Bracknell Forest Council

Highway Infrastructure Asset Management Plan

2022

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1. Introduction

1. Asset management is a means to deliver a more efficient and effective approach to the maintenance of highway infrastructure assets through long-term planning, ensuring that standards are defined and achievable for available budgets. It supports making the case for funding and better communication with stakeholders, facilitating a greater understanding of the contribution highway infrastructure assets make to economic growth and the needs of local communities.

2. This HIAMP sets out the vision for improvements in the management, operation and funding of the Bracknell Forest highway network. The Council is committed to a consistent, proactive approach, managing the unique maintenance impacts of **New Town inheritance** by developing our investment strategies and prolonging the life of our entire highway infrastructure. Our approach will seek to make the most efficient use of maintenance funding by prioritising timely interventions, whilst targeting further relevant funding opportunities where available.

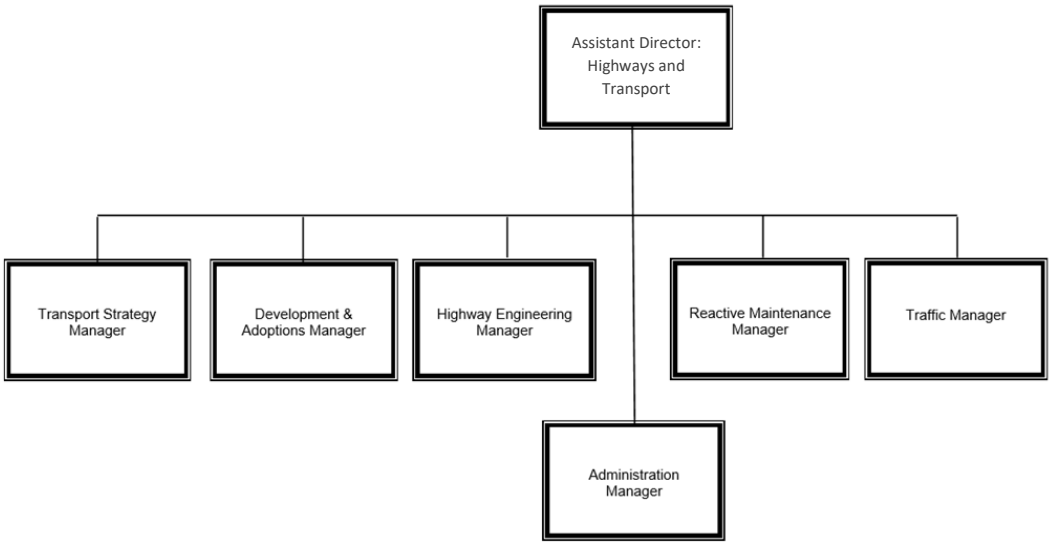
Bracknell 'new town' under construction in the 1950s. Whilst the characteristic planned dual carriageways, roundabouts, subways, cycle routes, and distributor roads of the town could still be considered modern in relative terms, much of the infrastructure is now over 60 years old, presenting unique maintenance challenges. Meanwhile, the towns of Crowthorne and Sandhurst, and the Borough's surrounding villages are generally built around more historic street settings, often requiring a different, more sympathetic approach to highway maintenance.

3. The HIAMP is a strategic document which outlines how the asset management system will maximise efficiency, deliver value for money and identify key asset objectives for the plan period. This HIAMP recognises the most up to date standards including the UK Roads Liaison Group (UKRLG) Highways Efficiency Maintenance Programme's (HMEP) Highway Infrastructure Asset Management Guidance, developed by the Department for Transport (DfT) in partnership with the Local Government Association (LGA).

4. The highway is the most valuable publicly owned asset managed by Bracknell Forest Council. The HIAMP encompasses all parts of the asset and sets out an approach that will consider and prioritise activities to deliver a comprehensive and effective asset management service. It balances the preservation and enhancement of the highway network with the best use of resources for the delivery of services to Bracknell Forest residents and to users of the highway network.

2. Leadership & Support

1. Leadership and commitment with respect to the asset management systems is critical to deliver the levels of service and asset objectives defined by this HIAMP.
2. Responsibility for managing the highway asset rests with Bracknell Forest Council and the organisational structure, as shown in the structure chart below, reflects the responsibilities for highway policy development and delivery of highway network activities.
3. The Corporate Management Team is responsible for ensuring the resources for the asset management system are available and for ensuring the effectiveness of the asset management system.



Highways and Transport Division organisational structure

4. Operation and control of planned work is managed by the Assistant Director: Highways and Transport, with specialist support from the engineering management team. The asset management process also involves external companies which provide key specific support. Key term-contractors and suppliers include:-
    - Ringway Infrastructure Services – highway service term contractor
    - Siemens – traffic signal term contractor
    - Pitney Bowes – CONFIRM asset register
    - Pavement Testing Services – highway condition surveys
    - Atkins – highway structure condition assessments
5. Where required, significant one-off projects are procured on a project by project basis in accordance with the Council's procurement procedures. Competency of all outsourced activities and the awareness of the HIAMP and asset management system is ensured. Appropriate insurance and accreditation will be held by third parties

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3. Stakeholders

1. The Council is committed to ongoing engagement with residents and other key stakeholders in the delivery of services and will ensure regular opportunities to review and improve performance. It is recognised that feedback informs decision-making and service delivery and so stakeholder engagement and feedback forms part of the highway asset management system.

2. The Council publishes funding allocation and work programme reports along with resultant approval decisions by the Executive. Customer feedback through enquires, complaints and compliments are monitored to ensure service standards are maintained and improvements identified. Delivery of targeted communication plans are used to present and explain the Council's highway engineering work.

3. Regular formal and informal briefing sessions on the HIAMP for relevant staff will ensure that individuals can have an impact on the achievement of the asset management objectives through awareness of:

    - The asset management policy;
    - Their contribution to the effectiveness of the asset management system;
    - Their work activities, associated risks and opportunities;
    - The implications of not conforming to the asset management system requirements.

4. The HIAMP will also be a relevant reference document for designers in the preparation of highway improvement schemes.

4. Document Control and Review

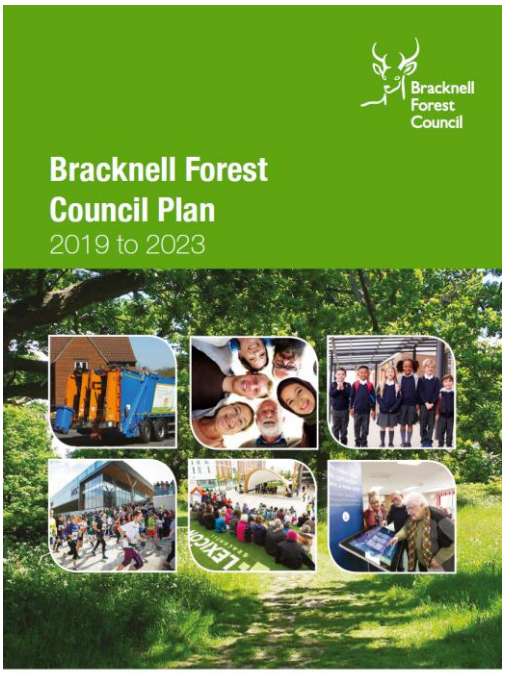
1. The HIAMP is displayed on the Bracknell Forest Council website for public access. The document will be reviewed regularly by the Assistant Director: Highways and Transport and any interim and minor amendments endorsed by the Executive Member for Planning and Transport.

