Highway Infrastructure Asset Management Plan

London Borough of Barnet

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Document History

Version	Date	Status	Author	Reviewer	Comments
1.0	March 2011	Initial Draft	Andy Pickett		Initial draft
2.0	August 2012	Final Draft	Andy Pickett		Incorporating LB Barnet comments
2.2	November	Final	Andy Pickett		Incorporating further LBB Comments
3	June 2022	Draft	Mark Rees-Williams	Ali Ataie/Ian Edser	Major review to align with contemporary best practice guidance and LBB Network Recovery Plan initiative.
4	July 2022	Draft	Mark Rees-Williams	Andy Tipping/Ali Ataie	Review comments 4.13,4.24, 5.13, 7.16, 7.17. Accepted and incorporated

Contents

1 Forward/Executive Summary

1.1 Context and Background

1.1.1 The London Borough of Barnet's (LBB) highway network is our largest, most valuable and most visible community asset and is probably the most-used of all of our services, by nearly all residents on a daily basis. It is vital to the economic, social and environmental well-being of our community.

1.1.2 Highway Infrastructure networks through their management and use as *transport assets* promote and support connectivity, accessibility and inclusion, and can positively support air pollution improvements, carbon zero and CO_2 reduction as part of the climate change imperative. Managed well the network can support sustainability and health and wellbeing through active travel.

1.1.3 The Highways Act 1980 ("HA 1980") sets out the main duties of highway authorities in England and Wales. Highway maintenance policy is set within a legal framework. Section 41 of the HA 1980 imposes a duty to maintain highways which are maintainable at public expense. The HA 1980 sits within a much broader legislative framework specifying powers, duties and standards for highway maintenance.

1.1.4 The Council has a duty to ensure that the statutory functions and responsibilities in relation to those highways for which the local authority is responsible are discharged. The Council also has a duty to ensure a safe passage for the highway user through the effective implementation of the legislation available to it, principally the HA 1980 and, in particular, Section 41 of the HA 1980 (noted above).

1.1.5 The current best practice guidance is **Well-Managed Highway Infrastructure A Code of Practice (COP) 2016** and the integrated UK Roads Liaison Group (UKRLG) **Highway Infrastructure Asset Management Guidance Document**. They provide comprehensive information and directives for highway asset management. Best practice is summarised through 36 recommendations (as set out in Schedule 1) in the Code itself (which cross reference to 14 recommendations in the detailed asset management guidance).

1.1.6 The foundation for asset management best practice is the COP Recommendation No.3 (Asset Management Policy & Strategy):- **An asset management policy and a strategy should be developed and published. These should align with the corporate vision and demonstrate the contribution asset management makes towards achieving this vision**

1.1.7 The corporate vision is set out in the **LBB Strategic Asset Management Plan (2014)** which incorporates Highways and Parks Estates (Part 2 Section 5.1) within the overall approach to LBB's management of assets and in the **LBB Sustainability Framework** (approved by Policy & Resources Committee 9th December 2021) The Vision supports the implementation of the **Highway Infrastructure Asset Management Plan (HIAMP)** and other supporting asset management documentation such as the Streetscape

Design Guide (Developers Design Guide), being prepared, to manage best practice for new highway infrastructure and public realm.

1.1.8   This HIAMP sets out our strategy for the financially sustainable maintenance of our road network to best meet the needs of our community in line with best practice guidance. The 2022 HIAMP follows all best practice recommendations with no express or considered deviations from best practice guidance. LBB has in place all key operational components:

- *Electronic Maintenance Management system (CONFIRM)*
- *Appropriately trained and competent delivery teams*
- *Systems to collect asset condition data and report performance*
- *A planned multi-year forward asset maintenance programme (NRP) and budget commitment*
- *Key supporting documentation – Operational Network Hierarchy, Highway Infrastructure Safety Inspection Manual, Streetworks Manual and Winter Maintenance Plan*

1.1.9   Implementation of the HIAMP is supported by the Council's 2022/23 annual revenue maintenance budget to achieve the reactive safety defect policy standards is complemented by other revenue and HIAMP capital funds to maintain, improve and develop highway assets. The planned improvements are in line with the Council's long term transport strategy in support of walking and cycling within the borough as well as ensuring expeditious movement of traffic. A budget allocation of £13.106m (2022/23) supports the delivery of HIAMP Network Recovery Plan (NRP) and Community Infrastructure Levy (CIL) Work Programme, both of which are aligned with CO_2 reduction and efficiency.

1.1.10 The LBB Network Recovery Plan (NRP) which is an operational document supplement to the HIAMP and separately considered and approved annually by the Environment & Climate Change Committee addresses the **key best practice recommendation for a systematic approach to forward planning and long term planned works programmes** (recommendations 13 & 31). LBB has an effective planned programme managed through the NRP. The works programme has been primarily developed based on a visual condition assessment survey and deterioration modelling. Schemes have been identified and prioritised using an asset management approach across the borough, using whole life costing and good asset management principles to ensure that investment is focussed in a timely manner where it is most needed.

1.2   What is Asset Management?

1.2.1   2016 Well-Managed Highway Infrastructure A Code of Practice (COP) Section A.2.1.2 summarises the role of asset management as follows:

"Asset management is widely accepted as a means to deliver a more efficient and effective approach to management of highway infrastructure assets through longer term planning and ensuring that levels of service are defined and achievable for available budgets. It supports making the case for funding, for better communication with stakeholders, and facilitates a greater understanding

1.2.2   2016 Well-Managed Highway Infrastructure A Code of Practice (COP) recommends (Recommendation 12 – Network Hierarchy) that a network hierarchy, or a series of related hierarchies, should be defined which include all elements of the highway network, including carriageways, footways, cycle routes, structures, lighting and rights of way. The hierarchy should take into account current and expected use, resilience, and local economic and social factors such as industry, schools, hospitals and similar, as well as the desirability of continuity and of a consistent approach for walking and cycling.

