Street Gazetteer and Network information
- Asset Registers and Inventories
- Inspection Records
- Defects records
- Condition information
- Asset installation/implementation dates and service lives
- Asset location information
- Works ordering and completion dates
- Maintenance histories
- Technical drawings of completed schemes, and Health and Safety Files
- Technical approval documentation for structures

Use of all data complies strictly with data protections laws.

An Information Strategy has been developed and documented so that data collection informs the performance management framework which monitors delivery of the Asset Management Strategy which is linked to the Council's Organisation Strategy. (Refer to 8. Performance Management - turning the Council's Strategic Priorities into Outcomes).

The Council's asset data is currently stored in a number of electronic and manual systems, although the most salient data is in electronic format which is subject to rigid security measures.

The functionality and capability of data management systems is routinely reviewed, and recommendations are made to the Council where the benefits from investment can be made. The advantages of new software can include the unlocking of essential developments in service provision, as well as significant cost savings from reducing data processing times.

12. Making the Case for Investment

The case for investing in the maintenance of each asset group is made robustly, based on sound data and evidence that demonstrates value for money, and is linked directly to the achievement of the Council's Strategic Priorities.

12.1 Business Cases – the benefits of long-term planning

Like most Highway Authorities, the Highways service competes with other Council priorities for investment. It is therefore important that the case for investing in the maintenance of each asset group is made robustly. This is especially true when making the case for investment in the long term, as this represents a sustained commitment by the Council.

A long-term approach to budget setting gives more certainty to the delivery of the forward programmes of works, allowing more efficient planning and procurement of resources. It also enables strategic programming with other works on the highway network, which delivers value for money through shared resources. This approach also results in improved customer information. However, the budget setting process for the Council occurs annually, and providing long term agreements to funding can be problematic in an environment where availability of funding can be subject to significant and rapid change.

The Strategy scenarios which link standards of service with specific capital investment levels to deliver forward programmes of works, include the corresponding impact on the reactive funding requirement for minor repairs as well as impact on risk. Generally, as capital investment increases then asset condition improves and the requirement for minor reactive investment decreases. Arguably the impact on risk follows the same pattern

Reactive repair cost savings can contribute to the cost of repaying the capital borrowing for the investment in question but are unlikely ever to offset it completely, and there is no 'golden mean' to dictate the ideal balance between the levels of investment for these different types of activity. Balancing investment levels across maintenance activities requires careful consideration of customer needs, as well as an understanding of the root causes for reactive maintenance, knowledge of processes and associated productivity and cost, and risk management. We will continue to make recommendations to the Council regarding these matters.

The information required for investment planning is derived from lifecycle planning and deterioration modelling. This reflects not only individual asset need, but it includes recommendations on the best balance of funding across all asset groups to achieve the desired outcomes.

Business cases also assess the potential consequences of under investing in asset maintenance, including the likely impact on customer satisfaction. Accordingly,

business cases for asset investment receive considerable Cabinet Member engagement and scrutiny before being presented to the Council for consideration.

Essex Highways also identifies opportunities for other potential sources of asset investment funding and where appropriate collates and submits bids on behalf of the Council. This includes investment initiatives from the DfT, such as the Local Highways Maintenance Challenge Fund, as well as investment opportunities from the South East Local Enterprise Partnership (SELEP). Essex Highways will continue to explore all potential opportunities for additional investment for the Council.

13. Scheme Delivery

Delivering works on the ground to agreed quality, timescales and to budget underpins the effective and efficient delivery of asset investment.

13.1 Rolling Forward Programme of works

A prioritised 3-year forward rolling programme of capital maintenance schemes for each major asset group is maintained annually. The benefits of a long-term forward programme are that it offers the opportunity to manage the programme strategically with a view to:

- Minimising disruption on the network
- Maximising the opportunity for collaborative working between works programmes for different asset groups
- Providing opportunities to integrate larger and smaller scale works, or to integrate with planned third party works on the network (e.g. works of other organisations such as utility companies)
- Providing opportunities for collaboration on smaller scale maintenance works, with the benefits of minimising the number of road closures and reducing traffic management costs
- Optimising delivery by coinciding the timing of schemes which are in the immediate locality of other works

13.2 Annual Delivery Planning

The forward programme is reviewed annually to take account of new data, changing priorities and changes in investment. This commences prior to the start of each financial year and forms the basis for the annual delivery planning process.

Annual delivery plans set out the schemes and activities to be undertaken for each asset group during the financial year, how they will be delivered, the resources required, and the outputs and performance targets to be achieved.

The annual delivery planning process identifies resource needs and ensures that any potential recruitment programme has the appropriate focus. It also ensures that adequate resources are allocated to asset management activities.

Collaborative working with Supply Chain Partners (SCP) provides early contractor involvement in the design, planning and procurement process. Tendering works across the supply chain to derive a favourable ‘target delivery cost’ drives efficiency and value for money while sustaining quality. This approach is incentivised through

the sharing of financial benefits between the Council and its Delivery Partner Ringway Jacobs, which drives a culture of continuous improvement.

The delivery of these programmes is subject to rigorous monthly review meetings throughout the year to scrutinise performance and outputs to ensure the full programme will be delivered within the required timescales and to budget.

14. Competencies and Training

Defining asset management roles with competent, accountable and well-trained personnel, combined with a 'one team' culture, ensures effective delivery of the Asset Management Strategy

Successful delivery of the Asset Management Strategy relies on competent and suitably experienced personnel, therefore accountabilities for asset management are clearly defined. Annual staff performance reviews identify potential development needs for each staff member, and details are retained on file in a confidential competency matrix accessible only to managers.

This process enables the formulation of a structured training programme that ensures asset management knowledge is continually enhanced, and that those with key roles in asset management are identified and supported to achieve recognised qualifications and skills levels. Sharing of knowledge and the encouragement of innovation, however, fosters a culture of 'one team', so that whilst individuals are empowered to make a difference, advancements are made collectively so the organisation benefits from every improvement.

15. Reviewing and updating this Strategy

Asset management is a developing process within a dynamic environment, and we continuously monitor changes and new guidance within the industry to ensure that our approach remains innovative.

In recent years Essex Highways has proved its maturity as a best practice asset management led service through sustaining compliance with DfT guidelines relating to the highest level of competence in asset management. This level of competence is assessed by the DfT's Local Highways Maintenance Incentive Fund Self-Assessment process, and ensures the Council receives its full allocation from the DfT for this area of funding. Local Authorities who are unable to comply with the same level of competence receive reduced levels of funding from the DfT.

It is also worth noting that Ringway Jacobs attained British Standard BS ISO 55001 in Asset Management for Essex Highways in 2017; this standard was reviewed and sustained in 2018 and again in 2019.

Delivery of this Strategy is the responsibility of the Asset and Records Manager supported by Senior Managers in the Essex Highways service and the Council's Essex Highways Commissioning team for Transport and Infrastructure. A collaborative approach combined with effective communication, however, ensures

the Asset Management Strategy is delivered by a broader ‘one team’ approach. For example, in 2015, the Ringway Jacobs strategic partnership with Essex County Council became one of the first relationships of its kind in the United Kingdom to achieve BS11000 – Collaborative Business Relationships. More recently this accreditation was subject to a successful audit which included transfer to ISO44001. Some of Ringway Jacob’s supply chain partners are also named partners.

This Strategy will be reviewed regularly to ensure it continues to be aligned to the Council’s Strategic Priorities and that it continues to provide the right information for informed decision making. However, the core principles relating to effective asset management underpinning this Strategy are unlikely to change significantly.

Next review date January 2022