Agenda Item No: 6

Highways Improvement Programme – Asset and Data Strategy

To:	Highways and Transport Committee
Meeting Date:	2 December 2025
From:	Deputy Chief Executive, Executive Director of Place and Sustainability
Electoral division(s):	All
Key decision:	No
Executive Summary:	This report presents the Council's Draft Asset Management Strategy for approval and adoption pending further refinement following review and feedback by the committee. The Asset Management Strategy, which includes the Asset Data Strategy as an appendix, sets out the approach to managing and maintaining each asset to secure best value, safety and asset longevity. It is anticipated that following a review period a finalised version will be presented to the committee in Spring 2026 for approval.
Recommendations:	The Committee is recommended to: a) Review and provide feedback on the Draft Asset Management Strategy and Asset Data Strategy; and b) Note the thematic approaches, as summarised in paragraphs 3.5 - 3.6 of the report and as set out in Appendix 2 of the report, regarding how the Council's different highway assets will be managed in the future.

Officer contact:
Name:Joshua Rutherford
Post: Head of Asset Management, Design & Delivery
Email: joshua.rutherford@cambridgeshire.gov.uk

1. Creating a greener, fairer, and more caring Cambridgeshire

1.1 Ambition 1: Net zero carbon emissions for Cambridgeshire by 2045, and our communities and natural environment are supported to adapt and thrive as the climate changes.

1.2 An asset management approach is focused on minimising the environmental impact and carbon footprint of our maintenance and improvement activities. The asset management approach is predicated upon preventative maintenance treatments being applied to highways at the appropriate points in their lifecycles. Such preventative maintenance minimises the need for deeper, more expensive treatments to be applied at later dates.

1.3 Deeper treatments are the most environmentally harmful as they require greater use of materials (including virgin aggregates) and associated transport. These carbon emissions are exacerbated by road users having to travel further via diversion routes and having to wait at traffic control, such as traffic signals.

1.4 Ambition 2: Travel across the county is safer and more environmentally sustainable.

1.5 This proposed investment will support safer journeys by ensuring our footways, cycleways and carriageways are smoother and that our routes are well maintained.

1.6 The maintenance programme includes a range of surface improvements, including works to some of the county's soil affected roads. Works to these roads will play a key role in keeping this challenging part of the county's highway network safe.

1.7 Furthermore, the Council is continuing to explore ways to decarbonise the delivery of planned capital maintenance works process by implementing the follow changes:

- Use of Cold Recycled Binder Materials instead of conventional asphalt in footway maintenance works. This is projected to reduce carbon expenditure by 40%.
- Trialling low carbon cements in road reconstruction schemes, instead of conventional, which is projected to reduce carbon emissions by 70-80%.
- Replacing conventional diesel in construction plant with hydrogenated vegetable oil, resulting in an 80% saving in carbon emissions.

1.8 Ambition 3: Health inequalities are reduced.

1.9 Consistent with Ambition 2, our commitment to maintaining safe routes will help prevent injuries on our network. Furthermore, by promoting schemes where Active Travel provision may be improved, and improving access to public transport links, we can help create an environment that gives people the opportunity to be as healthy as they can be.

1.10 Ambition 6: Places and communities prosper because they have a resilient and inclusive economy, access to good quality public services and social justice is prioritised.

1.11 A properly maintained highway network is a key enabler for the transport of goods and passengers across the county and beyond. This is fundamental to the county developing and retaining a resilient economy.

2. Background

2.1 The Council's highway activities have a significant impact on users across the county, being of high priority to residents and communities within Cambridgeshire as well as wider stakeholders using the highway network. This has been highlighted in the annual Quality of Life and National Highways and Transportation Network Surveys, with key improvement areas being identified including the condition of the Public Rights of Way network, the condition of road surfaces and the maintenance of footpaths and cycleways.

2.2 The most recent quality of life survey has identified that public satisfaction in highways is now at 28%, up from 21% the year before. Whilst this is a significant improvement in just one year, there is still plenty of work to be done. For this reason, new ways of working and approaching highway maintenance are proposed to be implemented as set out in this report. This is a fundamental change to how highway maintenance has previously been delivered and includes a greater focus on the customer, being data led, focussing on quality outcomes, and getting best value for money.

2.3 The purpose of this report is to provide guidance and assurance around what plans and processes will be implemented, going forward, to maintain the Council's highway assets effectively and efficiently. This is captured and explained in two new documents which have been produced as follows.

(i) A Highway Asset Management Strategy, (HAMS): this document is the parent document setting out how the Council will maintain its assets and is attached at Appendix 1. The HAMS provides detailed plans by asset type for how the strategy is implemented in practice, including clearly defined approaches, inspection regimes, intervention levels, prioritisation processes and management plans for each asset with close alignment to the authority's strategic framework and vision.