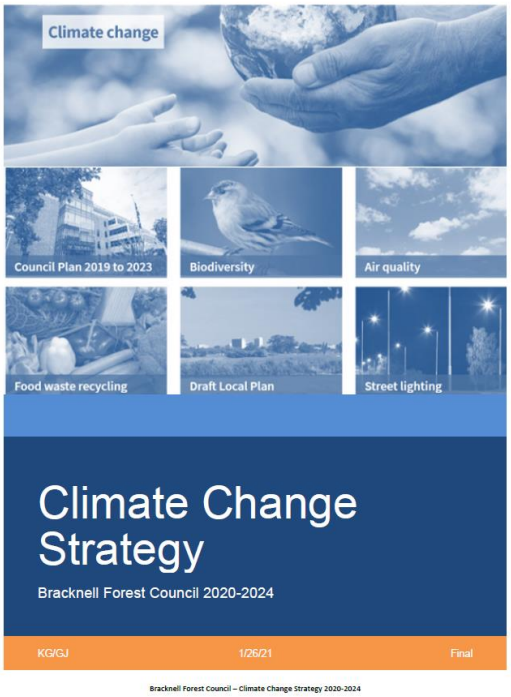
2. An annual review will consider:

    - Performance of the asset over the previous period including condition trends;
    - Changes in process and issues relevant to the management system;
    - Contractor and supply chain performance;
    - Industry developments;
    - Opportunities for continuous improvement.

3. In addition, a more comprehensive review of the HIAMP will be undertaken periodically (typically every 5 years) and formally approved by the Council. This review will consider impacts upon the asset management system with regard to:

    - Forward financial planning based on Government grant allocations;
    - Review of Government policy and guidance on asset management ;
    - Assessment of emerging highway risks;
    - Assessment of asset condition against expectations;
    - The Council Plan;
    - Links to wider strategies, e.g. Climate Change, Public Health, Transport.





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5. Assets Covered by the HIAMP

1. The HIAMP applies to the whole of the highway network and covers the full range of asset components that exist within Bracknell Forest Council's responsibility. These assets are detailed in the table

Key Asset	Quantity			
	A Class Roads	B Class Roads	C Class Roads	Unclassified Roads
Roads – Total length (Km)	48.7	42.7	44.5	323.9
Roads – Urban length (Km)	18.3	31.4	39.0	291.9
Roads – Rural length (Km)	30.4	11.3	5.5	32.0
Roads urban – Area (m2)	209,457	212,663	385,821	1,277,889
Roads rural – Area (m2)	337,459	96,485	70,917	135,216
Central res. – Length (Km)	14.839	0.598	0.229	0.038
Central res. – Area (m2)	37,097.5	1,495.0	572.5	95.0
Footways/Cycle tracks (Km)	33.618	57.542	48.123	395.648
Footways/Cycle tracks (m2)	60,774	118,234	112,186	755,454
Kerbs – length Km	121.078	80.655	82.224	476.800
Gullies - No.	2,808	3,023	2,808	12,959
Lines hatched – length (m2)	13,522	22,594	13,204	40,918
Longitudinal lines - (Km)	83.432	54.652	40.758	138.725
Road Markings - No.	2,314	2,097	871	4,998
Veh. Safety Fence - (Km)	2.461	0	2.876	0
Ped. Guard Rail - (Km)	5.954	0.851	0.998	6.004
Signs (non illum) – No.	1,361	859	1,474	4,998
Signs (illuminated) – No.	1135	514	242	533
Bollards – No.	389	632	358	448
Lighting columns	1761	1727	450	10200
Traffic Signals (heads)	603	101	0	112
Structures – Road Bridges	34			
Structures – Underpass	74			
Structures – Footbridges	41			
Structures – Culverts	13			
Structures – Retaining wall	19			
Structures – Gantry/CCTV	12			

2. The HIAMP covers the activities and processes associated with service delivery relating to the following:

    - Street lighting and electrical asset testing
    - Carriageway and footway condition assessment
    - Structural testing and inspection
    - Drainage network condition assessment
    - Electrical asset replacement programmes
    - Planned carriageway and footway improvement schemes
    - Maintenance of highway structures
    - Highway drainage maintenance and improvement works
    - Maintenance of street furniture

3. The HIAMP makes reference to those items within the street that are the responsibility of third parties, such as utility providers, but nonetheless have implications for the quality of service provided by our highway network. Collaboration with utilities including advanced work programming and inspection are in place to maintain the integrity and life of the highway infrastructure assets.

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6. Knowledge of the Asset

1. To develop an asset management approach, with associated business processes and systems, it is essential to have a thorough and up-to date knowledge of the assets involved. This knowledge includes, but is not limited to:

    - The extent of the highway network itself;
    - The extent and detail of every asset type and component present within that highway network;
    - Information about the quality and condition of each asset component, and the quality of service that is provided;
    - Information about the historical life-cycle of the assets, including age and dates of major maintenance interventions and improvements;
    - The anticipated deterioration path for the asset.

2. It is key that asset data for the network is stored within management information systems and that the asset data is updated on regular basis.

3. Data sets include:

    - Asset Inventory
        - Carriageways, footways, cycle tracks, structures, highway lighting, drainage street furniture, electrical assets and traffic signals
        - Asset construction detail
        - Asset age and location

    - Asset Condition
        - historical
        - current
        - projected

    - Operational data
        - routine inspection regimes
        - routine maintenance regimes
        - record of interventions
        - current scheme planning and works

    - Financial data
        - future expenditure requirements
        - estimated intervention costs

    - Traffic and streetworks etc.
        - Street gazetteer
        - traffic sensitive streets
        - third-party utility maintenance programmes

7. Asset Systems

Inventory Data

1. The key systems for managing the asset data are:

    - CONFIRM software (highway asset register)
    - Horizons software (highway asset management)
    - Structures Asset Dashboard software (highway structure management)
    - In-view software (Intelligent Transport System fault management)
    - Street Manager software (highway network activity register)

    The asset inventory is recorded using CONFIRM in accordance with the protocols established for the effective management of the asset types.

2. Street network asset data is held against a number of different referencing systems to ensure information can be collected and analysed effectively, the main systems to be used are:

    - UKPMS Section Reference (Classified network)
    - USRN Reference (Unclassified network)
    - GPS co-ordinates

3. All location, dimensions and physical characteristics of all of the assets within the highway network are included within an asset database with the information being routinely updated to ensure it remains current.

4. Asset data is updated on an on-going basis through:

    - On-site checking of asset data;
    - Recording of new or modified assets following highway improvement works;
    - Maintenance work records.

5. Effective mechanisms are in place to ensure that data is made available to the Council's contractors and third party utility providers.

Asset Valuation Data

6. Asset Valuation is completed annually to a timescale in accordance with DfT reporting requirements, to support the production of the Whole Government Accounts (WGA) which is a consolidated set of financial statements in order to produce a comprehensive, accounts-based picture of the financial position of the UK public sector. The key drivers for Asset Valuation are:

    - To emphasise the need to preserve the highway infrastructure by placing a monetary value on highway infrastructure assets;
    - To demonstrate asset stewardship by monitoring the asset valuation over time;
    - To support highway asset management by providing a holistic financial framework.

8. Challenges and Opportunities

1. The ongoing financial pressures upon highway maintenance due to increasing asset scale and competing demands for Government and Local Authority funding provide specific challenges to maintaining network performance. As a result, all Highway Authorities are managing levels of deterioration on the highway network

2. The Council faces an additional challenge in managing large scale asset maintenance and replacement within 'new town' areas where significant elements of highway infrastructure reach intervention points at around the same time. This impacts significantly on financial and lifecycle planning.

3. An objective approach to asset management is key to ensuring that the Council's priorities give due regard to maintaining asset condition, ensuring value for money and reducing risk to the public. Additionally, there is importance in supporting and responding to developing themes within the highways and transport landscape which are seeing significant change.

