

	Cabinet 16 October 2023
	Report from the Corporate Director of Resident Services
	Lead Member – Cabinet Member for Environment, Infrastructure & Climate Action (Councillor Krupa Sheth)
Highways Planned Maintenance Programme 2023-24	
Wards Affected:	All
Key or Non-Key Decision:	Key
Open or Part/Fully Exempt: <small>(If exempt, please highlight relevant paragraph of Part 1, Schedule 12A of 1972 Local Government Act)</small>	Open
List of Appendices:	Four: Appendix A: Highways Maintenance Programme Completed in 2022/23 Appendix B: Highways Maintenance Programme for 2023/24 Appendix C: Ward Abbreviations Appendix D: Key Officer Decision
Background Papers:	None
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1.0 Executive Summary

- 1.1 This report sets out recommendations for Brent's 2023/24 Carriageway Maintenance programme through prioritised programmes of major road resurfacing and preventative maintenance, which includes injection patching.

1.2 It also sets out budgets for asset condition surveys and analysis, improvements to highway structures & drainage, improvements to the public realm and renewal of road markings.

1.3 To enable further ward councillor discussions on ward priorities a report detailing the footway maintenance programme will be presented to a future Cabinet.

2.0 Recommendation(s)

That Cabinet:

2.1 Approves the 2023/24 Planned Carriageway Maintenance Programme as set out in Appendix B of this report.

2.2 Note the budgets allocated for asset condition surveys and analysis, improvements to highway structures & drainage, improvements to the public realm and renewal of road markings.

3.0 Detail

3.1 Cabinet Member Foreword

3.1.1 Highway infrastructure is the most visible, well used and valuable physical asset owned by the Council. The latest value of Brent's asset is estimated at around £4.5bn and includes 505 km of roads; 847 km of pavements; 20700 road gullies and 90 bridges and structures.

3.1.2 Our Asset Management approach uses condition survey and other data to produce annual road and footway maintenance programmes, to give optimum condition improvement for our budget, taking into account deterioration of the asset.

3.1.3 This work chimes well with our Borough Plan, particularly "Prosperity & Stability in Brent" and "A Cleaner Greener Future". Our efforts to reduce the carbon footprint of our highways works help our "Climate and Ecological Emergency Strategy". The highways drainage work is embedded in our "Flood Risk Management Strategy" and the highways term contracts (through which this work is carried out) have been procured in accordance with the "Procurement Strategy". Overall, highway maintenance allows our highway assets their continued availability to contribute towards the "Transportation Strategy".

3.1.4 A report detailing a three year Planned Footway Maintenance programme will be presented to a future Cabinet. This is to enable further discussion with Ward Councillors on the priority locations they want included in the 2023-26 Planned Footway Maintenance programme, which may differ from the priority locations identified through the Asset Management selection process.

3.2 Background

Last Year's Highways Maintenance Investment 2022/23

3.2.1 In 2022/23 Brent's annual highways maintenance investment programme consisted of £3.5m base Brent capital funding, plus £2m extra Brent Capital funding. This was used to maintain Brent's carriageways, footways and highway structures. The works delivered, which resulted in (amongst other things) around 4.3 miles of roads being resurfaced, and 5.7 miles of footways being reconstructed.

Brent's Highway Assets

3.2.2 Highway infrastructure is the most visible, well used and valuable physical asset owned by the Council. The latest value of Brent's asset is estimated at around £4.5bn and includes:

- 505 km (315 miles) of roads;
- 847 km (529 miles) of pavements;
- 90 bridges and structures;
- 20700 road gullies;
- 10,000 street trees; and
- 22,848 streetlights and other illuminated street furniture.

Asset Condition Surveys

3.2.3 We have taken advantage of new technology to improve our asset condition data collection. Now, for carriageways, a video survey of the whole borough can be completed in a week, much quicker than a traditional manual survey. The survey is undertaken from an ordinary car using a standard mobile phone. The innovative part is that Artificial Intelligence (AI) software then scans the images, quickly and reliably identifying defects and categorising them into types.