1.2.3   The LBB Operational Network Hierarchy (ONH) is an integral part of asset management. The ONH was approved by the Environment Committee on 8 March 2022. The ONH maintains a risk category for all parts of the network from which scheduled safety inspections are planned and undertaken to appropriate frequencies and planned asset maintenance is considered. The ONH is regularly reviewed by officers to ensure compliance with national guidelines and updated accordingly to maintain a risk-based approach to highway inspections.

1.3 Role & Purpose of the Highway Infrastructure Asset Management Plan

1.3.1   This HIAMP sets out LBB's current approach to the asset management of the highway infrastructure assets with the Borough and is the basis for periodic strategic review and the identification and management of priorities for further development. These actions are set out in the improvement plan which prioritises actions on the basis of risk and potential for benefits in costs savings and/or improvements in service delivery.

1.3.2   Operational implementation and delivery of the HIAMP is through a suite of documentation including the Highway Infrastructure Safety Inspection Manual (HISIM) which defines the LBB standards for safety defect intervention action thresholds for carriageway and footway trips and potholes. HISIM was approved by the Environment Committee on 8 March 2022. HIAMP also takes into account the climate change agenda and sustainability. The Environment Committee on 8 March 2022 approved a report on Highway Material Palette, which takes into account the sustainability strategy in asset management.

1.3.3   The HIAMP requires a planned maintenance works delivery programme for the Authority's highway infrastructure assets. This includes footways (pavements) and all cycling infrastructure. The LBB planned maintenance programme is the **Network Recovery Plan (NRP)** – most recently Approved by the Environment Committee on 13 January 2022.

1.4 Asset Management Policy Statement

"*In the management and maintenance of the roads and footways, bridges, lighting and other assets that form the London Borough of Barnet highway network, we aim to provide a high quality and sustainable service which both meets the needs of residents, businesses and other stakeholders and which is sustainable in the long term. By adopting a strategic approach and good asset management techniques, we evaluate all costs over the whole service life of our roads, footways, bridges, lighting and other assets, and through the use of a preventative ("stitch in time") approach to maintenance treatments, aim to minimise costs and to maximise value, improve environment whilst providing a high quality sustainable service.*"

2 Highway Infrastructure Asset Management Plan

2.1 Asset Management Guidance & Best Practice

2.1.1 The current best practice guidance is the 2016 Well-Managed Highway Infrastructure A Code of Practice (COP) and the integrated UK Roads Liaison Group (UKRLG) Highway Infrastructure Asset Management Guidance Document. They provide comprehensive information and directives for highway asset management. Best practice is summarised through 36 recommendations (as set out in Schedule 1) in the Code itself (which cross reference to 14 recommendations in the detailed asset management guidance).

2.1.2 Underpinning and fundamental to the whole process of highways asset management is an appreciation of what the network comprises (inventory) and its present condition. Armed with this base knowledge it is then possible consider the current position with respect to service delivery and the focus for improvement reflective of "Levels of Service".

2.1.3 The HIAMP is primarily concerned with ensuring a joined up management system to maintain the existing highway network and support the desired Levels of Service that its assets offer. These capital and operational maintenance activities can extend in a limited way to "asset improvements" but only in so far as:-

   (1)   Activities taken to extend the life of the asset may by definition also improve it somewhat, or

   (2)   New standards can lead to a limited rise in Level of Service expected of the asset itself, and subsequent capital renewal initiatives may include asset upgrades to meet this standard.

2.1.4 In this way, the HIAMP serves to draw on the linkages between national legislative and strategic initiatives at one end of the scale, and at the opposite end it brings in the everyday maintenance, management and operational issues reflective of local decision making in Barnet.

2.2 Scope

2.2.1 Whilst the main focus of the HIAMP is the carriageways and footways and cycleways in the borough, as the highest value assets, it covers all of the council-own assets within Barnet's highway network together with associated services, including;

   1.   Carriageways and footways.

   2.   Highway structures, including bridges, footbridges, retaining walls, subways and culverts.

   3.   Lighting and lighting columns and illuminated signs (PFI Contract)

   4.   Other assets, including traffic signs, road markings and studs, drainage, street furniture, and the green estate.

5.   Highway Drainage

6.   Trees and Verges

7.   Street Furniture, markings and studs.

Traffic signals and other traffic control systems across the borough are maintained by Transport for London and are outside of the scope of this HIAMP.

2.3 The Benefits of Asset Management

2.3.1   The decision making benefits from the implementation of effective highway infrastructure asset management include;

- whole life cost-based modelling, to understand and minimise costs, maximising value over the long term

- scenario planning and option appraisal to model and understand the cost consequences of different maintenance strategies

- prioritising work programmes to maximise the return on a given level of investment

- reducing the amount of unplanned, reactive maintenance

- reducing the number and value of successful third-party claims

- understanding and adjusting trade-offs between capital and revenue spend to achieve the best balance

- using the detailed information that the system will provide about the cost of individual maintenance activities to drive down the cost base, and to monitor whether treatments deliver the expected performance including sustainability and CO_2 reductions

- informing better procurement

- monitoring performance trends over time

- benchmarking.