4. The Council's adoption of asset management principles provides an evidence based approach with responsible decision-making contributing to set objectives that aim to deliver the most efficient and effective regime over the lifecycle of the asset. This ensures that the performance of that asset reflects the requirements of the Council and any associated funding constraints.

5. Evidence based asset management provides a valuable tool to enable the Council to establish appropriate budget allocations through the demonstration of the effects of under-investment in the network and the implications of not meeting target condition.

6. The HIAMP seeks to adopt best practice and embrace real changes in the way the highway asset is maintained and developed, taking advantage of ongoing infrastructure developments especially through the use of digital advancements and materials development.

9. Asset Objectives

1. A key function of the asset management process is to understand the needs and objectives of each asset group against performance and the actions required to achieve them. These are detailed in the table below.

Assets	Carriageways	Footways & Cycleways	Structures (Bridges, Subways, Culverts, Retaining walls)	Drainage	Street Lighting	Others
Challenges						
Funding vs aging assets	✓	✓	✓	✓	✓	✓
Managing deterioration	✓	✓	✓	✓	✓	✓
Managing risk	✓	✓	✓	✓	✓	✓
Maintaining availability of highway network by ensuring adequate asset condition	✓	✓	✓	✓	✓	✓
Network hierarchy influences priorities	✓	✓	✓	✓	✓	✓
Limited treatments beyond full replacement	○	✓	○	○	✓	✓
Affordability of replacement (i.e. high unit cost)	○	○	✓	○	○	○
Expectation of asset quality (Active Travel)	○	✓	○	○	○	○
Increasing impacts of weather events linked to climate change	✓	✓	✓	✓	○	○
Drainage impacts on carriageway and structural condition and deterioration	✓	○	○	✓	○	○
Rate of asset growth	✓	✓	✓	✓	✓	✓
Specific duties as Lead Local Flood Authority (LLFA)	○	○	○	✓	○	○
Operational impacts - consequences of repetitive overlay	✓	○	○	○	○	○
Access to the network, conflict with third parties/utilities	✓	✓	✓	✓	✓	○
Condition of third party assets adding to highway failures	✓	✓	○	○	○	○
Accumulative disruption	✓	○	○	○	○	○
Scale of utility installation (particularly telecoms)	○	✓	○	○	○	○
Vehicle overrun causing damage	○	✓	○	○	○	○
Energy reduction targets linked to Climate Change	○	○	○	○	✓	✓
Asset damage from third parties (collision/vandalism)	○	○	✓	○	✓	✓
Technological obsolescence - ITS equipment	○	○	○	○	○	✓
Actions						
Inspection regimes	✓	✓	✓	✓	✓	✓
Measurement of asset condition (data)	✓	✓	✓	✓	✓	✓
Holistic network assessment	✓	✓	✓	✓	✓	✓
Cost benefit and value for money	✓	✓	✓	✓	✓	✓
Lifecycle planning	✓	✓	✓	✓	✓	✓
Prevention	✓	✓	✓	✓	○	○
Targeted intervention	✓	✓	✓	✓	✓	✓
Flood risk management	✓	○	✓	✓	○	○
Energy management	○	○	○	○	✓	✓
Asset growth management	✓	✓	✓	✓	✓	✓
Asset rationalisation	○	○	○	○	✓	✓

2. Future works programmes for each asset group will need to be flexible and responsive to emerging issues.

10. Annual Infrastructure Asset Management Process

Review

1. The HIAMP objectives will be reviewed and revised following the receipt of annual condition surveys. The review will consider the following:

    - Asset data
    - Deterioration patterns
    - Financial impact of any changes
    - Current industry best practice
    - Works undertaken and their impact on condition

2. In addition, specific plans have been developed for individual asset types, which will also be updated and reviewed. The following asset plans are included in Appendix A1 – A6, respectively:

    - Road Carriageways Management Plan
    - Footways and Cycle Tracks Management Plan
    - Bridges and Structures Management Plan
    - Drainage Management Plan
    - Street Lighting Management Plan
    - Street Furniture Plan

3. Alongside the HIAMP, the Highway Management and Maintenance Plan (HMMP) details the policies, strategies and processes which shape the way the Council will develop and deliver its reactive highway network maintenance services. The HMMP details the safety strategy and inspection regime for the network in relation to the Council's reactive maintenance response which differs to the planned maintenance actions defined by the HIAMP. The HMMP is available at:

    Roads strategies and policies | Bracknell Forest Council (bracknell-forest.gov.uk)

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Asset Condition Surveys

4. The asset condition surveys are a key driver in achieving the asset management objectives. Asset condition surveys are scheduled as follows:

    - Carriageways and footways survey are conducted annually by UKPMS accredited inspectors/vehicles at the following timescales:
        - SCANNER (A, B, C Network)
        - SCRIM (A, B, C Network)
        - Coarse Visual Inspection – (50% of Unclassified Network)
        - Footway Network Survey – (50% of Footway Network)
    - Skid resistance testing is carried out routinely on the network through SCRIM surveys and also on a site-specific basis where the surfacing is suspect or where there is a history of wet skid accidents. Any site identified as being "deficient", will be added to the forward treatment plan.
    - Highway Safety Inspections are undertaken via driven and walked surveys at 1, 3, 6 and 15 month intervals dependant on Hierarchy, as detailed within Table 5 of the HMMP. The HMMP also details the risk assessment and response levels for defects identified.
    - Structures condition surveys are conducted annually throughout the summer months at the following frequency:-
        - Principal inspection – Every 6 years
        - General inspection – Every 2 years
        - Routine inspections – Annually or as required by the inspection plan
    - Cyclical maintenance of highway drainage systems is undertaken annually where required, with interim action identified through inspection. Closed drainage systems are surveyed through a programme of CCTV surveys to identify unresolved issues with drainage assets. These surveys can identify reactive repairs or help provide information to longer-term drainage improvement schemes.
    - Structural testing of lamp columns over 25 years old will be undertaken on a regular basis to identify ageing columns which will require remedial work or complete replacement.

5. The Council undertakes a detailed validation process of all survey data, this includes:

    - Maintaining records of all highway inspector accreditations
    - Maintaining records of survey vehicle accreditations/calibrations
    - Ensuring independent auditing/certification is conducted in accordance with agreed procedures

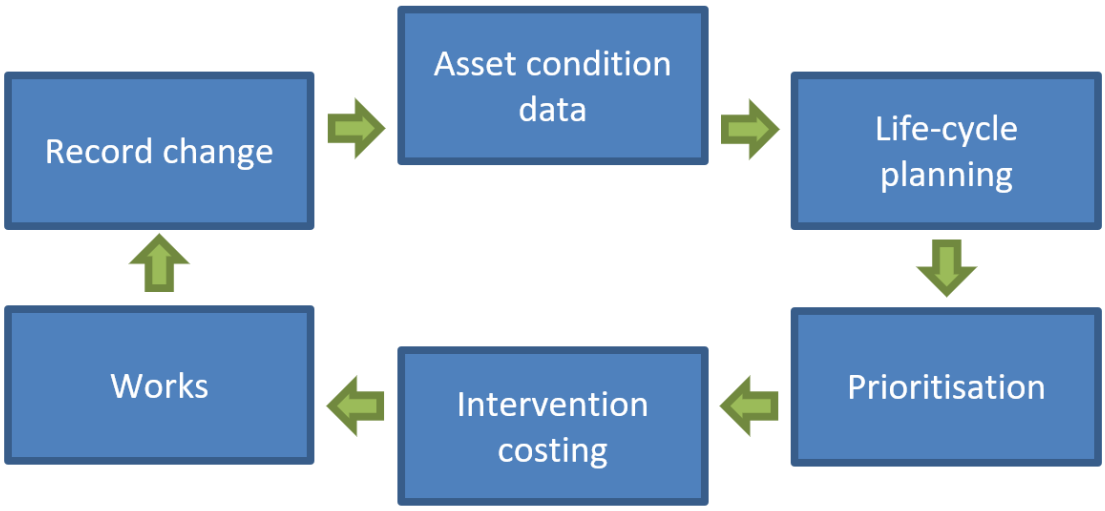
      Internal validation of data by comparison with previous year's survey data

Works Programming

6. The following programmes are produced to manage forward works and enable the integration of activities on the network with third parties:

    - Detailed annual planned maintenance work programme;
    - Outline future planned maintenance programme to 5 years, anticipating priorities by year;
    - Reactive annual maintenance programmes.