3.2.4 Being quick, this survey method means we can progress repairs quickly ; from the start of borough-wide video survey, through data analysis, to a programme of pothole repair works commencing on the ground can be as little as three weeks. The rapidity of this survey method means that we have comprehensive and up-to-date road defect data and so can target repairs (e.g. injection patching) much more effectively.

3.2.5 The video survey has other benefits; officers can interrogate the images to see exactly why one section is showing up "red" condition; inventories of traffic signs (temporary and permanent) are collected automatically; and the system can (for instance) identify faded road markings, allowing us to produce a comprehensive intelligence-lead prioritised refresh programme much more efficiently.

3.2.6 It is proposed to utilise up to £100,000 of Brent capital funding to undertake asset condition surveys and analysis during 2023/24. These surveys assist us in managing the asset by providing data on the long-term deterioration of the network and help us draw up prioritised works programmes.

Structural Asset Condition

3.2.7 The table below sets out the condition of Brent's roads (carriageway) by indicating the percentage of each length of road type where maintenance should be considered.

Year	% of roads where maintenance should be considered		
	A class roads	B and C class roads	Unclassified roads
2008/2009	8%	9%	23%
2009/2010	11%	9%	23%
2010/2011	9%	7%	27%
2011/2012	9%	6%	26%
2012/2013	8%	9%	20%
2013/2014	13%	11%	21%
2014/2015	16%	16%	21%
2015/2016	6%	10%	21%
2016/2017	6%	5%	24%
2017/2018	22%	7%	21%
2018/2019	6%	7%	18%
2019/2020	14%	10%	14%
2020/2021	17%	14%	9%
2021/2022	22%	16%	8%
2022/2023	10%	7%	8%

3.2.8 The classified road network has improved in condition, with A-roads improving from 22% to 10% in need of maintenance and B&C-roads going from 16% to 7%. The improvement in A-road performance reflects the investment put in by Brent last year 22/23, with 2 km of resurfacing and a large patching programme. However, capital spend resulting in improvement is not the only factor on these figures as at the same time network deterioration also affects condition by making it worse. Unclassified roads make up 80% of all borough roads and from the latest surveys and their condition has held steady, with 8% of Brent's unclassified roads now in need of substantial maintenance. This is in spite of the unfavourable weather conditions experienced in the 22/23 winter, and reflects the increased budget for road resurfacing recent years as the footway allocation within the £3.5m normally used for footways was "repurposed" for extra carriageway maintenance in the years of large additional investments of £20m & £15m. The extensive injection patching programmes no doubt help the carriageway condition.

3.2.9 As time goes on roads and pavements that are currently in good condition will deteriorate, just like any physical asset such as a house or a vehicle. To keep on top of the deterioration of our asset the council must invest continually in maintenance.

Highways Asset Management & Scheme Prioritisation

3.2.10 To improve the way the council maintains its highways, the council adopted the Highway Asset Management Plan (HAMP) in February 2014. The HAMP sets out a strategy based on the need to repair our assets on a regular basis, before

they fail, to extend their lifespans and reduce repair costs long-term, and provide the best value for money for the Council.

3.2.11 The strategy initially involves introducing a programme of major resurfacing works along with preventative maintenance, which takes the form of thin surface treatments (to seal roads against water ingress) and injection patching (to slow down the rate of deterioration)

3.2.12 During 2022/23, the network has been assessed to determine the current condition of our carriageways. A range of factors is then considered to define priorities for maintenance.

3.2.13 Our Asset Management (AM) software uses the Council's condition survey data to produce annual road maintenance programmes, including suggested treatments, for defined budgets to give optimum condition, taking into account deterioration of asset. Officers use this function of the AM tool to draw up programmes for:

- Major resurfacing programme for B, C and unclassified roads;
- Preventative maintenance for unclassified roads (both thin surfacing and injection patching programmes)
- Road-marking refresh programme

3.2.14 The factors taken into account come under two broad headings, "**Treatment Benefit**" from network condition and "**Prioritisation benefit**" for all the other factors. Scores are given according to each of the factors and the total score gives the relative priority for maintenance of one road against another.

