Nottingham City Council

Highway Services

Nottingham City Council -

Highways Asset Management Strategy

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Contents

Foreword

This **Highways Asset Management Strategy** sets out how the asset management approach to the maintenance of the public highway assets of Nottingham City Council will be managed.

By bringing together all goals, objectives and policies with existing information, it will show how the principles of asset management will be used to ensure our highway services provide best value for money in meeting the requirements of its businesses, residents, and visitors. Not just to keep the highway safe to use, but also to assist in regeneration, social inclusion and protecting the health and safety of the community and the environment.

Our aim is to provide a reliable, safe, available and efficient network and in doing so optimise the available resources, provide value and demonstrate accountability. To do this, the culture of the highway services we provide will need to adapt so that our systems, procedures, and methods of working are fully aligned and coordinated.

By aligning this document with the **Local Transport Plan** (LTP), management of the use of improvement actions outlined within this document will enhance the strength of the LTP.

Purpose of this Strategy

This document provides an overview of the asset management framework and strategic approach to the management of the highway's assets in the council's stewardship.

As Local Highway Authority, the council has a duty of care to maintain the safety and accessibility of the highway maintained at public expense and the Highways Act 1980, requires that the council has made reasonable provision for its upkeep and safety.

This strategy defines the commitment of all highway asset owners to deliver that outcome against the council's vision, key objectives, plans and priorities as set the in the **Nottingham City Council Plan 2025-29**.

Nottingham City's Council Plan sets out the vision, purpose and core missions for the period 2025 to 2029 with the purpose to deliver good and robust services for local people in a safe and clean city that people want to live, work and study.

To lead Nottingham forward, the economy will be revitalised to acknowledge, reflect and celebrate Nottingham's cultural heritage and to improve infrastructure and connectivity. Joined up partnership working will be prioritised to pool efforts and expertise and to engage more deeply with residents to deliver common goals and aspirations.

Nottingham City's vision, three core missions and eleven priorities is to provide a renewed council, delivering for local people and leading Nottingham forward in a flourishing, inclusive, and sustainable city where residents will thrive and prosper.

A renewed Council

a) Fostering Governance Transparency and Innovation

b) Financial Stewardship

c) Adopting a 'One Council' approach

Delivering for local people

a) Empowering Safe Communities

b) Providing Safe, Affordable Housing

c) Healthy and Safe Residents

d) Enhancing Education and Skills

Leading Nottingham forward

a) Revitalising the Economy

b) Celebrating Cultural Heritage

c) Improving Infrastructure and Connectivity

d) Championing Sustainability

A robust asset management approach to providing highways infrastructure service delivery effectively underpins the implementation of the council's vision, key objectives, plans and priorities and the delivery of all Council-run services and many externally delivered services to the City, it...

- Employs the principles of asset management
- Sets out the pre-requisites for an effective delivery of an asset management approach to the maintenance and management of the highway asset
- Provides the high-level understanding of the processes required to deliver an effective service
- Provides a value for money outcome by considering whole life costs, associated risks
- Aligns with the council's objectives, strategies and vision for its residents

The Council Plan is further underpinned by a more detailed **Performance & Delivery Plan** which outlines the key actions, activity and metrics that support the delivery of the three core missions.

1. Introduction

The Importance of the Highway

The local highway network is the largest and most visible asset the council is responsible for with an asset replacement value of approximately £1.8 billion. It is used every day by residents, businesses and visitors and it provides a vital contribution towards the economic, social and environmental well-being of the area. Carriageways and footways provide key transport links across the city and connects to areas both within and outside of the city's boundaries.

Nottingham City Council's highways asset comprises:

- 767km of road and 1,442km of footway networks
- 210 key bridges and structures
- 33,329 streetlights
- 144 traffic signalled junctions and 162 pedestrian signals
- 37,349 road gullies

In many places within the city the highway is a part of the character and quality of the local areas it serves and is key to the delivery of wider Council goals and objectives including economy, regeneration, social inclusion, education, employment, recreation and health.

In order to continue to deliver these aims and support local communities, it is essential the highway assets are maintained and managed effectively to deliver a safe, reliable and sustainable network appropriate for the user.

The **Highways Asset Management Policy** to which it is aligned, endorses an asset management approach to the management and maintenance the highway asset and how this approach aligns with and delivers the council's aims, goals, objectives and vision.

The strategy will cover a five-year period from 2025 to 2029 and reviews of both the policy and strategy will be undertaken annually to reflect changes in legislation, practice, the highways network and ongoing work in partnership with our stakeholders.

The strategy outlines how the **Highway Asset Management Plans, Processes and Procedures** will ensure a safe, reliable and sustainable highway by the optimal allocation of resources for the management, operation, preservation and enhancement of the highway to meet the needs of current and future customers.

