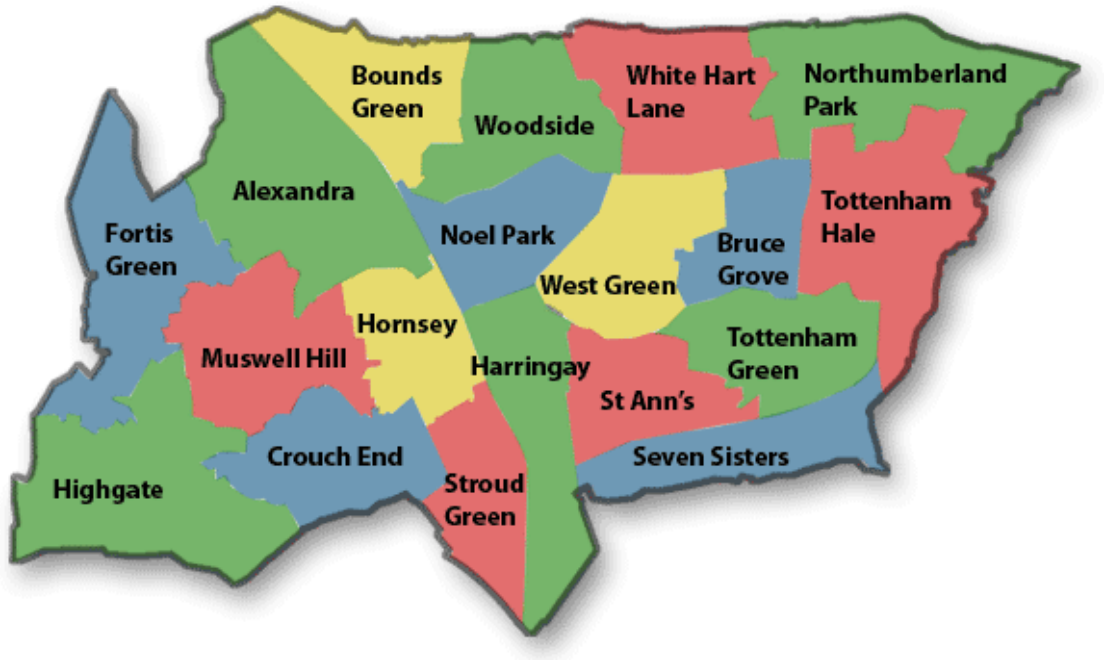
London Borough of Haringey

Highway Asset Management Plan 2019



Contents

1. Haringey's Highway Assets

1.1 Introduction

Haringey's first Highway Asset Management Plan (HAMP) was approved by the Council in March 2008. This document provided an overview of the proposed process for assessing condition and determining the financial commitment required for highway maintenance.

Member's recognised the requirement for more detailed work to develop a robust asset management plan for the Borough, reflecting the need to manage highway assets as efficiently and effectively as possible to get the best possible result with the funding available.

This document is the second HAMP produced by LB Haringey. It has been developed to describe how the Council will manage and prioritise its planned and reactive highway maintenance programme having regard for current best practice

1.2 Supporting Corporate Objectives and Aims

The Council's vision is to work with communities to make Haringey an even better place to live. In support of our vision in 2015 we launched the 'Building a Stronger Haringey Together Corporate Plan 2015 – 2018'. It explains our priorities for Haringey, and what we will do to help achieve these. Development of the corporate plan was informed by an extensive programme of community engagement.

This plan will assist to deliver the Council's stated objective *"to make our streets, parks and estates clean, well maintained and safe" by "investing in our roads, pavements and lighting (to) further improve the safety of our roads and the flow of traffic"*

Within our Corporate Plan, we promise to review "how we deliver parking enforcement, parks and highways services to make sure they are customer focused and operated in the most effective and efficient way possible".

This HAMP, in conjunction with a highway safety inspection manual that provides guidance in respect of our new reactive maintenance strategy, supports the outcomes of our review of highway maintenance service delivery and identifies the best approach to maintaining the boroughs assets in the most effective and efficient way possible, thereby meeting corporate best value targets.

Appendix B demonstrates in greater detail how the objectives of our corporate plan would be directly addressed through implementation of this Highways Asset Management Plan.

1.3 The Highway Asset

The borough's highway infrastructure, at a value in excess of £1 billion, is the most visible, well-used and valuable physical asset owned by the Council. It represents an enormous investment in construction and development over hundreds of years, and it is relied upon by every resident in the Borough.