Treatment Benefit

- a) In order to create analytical models to understand maintenance needs, firstly we define how the asset will deteriorate if no remedial action is taken. This can be done in a number of ways, one of which is using historical condition data. The next thing is to define the remedial treatments to counter that deterioration. Specific treatments could be 20mm resurfacing, 40mm resurfacing or reconstruction for a carriageway.
- b) Defined data is used to identify the suitable remedial treatments to be applied to each scheme and are obtained from the combination of condition triggers required for each treatment.
- c) The system then analyses the maintenance rules over subsection lengths (e.g. 10m, 20m) of carriageway. For each subsection, from the condition surveys it identifies the treatment required. It then merges treatment subsections together into "schemes".
- d) A "Benefit Cost Ratio" (BCR) is calculated for each subsection, which is the expected improvement in condition (i.e. the Benefit) versus the cost of treatment. This is then averaged over the total length of road surface identified as needing maintenance, to get the "Average Treatment Benefit".

Prioritisation Benefit

Scores for each of the following Prioritisation factors are calculated, weighted according to both the relative importance of each factor, and the total length of

required maintenance (“treatment length”) identified within a road, to get the Prioritisation Benefit score.

- e) **Claims Priority** Roads with a recent history of public accident claims for loss or damage on the carriageway are allocated a score in this category. The number of accident claims in a road is divided by its length, so that roads of different lengths can be compared on an equal basis.
- f) **Defects Priority** Roads with a recent history of reactive maintenance defects identified on the carriageway are allocated a score in this category. Reactive maintenance defects could be potholes or cracking and are identified through either reactive safety inspections in response to customer reports or scheduled safety inspections. The number of defects in a road is divided by its length, so that roads of different lengths can be compared on an equal basis.
- g) **Nominations Priority** Roads, which have been named in that year’s round of Councillor Nominations, are allocated a score in this category
- h) **Hierarchy Priority** Brent carriageway hierarchies have been determined according to the principles in the industry Code of Practice “Well Managed Highway Infrastructure” by Metis Consultants Ltd. A network hierarchy based on asset function is the foundation of a risk-based maintenance strategy. The hierarchy takes into account current and expected use, resilience, and local economic and social factors such as industry, schools, hospitals and similar.

3.2.15 Note the above relates to Non-Principal Roads only, for Principal Roads resurfacing programmes have been determined solely by structural condition as they carry the greatest volume of traffic.

3.2.16 Programmes are often drawn up on a whole road basis. This means a section of road in relatively good condition may be resurfaced if it is on a street where the rest of the road needs maintenance and it would be illogical, or impractical, not to resurface the whole street. With longer roads, schemes can be targeted at a section of the road between junctions where the priority is highest.

Preventative Treatments and Innovation

3.2.17 Thin surface treatments used in preventative maintenance is appropriate where the deterioration in the surface (as measured by highway condition survey data) has not yet resulted in problems with the underlying structure of the road. Similarly, major resurfacing is required when deterioration has progressed further and so more extensive (and more expensive) repairs are necessary.

Highways Investment during 2023/24

3.2.18 Two schemes on the Principal Roads resurfacing programme and ten locations for major footway reconstruction were approved by Key Officer Decision for an early start in August. This was to facilitate implementation of the 2023/24 programmes, by giving approval for implementation before this customary

annual Highways Capital Maintenance report to Cabinet. See Appendix D for the Key Officer decision report.

3.2.19 Carriageway Works

- a) Roads have been prioritised from the results of an independent network condition survey, also considering roads against the wide range of factors noted above, and with an engineer’s assessment from a site visit.
- b) In summary the proposed carriageway works programme for FY 23/24 includes:

Carriageway works programme 2022/23	£000
Major resurfacing of B, C & unclassified roads; Preventative maintenance unclassified roads	2175
Carriageway Short Sections	150
Injection patching	250
Renewal of Road Markings	50
£15 m - Major resurfacing of Principal (“A”) roads	2000
Total	4,625