Highways Asset Management Strategies/Plans will set out the aims and objectives for each of the main asset groups comprising:

- Carriageways, footways, cycleways & street furniture
- Structures
- Street lighting
- Traffic signals
- Public rights of way
- Arboriculture
- Drainage

- Road safety & traffic management
- Highways data
- Winter service

The Case for Asset Management

Asset Management has been widely accepted by central and local government as a means to deliver a more efficient and effective approach to the management of highway assets through longer term planning using better risk management and allocation of resources. It also supports the case for greater funding and better communication with stakeholders, facilitating a greater understanding of the contribution highway assets make to economic growth and the needs of local communities.

Asset management comprises a series of logical and coordinated activities monitoring performance, the risks associated with the asset and expenditure required to maintain them to maximise their value throughout their lifespan. Informed decisions are made on investment, focussed on long term planned activities which will reduce the need for costly and reactive short-term repairs.

This approach provides the best value for money and provides a highway environment that is safe, secure and accessible for all our customers.

The council's approach to Asset Management has been developed using the recommendations set out in the HMEP Highway Infrastructure Asset Management Guidance (2013) and aligns with the best practice recommendations set out in the Code of Practice 'Well-Managed Highway Infrastructure' (2016) which requires local highways authorities to adopt a risk based / integrated asset management approach to maintaining highway infrastructure.

These approaches are supported by incentivised approaches to highway maintenance funding, including the Department of Transport Challenge and Incentive Funds.

Highway Asset Management Strategy - Framework Model

It is important to understand how the strategy is supported by the plans, processes and procedures that define the activities required to manage and maintain the extensive range of highways assets that comprise the highway network.

The **Highway Asset Management Framework** establishes the context for highway asset management and the Guidance Document (2013) sets out the model by which the strategy is based, defined and developed.

The authority's **Asset Maintenance Management Strategy** is modelled so as to provide context and connectivity between top level governance protocols and operational service delivery processes in order to provide an asset service outcome which is fit for purpose and reflects the existing and future priority and functional needs of the council and its stakeholders.

The main strategic components of the model are given by the following entities:

- Governance
- Enablers
- Planning
- Delivery

The content of each strategic entity is shown in the 'Framework Model' diagram below:

Strategy Framework Model:

GOVERNANCE

- Key Governance Drivers
- Corporate Initiatives
- National Data Set
- Incentive Fund Self-Assessment
- Highways Code of Practice
- Whole of Gov't Accounts - Infrastructure Asset Valuation

PLANNING

- Data Management
- Asset & Network Inventory
- Network Heirarchy
- Service Levels
- Safety & Service Inspections
- Skid Management
- Winter Services
- Adverse Weather
- Lifecycling Planning
- Forward Works Programme

ENABLERS

- Leadership & Organisation
- Risk Management
- Asset Management System
- Performance Measures/Targets
- KPIs/Performance Monitoring
- Competencies & Training
- Environmental Management
- Collaboration & Benchmarking
- Communications

DELIVERY

- Annual Works Programme
- Design
- Works Delivery - Procurement

The following diagram illustrates the framework as a whole and provides context and an overview of the dependency of interrelated areas of work in delivering the strategic approach.

Nottingham City Council Vision
Local Transport Plan

Asset Management Planning Strategies	Highway Asset Management Policy	Asset Management Strategies
Highway Maintenance Hierarchy & Resilient Network Strategy	**Highway Asset Management Strategy**	Highway Asset Management Leadership Structure
Network Management Plan	**Highway Asset Management Plan**	Highway Asset Competency and Training Strategy
Highway Asset Risk Strategy	**Asset Strategies**	Highway Communications Strategy
Highway Data Management Strategy	Carriageways, Footways, Cycleways & Street Furniture Strategy	Safety Audit Policy
Highways Safety Inspection Manual	Structures Strategy	High Friction Surface Strategy
Highway Asset Service Levels & Performance Indicators Strategy	Street Lighting Strategy	Highway Asset Competency and Training Strategy
Highways Asset Lifecycle Planning Strategy	Traffic Signals Strategy	Highway Skid Management Strategy
Winter Service Plan	Public Rights of Way Strategy	Highway Environmental, Carbon Reduction and Biodiversity Strategy
	Arboriculture Strategy	
	Drainage Strategy	
	Road Safety and Traffic Management Strategy	
	Traffic Data Strategy	
	Highway Environmental, Carbon Reduction and Biodiversity Strategy	

GOVERNANCE

Governance considers the organisation and its political and stakeholder environment and the context within which Nottingham City Council's highway services are delivered.

The key drivers of Governance for the HAM Strategy comprises of the following entities:

Key Governance Drivers for Highway Asset Management:

- Supporting Council Vision / delivering Council Goals and Objectives
- Providing a safe and reliable network
  - Complying with legal duties including Highways Act 1980, Traffic Management Act 2004 and Equalities Act 2010
  - Meeting national policy, guidance and codes of practice
- Managing stakeholder expectations
- Long-term improvements to the condition of the network
- Understanding future demands on the highway assets
- Making the best of financial constraints
- Delivering efficiency and value for money
- Enabling whole government accounts and local financial reporting

Highways Code of Practice

The **Highways Code of Practice** is a key governing guidance document that provides direction and guidance for the development of the HAM Strategy. It is designed to promote the adoption of an integrated asset management approach to highway maintenance based on the establishment of local levels of service through risk-based assessment.