7. The diagram below shows the relationship of asset condition surveys to targeted interventions



11. Management of Risk and Change

1. Effective risk management improves decision making at both a strategic and operational level, enabling organisations to allocate funding more effectively and providing greater transparency in the way decisions are made.
2. Within an Asset Management context, Risk Management ensures that:
    - the likelihood of achieving objectives is increased
    - levels of acceptable risk can be evaluated
    - risks can be avoided or reduced through pro-active management
    - consequences of failure can be identified including loss of service
    - compliance with the relevant legal and regulatory requirements
3. Risks can rarely be eliminated altogether so risk management is about reducing the exposure of the public or the organisation to risks in accordance with assessments of needs, prioritises and affordability. Risk management is incorporated into the asset management process and a risk based approach is taken when setting the level of investment, level of service, operations, inspections and programme of works.
4. Change can occur for a variety of reasons and can influence the asset management system. Change can occur at both network level and/or operational level. It can also relate to political, financial, social, technological, legislative and environmental factors outside of the highways infrastructure asset.
5. It is acknowledged that changes to process or capital works programmes may be required due to these factors and appropriate decision making processes are in place to confirm and authorise such changes.

12. Related Plans

1. The **Council Plan (2019-2023)** sets out a number of strategic themes which can be directly impacted by highway infrastructure, as every journey for whatever purpose uses the network of highway assets. These themes are:

    - Value for money
    - Economic resilience
    - Education and skills
    - Caring for you and your family
    - Protecting and enhancing the environment
    - Communities

    The Council Plan can be found at the following link:

    The Council Plan | Bracknell Forest Council

2. The **Local Transport Plan 3 (2011-2026)** sets out a long-term strategy for the development of transport in the Borough. In particular, Policy TP19 of the LTP3 relates to Asset Management and highlights:

Policy TP19 – Transport Asset Management
The Council will use the Transport Asset Management Plan to provide a value for money approach to managing and maintaining the Council's transport assets through: • **Routine safety inspections at frequencies appropriate to the strategic importance of the street to identify and rectify defects likely to inconvenience or endanger network users or the wider community.** • **Network condition assessments in line with standard national practice to establish current conditions and aid development of future planned maintenance programmes.** • **Considering the potential impact climate change may have on the local transport network and ensuring so far as practicable that our works are adapted and resilient to climate change.** • **Considering the impact of highway maintenance and schemes on the natural environment, i.e. incorporating SUDS, using sustainable/recycled materials and biodiversity impact mitigation.** • **Reviewing and, where possible, reducing the use and impact of illuminated traffic signs and street lighting to contribute towards the Council's strategic carbon reduction agenda.** • **Investigating and installing new and/or replacement public lighting systems that optimise power consumption and utilise apparatus that can be recycled.**

    The LTP3 can be found at the following link:

    Transport policy | Bracknell Forest Council

3. Bracknell Forest Council has committed itself to becoming carbon neutral by 2050. Highway Assets and Infrastructure have a key role to play in achieving this goal, through the methods and materials used in construction and maintenance, the way assets are operated and powered (i.e. LED streetlights), by ensuring the highway network runs efficiently (through reliable and smart traffic management) and by facilitating more sustainable modes of travel. This is in line with the **Climate Change Strategy (2020-2024)** and **Action Plan** which can be found at: Climate change strategy | Bracknell Forest Council

4. The Council actively supports the Government's **Decarbonising Transport Plan** which makes specific reference to managing whole life carbon in transport infrastructure (i.e. emissions associated with the creation or major modification of an infrastructure asset). More broadly, the plan advocates transport networks which have well planned, maintained and managed infrastructure that facilitates efficient movement, in particular by walking, cycling, public transport and alternatively fuelled vehicles, and indeed future mobility solutions which may not even be in existence yet. The document can be found at: Decarbonising Transport – A Better, Greener Britain | DfT

5. Highway infrastructure plays a key role in supporting public health including air quality, active travel, social connectivity and mobility as referenced within **Working Together to Promote Active Travel** briefing document published by Public Health England which can be found at: Working Together to Promote Active Travel

6. Active Travel plays a significant role in reducing congestion and improving the health of the community, and Bracknell Forest has a comprehensive network of walking and cycling routes to facilitate this. Many of these are a legacy of the new town development in the 50s and 60s, and whilst they are a valuable asset, they come with associated maintenance needs. Encouraging more people to walk, cycle and increasingly scoot requires a high quality, well maintained network, and the HIAMP, complemented by our Walking and Cycling Strategy, and Local Cycling and Walking Infrastructure Plan will help to deliver this.

7. Policy TP8 of the LTP relates to walking and cycling (active travel) and states:

Policy TP8 – Walking and Cycling

The Council will promote walking and cycling in the Borough through:

- **Marketing cycling and walking as a healthy, sustainable and attractive travel choice.**
- **Improving, where feasible, walking and cycling infrastructure.**
- **Ensuring the needs of pedestrians and cyclists are fully considered within new developments.**
- **Improving green infrastructure to make walking and cycling more attractive.**
- **Improving safety for pedestrians and cyclists.**

8. The Council's Public Health Portal can be found at: Public Health Portal | Bracknell Forest Council

Appendices

A1 – Road Carriageway Management Plan

A2 – Footways and Cycle Tracks Management Plan

A3 – Bridges and Structures Management Plan

A4 – Drainage Management Plan

A5 – Street Lighting Management Plan

A6 – Street Furniture Management Plan

A1 – Road Carriageway Management Plan

A.1.1 Scope

A.1.1.1 Carriageways (the paved road construction which carries traffic) comprise the most valuable single asset within the Highways Infrastructure Management Plan. One of the key challenges for the introduction of Asset Management to the road network is the introduction of a Life Cycle Planning approach to the management of carriageways.

A.1.1.2 Through the development of this approach, a longer-term view to the management of the asset through the life-cycle involves consideration of:

- the asset performance over multiple treatments
- a needs-based assessment of maintenance requirements based upon UKPMS surveys and deterioration modelling
- active management of 'new town inheritance' factors
- challenging highway maintenance funding levels

A.1.1.3 To deliver the improvement in network condition we will:

- implement predictive models that demonstrate the implications of future investment options upon asset condition, quality of service, asset value and preservation - including the ability to assess whole-life cost and carbon emission principles.
- implement a value management process for determining the most appropriate scheme options, and for balancing the requirements of service quality and asset preservation or improvement.

A.1.2 Current State of Inventory and Asset Register

A.1.2.1 The asset inventory is comprehensive. This will be maintained through repeat condition surveys.

A.1.3 Asset Plan

A.1.3.1 A rolling forward treatment programme is produced using the asset condition monitoring and management system *Horizons.*

A.1.3.2 The forward programme incorporates identified capital improvements and is developed from condition surveys and observation. The data is modelled within Horizons to produce the most efficient and cost effective programme of works based on the life cycle management of the assets.

A.1.3.3 The draft programme is further refined to produce proposed capital schemes for the upcoming financial year with the final selection being identified a priority basis.