It is crucial for the prosperity of the borough, enabling the safe and free movement of people and goods whether they are walking, cycling, driving or using bus services. Highways are vital to the economic success of the borough.

Safety of the highway network is the Council's responsibility. Haringey has a duty to inspect and repair roads, pavements and highway structures, and to ensure that street lighting and drainage systems work effectively.

The Council as Highway Authority owns, and is responsible for, the repair and maintenance of all assets that form part of the public highway, including:

- The road surface and underlying structure;
- The pavements;
- Street trees;
- Lighting columns;
- Drainage systems;
- Bollards, Street furniture; and
- Other highway assets include bridges, culverts, and drainage pipes that aren't necessarily visible to the highway user.

London Borough of Haringey is responsible for highway assets worth over £1bn, including:

LB Haringey Highway Assets		**Distance / No.**	**Estimated replacement value (£000)**
Roads	A Class	29.3 km	£936m[1]
	B&C Class	42.3 km	
	Unclassified roads	251 km	
	All roads	**322.6 km**	
Footways		604 km	
Structures		41	£21m[2]
Gullies		14, 276	£29m[3]
Street trees		32,128	-
Street lights		17,849	£45m[4]
Illuminated street furniture		3,685	£6m[5]
		Total estimated asset value	**£1.04bn**

Funding for the management of this asset is under continuous scrutiny, with increasing pressure from government and the public for transparency, accountability and more efficient use of the limited resources available.

[1] Based on £2.9m/km for new construction taken from Pricing, Costs and New Capacity, Christopher Archer/Stephen Glaister, Department of Civil and Environmental Engineering, Imperial College London Nov 06 (2003 prices factored to 2016)

[2] Assuming average costs for full replacement at c£500k per structure

[3] Assuming £2,000 replacement and connection costs per gulley

[4] £2,500 for new column and lamp and supply

[5] £1,500 for supply and erection

2. Maintaining the Public Highway

2.1 Condition of Highways

"A Class" roads are managed by Transport for London, who identify maintenance priorities through an annual programme of condition surveys. TfL determine which sections and lengths of their strategic road network should be resurfaced and they then allocate funds to the borough, who plan, coordinate and manage the strategic road resurfacing programme on their behalf.

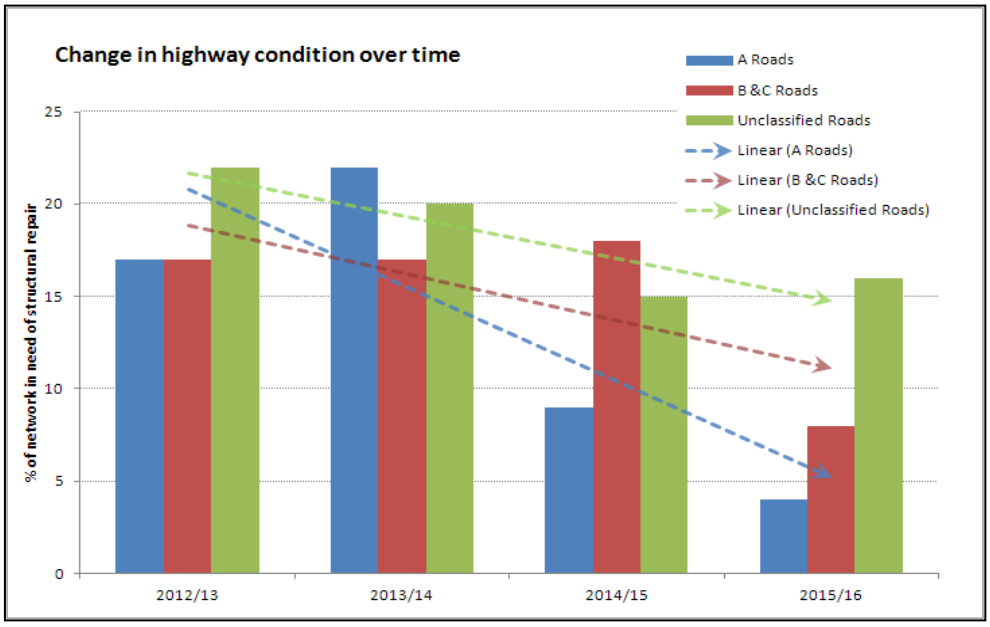
Unclassified roads represent around 80% of the borough's highway asset, around 250km. When including B and C class routes, LB Haringey fund maintenance for close to 300km of the local highway network. The following table and graph illustrate how the condition of the highway network has changed over the 4-year period from 2012/13 to 2015/16. This is measured in terms of the % of the network that requires structural maintenance in a given year, as measured and quantified through annual condition surveys.