This strategy sets out Nottingham City Council's approach to meeting the new **Code of Practice – Well-managed Highway Infrastructure 2016**. It references a number of documents which will complete the framework and processes enabling the highway assets to be maintained using a risk-based lifecycle approach to future maintenance.

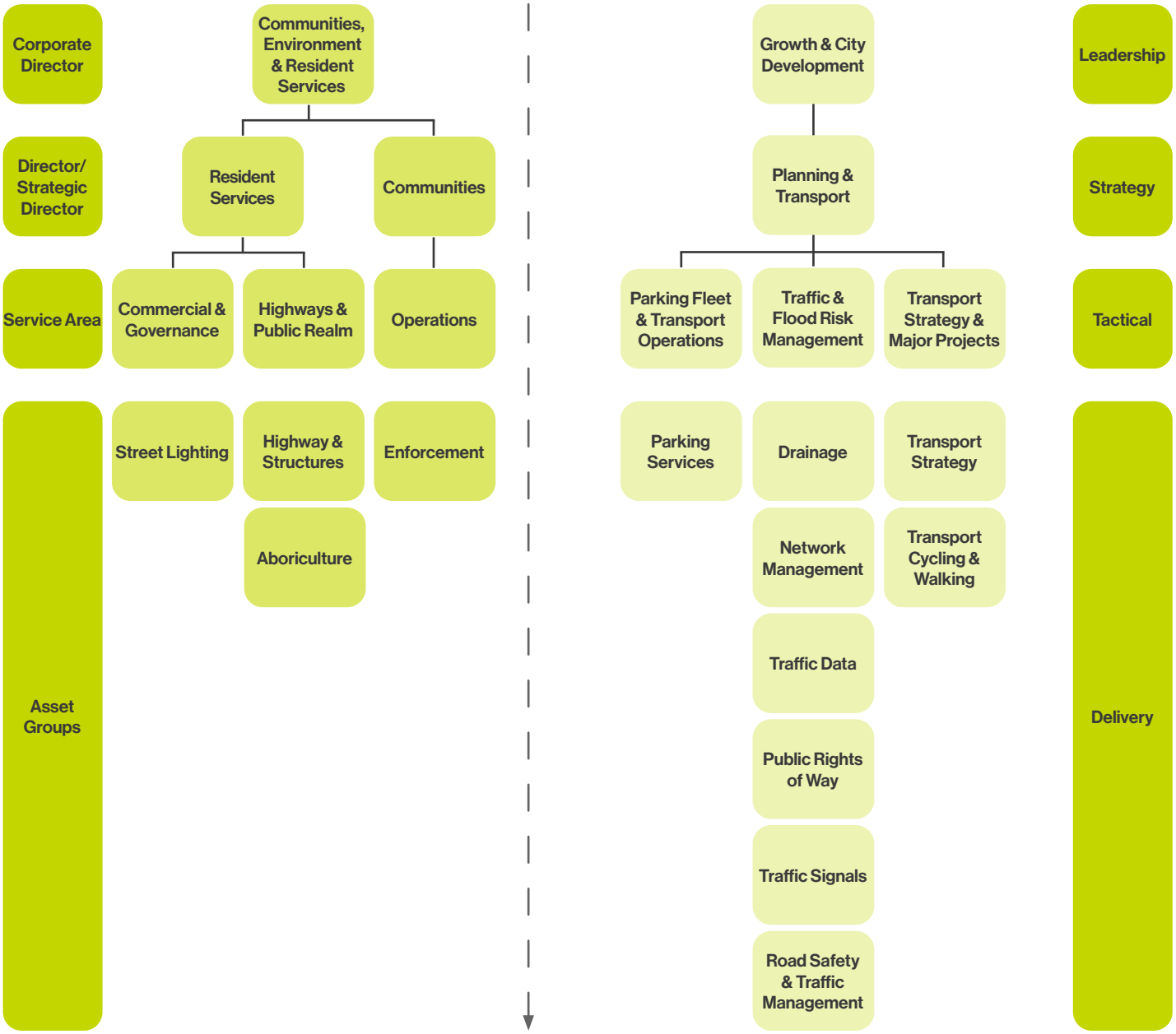
ENABLERS

Asset management enablers describes the entities and functions that support the implementation of the **Asset Management Framework**.

Leadership and Organisation

Leadership has a strong governing and enabling influence on the culture and behaviour of all organisations. Clear political and operational direction and priorities will ensure that both significant and relatively minor decisions taken across the organisation support a consistent approach to delivery of the business objectives. Such decisions will include appropriate investment decisions to meet the asset management strategy.

Strong leadership is embedded within the highways division and is led and supported by the following key positions within the Highways Management Structure:



A cross-cutting role to support the development and delivery of asset management across highways support services is based within Highway & Public Realm Services.

It is the responsibility of the asset owners to ensure that plans, processes and procedures are implemented in line with the asset management policy and strategy.