(ii) A Highway Asset Data Strategy, (HADS): this is a child document to the HAMS and is attached at Appendix 2. It sets out the data that the Council uses to support effective asset management and data-led decisions, the way that the data will be collected / used, and the associated roles and responsibilities.

2.4 The two documents set out above relate to differing extents to all highway assets. The highway the Council maintains is extensive and varied, requiring different management approaches depending on the type of asset and levels of investment available. Table 1 highlights the extent and variety of assets maintained as public highway to which these documents will apply.

Highway, footways, and cycleways type	Length in kilometres (km)
Roads	4,519
Footways (including 277km of footway not adjoining a road)	2,710
Other public rights of way	3,256
Cycleways	41
Quantity	Description
1,200	Road, pedestrian, and cycleway bridges
2,200	Public right of way bridges
85	Other structures including underpasses / subways and retaining walls
60,000	Streetlights and illuminated signs / bollards
145	Zebra pedestrian crossings
192	Sets of traffic signalised junctions
228	Traffic light-controlled crossings
112	Electronic information and variable messaging signs and other traffic management assets
Over 115,000	Drainage gullies, highway drains / sewers, soakaways, and other drainage infrastructure
87,000	Highway trees
4,400km	Length of grass verges
Over 100km	Road safety fencing and pedestrian guard rails
Over 7,000	Public rights of ways assets including gates, stiles, and signs

Table 1 (N.B The Council's street lighting assets are not covered within these proposals and are managed via a separate 25-year Private Finance Initiative which commenced in 2011)

2.5 To maintain these assets to a suitable standard requires a considered strategy, management plan, and optimum level of investment. Table 2 provides context for how much investment is required, over a sustained period, to maintain the Council's highway assets in their current condition. The figures provided are based on a ten-year investment cycle. Meanwhile, Appendices 1 and 2 set out how the authority will approach managing its highway assets going forwards.

Asset	Steady State Condition (where applicable)
Carriageways	£34,000,000
Footways & Cycleways	£4,000,000
Structures	£12,000,000
VRS	£750,000
Signals	£950,000

Asset	Steady State Condition (where applicable)
Intelligent Transport Systems	£167,000
Drainage	£3,000,000
Signs & posts	£750,000
Road markings	£750,000
Rights of Way	£500,000
Minor Maintenance Projects	£550,000
Asset Surveys	£750,000
Total required	£58,167,000

Table 2

2.6 To date, the Council has allocated an additional £43m of the Council's budget over the past two years towards highway maintenance, over and above the funding provided by the Department for Transport (DfT). The Council is currently undertaking business planning for 2026/27, with budget allocations to be confirmed later this budget year and the Capital Maintenance Programme for 2026/27 to follow the completion of this process in March 2026. Table 3 provides a funding breakdown covering the last five years, showing how much has been spent by the authority on highway maintenance, inclusive of DfT funding.

Financial Year	**Total £ spent on highway maintenance** *(Capital & Revenue)*
2020-21	£47.79 Million
2021-22	£48.16 Million
2022-23	£53.46 Million
2023-24	£53.08 Million
2024-25	£79.17 Million
2025-26	£91.98 Million

Table 3

2.7 The Council also faces significant maintenance challenges which are identified within the HAMS. Cambridgeshire is in a particularly unique position, as approximately 40% of its total road network lies on peat-based soils, which are highly susceptible to seasonal expansion and contraction.

2.8 Soil affected roads present a significant additional maintenance liability, requiring more frequent and costlier interventions than those faced by many other authorities. Whilst the Council has identified how it will manage this issue, the size and scale of investment required to fully address the problem is not factored into national government funding grants for road maintenance and is beyond any budget available to the Council.

3. Main Issues

Highway Asset Management Strategy (HAMS)

3.1 The draft HAMS is attached at Appendix 1. This sets out how the Council manages each highway asset from a strategic perspective and in alignment with its vision and strategic framework, whilst referencing relevant national and local policies.

3.2 This also details how the authority manages each highway asset. This has been carefully considered to reflect the needs of communities alongside the investment and maintenance needs of each asset.

3.3 The HAMS replaces the previous Highway Operational Standards (HOS), as the reference document for how the Council maintains its highway assets. As part of the process of producing the HAMS, officers have engaged with teams across the organisation and held discussions with neighbouring authorities, whilst reviewing the approaches undertaken by others across the region and listening to feedback from both elected Members and communities regarding priority maintenance areas.