% of carriageway in need of structural maintenance

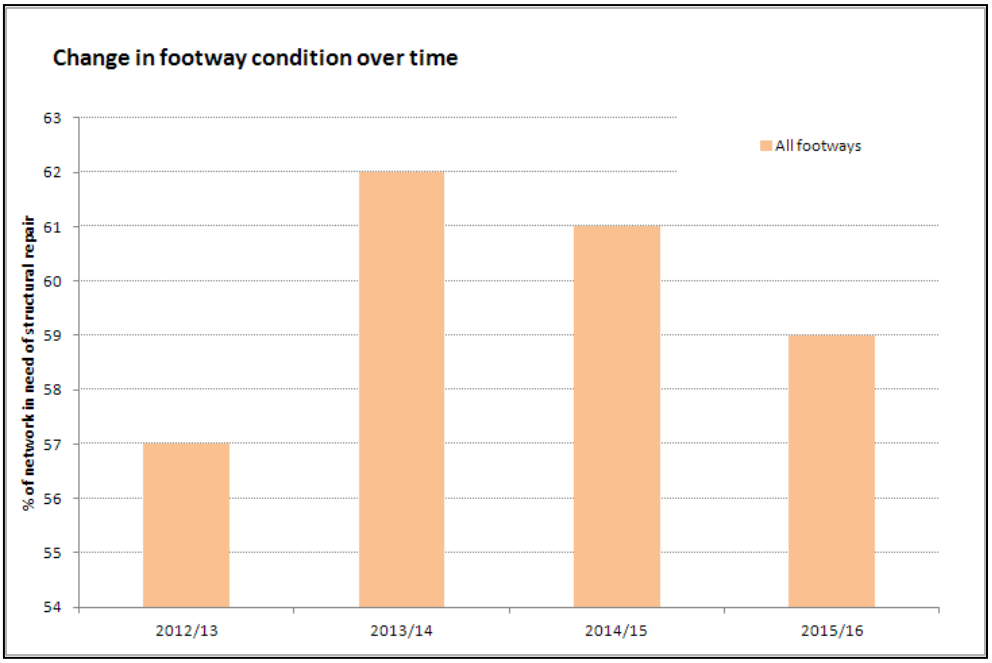
Class	2012/13	2013/14	2014/15	2015/16
A Roads	17%	22%	9%	4%
B & C Class Roads	17%	17%	18%	8%
Unclassified Roads	22%	20%	15%	16%

% of footway (pavements) in need of structural maintenance

Class	2012/13	2013/14	2014/15	2015/16
All borough roads	57	62	61	59



Note: downward trend shows improvement in condition over time



The overall condition of the highway network has improved, with a notable downward trend in the % of the road surface that requires structural maintenance across all road types. This improvement reflects an increase in investment during 2013/14 and 2014/15.

The unclassified road network has improved least, with 16% of Haringey's unclassified roads requiring structural maintenance as opposed to 22% in 2012/13. B and C road condition showed a marked improvement in 2015/16 despite their worsening condition over previous years.

The footway condition is notably poor, although there have been some improvements over the past three years. Despite this, 59% of the footway network requires structural maintenance, a modest 3% improvement from 2013/14. The improved position shown in 2012/13 pre-dates the current highways inspection regime, which now incorporates the whole of the highway network as opposed to higher category roads. It therefore describes a more positive outcome as it does not include all roads in the borough.

The ongoing improvement in carriageway and footway condition is encouraging and is a positive result of careful investment planning since the publication and implementation of the previous highway asset management plan. It also reflects the increasing capital investment in highway maintenance, which currently enables us to invest in around 5km of carriageway and 5km of footway resurfacing each year.

However, when analysed in terms of costs and backlog, the condition of the network remains of great concern:

- *The backlog in local road maintenance is £11.2m and the backlog in footway maintenance is £32.3m – a total of £43.5m[6].*
- *In 2015/16 the total capital investment in local roads was £1.3m for carriageway maintenance and £1.5m for footway maintenance.*

[6] *% of the network in km requiring maintenance multiplied by the cost per km to undertake structural maintenance on footways or carriageways*

- *To clear the backlog of carriageway maintenance would take 9 years*
- *To clear the backlog of footway maintenance would take 21 years.*

Haringey therefore continues to face significant and increasing challenges represented by budgetary constraints to “keep up” with the deterioration of roads.