Risk Management

Risk management is the cornerstone of delivering the council's risk-based approach. It promotes a full risk assessment to be undertaken on all facets of the highways service delivery, assessing the risk, the likelihood of it occurring and the potential consequence. This enables the optimal allocation of resources for the management, operation, preservation and enhancement of the highway to be determined to meet the needs of current / future customers and tempers the potential to increase costly reactive solutions.

The active use of risk management in the assessment of safety defects undertaken during safety inspections of the highways assets makes use of a real time 'on site' assessment. This approach prioritises those with the most serious consequences with the remaining defects being scheduled for rectification through planned works, reducing costs and ensuring a more effective and managed repair. Safety inspection risk assessments are based on:

- Correct evaluation of the risk posed to highway user by defects or deficiencies in the highway asset
- Ability or effectiveness to manage the risk within available resources
- Value for money

Highway safety inspectors are currently provided with additional training in risk management.
A risk register has been developed and populated for the delivery of all highway services and has prioritised the risks for management, mitigation and / or resolution in the **Highway Asset Risk Strategy**.

Further work is in hand to assess the risks associated with key asset groups and assets to identify a programme of risk-based maintenance. and will be a key factor in determining the most effective programme of planned maintenance.

Asset Management Systems

Given the diversity of highways assets and their individual maintenance requirements, the council's current asset management systems comprise a number of separate systems that effectively manage asset groups, i.e. structures, highways and footways, street lighting, traffic signals. These individual systems will be linked through common referencing of asset and association with a common highway network allowing enabling an integrated approach.

Data relevant to the highway network and its Asset Register is held in the Confirm / UKPMS Asset Management System used by many local councils to manage highway and transport assets, customer services, maintenance and performance.

Confirm and other Performance Management systems are used to manage and monitor performance across the Highways Division.

Performance Measures and Targets

Performance measures, targets and the current performance data is used at different levels to ensure that appropriate action is taken to ensure an environment of continuing improvement. The council already has leadership and management led performance measures and targets used to manage the performance of the service. Measures and Targets are set at three levels to ensure that they are most appropriate to the Strategic, Tactical and Operational delivery of the service:

- **Strategic** (Council / Department) – high level understanding of the performance of the network audits highways assets. Members, department directors and department management teams, much more about general direction and trends.
- **Tactical** (Department / Division) – an understanding of asset group and key service delivery area performance for discussion at highways management team meetings.
- **Operational** (Division / Group / Team) – a granular and more specific understanding of the performance data which affects the daily outputs of staff, reasons for poor performance and look to make improvements through training support, changes to delivery processes or mechanisms.

Understanding performance is key to the management of the highway asset and a value for money approach. Levels of Service, Performance Measures and Targets will be set out in the Performance Management Frameworks appendices to the **Highway Asset Service Levels & Performance Indicators Strategy**.

KPIs, Performance Management and Monitoring

The measurement of performance is key to the efficient effective and value for money management of the highway assets.

The council already measures performance and has a number of KPIs associated with the safety inspection of its assets. A Highway Asset Service Levels and Performance Indicators Framework is used to ensure all highways assets are managed efficiently and effectively. Progress is continually reviewed against this Framework; daily, weekly, monthly and annually to ensure that performance is at the forefront of the council's stewardship of the highway network.

The council will be developing further performance measures targets and KPIs to monitor the effectiveness of this **Highways Asset Management Strategy**.

The council will be developing a Performance Clinic approach to ensure frequent performance reviews are undertaken with the asset managers and that strategies are put in place to ensure performance targets are met and these will be set out in the **Highway Asset Service Levels & Performance Indicators Strategy**.

The council also participates in national highways and transport satisfaction surveys to understand the levels of satisfaction with the council's service delivery, the factors of importance to them and the key issues of users. The council makes active use of the information returned through resident surveys, satisfaction surveys and focus groups, as well as customer enquiries linked to the reporting of defects, to actively challenge and amend its processes to be more effective and meet stakeholder expectations.

Survey responses also help in the targeting and publishing of information clearly ensuring customers are well informed about the performance and processes of services and influences the council's Levels of Service and priorities.

Competency, Skills and Training

Competent, well-trained staff will be responsible for delivering an asset management-led delivery of the strategy and the council will ensure that they have the appropriate skills and that relevant training and accreditation are in place. Generic asset management and more bespoke attributes and skills required will be identified in competency frameworks for both individuals and disciplines and assessed using a skills matrix, reviewed during the annual review process. Support and / or training requirements will be identified and prioritised through the review process.

The council operates a training plan for its operational staff which provides clear guidelines as to the qualifications and toolbox talks required for the safety and effectiveness of the operational workforce. It also provides an annual appraisal for all staff to discuss targets and training opportunities. The development of a more framework-based approach to assessing the competencies, skills and training requirements of those responsible for the strategic and tactical management of the highway assets is currently being developed. These strategies, plans, processes and competency frameworks are set out in the **Highway Asset Competency and Training Strategy**.