A.1.3.4 The specific challenges and associated actions over the next 5-years for the carriageway assets are shown in Table 1 below:

5-Year Challenges	Challenges	Actions
Asset Condition	1) Managing new town inheritance within challenging funding levels restricts preventative and planned maintenance which impacts on long-term asset condition. 2) Asset condition survey contract will require renewal within the next 5-years. 3) Link between existing asset management system (Confirm) and asset condition monitoring system (Horizons) can be improved with some defect data not currently linked. 4) More effective use of SCRIM data to manage skid-risk interventions is required. 5) Increasing impact on asset longevity due to third party access (utilities, telecoms).	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Review collection methodology and condition data type - explore video / AI data collection to provide efficiencies and improve interpretation. 3) Review opportunities for improved links between systems and provide a more holistic overview to improve analysis. 4) Introduce a revised SCRIM criteria to improve associated work programmes. 5) Ensure inspection regimes are adequate to identify non-compliance of reinstatements.
Budget	1) Current levels of government grant funding for highway maintenance, combined with new town inheritance, results in spending bias toward reactive maintenance issues. 2) The available budget drives which schemes can be accommodated within the annual capital and revenue work programmes. Individual project costs can be out of scope for single year implementation.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Refine rolling 5-year plan to prioritise works and best utilise available budget, including phasing of related work packages.
Material / Treatment Choice	1) Identification of sufficiently durable treatments which provide the lowest whole life financial and carbon costs can be challenging. 2) Funding constraints increase the requirement to apply surface treatment instead of undertaking surface replacement, due to funding constraints. 3) Carriageway material choice directly impacts upon network and user disruption during application.	1) Be open to opportunities for material innovation and undertake site trials to test suitability. 2) Seek opportunities for further funding in cases where long-term network condition will be compromised. 3) Balance network disruption against scales of material longevity to identify best fit options.
Climate Change	Contribution towards the national objective to be carbon neutral by 2050 requires a broad review of materials and processes.	Work with term-contractors/suppliers to develop: (a) knowledge of carbon costs of materials and treatments; (b) explore material recycling options; (c) reduce associated emissions from vehicles and specialist plant; (b) opportunities for innovation.
Inventory	Pace of development growth and adoption of new public highways creates a rapidly expanding network of carriageway assets to maintain.	(a) Maintain/update asset inventories and condition survey systems; (b) Take account of increasing budget pressure from expanding network.

5-Year Challenges	Challenges	Actions
Technological Development	Technological obsolescence of data collection, data analysis and asset condition monitoring systems will require replacement over time.	Review ongoing technological developments and seek to identify efficiency and value for money where further investment is required.
Third Parties	Large-scale programmes of fibre broadband installation will impact on a number of carriageways over the next 5-years.	a) Identify the ongoing impact of fibre broadband installations and manage third party reinstatements. b) Limit any maintenance treatments prior to broadband installation work and instead seek to co-ordinate subsequent interventions.

Table 1: Carriageway 5-Year Challenges and Actions

A.1.4 Carriageways Life Cycle Management

Lifecycle Stage 1 – Creation or Acquisition of Carriageways

A.1.4.1 Much of Bracknell Forest Council's network is a 'new-town', well-developed and mature, and as such there are limited instances of new provision; those new roads are mainly new adoptions, as part of housing and business developments, and the occasional expansion of carriageway as part of a highway improvement scheme.

A.1.4.2 Any new roads will be designed and constructed in accordance with the Councils Highway Design Guide for Developers:

Streetscene Supplementary Planning Document | Bracknell Forest Council (bracknell-forest.gov.uk)

Lifecycle State 2 – Routine and Reactive Maintenance for Carriageways to maintain Safety and Serviceability

A.1.4.3 The delivery of routine and reactive maintenance covers the following activities;

- Repairs to defects in response to public and ad-hoc reports
- Repairs to defects identified as part of the rolling programme of routine safety inspections

Lifecycle Stage 3 – Renewal or Replacement of Carriageways and Associated Items

A.1.4.4 Renewal or replacement activities, to return carriageways and/or associated items to 'as new' condition (or to current standards, which may be better than the original standards, given advancements in technology), encompasses the following:

- Planned carriageway maintenance
  - Resurfacing
  - Surface dressing
  - Strengthening
  - Planned large-scale patching

- Reconstruction

- Replacement of carriageway markings
- Replacement of ironwork

Lifecycle Stage 4 – Upgrading of Carriageways and Associated Items

A.1.4.5 The upgrading of carriageway to result in improvements in the service provided could encompasses the following:

- Enhancement schemes
- Provision of anti-skid, special surfaces, etc.
- Widening, realignment, etc.
- Provision of bus lanes, cycle lanes and additional active travel access etc.
- Safety schemes
- Other highway improvement schemes

A.1.4.6 Any improvements will be designed in accordance with the correct standards.

Lifecycle Stage 5 – Decommissioning and Disposal of Carriageways and Associated Items

A.1.4.7 Occasions to remove carriageways from the network of adopted highways are rare. Decommissioning of carriageways would generally only take place in conjunction with disposal of the whole street which would only happen in exceptional circumstances. Small lengths of carriageway might be removed from the network as part of major developments, new developments and traffic improvement schemes, but change of use does not, as such, constitute decommissioning.

Bracknell Forest Council

A2 – Footways and Cycle Tracks Management Plan

A.2.1 Scope

A.2.1.1 The footway and cycle track asset group comprises the surface and structure of assets within the Council network, both those associated with carriageways and those remote from carriageways.

A.2.2 Current State of Inventory and Asset Register

A.2.2.1 The asset inventory is comprehensive. This will be maintained through repeat condition surveys.

A.2.3 Asset Plan

A.2.3.1 A rolling forward treatment programme for footways is produced within the asset condition monitoring and management system - *Horizons*.

A.2.3.2 The forward programme incorporates identified capital improvements and is developed from condition surveys and observation. The data is modelled within Horizons to produce the most efficient and cost effective programme of works based on the life cycle management of the assets.

A.2.3.3 The draft programme is further refined to produce proposed capital schemes for the upcoming financial year with the final selection being identified a priority basis.

A.2.3.4 The specific challenges and associated actions over the next 5-years for the footway assets are shown in Table 2 below:

5-Year Challenges	Challenges	Actions
Asset Condition	1) Managing new town inheritance with challenging funding levels restricts preventative and planned maintenance which impacts on long-term asset condition. 2) Increasing impact on asset longevity due to third party access (utilities, telecoms). 3) Desired outcome of increased walking and cycling is linked to asset quality and user experience. 4) Asset condition survey contract will require renewal within the next 5-years.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Ensure inspection regimes are adequate to identify non-compliance of reinstatements. 3) Seek to incorporate user feedback and route hierarchy within intervention criteria. 4) Review collection methodology and condition data type - explore opportunities to improve interpretation.
Budget	1) Current levels of government grant funding for highway maintenance, combined with new town inheritance, results in spending bias toward reactive maintenance issues. 2) The available budget drives which schemes can be accommodated within the annual capital and revenue work programmes. Individual project costs can be out of scope for single year implementation.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Refine rolling 5-year plan to prioritise works and best utilise available budget, including phasing of related work packages.
Material/ Treatment Choice	Identification of sufficiently durable treatments which provide the lowest whole life financial and carbon costs can be challenging.	Be open to opportunities for material innovation and undertake site trials to test suitability.
Climate Change	Contribution towards the national objective to be carbon neutral by 2050 requires a broad review of materials and processes.	Work with term-contractors/suppliers to develop: (a) knowledge of carbon costs of materials and treatments; (b) explore material recycling options; (c) reduce associated emissions from vehicles and specialist plant; (b) opportunities for innovation.
Inventory	Historical shortfall in detailed inventory data for footways and cycleways, combined with expanding network through development, impacts upon priority assessments.	(a) Undertake inventory review of footway and cycleway network and update asset management systems. (b) Seek to identify a hierarchy of routes to link maintenance considerations with walking and cycling usage.
Technological Development	Technological obsolescence of data collection, data analysis and asset condition monitoring systems will require replacement over time.	Review ongoing technological developments and seek to identify efficiency and value for money where further investment is required.