2.3.2   Implementation of highways asset management further supports the achievement of better value to balance the cost of maintaining the asset to the performance and quality of service delivery provided by the asset eg. a footway or street light

- Reduced life-cycle costs

- Defined levels of service

- The ability to track performance

- Improved transparency in decision making

- The ability to predict the consequences of funding decisions

- Decreased financial, operational and legal risk and

- Ability to discharge valuation and financial reporting responsibilities

2.3.3   Asset management supplements engineering needs and judgement with ancillary financial, economic and socio-analysis modelling, thus enabling the understanding and

the management of relationships between cost and performance, and thereby bringing about improved decision-making.

- Demonstrate the implementation of proactive risk management processes.

- Document "Levels of Service" and the ability to audit asset performance against these.

- Arrive at the best whole life cost solutions for asset maintenance based on predictive modelling techniques.

- Predict the consequences of funding decisions relating to the effect on the asset condition, Levels of Service and the impacts on longer-term costs.

3   Review and Development

3.1 Processes for Updating and Review of the HIAMP

3.1.1   The highways Asset Management business planning cycle will include an annual review, both of individual investment schemes (Network Recovery Plan) and of the operation of the HIAMP as a whole, as part of a process of continuous improvement to consider whether:

- Desired levels of service are being achieved
- Anticipated costs are accurate
- The value of the asset is being maintained
- Option appraisal is being meaningfully applied
- Future projections are realistic
- Service level standards are appropriate

4.1 Asset Inventory/Current Data

4.1.1   Asset inventory information is for the most part held in the LBB Maintenance Management software system - CONFIRM. Structures asset information is managed via the Bridgestation software in conjunction with LoBEG. Street lighting asset information is managed via the Service Provider and their Contractor

4.1.2   Asset condition data is recorded for carriageways and footways, using UKPMS specification surveys, and other specialist surveys for trees, street lighting and structures.

4.1.3   Table 3, below, gives the current best information on the significant assets for which LBB are responsible;

Item	Quantity
Carriageways	6 million square metres
Footways	1.5 million square metres
Street Lighting	33,466 assets all types. [30,466 lit – 27,504 street lights]
Structures	74 no
Street Trees	29,154

Table 4; Asset Quantities

4.1.4   London Borough of Barnet, as Lead Local Flood Authority (LLFA) has a statutory duty under Section 21 of the Flood and Water Management Act 2010 to produce a register of all structures or features, including third party assets, which are likely to have a significant effect on flood risk. This register holds a record of information about each of those structures or features. Work is ongoing to achieve a full register that incorporates third party assets, such as those of the Environment Agency. A focus area is to survey the Council's ordinary watercourses.

4.2 Asset Maintenance Management Systems(software)

4.2.1   LBB operate the CONFIRM electronic maintenance management system as the single system for all requirements. (recently replacing the EXOR Atlas system which functioned for many years).

4.2.2 Street Lighting information is held by the PFI Service Provider and the Contractor Bouygues. It is managed in the software system MUSE (used worldwide). Each street lighting asset contains 144 attributes of detail and through the PFI Contract performance standards cover all aspects of service including the Management Information Systems and related asset Inventories. A full audit record of all works carried out on all assets is recorded and maintained throughout the 25 year contract term.

4.2.3 For bridges and structures the web-based BridgeStation system is used in conjunction with the London Bridge Engineering Group (LoBEG) is used. Bridge Station holds the structures inventory, with design information, maintenance and inspection history and cost information. Photos, drawings and other documents are also stored. The system is used for the bidding of structures funding through TfL, and is mandated by LoBEG. BridgeStation also supports the calculation of the Bridge Condition Index (BCI).

4.2.4 Comprehensive inventory and condition data is held for street trees in the Ezytreev system, supplied by R&A software. A complete inventory of street trees has been held on a database since 1996 and informed the content of the Tree Policy 2017.

4.3 Highway Asset Condition Inspections, Works Ordering and Streetworks

4.3.1 LBB operates a comprehensive and fully integrated condition inspections system using the CONFIRM system. Details are set out in the **Highway Infrastructure Safety Inspection Manual (HISIM) 2022** and the **Streetworks Manual**. The system integrates front end public enquiry service requests with inspections, works ordering to contractor and performance monitoring.

4.4 Data management regime

4.4.1 In the context of highway Asset Management, best practice in data management requires an organisation to:
- recognise data as an asset that is vital to the effective management of highway assets
- be clear on what data is needed to manage its highway assets including required levels of quality and update
- define responsibilities for collecting and maintaining data
- have clear processes and arrangements for the collection or creation; storage and retrieval; and archiving or deletion of data
- apply a service-wide view to ensure that data can be shared and used by different parts of the organisation
- minimise the collection and storage of redundant and duplicate data

4.4.2 The main benefits to an organisation of effective data management are:
- better data quality that enables more effective decision making
- improved service delivery based on better and more timely information
- a better understanding of the data needs of the organisation makes it more responsive to change

- cost savings through more efficient use of data and reduce the amount of duplicate or redundant data that are collected and stored
- sharing of data and information will improve co-operative working and lead to more co-ordinated service provision and alignment with key strategic policies
- employees will be better equipped to take decisions

4.4.3   A combination of operational guidance documents and industry standard asset management systems ensures that the above factors are achieved.

5 Asset Valuation & Depreciation

5.1.1 Asset Management systems provide calculated information on the value of assets. The estimated valuation being a tool to help compare the value of different corporate assets in the context of Whole of Government Accounting (WGA) and support strategic budget allocation decisions. Schedule 4 directs to the latest available calculation of Gross Replacement Cost (GRC) and Depreciated Replacement Cost (DRC) and highway asset valuation for the Carriageways and Footways within LB Barnet. This is via external services provided currently by XAIS.