Environmental Management

Managing an asset as diverse and extensive as highways assets, particularly where the assets often reside in both urban and rural areas, and conservation areas requires a sound environmental management system which regularly audits the environmental risks posed by the asset. At present the

council has an ISO14000 environmental management accreditation to manage their environmental responsibilities although many of the environmental issues were linked to the health and well-being of the residents of Nottingham City and the council's workforce are included in regular Health and Safety Inspections. These existing processes will be developed to take account of additional risks including pollution, noise, smell, dust, effects on the watercourse or the health of adjacent agricultural / livestock, the management of carbon use in plant and materials and ecology including flora and fauna, as part of a **Highway Environmental, Carbon Reduction and Biodiversity Strategy** to complement and provide plans and processes to support the existing Environmental Policies and Management Systems.
To ensure a practical solution can be adequately resourced it is planned to consider an integrated approach to Environment, Health and Safety and Property Inspections and Management.

Collaboration, Knowledge Sharing and Benchmarking

Regional Service Improvement Group are a useful forum for adjacent/peer authorities and risk management authorities to share knowledge and good practice. The council has been an active member and many of the processes that ensure the implementation of this strategy have been developed in conjunction with other local authorities within the Regional Service Improvement Group in order to adopt best practice initiatives and promote continuous improvement.

The council also benchmarks its services against the delivery of similar services in the cities of Derby and Leicester and meets regularly to discuss and share good practice.

Communications

For this strategy to succeed it needs to be communicated clearly both internally to ensure maximum value and externally to ensure a shared understanding of the approach and where works are planned. The council's Highway Communications Strategy sets out the council's stakeholders, how dissemination and receipt of information will be managed and includes a matrix defining levels of communication informing stakeholders of planned and reactive work relevant to the network hierarchy.

PLANNING

Asset management planning describes the key activities and processes for asset management planning and gives advice on how these should be applied to highway assets.

Data Management

Good asset management relies on quality, accurate, appropriate and current data in order to inform effective planning and decision making. The council has developed a **Highway Data Management Strategy** which outlines the approach to managing all data associated with the highway assets and network and the importance or regular data audits and cleansing to ensure data reliability. It sets out a hierarchy for data using a risk management approach to identify business need (importance). It also sets out processes to be followed by data owners with regards to the; accessibility and currency, data collection, frequency of collection and updating, data management and disposal.

Asset & Network Inventory

Good asset management and service planning relies on an understanding of the existence, extent, quality, location, condition, value and maintenance requirements of its highway's assets. Asset inventory and attributes providing data to assist in:

- the management of the asset
- the programming of planned and reactive maintenance
- asset history, (including interventions, service history, costs, inspections and customer enquiries)
- the provision and upkeep of the highways network asset register
- the strategic planning of highway works and services

The council has completed a gap analysis of the accuracy, completeness and currency of its asset inventory and as referenced in the Risk register established within the **Highway Asset Risk Strategy** established a programme of data audit, capture and update as set out in the **Highway Asset Risk Strategy**.

Current data associated with the following assets is held in the County's asset management systems and is regularly audited and updated using video, service inspections and a rolling programme of asset capture surveys:

- Carriageway & footway - location / condition Annual Engineers Inspection Survey, SCRIM (skid resistance survey) Carriageway & Footway widths
- Street lighting - location / condition
- Structures - location / condition
- Improvement and Resurfacing Schemes (digital / paper)
- Common Survey Network

Network Hierarchy

The network hierarchy recognises that maintenance and management of the highway's assets based on the current classification of A, B, C and Non-Classified Roads, however it fails to recognise:

- the volumes of traffic using particular roads
- their importance in delivering the council's aims and objectives
- the consequences of failure of certain routes or items of critical infrastructure
- the impact on the economy and communities

The council has therefore developed a **Network Maintenance Hierarchy and Resilience Strategy** based on both network usage and the importance and limitations of particular routes and assets across the network. It allows differing levels of service and maintenance strategies to be applied to the hierarchy of the network ensuring the most effective treatments are employed appropriate to the use and importance of the roads in question and allows for the integrity of routes used by greater volumes or goods vehicles to be maintained to ensure the long-term resilience of those parts of the network.

At its highest level the network hierarchy identifies a 'Resilient Network' of key routes serving the businesses, communities, services and forming links both nationally and between adjoining authorities. These routes will be given priority in planned and reactive maintenance and will be maintained in the event of adverse weather or other emergent events. The resilient network includes a number of critical assets where failure would result in significant impact to the local economy, and these have been identified and prioritised in the **Highway Asset Risk Strategy**.

Service Levels

Levels of Service provide a simple means of describing the standard to which highways assets will be managed and maintained. Service levels can identify what the service might look like, what they might expect in terms of performance, safety and reliability and will provide the council a standard to measure their delivery against, helping promote a more efficient and effective delivery of the service. Levels of Service must take account of statutory duties and requirements, national and regional guidance, the volume and type of traffic using the network and the risk to the service user and the authority.