5-Year Challenges	Challenges	Actions
Third Parties	Large-scale programmes of fibre broadband installation will impact on the majority of footways over the next 5-years.	c) Identify the ongoing impact of fibre broadband installations and manage third party reinstatements. d) Limit any maintenance treatments prior to broadband installation work and instead seek to co-ordinate subsequent interventions.

Table 2: Footway 5-Year Challenges and Actions

A.2.4 Footways/Cycle Tracks Life Cycle Management

Lifecycle Stage 1 – Creation and Acquisition of Footways and Cycletracks

A.2.4.1 Much of Bracknell Forest's network is a 'new-town', well-developed and mature, and as such there are limited instances of new provision. Asset creation is usually as a result of new adoptions, as part of housing and business developments or as part of a highway improvement scheme.

A.2.4.2 Any new footways or cycle tracks will be designed and constructed in accordance with the Councils Highway Design Guide for Developers:

Streetscene Supplementary Planning Document | Bracknell Forest Council (bracknell-forest.gov.uk)

Lifecycle Stage 2 – Routine and Reactive Maintenance for Footways and Cycletracks to maintain Safety and Serviceability

A.2.4.3 The process for the delivery of routine and reactive maintenance cover the following activities:

- Repairs to defects in response to public and ad-hoc reports.
- Repairs to defects identified as part of the rolling programme of routine safety inspections.
- Routine Maintenance - general day-to-day maintenance on the footways and cycle tracks that is necessary to maintain them in a safe condition for users.

Lifecycle Stage 3 – Renewal or Replacement of Footways and Cycle tracks

A.2.4.4 Renewal or replacement activities, to return footways and cycle tracks to 'as new' condition or to current standards (which may be better than the original standards, given advancements in technology) encompasses the following:

- Micro Asphalt surfacing or Slurry Sealing
- Inlay resurfacing
- Replacement flags and paving
- Reconstruction

Lifecycle Stage 4 – Upgrading of Footways and Cycle tracks

A.2.4.5 The upgrading of footways and cycle tracks, to result in improvements encompasses the following:

- Provision of special surfaces
- Widening, realignment, etc.
- Safety schemes
- Highway improvement schemes
- Active Travel provision

Lifecycle Stage 5 – Decommissioning and Disposal of Footways and Cycle tracks

A.2.4.6 Occasions to remove footways and cycle tracks from the network of adopted highways are rare. Decommissioning would generally only take place in conjunction with disposal of the whole street which would only happen in exceptional circumstances. Small lengths of might be removed from the network as part of major developments, new developments and traffic improvement schemes, but change of use does not, as such, constitute decommissioning.

A3 – Bridges and Structures Management Plan

A.3.1 Scope

A.3.1.1 Bridges are essential components of the UK transport infrastructure and their safety and serviceability are therefore vital in the smooth functioning of the transport systems/network. Society expects and perceives bridges to be safe and the fact that there have been no cases of catastrophic bridge failures in recent years is due largely to the inspection and maintenance systems in place.

A.3.1.2 The Council is responsible for the inspection, maintenance, repair, replacement, assessment and management of all highway structures. The new code of practice "*Well-Managed Highway Infrastructure: A Code Of Practice"* was launched in September 2015 and covers all aspects of highway structures management, except for the design of new structures or alterations/upgrades to existing structures.

A.3.2 Current State of Inventory and Asset Register

A.3.2.1 The asset inventory is comprehensive and this will be maintained through repeat condition surveys. The asset grouping comprises bridges (both vehicular and pedestrian), culverts, subways, and retaining walls. Bridges are of various types and spans and their construction is mainly brickwork/masonry, concrete or steel.

A.3.2.2 Within the Council network there are a significant number of structures that carry the highway infrastructure which are owned by other statutory bodies such as Network Rail.

A.3.2.3 The Council will appoint an accredited specialist to carry out inspections to all structures. Details of the assets are recorded under individual structures inspections file.

A.3.3 Asset Plan

A.3.3.1 An ongoing forward treatment programme for structures is produced, incorporating both minor revenue and major capital improvements.

A.3.3.2 The lifecycle planning programme is based on bi-annual and periodic assessments of the asset condition and is used to produce both a capital and revenue programme for the upcoming financial year. Priority is based on the condition, usability and safety of the asset.

A.3.3.3 The specific challenges and associated actions over the next 5-years for the structures assets are shown in Table 3 below:

5-Year Challenges	Challenges	Actions
Asset Condition	1) Managing new town inheritance within challenging funding levels restricts preventative and planned maintenance which impacts on long-term asset condition. 2) The efficiency of remedial work planning is affected by the periodic nature of structural inspections. Remedial works at high cost, needing to be included in annual capital programme. 3) Asset condition data is limited for some categories. 4) Asset condition survey contract is due for renewal within the next 5-years.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Develop asset database to track condition trends and better inform future programme development. 3) Establish uniform data sets. 4) Review opportunities to improve condition data survey categories to support trend analysis.
Budget	1) Current levels of government grant funding for highway maintenance, combined with new town inheritance, results in spending bias toward reactive maintenance issues. 2) The available budget drives which schemes can be accommodated within the annual capital and revenue work programmes. Individual project costs can be out of scope for single year implementation.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Refine rolling 5-year plan to prioritise works and best utilise available budget, including phasing of related work packages.
Climate Change	Contribution towards the national objective to be carbon neutral by 2050 requires a broad review of materials and processes.	Work with term-contractors/suppliers to develop: (a) knowledge of carbon costs of materials and treatments; (b) explore material recycling options; (c) reduce associated emissions from vehicles and specialist plant; (b) opportunities for innovation.
Scheme Programming and Delivery	Necessary work to major structures located on key network corridors could introduce large scale impacts for highway users, including duration.	Early programme development to identify innovative working methods which limit network disruption. Provide comprehensive early warning and advice to network users.
Inventory	Historical shortfall in detailed inventory data for some structural assets, e.g. culverts and minor retaining walls, masks full asset management demands.	(a) Undertake inventory review to ensure a comprehensive asset register; (b) Review full asset management demands against current funding levels.
Third Parties	Damage to highway structures by third parties (typically vehicles) can impact suddenly on programmes and funding.	Continue to review of damage prevention systems to protect structural assets from vehicle incursion.

Table 3: Structures 5-Year Challenges and Actions

A.3.4 Structures Life Cycle Management

Lifecycle Stage 1 – Creation and Acquisition of Structures

A.3.4.1 Much of Bracknell Forest's network is a 'new-town', well-developed and mature, and as such there are limited instances of new highway structure provision. Asset creation is usually as a result of redevelopment or major works.

A.3.4.2 Any new highway structures assets are subject to rigorous design criteria and regulated sign-off processes to ensure adequacy and safety.

Lifecycle Stage 2 – Routine and Reactive Maintenance for Structures to maintain Safety and Serviceability

A.3.4.3 Following general and principal inspections any necessary routine or reactive maintenance works will be programmed. This work could, for example, include minor repairs to reinforcement protection and superficial highway furniture, or servicing of sump drainage pumps.

A.3.4.4 Reactive maintenance actions also include ensuring the immediate safety of the structure, for example, if a bridge parapet or beam is hit by a vehicle.