5.1.2 A GRC value is available for Structures using the LoBEG BridgeStation approach, using standard London Rates.

5.1.3 The London Tree Officers Association developed a method (CAVAT) for valuing the amenity value of trees. Unlike most capital assets, trees actually appreciate in value the larger they become due to replacement costs and ecosystem service benefits (shade, air quality, amenity, flood alleviation etc). This has been applied to the LBB tree stock. The CAVAT valuation does not include the valuation of land.. Refer LBB Tree Policy 2017.

6   Levels of Service

6.1 Levels of Service

6.1.1   Levels of Service provide the mechanism for achieving service quality from the Highways Asset. The Level of Service therefore reflects the way our service is delivered and how it is perceived by our customers. Levels of Service include the performance and condition of the asset itself, the quality of the service that the asset provides and the performance of the Council in delivering that service.

6.1.2   This Highways Asset Management Plan describes the mechanisms that we will put in place to monitor and improve the quality of the services provided by the highways asset, whilst at the same time ensuring that the long-term integrity and cost-effectiveness of the asset is provided for.

6.1.3   The Service is subject to contractual KPIs relating to elements of asset management, particularly reactive maintenance. Annual indicators are produced which examine network performance and consider future trajectory figures to reflect of financial investment levels and associated need for maintenance.

6.2 Stakeholder/Residents' Perception and Satisfaction

6.2.1   Good roads and pavements have benefits to all sectors of the community in removing barriers and assisting quick, efficient, and safe movement to schools, work and leisure. This is particularly important for older people, people caring for children and pushing buggies, those with mobility difficulties and sight impairments. The state of roads and pavements are amongst the top resident concerns and the Council is listening and responding to those concerns by the planned highways maintenance programme.

6.2.2   The physical appearance and the condition of the roads and pavements have a significant impact on people's quality of life. A poor-quality street environment will give a negative impression of an area, impact on people's perceptions and attitudes as well as increasing feelings of insecurity. The Council's policy is focused on improving the overall street scene across the borough to a higher level and is consistent with creating an outcome where all communities are thriving and harmonious places where people are happy to live.

6.2.3   On-going assessments are carried out on the conditions of the roads and pavements in the borough responding to requests by letter, email, and phone-calls from users, Members and issues raised at meetings such as Area Committees. The improvements and repairs aim to ensure that all users have equal and safe access across the borough

regardless of the method of travel. Surface defects considered dangerous are remedied to benefit general health and safety issues for all.

6.2.4   Customer surveys and analysis of customer enquiries and service requests contribute valuable information and insight on residents' priorities and satisfaction with the services provided by the council, including the streets in the borough.

6.2.5   The condition of roads and pavements (footways) has historically tended to be identified as an important issue of concern to residents regarding expectations for the standard of service for maintenance repairs and planned maintenance.

6.2.6   The HIAMP monitoring and review process will use all available information working in conjunction with locally elected Members and the Environment and Climate Change Committee to improve user satisfaction.

7 Lifecycle Planning - Carriageways & Footways

7.1 Lifecycle Planning

7.1.1 Lifecycle Planning recognises that there are key stages in the life cycle of each asset component and that there are options at each of these stages for the investment required and an optimum timing for the investment. The overarching objective is to ensure that each part of the asset (carriageway, footway, bridge) achieves its full expected design life, at minimum cost over its' lifetime. The analysis of options using these criteria is what is generally known as 'Life Cycle Costing' or 'Whole Life Costing'.

7.1.2 The latest best practice guidance provides comprehensive guidance on the use of asset lifecycle planning to optimise whole like costing principles.
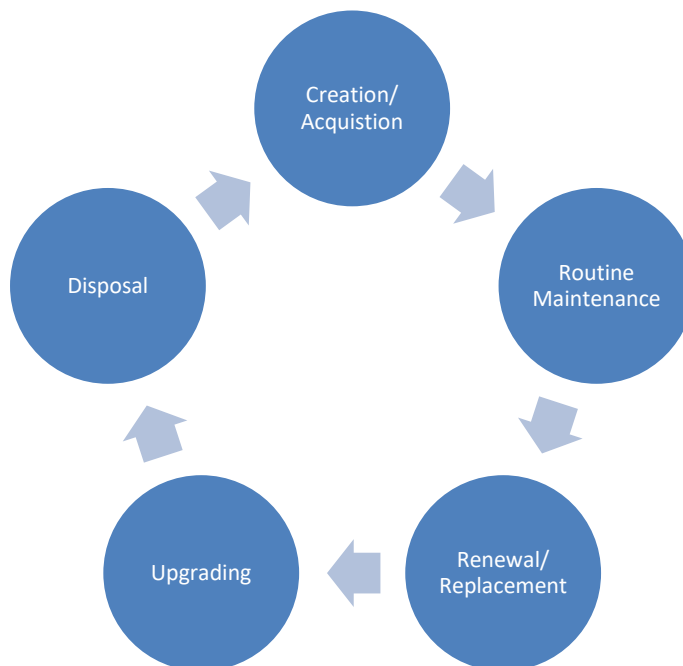
Figure 7. The Asset Lifecycle

7.1.3 The Network Recovery Plan draws upon lifecycle principles to achieve annual percentage (by area) replacement of carriageways aligned with reasonable design life criteria of 20-25 years for carriageways (e.g. circa 5% annual replacement) and 40-50 years for footways. The Operational Network Hierarchy (ONH) helps to factor in different levels of usage to lifecycle planning and prioritisation.