Levels of Service will also consider the council's objectives in ensuring safety, serviceability and sustainability and these are set out in the table below:

Key Principle	Aim	Level of Service	Outcomes	Measures
Network Safety	Managing risks to users of the city's assets	All highway assets are in a safe condition and contribute to the reduction of associated road / traffic casualties	Meeting statutory obligations	SCRIM (Skid Resistance)
			Meeting users' safety needs	Accidents Near misses Claims
Network Serviceability	A network that meets local, regional and national needs	Current network accessibility and condition maintained and improved where necessary so as to meet the council's goals and objectives	Availability and reliability	Roadworks Congestion
			Network integrity	Condition Resilience
			Maintaining reliability	Claims
			Resilience to adverse weather	Closures
			Accessibility	Pedestrians Cyclists Disabilities

Key Principle	Aim	Level of Service	Outcomes	Measures
Network Sustainability	An affordable, environmentally sensitive and effectively managed network	An improving and long-lasting value for money supported maintenance and operation the highway network over time, that whilst supports the environment and local communities	Minimising cost over time	Treatment lives
			Maximising effectiveness of the council's maintenance processes	Claims £££s / m2 Reactive £££ / km
			Maximising value to the community and economic prosperity	Business development House building
			Maximising environmental contribution	Biodiversity Carbon reduction
Customer	High level of customer satisfaction	Ensure appropriate, informed and timely customer responses to network enquiries	Customer satisfaction through communication, consultation and information	Satisfaction Surveys Claims Enquiries / Defect Reports

The council will assess the delivery of the Levels of Service based on the following table:

Excellent	Good	Fair	Poor
Meets or exceeds aims, levels of service and outcomes.	Meets current aims, levels of service and outcomes.	Does not meet all reasonable aims, levels of service and outcomes.	Does not meet aims, levels of service and outcomes.

More detail of the Levels of Service associated with each of the highway's asset groups and the associated performance targets can be found in the **Highway Asset Service Levels & Performance Indicators Strategy**.

Safety Inspections

Safety inspections provide a frequent assessment method of assessing, planning and reacting to ensure the safety of highways assets and in particular the risk of a defect associated with a highway's asset affecting network users.

Safety inspections are conducted to identify the reactive maintenance needs of the asset and are undertaken for highway assets within the following main asset groups:

- carriageways including on-road cycleways
- footways including shared use cycleways
- highway drainage
- traffic management and management of electronic traffic equipment

- street furniture including pedestrian & vehicle barrier/restraint system
- non-illuminated bollards & traffic signs
- highway trees and verges
- road markings
- obstructions (including issues with trees and vegetation)
- obscured visibility
- spillage or debris on the highway network
- overhead wires in a dangerous condition
- missing or defective ironwork and other apparatus that is the responsibility of public utility companies - directed to the relevant utility company for action as soon as possible, under section 72 of the NRSWA 1991.
- compliance with "Specification for the Reinstatement of Openings in Highways" - Code of Practice

The council is the Local Highway Authority and as such has a statutory duty to maintain highways maintainable at public expense under Section 41 of the Highways Act 1980.

Safety inspections identify, assess, record and prioritise the repair of defects which may present an immediate danger or significant inconvenience to users of the highway and include the condition of all highway assets. Safety inspections also identify defects of a lesser risk for potential inclusion in the identification of future planned maintenance or to promote a more detailed investigation.

The council's response to defects identified during safety inspections are risk assessed in terms of their significance, i.e. the likely impact and the probability of an incident arising from the defect.

The council's network hierarchy, based on importance and usage of routes and not dependent on the current road classification system is key to the delivery of the council's risk-based approach to safety inspections. The council has set its own standards for the frequency of highway safety inspections, and these have been determined using the network hierarchy, with the most used having the highest inspection frequency.

Footway and cycleway hierarchies often differ from adjacent carriageway hierarchies and therefore safety inspection frequencies for carriageways, footways and cycleways may vary and are specified in the **Highways Safety Inspection Manual**.

Reactive Maintenance Repairs

Reactive highway maintenance repairs that are identified from the safety inspections are carried out by the council's 'in-house' contractor and are generally undertaken in response to instructions from:

- the highways / safety inspector
- the maintenance manager / asset owners of the asset groups
- public enquiries / reports

However, there are occasions when repairs are undertaken on a programmed find and fix basis, often after particularly adverse weather events.

Reactive patching and minor repairs will be undertaken to ensure that surfaces are maintained in a safe condition.

In conservation areas, or where there is a need to protect and retain historic surfaces and features, temporary repairs will be programmed for a permanent repair on a 'like for like' basis.

Key to the management of reactive repairs will be the completion of records that identify:

- the gang which undertook the repair
- how the repair was affected
- when, date and time of repair
- a photograph of the completed works
- GPS location

The council is working towards closer monitoring of Reactive Maintenance Repairs to provide information to support planned maintenance as well as to reduce in the long term.

Service Inspections

In addition to safety inspections the council has a programme of 'Service Inspections' that assess the condition of the highways assets to understand the network condition, its financial needs and also to inform on planned and local routine maintenance programmes in support of delivering network sustainability.