Lifecycle Stage 3 – Renewal or Replacement of Structures

A.3.4.5 The replacement of bridges and structures are typically determined from a failed load assessment along with the condition assessment and the risk assessment. Other factors which influence replacement projects include :

- Increased traffic loading
- Widening requirement due to increased traffic volumes
- A structure reaching the end of its prescribed service life

Lifecycle Stage 4 – Upgrading of Structures

A.3.4.6 The upgrading and/or strengthening of bridges are identified through similar means to replacing a bridge, but a strengthening programme involves a different set of design parameters and strength assessments. Financial and aesthetic constraints may also be a factor given the extensive costs involved in structural engineering.

Lifecycle Stage 5 – Decommissioning and Disposal of Structures

A.3.4.7 Occasions to remove structures from the network of adopted highways are rare. Decommissioning would generally only take place in conjunction with disposal of the whole street which would only happen in exceptional circumstances.

A.3.4.8 If a structure is demolished any materials will be managed in accordance with current environmental legislation, with an emphasis placed on recycling where practical.

Bracknell Forest Council

A4 – Street Lighting Management Plan

A.4.1 Scope

A.4.1.1 The street lighting asset group comprises columns, lanterns and related electrical assets associated with carriageways and footways.

A.4.1.2 **Current State of Inventory and Asset Register**

A.4.1.3 The existing inventory knowledge is of a high standard for columns, however, extensive inventory review is required following the completion of LED upgrade and improvement works.

A.4.2 Asset Plan

A.4.2.1 Streetlighting columns have a life expectancy of 40 years. Lifecycle structural testing will commence on assets greater than 25 years old.

A.4.2.2 Asset condition data from structural testing is utilised to provide a RAG rating where;

- Red – is replaced
- Amber – is re-tested on 3-year cycle
- Green – is re-tested on 5-year cycle

A.4.2.3 The specific challenges and associated actions over the next 5-years for the street lighting assets are shown in Table 4 below:

5-Year Challenges	Challenges	Actions
Asset Condition	1) Managing new town inheritance within challenging funding levels restricts preventative and planned maintenance which impacts on long-term asset condition. 2) Structural integrity of aging columns requires continuous assessment. 3) Cabling condition assessment is hampered by scale of the network and the need to focus resources on existing fault rectification.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Maintain ongoing column replacement programme to address most at risk assets and reduce the demands for repetitive condition monitoring.
Budget	Current levels of government grant funding for highway maintenance, combined with new town inheritance, results in spending bias toward reactive maintenance issues.	Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants.
Material/ Treatment Choice	Ongoing delays in supply chain for new columns (nationally).	Ensure forward programming to minimise delay and reduce risks of asset failures.
Climate Change	Contribution towards the national objective to be carbon neutral by 2050 requires a broad review of energy consumption.	Continue to convert remaining lighting assets to LED technology either as part of planned renewal programmes or the reactive response to network failures where appropriate.
Third Parties	Damage to lighting assets by third parties (typically vehicles) can impact on programmes and funding.	Continue to recover asset replacement costs from third parties (where identifiable) to maintain the integrity of the network and prevent future additional burden.

Table 4: Street lighting 5 year Challenges and Actions

A.4.3 Street Lighting Life Cycle Management

Lifecycle Stage 1 – Creation and Acquisition of Street Lighting

A.4.3.1 Much of Bracknell Forest's network is a 'new-town', well-developed and mature, and as such there are limited instances of new asset provision. Asset creation is usually as a result of new housing or business development or highway improvement works.

A.4.3.2 Any new street lighting assets are subject to a technical sign-off processes to ensure adequacy and safety.

Lifecycle Stage 2 – Routine and Reactive Maintenance for Street Lighting to maintain Safety and Serviceability

A.4.3.3 Cyclical maintenance programmes include electrical testing and cleaning. Following structural inspections any necessary routine or reactive maintenance works will be programmed. Reactive maintenance includes lamp replacement where necessary.

Lifecycle Stage 3 – Renewal/Upgrade or Replacement of Street Lighting

A.4.3.4 The renewal/upgrading or replacement of street lighting assets are identified through the cyclical maintenance and structural inspections which commences on assets greater than 25 years of age.

Renewal/upgrade and replacement works will include LED lamp upgrade and/or column replacement following structural review

Lifecycle Stage 4 – Decommissioning and Disposal of Street Lighting

A.4.3.5 Occasions to remove rather than replace street lighting from the network of adopted highways are rare. Decommissioning would generally only take place in conjunction with disposal of the whole street which would only happen in exceptional circumstances.

A.4.3.6 If street lighting is removed any materials will be managed in accordance with current environmental legislation, with an emphasis placed on recycling where practical.

Bracknell Forest Council

A5 – Drainage Management Plan

A.5.1 Scope

A.5.1.1 The drainage network throughout the borough is extensive, covering a wide range of assets including gullies, culverts, SuDS features and associated connecting pipework.

A.5.1.2 The management of drainage throughout the borough also requires collaboration with private landowners (including ditch lines, open water courses etc.) and riparian responsibilities apply.

A.5.1.3 **Current State of Inventory and Asset Register**

A.5.1.4 The existing inventory knowledge throughout the drainage network is being actively updated and is of high priority through the next 5-year period. This will include drainage assets adopted through S38 and S278 works as part of new development.

A.5.2 Asset Plan

A.5.2.1 An ongoing forward programme for drainage assets is produced, incorporating both minor revenue and major capital improvements. This programme is developed based on flood risk priorities and informed further by records of drainage related incidents.

A.5.2.2 The specific challenges and associated actions over the next 5-years for the drainage assets are shown in Table 5 below:

5-Year Challenges	Challenges	Actions
Asset Condition	1) Managing new town inheritance within challenging funding levels restricts preventative and planned maintenance which impacts on long-term asset condition. 2) Scale of the network, visibility of underground assets, historical shortfall in asset condition data and the impact of vegetation and root encroachment masks the full asset management demands.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Establish key metrics for asset condition data and identify practical and achievable systems of data collection based on hierarchy of flood risk sites and reactive maintenance records.
Budget	Current levels of government grant funding for highway maintenance, combined with new town inheritance, results in spending bias toward reactive maintenance issues.	Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants.
Climate Change	Increasing impacts of ongoing Climate Change through severe weather events increases strain on drainage assets and contributes to earlier failures. Network deficiencies are emerging more regularly.	a) Increase asset condition data (above) to inform improvement programmes and priorities; b) Identify network deficiencies linked to weather event history; c) Seek to prevent additional strain on asset integrity through targeted routine cleaning and maintenance programmes.
Inventory	Historical shortfall in detailed inventory data for some drainage assets masks full asset management demands.	(a) Undertake inventory review to ensure a comprehensive asset register; (b) Review full asset management demands against current funding levels and flood risks.
Technological Development	Technological development can provide opportunities for increased efficiency of data capture and analysis but requires investment.	Undertake a review of drainage asset management tools (systems) which increase the efficiency, effectiveness and value of work programmes and review the business case for investment.
Third Parties	Riparian responsibilities of landowners adjacent to the highway causes enforcement burden and impacts on the long-term integrity of assets.	Review opportunities to work collaboratively and proactively with private landowners to maximise asset condition, e.g. ditches, culverts.

Table 5: Drainage 5-year Challenges and Actions

A.5.3 Drainage Life Cycle Management

<u>Lifecycle Stage 1 – Creation and Acquisition of Drainage</u>

A.5.3.1 Much of Bracknell Forest's network is a 'new-town', well-developed and mature, and as such there are limited instances of new highway drainage provision. Asset creation is usually as a result new housing or business development of major highway improvement works.

A.5.3.2 Any new drainage assets are subject to rigorous technical design criteria and sign-off processes to ensure adequacy and safety.