7.1.4 Lifecycle planning for LBB's 74 structures is managed for London as a whole, through a LoBEG Asset Management Working Group and using BridgeStation specialist asset

management software and is driven by inspection data prioritisation and on the Bridge Condition Index (BCI). Higher-risk structures are also subject to additional inspections.

7.1.5 Lifecycle planning for the street lighting assets is applied through a detailed and contractual performance specification.

7.1.6 For tree management asset management is well advanced. It is worth acknowledging that street trees are planted to have a minimal life expectancy of 50 years and for existing mature trees of certain species, i.e. Oak, London Plane, this would be well in excess of 100 years.

7.1.7 Life cycle planning is adopted to ensure an evenly aged tree stock, comprehensive data on the extent, specification and condition of trees is held, and is used to inform decisions on maintenance and investment in conjunction with assessments of risk. The London Borough of Barnet Tree Policy was adopted in October 2017 and documents all key elements of tree asset management.

7.2 Forward Works Programming (Network Recovery/Backlog Management)

7.2.1 'Maintenance Backlog' in asset management terms is an assessment of the total work required to bring the network to "steady state" condition; that is, where the network is in an acceptable condition, in accordance with standard good practice and with LB Barnet's priorities and aspirations, and where the annual calculated financial deterioration can be matched by annual expenditure.

7.2.2 LBB has an established forward planning system to replace carriageway and footway surfacing assets. The Network Recovery Plan works programme, now in its' 8th year of operation, is addressing the assessed backlog. The system is set out and approved annually in the **Network Recovery Plan** and links to available CVI and FNS condition surveys and projections and all available information.

Survey	Coverage
UKPMS Coarse Visual Inspections (CVI)	All Local Road Carriageways
UKPMS Footways Network Survey (FNS)	All Footways
SCANNER Machine Survey	Principal and Classified Roads
DVI	Principal Road Carriageways
SCRIM	Principal Road Carriageways
Patching (Bespoke Survey)	Principal, Classified and Local Roads

7.2.3   The current asset works programme and funding to support is set out in the Environment Committee Report 13th January 2022

7.2.4   LBB has a defined Network Hierarchy – the Operational Network Hierarchy (ONH) which is used to assist with prioritisation based on need and relative risk.

7.2.5   The Work Programme is developed from the foundation of an independent condition assessment survey company, Xais, who undertake a visual survey of every public highway footway and carriageway in the borough and record the data to a defined national standard. This data is added to that of the defects scores, scoring to indicate the relative position on the operational network hierarchy and location in relation to places of education and worship. In the case of footways, the surveys also consider where footway deterioration was evident due to tree root protrusion. These principles and guidelines are documented in 'Well Managed Highway Infrastructure' A Code of Practice 2016.

7.2.6   A risk-based asset management approach is employed when selecting potential schemes, and the Council continually seeks advancement in the way the condition data is collected and analysed. Advancement in data capture and analysis technology has enabled more insight into the data and use it more effectively to determine areas of defectiveness on the highway network. Latest (2022) scheme selection has included the introduction of Artificial Intelligence (AI) technology and imagery for the validation of asset condition. Continuous improvements enhance confidence in the data provided and improve the analysis of network condition data.

7.2.7   Engagement with ward councillors is undertaken on the NRP Work Programme. The final programme can necessarily be subject to review and possible change to ensure that future developments and statutory undertaker works within the borough do not conflict and result in abortive works, or where engineering practicalities mean that the proposed treatment type is no longer suitable. Any schemes which are unable to be progressed or delayed due to such circumstances are replaced in the programme with those next on the priority list.

7.3 Maintenance Treatment Options

7.3.1   The Network Recovery Plan incorporates a standardised set of carriageway and footway design treatments to optimise maintenance expenditure and value for money.

7.3.2   The Council's **Sustainability Strategy Framework** (as approved by the Policy & Resources Committee on 9 December 2021) identified that the Council's supply chain makes up the largest contribution to the Council's carbon emissions, in particular the construction supply chain is a significant contributor. The baseline data assessed that 37% of the Council's supply chain emissions related to construction. The Highways Service forms part of this supply chain. The Council's Highways Service uses on average 15,000 tonnes of asphalt-based products in a typical year, with the approved

NRP and CIL work programme likely to increase this to 25,000 tonnes in 2022/23 financial year.

7.3.3   The Council has introduced an innovative Highway Material Palette for use in the delivery of the Councils reactive and planned maintenance programmes from 1 April 2022.

7.3.4   In collaboration with Tarmac Kier Joint Venture (LBB's current term maintenance contractors) the implementation of a coherent and consistent Highway Material Palette will support the Council in its sustainability objectives through a 'whole life' approach drive efficiency in the operation, providing the Council with ongoing value for money as well as reduction in CO2e carbon emissions and increasing the use of recycled materials.

7.4 Annual Depreciation

7.4.1   Annual Depreciation provides an indication of the level of funding required to maintain the network in "steady state" condition once backlog has been eliminated. For carriageways, annual depreciation, calculated using the standard CIPFA/UKPMS method.

8 Improvement Plan

8.1 Improvement Plan

8.1.1 LBB is currently assessing priority focus areas. An overview report RAG rated the status of best practice systems and documentation to inform a prioritised improvement plan. A review and 2022 update of the Highway Infrastructure Safety Inspection Manual and Operational Network Hierarchy has been completed. The Streetworks Manual has been completed. A new asset management **Streetscape Design Guide** is being developed which will help direct best practice when new assets are being considered planned and developed.

8.2 Progress against COP Recommendations

8.2.1 Schedule 1 reproduces the COP key 36 recommendations. LBB can evidence a high level of compliance with the key recommendations as set out in this HIAMP.