Service inspections are undertaken in order to:

- understand the asset condition
- identify assets requiring planned, preventative and routine maintenance
- plan potential interventions / treatments required to:
  - prevent further deterioration
  - or restore the assets functionality
- identify the required finance
- inform planned maintenance programmes

Service inspections are undertaken for assets within the following main asset groups:

- carriageways (including on-road cycleways)
- footways (including shared use)
- structures
- street lighting
- trees

The council's programme of service inspections, assessment and recording of asset condition provides a framework for identifying planned maintenance of the highway to maintain it in a safe and serviceable condition.

Service inspections are undertaken using the network maintenance hierarchy, based on importance and usage of routes and not dependent on the current road classification system.

The council has set its own frequency of service inspections and these have been determined using a risk-based approach based on the network maintenance hierarchy, with the most used routes having the highest inspection frequency.

Skid Management

There is an established relationship between wet-road skid resistance and the frequency of skid related accidents and significant reductions in accidents can be achieved by improving skid resistance at some wet-road accident locations.

Skid surveys are carried out using a Sideways-force Coefficient Routine Investigation Machine (SCRIM) and are referenced to the council's survey network providing an assessment of skid resistance on wet roads. The skid resistance of the road surface is then compared with minimum Investigatory Levels assigned to the road network.

All 'A' classified roads are surveyed, the remaining 'Classified / Un Classified' will be investigated where accident clusters are identified.

The council's approach to Skid Resistance is set out in the **Highway Skid Management Strategy**.

Winter Service

In the event of severe weather warnings, the council will identify appropriate resources to ensure an efficient and timely response.

Should weather forecasts or ice monitoring stations indicate the potential for ice forming on the cycle, footway and / or road surfaces, then precautionary salting will be carried out on a pre-consulted network to prevent ice forming or light falls of snow settling.

- Primary highway network – pre salting
- Secondary highway network – post salting

The amount of salt used will be the minimum possible to achieve adequate treatment so as to minimise the effects on the environment.

Salt bins, where provided, will be maintained as set out in the **Winter Service Plan**.

Adverse Weather

In recognition of climate change, in particular the increased risk of flood, heavy rain or strong winds, winter and increasingly hot summers, and in view of the role of the council as both Highway and Lead Local Flood Authority, the council is developing processes to ensure the availability, reliability and safety of the highway network during:

- intense / prolonged rainfall
- winter ice and snow
- groundwater, surface water (pluvial) and river (fluvial) flooding

Lifecycle Planning

As recommended by current national guidance and good practice, the council makes use of lifecycle planning to identify:

- the likely maintenance requirements of highway's assets
- the budgetary requirements to achieve this

Lifecycle planning considers the whole life of the asset and the costs of maintenance interventions over that period, taking account of:

- the treatment lives of maintenance interventions
- the relative cost of treatments
- the levels of service required

This approach enables alternative maintenance strategies to be evaluated based on:

- meeting levels of service
- fully funded and available budgets
- required service lives

To ensure the maintenance undertaken is the most effective and timely for the asset, asset group and the users of the highway network within the available budget. The council's approach to lifecycle planning is set out in the **Highways Asset Lifecycle Planning Strategy**.

Forward Works Programme

This strategy will support the development of a 1, 3, 5, and 10 year forward works plan / 'strategic' budget to be identified for all transport assets.

It will also provide clear indications as to the nature of planned maintenance required to maintain the network, i.e. preventative, restorative, resilient by considering asset condition and lifecycle costs against the provision of the desired levels of service, and ultimately the available budget, and ability to deliver the required maintenance.

The **Forward Works Plan** is currently focused on the carriageway asset group, with a developing footway, road gullies, structures and traffic signals programme. The remaining assets comprising, pedestrian barriers and vehicle restraint systems are being identified and surveyed to incorporate in time.

The Forward Works Plan will:

- provide an indicative work bank that can be prioritised in the council's annual service / works plan within the available budget
- show the individual asset group and collective works required over the 1, 3, 5 and 10 year forward works plan
  - identify the levels of backlog present
  - how these will continue to grow if expenditure does not meet the plan requirements
- and enable the timescale of the plan to be adjusted to best tackle the maintenance required to reduce the backlog and provide the agreed Levels of Service.

Annual scheme priorities and feasibility may change over time e.g., subject to winter weather degradation effects, cross-boundary/asset maintenance considerations, site availability, impairment, critical infrastructure, political interventions, utility works, traffic management, etc. The prioritisation of the schemes identified within the forward programme will be annually reassessed and determined reflective of the available budget, current condition, feasibility constraints and the prevailing risk.

Asset / Cross-asset Prioritisation and Budgeting

The council recognises that the current budget allocation is insufficient to manage the existing and growing level of backlog and to support the demands of a lifecycle planned approach to the maintenance of the highways assets.

It has reviewed the existing classified network and created a more manageable 'maintenance hierarchy' which reflects the importance of routes and their use and takes a risk-based approach to the allocation of levels of service and associated performance

However, despite taking these actions, it remains impractical to rely on individual asset group prioritisation which effectively delivers a bit of everything, but not necessarily what is required, i.e. prioritising carriageway maintenance by reducing maintenance to structures where the need may be greater but the individual costs higher.