Principal Road Network Funding

- c) In previous years, in addition to £3.5m of Brent capital, TfL would add funding for Principal Road (A-road) improvements. However, in November 2017 TfL published details of their new five-year Business Plan and between 2018/19 and 2019/20 investment in proactive planned renewals on both the Borough Principal Road Network (BPRN) and TfL Road Network (TLRN) was “paused”, with only very limited funding available across London; Brent received no funding in 2018/19 and 2019/20. In 2020/21, Brent received £239,000 of TfL funding to resurface Willesden Lane (Sidmouth Road to Coverdale Road). No funding from TfL was received for 2021/22, or 2022/23 either. This year 23/24 Brent has successfully secured £200k of funding towards the resurfacing of the A4006 Kenton Road between Woodcock Hill and Rushout Avenue

Injection patching

- d) In summer 2018, a successful pilot programme of injection patch repairs was carried out on unclassified roads (side roads). With this process, a large number of potholes can be treated quickly. A pothole repair can be done in about two minutes – the normal time it usually takes a conventional repair gang to do the job would be 10-15 minutes. The programme went very well, with a large number of defects being fixed across the borough in a short space of time, with minimal disruption.
- e) Though it should be pointed out that the process does not claim to provide repairs as long-lasting as traditional patch repairs, many repairs have indeed turned out to be durable, and there is no doubt that injection patching is a useful addition to our palette of repair types.

- f) Given this success, in 2019/20, a two-year contract was and a programme of repairs was carried out with a £500,000 annual budget to deliver a borough wide programme of injection patching pothole repairs.
- g) The previous two-year injection-patching contract has now expired, and a new two-year contract was procured in summer 2021. As of 2nd July 2023, our injection patching contractor has now completed their latest programme of repairs with Phase one running from January to September 2022 and Phase two running from March to June 2023. They concentrated on residential roads, picking up all surface highways defects along identified routes. In all they visited 398 roads, and undertook 13,424 repairs.
- h) This works out at £29.79 per repair on average (disregarding the size of the repair). In comparison a 1m2 traditional repair 100mm deep costs on average £89.87 (the cost varies depending on the type of asphalt)

Carriageway Short Sections

- i) Short lengths of carriageway that are in poor condition can cost a significant amount in reactive maintenance repairs, as well as being a cause of accident claims. It is therefore proposed to invest £150k of this year's overall budget to resurface short sections of carriageway through a targeted large patching programme. The programme will be determined "in-year" according to priorities at the time.

3.2.20 Investing in Public Realm

This year it is proposed that the Public Realm programme will continue with an allocation of £125k. The works will be to strengthen and protect footways and soft verges, particularly at junctions, to mitigate the effects of vehicle overrun.

3.2.21 Reducing the risk of flooding in Brent

Implementation of Sustainable Drainage Systems (SuDS) in Developments

- a) Since the introduction of the Flood & Water Management Act 2010, the Highways & Infrastructure service assesses every major development within the borough to ensure that each is in accordance with the London plan for sustainable drainage. So, each development will have at least a 50 % reduction in surface water discharge from the current level, which will incrementally decrease the volume of flow entering the sewer system during any rainfall event which will start to reduce significantly highway flooding.
- b) To accompany the reduction in discharge, we ensure that each development incorporates SuDS infrastructure such as green roofs, blue roofs and permeable paving that provides amenity for our residents, reduces carbon outputs, and enhances biodiversity.

Flood Risk Alleviation Schemes

- c) We are currently looking at hydraulic modelling to assess the prime areas of flooding within the borough and are looking at new opportunities to implement new schemes in order to alleviate flooding, provide amenity, and increase our biodiversity and lowering our carbon outputs

Watercourse Maintenance

- d) We manage the non-statutory main rivers within the borough and undertake inspections and maintenance to ensure that the watercourses are able to attenuate rainfall flows sufficiently and prevent “fluvial flooding” This occurs when the water level in a river, lake or stream rises and overflows onto the surrounding banks neighbouring land. By contrast, a pluvial flood occurs when an extreme rainfall event creates a flood independent of an overflowing water body

Flood Risk Management strategy

- e) Following extensive flooding in 2007, the Government gave powers and responsibilities to local authorities enabling them to manage flood risk more effectively. The Flood Risk Regulations 2009 and the Flood and Water Management Act 2010, have increased the statutory responsibilities of unitary authorities such Brent Council, which has a new role as the Lead Local Flood Authority (LLFA) for the borough.