9   Conclusions

9.1.1   This 2022 HIAMP provides a strategic overview of LBB's Highway Infrastructure Asset Management approach and systems and identifies a programme of works and planned developments to further ensure good asset management practices. The documentation system is illustrated at Schedule 2 of this HIAMP.

9.1.2   The HIAMP and systems are based, as recommended, on current best practice guidance -Well-Managed Highway Infrastructure A Code of Practice (COP) and the integrated UK Roads Liaison Group (UKRLG) Highway Infrastructure Asset Management Guidance Document. Collectively they provide comprehensive information and directives for highway asset management. Best practice is summarised through 36 recommendations (as set out in Schedule 1) in the Code itself (which cross reference to 14 recommendations in the detailed asset management guidance).

9.1.3   This LBB Highway Infrastructure Asset Management Plan (HIAMP) sets out the strategy for the financially sustainable maintenance of the LBB road network to best meet the needs of the community in line with best practice guidance. The 2022 HIAMP follows all best practice recommendations with no express or considered deviations from best practice guidance.

9.1.4   The HIAMP is not a static document and will require review and updating (as necessary) on an annual basis, to reflect:
- Any changes to national guidance and good practice recommendations
- progress in the development of the HIAMP and of asset management practices
- updated forward work programmes
- updated asset data and statistics
- changes to priorities and policies in LBB, in London and nationally
- changes to reporting requirements

9.1.5   The HIAMP confirms LBB's intention and commitment to improve the quality of service, sustainability and the value for money realised from its' highway maintenance expenditure and positive support for key environmental policies. Key initiatives including:-
- The forward planned maintenance programme – The Network Recovery Plan
- Adoption of sustainability supporting Materials Palette
- Annual condition surveys and performance measurement (XAIS)
- A clear Highway Infrastructure Safety Inspection Manual HISIM
- A well defined Network Hierarchy (LBB Operational Network Hierarchy)
- LoBEG Structures Asset Management with BMS Condition Assessment

10 Schedules

Schedule1. Well-Managed Infrastructure COP 2016 -36 Recommendations

RECOMMENDATION 1 – USE OF THE CODE

This Code, in conjunction with the UKRLG Highway Infrastructure Asset Management Guidance, should be used as the starting point against which to develop, review and formally approve highway infrastructure maintenance policy and to identify and formally approve the nature and extent of any variations.

RECOMMENDATION 2 – ASSET MANAGEMENT FRAMEWORK

An Asset Management Framework should be developed and endorsed by senior decision makers. All activities outlined in the Framework should be documented.

RECOMMENDATION 3 – ASSET MANAGEMENT POLICY AND STRATEGY

An asset management policy and a strategy should be developed and published. These should align with the corporate vision and demonstrate the contribution asset management makes towards achieving this vision.

RECOMMENDATION 4 – ENGAGING AND COMMUNICATING WITH STAKEHOLDERS

Relevant information should be actively communicated through engagement with relevant stakeholders in setting requirements, making decisions and reporting performance.

RECOMMENDATION 5 – CONSISTENCY WITH OTHER AUTHORITIES

To ensure that users' reasonable expectations for consistency are taken into account, the approach of other local and strategic highway and transport authorities, especially those with integrated or adjoining networks, should be considered when developing highway infrastructure maintenance policies.

RECOMMENDATION 6– AN INTEGRATED NETWORK

The highway network should be considered as an integrated set of assets when developing highway infrastructure maintenance policies

RECOMMENDATION 7 – RISK BASED APPROACH

A risk based approach should be adopted for all aspects of highway infrastructure maintenance, including setting levels of service, inspections, responses, resilience, priorities and programmes.

RECOMMENDATION 8 – INFORMATION MANAGEMENT

Information to support a risk based approach to highway maintenance should be collected, managed and made available in ways that are sustainable, secure, meet any statutory obligations, and, where appropriate, facilitate transparency for network users.

A Code of Practice RECOMMENDATION 9 – NETWORK INVENTORY

A detailed inventory or register of highway assets, together with information on their scale, nature and use, should be maintained. The nature and extent of inventory collected should be fit for purpose and meet business needs. Where data or information held is considered sensitive, this should be managed in a security-minded way.

RECOMMENDATION 10 – ASSET DATA MANAGEMENT

The quality, currency, appropriateness and completeness of all data supporting asset management should be regularly reviewed. An asset register should be maintained that stores, manages and reports all relevant asset data.

RECOMMENDATION 11 – ASSET MANAGEMENT SYSTEMS
Asset management systems should be sustainable and able to support the information required to enable asset management. Systems should be accessible to relevant staff and, where appropriate, support the provision of information for stakeholders.

RECOMMENDATION 12 – NETWORK HIERARCHY
A network hierarchy, or a series of related hierarchies, should be defined which include all elements of the highway network, including carriageways, footways, cycle routes, structures, lighting and rights of way. The hierarchy should take into account current and expected use, resilience, and local economic and social factors such as industry, schools, hospitals and similar, as well as the desirability of continuity and of a consistent approach for walking and cycling.

RECOMMENDATION 13 – WHOLE LIFE / DESIGNING FOR MAINTENANCE
Authorities should take whole life costs into consideration when assessing options for maintenance, new and improved highway schemes. The future maintenance costs of such new infrastructure are therefore a prime consideration.

RECOMMENDATION 14 – RISK MANAGEMENT
The management of current and future risks associated with assets should be embedded within the approach to asset management. Strategic, tactical and operational risks should be included as should appropriate mitigation measures.