Consequently, a maintenance strategy of 'cross asset prioritisation' will be utilised to understand the budgetary and maintenance requirements of all highway assets and how best to maintain the network in a safe, reliable and sustainable manner. Cross asset prioritisation relies on each asset owner understanding the maintenance needs of their asset stock and planning how this can be managed as budgets rise and fall to meet the challenging needs of other asset groups. Whilst carriageway and footway maintenance accounts for the largest annual expenditure requirements, the replacement of bridge decks, bearings, parapets and supports often represents a significant single asset expenditure requirement in a year.

To ensure all assets are maintained to deliver a safe and reliable network, future programmes and budget requirements for all asset groups will be identified to assist in long term maintenance budgeting, planning and cross asset prioritisation. This holistic approach is fundamental to Nottingham City Council's **Highway Asset Maintenance Management Strategy**, and it provides the strategic platform from which the priority maintenance needs of the network are identified and launched.

Annual Works Programme

The declared and publicised priority annual works programme is subject to a consideration of delivery constraints which shall determine the order in which the schemes are undertaken. The sequence of undertaking the approved annual works programme is determined by various considerations.

- the availability of appropriate engineering design and contractor resources
- site availability
- traffic management constraints
- seasonal conditions for weather-related products and processes
- planned and reactive utility works
- approvals from external operators e.g., Network Rail, Environment Agency, Canals and River Trust, etc.
- cross-boundary and cross-asset maintenance works programmes

Design

All designs will be undertaken based on an outcome specified by the maintenance manager / asset owners. They will include an assessment of the options to deliver the required outcomes based on the risk of each improvement option / treatment. Those responsible for the designs will liaise with those responsible for construction to ensure the most effective designs and contractual arrangements are in place to secure the maximum effectiveness, longevity and value for money of design solutions.

Works Delivery & Procurement

The operational delivery of the highway service is undertaken by a mixture of “in-house contractor” and external contractors procures through a suit of internal frameworks.

Whilst a significant level of work is delivered ‘in house’ the delivery frameworks are available to assist in achieving economies of scale for the delivery of design and construction services. This mixed approach ensures that annual budgets for highways assets can be delivered ‘in year’ in the most efficiently, effectively and offer value for money.

IMPROVING THE ENVIRONMENT

Environmental

In addition to the physical aspects of the maintenance strategy, the council also considers various environmental aspects in support of strategy implementation as follows:

- Highways plant efficiency review including exploration of electric equipment use
- Highways fleet/vehicle annual efficiency review (in collaboration with Fleet Services). Includes pursuing use of e-bikes
- Reduce carbon impact in the design, delivery of highway improvement and maintenance schemes

Safety Audit

The council has an active approach to the safety audit of highways works, both those improvements promoted by the council and those to facilitate development which are often developer funded. Safety audits will be undertaken based on a risk assessment of the location, usage and the likely effects of the improvements proposed to the environment.

Decluttering

The council has an active decluttering policy to ensure that highway assets are either removed or scheduled for non-replacement where they are no longer required or have been superseded.

Opportunities will be taken where highways improvements, maintenance interventions / treatments or service inspections are undertaken to assess highway assets and remove them where they are not required for safety reasons or to reduce the long-term maintenance liability. Highways assets in conservation areas will be reviewed in association with those responsible for the environmental management of the immediate area.

Carbon

Measures will be employed to reduce the council's carbon footprint in the maintenance of the highways assets employing measures to:

- Make use of cold mix carriageway and footway treatments
- Recycled and recyclable materials
- The use of low carbon footprint products, materials and processes
- Fuel efficient fleet and tools
- Efficient routing of services, including reactive management repairs, inspections and monitoring, winter service, etc.

Air Quality

Nottingham is one of five cities in England required to introduce **Clean Air Zones** and was the first to have its air quality plan approved by the Government.

In preference to a charging approach, Nottingham City has elected to pursue a "Go Ultra Low" project converting buses, taxis and refuse vehicles to low emission models.

SUMMARY AND CONCLUSION:

Strategy Outcomes

The overall strategy promotes an integrated asset management approach to highway maintenance, and it provides and informs on:

- long-term improvements to the condition of the network
- a case to support funding opportunities
- better communication with stakeholders

The delivery of the strategy is dependent on funding and consequently the strategy outcomes will be based on the following headline approaches:

- **Preventative** – management of the assets to prevent further deterioration through a combination of planned and reactive maintenance, whilst maintaining a safe, serviceable and reliable network. This strategy often relies on a more reactive approach.
- **Restorative** - management of the assets to prevent further deterioration and where possible restoring assets their original condition.
- **Resilience**– management and maintenance of the assets, returning all assets to their original condition and increasing the resilience of assets where there are clear lifecycle and network reasons. This strategy relies on a more planned approach, promotes sustainability and significantly reduces the need for reactive maintenance.

In practice a combination of these approaches will be utilised to facilitate annual asset maintenance management needs at a strategic level.


BUS
LANE