3.4 The HAMS includes improvements in the following areas.

i. Strategic alignment: There is much closer alignment with the authority's strategic framework and ambitions.

ii. A transparent approach to Asset Management: The Council has established more transparent asset management and investment approach for each asset, including detail on what this means going forward for each asset identified. The HAMS has been made more accessible and user-friendly, so the policies and guidance documents are more understandable for all.

iii. Key Performance Indicators: A suite of clear service standards and commitments have been created, which will be reported on annually. These will identify areas for improvement and areas which a currently performing well in a transparent and constructive way.

iv. Customer Engagement: There is an increased emphasis on stakeholder engagement and effective customer service, including minimum standards around communication of roadworks.

v. Sustainability: It has been identified how the Council will be as sustainable as possible and what it is doing to reduce the amount of carbon it expends.

vi. Public Rights of Way: There is a clear approach to how the Council manages and maintains its Public Right of Way network.

vii. Road Safety: The Council is putting Road Safety at the heart of what it does in highway maintenance and increasing the frequency of some safety inspections, and will inspect the whole network at a maximum period of 12 months. Previously some routes were inspected every 24 months.

viii. Fiscal responsibility: The Council has created a risk-based approach to how it

prioritises non-urgent reactive carriageway, footway and cycleway works which is more transparent and consistent.

ix. Quality Management: The Council has changed its approach for pothole and patching repairs, so these will be undertaken in the most efficient manner possible and more generally processes have been identified for how the Council manages quality, inspects work, and addresses defects.

x. Data led: The Council will be data led by default to enable objective and informed decision making which helps it think strategically and plan for the long term.

xi. Value for money: The Council has undertaken lifecycle planning for each asset where this is relevant. This means it has identified based on current condition an optimum investment level for that asset. This has enabled the Council to prioritise investment where it is needed most.

3.5 A critical element, key to implementing a successful asset management plan is the specific approach taken to managing each asset. Within the HAMS, this is identified by asset type and falls into one of three categories.

Available approach	Meaning
Preventative	A preventative asset management strategy is adopted for carriageways and footways, investing a greater proportion of the available budget to treat assets in the initial stages of deterioration. A preventative approach being adopted means that, in some cases, roads which appear to be in poor condition might wait longer for repair, while roads which appear in better condition are treated to arrest their deterioration.
Worst First	A 'worst first' approach targets investment towards those assets that are at the end of their life and are in a poorer condition as shown in the 'High Risk' area above where each single intervention would be seven times as costly, reducing the amount of network that could be repaired annually and resulting in deteriorating asset condition if referring to carriageways. This approach is appropriate where a preventative approach is not suitable. This could be the replacement of assets that you would expect to be working up until they fail, such as lighting units or electronic equipment where there is no benefit in intervening early.
Risk Based	A risk-based approach targets investment at those assets which have exceeded a set threshold based on a standardised risk assessment which is undertaken at regular fixed intervals. This approach is reliant on accurate and well-maintained asset data.

Table 4

3.6 A breakdown of the recommended asset management approach for each asset can be found below.

Asset	Asset Management approach
Carriageways	Preventative
Footways & Cycleways	Preventative
Structures	Worst First
VRS	Worst First
Signals	Worst First
Intelligent Transport Systems	Worst First
Drainage	Risk based
Signs & posts	Risk based
Road markings	Risk based
Trees	Risk based
Rights of Way	Not Applicable
Minor Maintenance Projects	Not Applicable
Asset Surveys	Not Applicable

Table 5

Highway Asset Data Strategy

3.7 The draft HADS is attached at Appendix 2. This document details the Council's approach to managing and collecting Highway Asset Data. The overarching principle being to consolidate as much of the asset data as possible into a single system, simplifying how it is collected, stored and maintained. This will have significant benefits for the short term and looking forward to local government reorganisation.

3.8 As an authority, the Council collects a considerable amount of data across its highway assets related to asset condition, asset inspections, and asset inventories. This data is critical in supporting the services drive to improve how it makes informed investment decisions for the long-term health of the highway network. The table below sets out some of the data collection methods employed across several asset types.

Asset Type	Survey Technology Method	Description
Carriageway Condition	SCANNER	Vehicle-mounted sensors assess road surface condition (rutting, cracking, texture).
Highway Safety Defects	Route Reports	Uses AI and imagery analysis to detect safety defects based on investigatory levels.
Carriageway Skid Resistance	SCRIM	Measures road surface friction to assess skid resistance, especially in wet conditions.
Footway Condition	Footway Network Survey	Footway Network Survey – visual condition assessments of pavements.