RECOMMENDATION 15 – COMPETENCIES AND TRAINING
The appropriate competency required for asset management should be identified, and training should be provided where necessary.

RECOMMENDATION 16 – INSPECTIONS
A risk-based inspection regime, including regular safety inspections, should be developed and implemented for all highway assets.

RECOMMENDATION 17 – CONDITION SURVEYS
An asset condition survey regime, based on asset management needs and any statutory reporting requirements, should be developed and implemented.

RECOMMENDATION 18 – MANAGEMENT SYSTEMS AND CLAIMS
Records should be kept of all activities, particularly safety and other inspections, including the time and nature of any response, and procedures established to ensure efficient management of claims whilst protecting the authority from unjustified or fraudulent claims.

RECOMMENDATION 19 – DEFECT REPAIR
A risk-based defect repair regime should be developed and implemented for all highway assets.

RECOMMENDATION 20 – RESILIENT NETWORK
Within the highway network hierarchy a 'Resilient Network' should be identified to which priority is given through maintenance and other measures to maintain economic activity and access to key services during extreme weather.

RECOMMENDATION 21 – CLIMATE CHANGE ADAPTATION
The effects of extreme weather events on highway infrastructure assets should be risk assessed and ways to mitigate the impacts of the highest risks identified.

RECOMMENDATION 22 – DRAINAGE MAINTENANCE

Drainage assets should be maintained in good working order to reduce the threat and scale of flooding. Particular attention should be paid to locations known to be prone to problems, so that drainage systems operate close to their designed efficiency.

RECOMMENDATION 23 – CIVIL EMERGENCIES AND SEVERE WEATHER EMERGENCIES PLANS

The role and responsibilities of the Highway Authority in responding to civil emergencies should be defined in the authority's Civil Emergency Plan. A Severe Weather Emergencies Plan should also be established in consultation with others, including emergency services, relevant authorities and agencies. It should include operational, resource and contingency plans and procedures to enable timely and effective action by the Highway Authority to mitigate the effects of severe weather on the network and provide the best practicable service in the circumstances.

RECOMMENDATION 24 – COMMUNICATIONS

Severe Weather and Civil Emergencies Plans should incorporate a communications plan to ensure that information including weather and flood forecasts are received through agreed channels and that information is disseminated to highway users through a range of media.

RECOMMENDATION 25 – LEARNING FROM EVENTS

Severe Weather and Civil Emergencies Plans should be regularly rehearsed and refined as necessary. The effectiveness of the Plans should be reviewed after actual events and the learning used to develop them as necessary.

RECOMMENDATION 26 – PERFORMANCE MANAGEMENT FRAMEWORK

A performance management framework should be developed that is clear and accessible to stakeholders as appropriate and supports the asset management strategy.

RECOMMENDATION 27 – PERFORMANCE MONITORING

The performance of the Asset Management Framework should be monitored and reported. It should be reviewed regularly by senior decision makers and when appropriate, improvement actions should be taken.

RECOMMENDATION 28 – FINANCIAL PLANS

Financial plans should be prepared for all highway maintenance activities covering short, medium and long term time horizons.

RECOMMENDATION 29 – LIFECYCLE PLANS

Lifecycle planning principles should be used to review the level of funding, support investment decisions and substantiate the need for appropriate and sustainable long- term investment.

RECOMMENDATION 30 – CROSS ASSET PRIORITIES

In developing priorities and programmes, consideration should be given to prioritising across asset groups as well as within them.

RECOMMENDATION 31 – WORKS PROGRAMMING

A prioritised forward works programme for a rolling period of three to five years should be developed and updated regularly.

RECOMMENDATION 32 – CARBON

The impact of highway infrastructure maintenance activities in terms of whole life carbon costs should be taken into account when determining appropriate interventions, materials and treatments. The utilisation of trees to convert carbon to oxygen has been quantified along with carbon storage in timber and roots.

RECOMMENDATION 33 – CONSISTENCY WITH CHARACTER
Determination of materials, products and treatments for the highway network should take into account the character of the area as well as factoring in whole life costing and sustainability. The materials, products and treatments used for highway maintenance should meet requirements for effectiveness and durability.

RECOMMENDATION 34 – HERITAGE ASSETS
Authorities should identify a schedule of listed structures, ancient monuments and other relevant assets and work with relevant organisations to ensure that maintenance reflects planning requirements.

RECOMMENDATION 35 – ENVIRONMENTAL IMPACT, NATURE CONSERVATION AND BIODIVERSITY
Materials, products and treatments for highway infrastructure maintenance should be appraised for environmental impact and for wider issues of sustainability. Highway verges, trees and landscaped areas should be managed with regard to their nature conservation value and biodiversity principles as well as whole-life costing, carbon capture, highway safety and serviceability.

RECOMMENDATION 36 – MINIMISING CLUTTER
Opportunities to simplify signs and other street furniture and to remove redundant items should be taken into account when planning highway infrastructure maintenance activities.