The Flood Risk Regulations 2009 introduced duties onto Local Lead Flood Authorities (LLFAs) to prepare preliminary assessment reports, to identify Flood Risk Areas and to prepare a Flood risk Strategy. The Flood and Water Management Act 2010 aims to provide better, more comprehensive management of flood risk for people, homes and businesses.

This strategy builds on the work already carried out and details what actions the Council and other key stakeholders are taking to manage flood risk in Brent. The Strategy has five objectives:

- Improving the understanding of flooding risks In Brent.
- Reducing the risk of flooding for people and businesses in Brent.
- Providing clear information on the roles and responsibilities of everyone involved in flood risk management in Brent.
- Ensuring that emergency plans and responses to flood incidents in Brent are effective.
- To take a sustainable and holistic approach to flood management, seeking to deliver wider environmental and social benefits.

This strategy is now being reviewed with an expected completion date of the autumn 2023.

Gully Cleansing

- f) We prioritise gully cleansing to prevent local flooding, with both scheduled and reactive gully cleansing activities taking place. There are approximately 20718 road gullies in the borough, which are cleaned as part of a cyclic maintenance. The cleaning cycle includes:
- High-priority (regularly blocking) gullies cleaned every six months.
 - 1,300 medium-priority gullies cleaned each year; and
 - 14,688 gullies cleaned every twelve months as part of a rolling programme.
 - 18,874 gullies cleaned every eighteen months as part of a rolling programme.
- g) The cleansing frequencies depend on the likelihood of gullies filling up with silt. Monitoring of the contractor performance continues and the contractor has remained on programme. Hard to reach gullies (i.e. where there are parked cars over them, or on busy corners) are subject to repeat attendance until cleaned; if necessary other measures (e.g. suspending parking bays) will be considered where necessary.
- h) Gullies are also cleaned on a reactive basis in response to reports from members of the public or Councillors of blocked gullies.
- i) We implement small scale schemes to address localised flooding problems such as broken gullies or gully pipes, or localised gully capacity problems. Larger scale capacity problems are within the remit of Thames Water who are responsible for the main drainage system. Whilst maintenance helps, rainfall flows that are greater than the capacity of the network will still result in localised flooding. This flooding will normally dissipate away down the drains given time.

3.2.22 Improving Brent's Bridges And Structures

- a) The Council are responsible for 90 highway structures, including 60 bridges, 13 retaining walls and 17 culverts. The majority of bridges are small structures spanning brooks. Funding for bridge maintenance is normally allocated by Transport for London on a regional priority basis.
- b) The proposed schemes include desk studies, special inspections, feasibility/options studies, assessments in order to get an informed decision for subsequent design stages and implementation of construction work. These activities are being undertaken in accordance to current design standards/guidance documents and CDM Regulations, taking into account the public and site personnel safety and the environment. Applications via BridgeStation for LoBEG funding are also being submitted for schemes that are eligible, though we have not been allocated any LoBEG funding in 2022/23.
- c) The Council's £76k revenue budget will be used for the 2022/23 Inspection programme and providing highway structures consultancy support.
- d) In 2022/23, the £0.45m Brent capital will be used for various highway structures and drainage tasks to be decided according to in-year priorities.

3.2.23 Renewal of Road markings

- a) Up until 2015/16 no funding was allocated for the systematic renewal of road markings. However, following on from the practice started in 2015/16 officers recommend the continuation of a £50,000 annual renewal programme. This programme will be drawn up using the video condition survey and as prioritised by the asset management system.
- b) Renewal of those road markings, which are required for enforcement, are managed by the Healthy Streets & Parking Service.

4.0 Stakeholder and ward member consultation and engagement

- 4.1 Officers continue to take account of councillor nominations for road maintenance and this is factored into the priorities for the annual maintenance plans.