Lifecycle Stage 2 – Routine and Reactive Maintenance for Drainage to maintain Safety and Serviceability

A.5.3.3 Cyclical maintenance programmes include gully cleansing and drainage system clearance. Additional maintenance programmes, for example head-wall protection, are in development and require further asset condition surveys which form part of the ongoing 5-year plan.

A.5.3.4 Reactive maintenance regimes will be further informed by the assessment of flood related incidents.

Lifecycle Stage 3 – Renewal/Upgrade or Replacement of Drainage

A.5.3.5 The renewal/upgrading or replacement of drainage assets are identified and developed based on flood risk priorities and informed further by records of drainage related incidents.

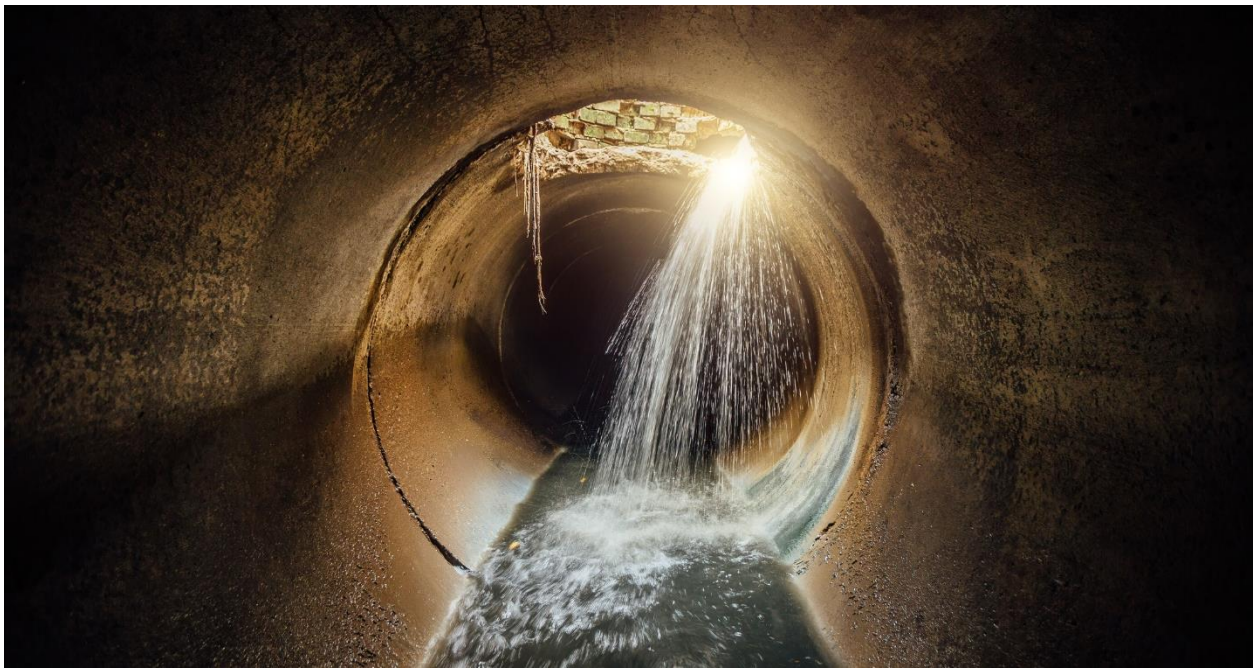
A.5.3.6 Renewal/upgrade and replacement works may include:

- Replacement of damaged assets reaching the end of service life
- Upgrade of assets to increase capacity

Lifecycle Stage 4 – Decommissioning and Disposal of Drainage

A.5.3.7 Occasions to remove rather than replace drainage from the network of adopted highways are rare. Decommissioning would generally only take place in conjunction with disposal of the whole street which would only happen in exceptional circumstances.

A.5.3.8 If drainage is removed any materials will be managed in accordance with current environmental legislation, with an emphasis placed on recycling where practical.



A6 – Street Furniture Management Plan

A.6.1 Scope

A.6.1.1 Street furniture throughout the Council's highway network is extensive, covering a wide range of assets including traffic signals, CCTV units, variable message signs, bollards, barriers, signs and associated posts etc.

A.6.1.2 There are constantly changing and/or expanding requirements for street furniture through the demands placed on the highway network by its users.

A.6.1.3 **Current State of Inventory and Asset Register**

A.6.1.4 The existing inventory knowledge is comprehensive for the actively managed assets such as traffic signals and illuminated signs. The inventory of routine assets such as minor road signs requires further development and due to the scale of these assets, and their historic nature, this work will continue throughout the life of the current HIAMP.

A.6.1.5 Significant development growth increases the overall street furniture inventory within a short time frame, requiring an ongoing review of network inventory and associated requirements.

A.6.2 Asset Plan

A.6.2.1 A lifecycle replacement/refurbishment programme is in place for traffic signal installations and work programmes for further assets are based upon reactive intervention on a priority basis.

A.6.2.2 The specific challenges and associated actions over the next 5-years for the street furniture assets are shown in Table 6 below:

5-Year Challenges	Challenges	Actions
Asset Condition	1) Managing new town inheritance within challenging funding levels restricts the scale of planned maintenance which impacts on asset condition. 2) Scale of the network and historical shortfall in asset condition data masks the full asset management demands.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Establish key metrics for asset condition data and identify practical and achievable systems of data collection based on hierarchy street furniture and reactive maintenance records.
Budget	1) Current levels of government grant funding for highway maintenance, combined with new town inheritance, results in spending bias toward reactive maintenance issues. 2) Rapidly expanding network of assets from new development places further increasing pressures of budgets.	1) Produce budget spend scenario modelling to review impact of current funding levels. Review benefits and opportunities for further funding through bids and grants. 2) Continue de-cluttering of the network through the removal of redundant street furniture and the amalgamation of assets to reduce the overall asset burden.

Climate Change	Contribution towards the national objective to be carbon neutral by 2050 requires a broad review of materials and processes and energy consumption.	Work with suppliers to develop: (a) knowledge of carbon costs of products; (b) explore recycling options; (c) maximise opportunities for low voltage or solar replacement, or removal of power supplies where appropriate; (d) opportunities for innovation.

Table 6: Street furniture 5-year Challenges and Actions

A.6.3 Street Furniture Life Cycle Management

Lifecycle Stage 1 – Creation and Acquisition of Street Furniture

A.6.3.1 Creation of Street Furniture assets are as a result of changing highway and high street needs and development growth.

A.6.3.2 New street furniture assets are subject to design criteria and sign-off processes to ensure adequacy and safety.

Lifecycle Stage 2 – Routine and Reactive Maintenance for Street Furniture to maintain Safety and Serviceability

A.6.3.3 Cyclical maintenance programmes include electrical testing (where appropriate), general safety checks, visual condition assessments and cleansing. These form part of a rolling programme of highway inspections or in response to public and ad-hoc reports.

A.6.3.4 Traffic signal maintenance procedures ensure specific operational and safety checks are undertaken. Reactive maintenance to wider street furniture assets will be as a result of asset failure or incident damage.

Lifecycle Stage 3 – Renewal/Upgrade or Replacement of Street Furniture

A.6.3.5 The renewal/upgrading or replacement of street furniture assets are currently identified based on reactive requirements.

A.6.3.6 Future Renewal/upgrade and replacement works may include:

- Replacement of outdated assets with low voltage and carbon saving alternatives.
- Replacement of faulty traffic signals or electrical apparatus.

Lifecycle Stage 4 – Decommissioning and Disposal of Street Furniture

A.6.3.7 Occasions to remove rather than replace street furniture from the network of adopted highways may be as a result of carriageway realignment or changing highway needs.

A.6.3.8 If street furniture is removed any materials will be managed in accordance with current environmental legislation, with an emphasis placed on reuse and recycling where practical.