3. Approach to Highway Asset Management

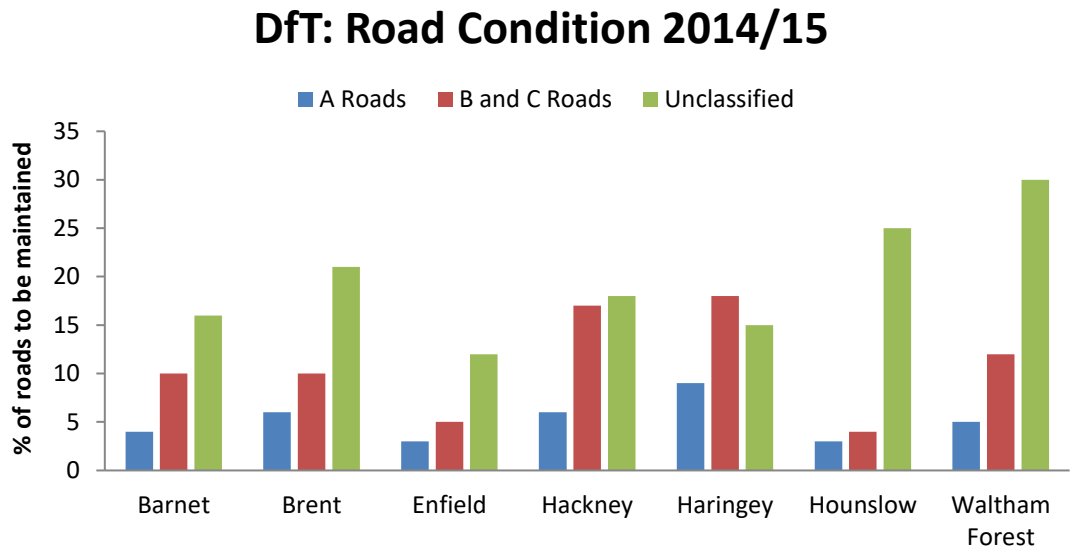
3.1 Asset Management Principles

Asset management principles have been adopted and developed by many boroughs since their inclusion in the Mayors Local Implementation Plan.

It is a performance-based approach to setting levels of service that seeks to maximise the value gained from investment by concentrating on what customers most care about: minimising disruption; improving the street scene and; contributing to safety.

Central government is stressing the need for objective asset management planning, and there are likely to be strong links to funding provision for authorities that adopt asset management planning principles.

The figure below shows the comparison of nearby boroughs with Haringey, based on official statistics from Department for Transport: Road Condition in England 2014/15. The data shows the percentage of roads by category that should be considered for maintenance. (i.e has a red road condition indicator (RCI)).



Haringey's unclassified road network, which represents 80% of the highway network in the borough, compares well with other authorities' condition statistics. The classified network does not compare as well, although much of this network is maintained by Transport for London as the strategic highway authority.

The relative condition of the highway network throughout Greater London (and the UK) reflects a lack of investment over many years combined with a historic approach to asset management that maintains roads under a "worst first" system.

Worst first involves identifying roads and pavements that are in very poor condition through automated and visual inspections of their condition. Condition assessments record potholes, cracking, slumping of the road surface, pavement trip hazards and other defect types. The number and types of defects recorded are then used to calculate condition indexes.

One index states the condition of the road surface, for example numbers of shallow potholes, cracks or “polishing” of the surface texture. A second index provides a measure of the sub-surface condition, i.e. whether the base of the road is breaking down, in other words the structure of the road appears to be failing. This can be measured by the extent and depth of slumping, low spots or wheel tracking.

Condition indexes are used to list all roads in the “worst” condition and, when combined with reports from highway inspectors and complaints from the councillors and public, they are used to identify a programme of maintenance work for the coming financial year.

The “worst-first” approach to asset management is easily understood by the public and members, who identify a road in poor condition and will see it as the council’s duty to repair it. They understand that simply fixing individual potholes is not as good a solution both aesthetically and, in terms of a cost-effective strategy, as carrying out a ‘proper’ repair. In the highways sector however, years of underinvestment and “worst first” strategies have got us to the point where we don’t have the money to repair everything.