5.0 Financial Considerations

- 5.1 The table below summarises the proposed allocation of Brent capital funding for highways maintenance during the year 2023/24:

Schemes	2023/24
	£000
BRENT BASE CAPITAL ALLOCATION	
Major resurfacing of B, C & unclassified roads; Preventative maintenance unclassified roads	2,175
Carriageway Short Sections	150
Injection patching	250
Injection Patching Traffic Management	
Highway Structures (*& Drainage)	450
Improvements to the public realm	125
Condition Surveys & Analysis	100
Renewal of Road Markings	100
Major Footway Works	0
Footway Short Sections	150
Sub-total Base Brent Capital	3,500
£20 m Major Footway Resurfacing, Refurbishment of Local Shopping Parades, Major Town Centre Refurbishments	
Recovery Funding	
£15 m - Major Footway Resurfacing	1500
£15 m - Major resurfacing of Principal ("A") roads	2000
Sub-total Major Footway Investment	3,500
TfL Funding for Principal Roads	200
TOTAL HIGHWAY MAINTENANCE PROGRAMME	9,030

- 5.2 The table above does not include the slippage from prior year budgets. For FY23/24 the capital monitoring reports takes into account this slippage and is the 'revised budget'. Carriageways on the monitoring reports is £3.5m and in line with the table above (Sub-total Base Brent Capital). Pulling works forward will increase the reported Revised Budget figure and would need formal approval of this paper. Budget FY24/25 would be reviewed and revised down in line with this paper proposal during the budget build for FY24/25.

Highways Capital Expenditure Budget FY23/24	
Budget includes over/under budget spends from FY22/23	
	2023/24 BUDGET
Footways	4,084
Carriageways	3,757
Other Highway Mtce costs	1,147
Total Highways Mtce Programme	8,987

- 5.3 It is proposed to utilise up to £100k of the £3.5m Brent Base Capital to undertake condition surveys and analysis during 2022/23. These surveys will assist preparation of a long-term asset management programme
- 5.4 The annual £3.5m is funded through a revenue contribution to capital and the investment of £15m will be funded through council reserves.

6.0 Legal Considerations

- 6.1 The Council's overall Capital Programme for 2023-2024 was agreed by Full Council on 23 February 2023. The programme consists of individual projects and sum allocated for work of a particular type. Under the Council's Policy Framework and Financial Regulations (Part 2 of the Constitution), any draft capital programme for a service area utilising those capital resources allocated by the Council must be submitted to Cabinet for approval.
- 6.2 Section 41 of the Highways Act 1980 places a duty on the council as highways authority to maintain the public highway. The Highways Maintenance Scheme Programme must make sufficient provision for the Council to comply with this duty. Breach of this duty can render the council liable to pay compensation if anyone is injured as a result of failure to maintain the highway. There is also a general power under section 62 of the Highways Act 1980 to improve highways.
- 6.3 Any contracts referred to within this report that are let for the provision of works must be let in accordance with the Council's Contract Standing Orders (Part 2 of the Constitution).
- 6.4 (Subject to certain restrictions in sections 2-4 of the Localism Act 2011, and subject to any specific prohibitions within other legislation, or the existence of more specific legal powers in other Acts), the Council may rely on the general

power of competence in section 1 of the Localism Act 2011 to work collaboratively with other local authorities where necessary.

- 6.5 The current Climate Change Act 2008 does not impose any direct statutory obligations on local authorities to reduce greenhouse gas emissions or to reduce their carbon footprint. However, local authority policy making including that at Brent Council, and case law is rapidly developing in this area. The Court of Appeal held in a recent judicial review case *R (on the application of Plan B Earth Ltd) v The Secretary of State For Transport and others* [2020] EWCA Civ. 214, that international climate change and environmental obligations are relevant considerations for determining whether public authority decisions (including those as to budgets and the allocation of resources) are sustainable as reasonable, if challenged judicially. The Environment Bill currently before Parliament will impose firmer targets and obligations in this area.