Schedule2. LBB Asset Management Suite of Documentation
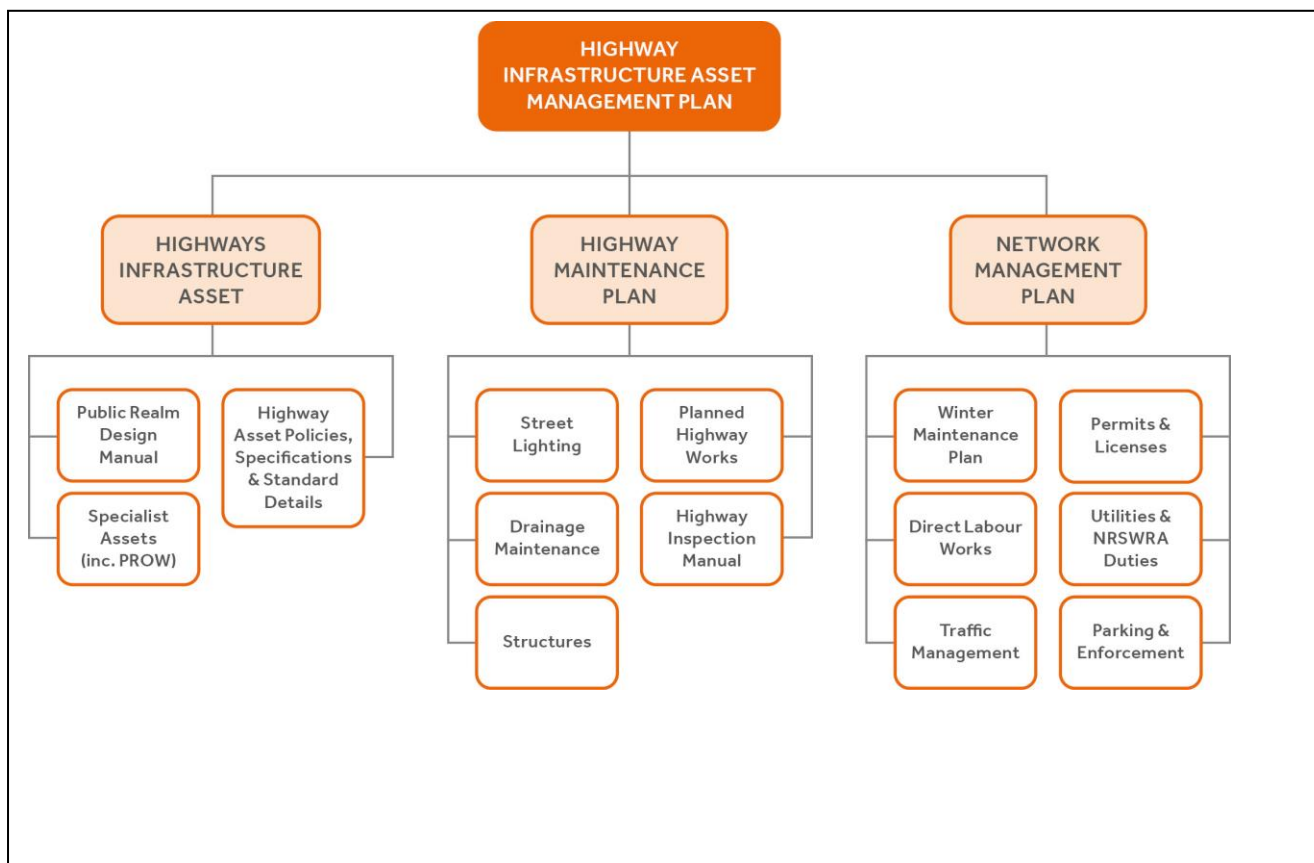
Schedule3. Forward Work Programmes (Network Recovery Plan link)

See Environment Committee Network Recovery Plan Report 13th January 2022.

Schedule3a. NRP Materials Palette (sustainabilty)

See Environment Committee Highway Material Palette Report 8th March 2022.

Schedule4. Condition of Carriageway & Footways (link to latest surveys XAIS)

See latest external specialist provider XAIS document/reports.

Schedule5. Carriageway and Footway GRC and DRC Calculation (XAIS)

See latest external specialist provider XAIS document/reports.

Schedule6. Asset Inventories

Available from LBB electronic Maintenance Management Systems – CONFIRM, Bridgestation, MUSE (street lighting), Ezytreev (Trees)

Schedule7. Key Document References

1. Well-Managed Highway Infrastructure A Code of Practice 2016*

2. UK Roads Liaison Group (UKRLG) Highway Infrastructure Asset Management Guidance Note*

3. LBB Sustainability Strategy Framework, as approved by the Policy & Resources Committee on 9 December 2021

4. Highway Infrastructure Safety Inspection Manual (HISIM) incorporating the Operational Network Hierarchy (ONH)

5. London Borough of Barnet Tree Policy October 2017

6. Streetscape Design Guide (pending – Autumn 2022)

* Available from www.ukroadsliaisongroup.org

Schedule8.Abbreviations

BCI	Bridge Condition Index
BSI	British Standards Institution
BVPI	Former Best Value Performance Indicator
CAVAT	Capital Asset Value for Amenity Trees
CI	Condition Index
CIPFA	Chartered Institute of Public Finance and Accounting
CVI	UKPMS Coarse Visual Inspection
DBM	Dense Bituminous Macadam
DfT	Department for Transport
DRC	Depreciated Replacement Cost
DVI	UKPMS Detailed Visual Inspection
FNS	UKPMS Footways Network Survey
GRC	Gross Replacement Cost
HIAMP	Highway Infrastructure Asset Management Plan
LBB	London Borough of Barnet
LLFA	Lead Local Flood Authority
LoBEG	London Bridge Engineering Group
LoTAG	London Technical Advisers Group
NI	Former National Data Set
PCIS	Pavement Condition Information Systems
RAG	Red, Amber, Green (maps)
SCANNER	Surface Condition Assessment for the National NEtwork of Roads
SCRIM	Sideway-force Coefficient Routine Investigation Machine
SDS	Single Data Set
TAG	Technical Advisers Group
TfL	Transport for London
TMA	Traffic Management Act
UKPMS	United Kingdom Pavement Management System
WGA	Whole of Government Accounts