Asset Type	Survey Technology Method	Description
Structures Condition	General & Principal Inspections	Regular visual inspections of bridges and other structures to assess safety and condition.
Traffic Signs	Gaist	AI/image-based assessment of sign condition and visibility using video or imagery.
Drainage Systems	KaarbonTech 'Gully SMART'	Tracks and manages gully (drain) conditions and cleaning schedules via software.
Trees	KaarbonTech 'TreeSmart'	Survey and management system for tree condition, location, and risk.

Table 6

3.9 The HADS will be the reference document for how the Council maintains and manages its highway asset data. This will include the systems used to collect, interpret, and store data. The data will be used to look strategically over the long term regarding how the Council maintains and manages its assets, informing investment scenarios and allowing it to forecast and evaluate different outcomes.

3.10 Key requirements set out in the HADS are as follows:

i. A single system approach to data collection and management wherever feasible. This reduces the need to switch between and maintain several different systems, whilst improves the chances of effective collaboration, reducing duplication and the chance of errors.

ii. Cloud based systems which are readily accessible as required whilst reducing the need to store and hold data physically.

iii. Key areas have been identified where the Council needs to improve how it collects data to get a complete asset inventory to give a better understanding of that asset.

iv. A detailed summary has been provided of the different data the Council collects across all its highway assets and what this is used for.

3.11 The next steps following this committee meeting are as follows:

- December 2025 – Spring 2026: service preparation for implementation and operationalisation of the new suite of documents, ensuring that officers understand and are equipped to deliver highway maintenance as set out in the document plus any further amendments.

- Early 2026: briefing and introductory session for Members to share the documents and what this means for highway maintenance.

- December 2025 - March 2026: officers will be identifying and prioritising schemes for the 2026/27 Capital Maintenance Programme in line with the asset management approach set out in the HAMS.

- March 2026: The Capital Maintenance & Improvement Programme 2026/27 report will be presented to the committee for review and approval.

- Spring 2026: The new Asset Management Strategy and associated documents, incorporating any amendments following the review and feedback period outlined above will be presented to the committee for approval and implementation.

4. Alternative Options Considered

4.1 The HAMS and HADS have been created with reference to national guidance and asset management principles which recommend taking a preventative approach to asset management where relevant.

4.2 The alternative option would be to prioritise funding based on other criteria which are not linked to asset management priorities. This would undermine the ability of the Council to secure the maximum level of funding from central government, and it would also represent poor value for money.

5. Conclusion and reasons for recommendations

5.1 The proposed HAMS document details how the authority will manage its highway assets in the most efficient and cost-effective way possible. The HADS follows the same approach for how Highway Asset Data will be captured and managed. It is recommended that all documents are approved for use on this basis.

6. Significant Implications

6.1 Finance Implications

The report sets out thematic allocations related to recommended management approach for each asset as well as identifying the steady state investment figure for each asset. The financial allocations for each asset will be presented to this committee as a separate Key Decision report, annually in March. It should be noted that the ten-year investment projections for steady state figures aren’t inclusive of inflation, however these figures will be revisited annually.

6.2 Legal Implications

Funding provision for the maintenance of and improvements to the public highway will have significant positive implications for user safety and the statutory health and safety requirements the authority is required to uphold. The HAMS identifies how the authority will meet its statutory duties whilst maintaining the highway.

6.3 Risk Implications

The HAMS details how risks will be managed and assessed and sets out clear processes for intervention and prioritisation which are aligned to guidance and best practise criteria.

6.4 Equality and Diversity Implications

The HAMS and HADS have been developed in accordance with approved Council policy. These will contribute to the provision of an inclusive highway network. An Equality Impact Assessment reflecting this it attached at Appendix 3.

6.5 Climate Change and Environment Implications

Carbon emissions

The asset management approach reduces the carbon emissions associated with highways maintenance. This is achieved through timely interventions, preventing the need for deeper, more carbon intensive treatments to be undertaken later with strategies now developed to reduce carbon by highway maintenance asset type.

Low Carbon Transport

The programme of schemes is predicated upon timely maintenance interventions, obviating the need for deeper, more disruptive treatments at later dates.

This will mean that users of the county's highway network will face less disruption due to roadworks. Therefore, there will be less need for traffic to undertake additional mileage due to diversion routes and traffic will spend less time waiting at traffic lights and other forms of traffic management.

Air Pollution

The resultant minimisation of disruption and construction traffic will help reduce air pollution, including particulates from traffic.

Resilience of our services and infrastructure, and supporting vulnerable people to cope with climate change

A well-maintained highway network, which can remain available during extreme weather conditions, is an essential contributor to the resilience of the services provided by the Council and other agencies. The highway network is the key conduit for the many of our front-line services to reach communities. These programmes of work contribute to the provision of such a safe, serviceable network of highways.

7. Source Documents

7.1 Highway Operational Standards