7.0 Equality, Diversity & Inclusion (EDI) Considerations

- 7.1 The proposals in this report have been subject to screening there are considered to be no equalities implications that require full assessment. The works proposed under the highways main programme do not have different outcomes for people in terms of race, gender, age, sexuality or belief.
- 7.2 In addition, the design criteria used in all highway work does take note of the special requirements of various disabilities. These will take the form of levels and grades associated with wheelchair users, for example road crossing points, and for partially sighted / blind persons at crossing facilities. The highway standards employed are nationally recognised by such bodies as the Department for Transport. This programme of works continues the upgrade of disabled crossing facilities at junctions, which were not constructed to modern day standards. All new junctions are designed to be compliant at the time of construction.
- 7.3 Strengthened areas of footway are far less susceptible to damage and will therefore aid the movement of pedestrians that may find it difficult to walk on uneven pavements.
- 7.4 Officers will make sure accessibility ramps are provided to aid wheelchair users and those with prams. Officer will make sure high visibility barriers and tapping rails are provided to allow those with visual impairments to negotiate the works as they are in progress.
- 7.5 Officers will make sure of the visibility of the required signage, also where temporary work is being carried out.
- 7.6 Officers will monitor of the quality of the work to ensure that the finished surface is to specification and does not form a mobility hindrance; and that signage and road markings are correctly provided as aid to movement.

8.0 Climate Change and Environmental Considerations

8.1 The Challenge is Now

8.1.1 The Highways Management service are keen to play an ever-increasing role in reducing carbon and other greenhouse gas emissions from within our remit. The industry code of Practice "Well Managed Highway Infrastructure" recommends:

"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 21]

"The impact of highway infrastructure maintenance activities in terms of whole life carbon costs should be taken into account when determining appropriate interventions, material and treatments." [Recommendation 32]

8.1.2 It is important that decision making in highways asset management be taken with these recommendations in mind. At the same time, London Boroughs should work to ensure that the Mayoral policy of London being carbon neutral by 2030 is achieved.

8.1.3 Thereby reduction of CO₂ in highway interventions needs to be assessed, understood and mitigated through:

- a) Reduction of carbon in the production of materials
- b) Reduction of carbon in transportation of materials to site
- c) Reduction of carbon in installation
- d) Reduction of waste generated from site
- e) Extension of life of the assets ensuring resilient materials are used that withstand climate change and deliver a service to society in the longer term.

8.2 Common Aims with Asset Management

8.2.1 The challenge of reducing carbon footprint for the maintenance of the highways asset dovetails well with the aim of highways asset management; which is to have a structured approach to managing assets effectively and minimise the whole life cost of the asset whilst delivering the required levels of service.

8.2.2 Given that our aim is to minimise ongoing maintenance; all maintenance has its carbon footprint and so by minimising maintenance - especially by increasing planned maintenance (which is by its nature more cost effective) and thereby decreasing the need for reactive maintenance – we also decrease carbon emissions.

8.3 What we are doing already

8.3.1 On a regular basis councils are reporting carbon efficiencies in schemes and contracts and works on various industry magazines. Currently our approach can be encapsulated by the watchwords **Reduce, Reuse and Recycle:**

- a) **Reduce** – the most desirable of the three: we reduce the ongoing maintenance through asset management, and use resilient materials in our footways and carriageways to be fit for the challenges of today. This approach needs to cover all schemes in the public realm, such as town centre refurbishments, to make sure they do not become maintenance liabilities. Warm-mix asphalt has many benefits over standard bitumen including reduced emissions (up to 30% & 50% at the point of mixing & laying respectively), reduced overall costs, improved Health & Safety and enhanced technical performance. Our preventative maintenance programmes reduce the need for more intrusive and costly maintenance
- b) **Reuse** – the next desirable is reusing materials where possible. For example, during footway improvement works wherever possible we reuse the existing granite kerbs, instead of shipping in completely new kerbs from places like Portugal or China.
- c) **Recycle** – lastly, if reducing or reusing is not possible, at least recycle. It is standard practice now amongst contractors to recycle as many material arisings from highway works as possible, and turn it into granular fill, which can be used in the foundations of footway and carriageway construction. Often recycle rates are well over 90%.

9.0 Human Resources/Property Considerations (if appropriate)

N/A

10.0 Communication Considerations

N/A

Report sign off:

Peter Gadsdon
Corporate Director, Resident Services