Roads are constructed in layers, with a sub-base, further asphalt “base” courses (layers) and a top “wearing course” layer, which is relatively thin and is of a higher quality. It is the wearing course that protects against skidding and prevents water getting into the sub-surface road layers and damaging them.

Despite the general squeeze on funding in recent years, current funding appears to be enough to maintain roads and footways in a relatively steady state, with the trend showing a gradual improvement in road condition.

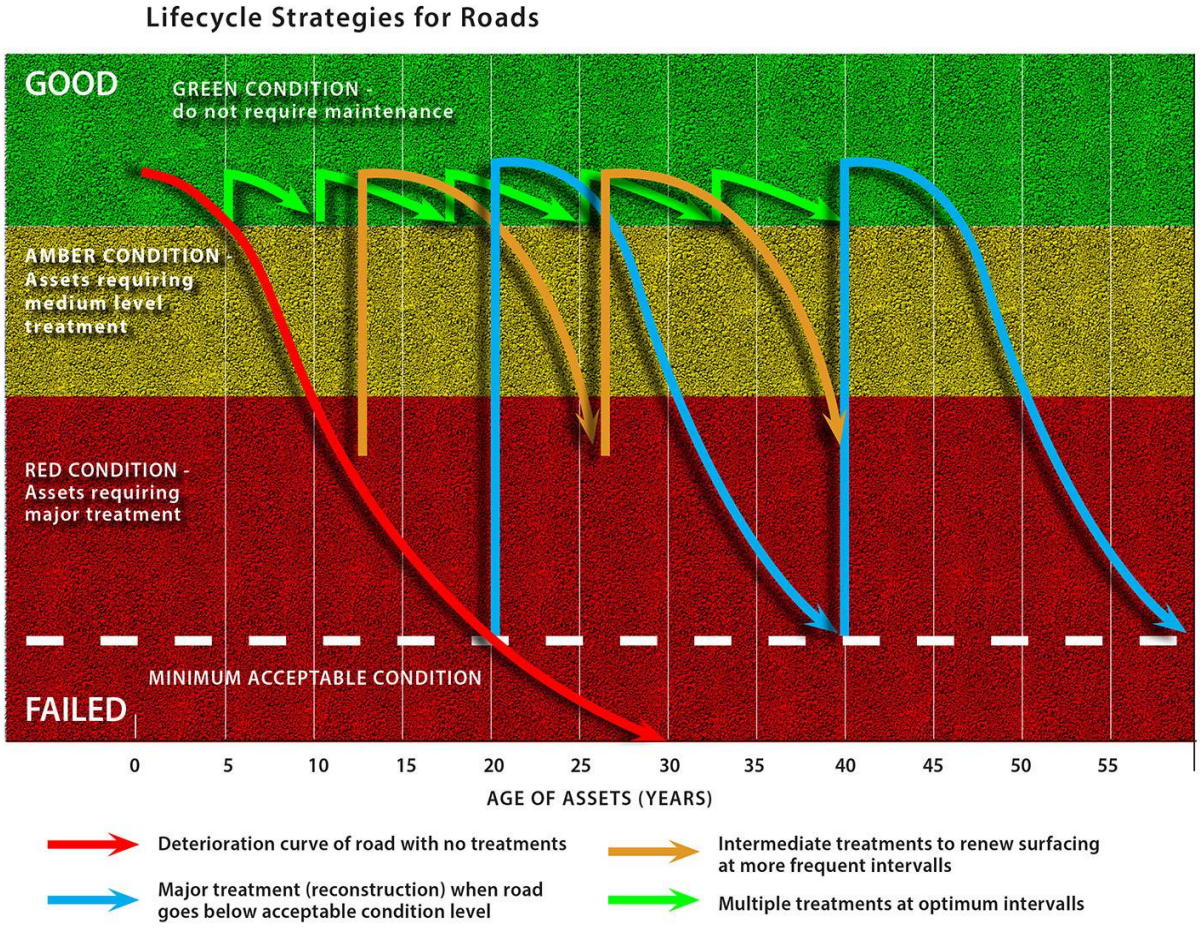
This HAMP proposes to move towards introduction of a preventative maintenance strategy. Preventative maintenance recognises that investing in the worst condition roads each year is a catch-up strategy and not a long-term solution. Several boroughs have already adopted this strategy including Enfield, Hounslow and Barnet among others.

LB of Enfield – Highway Infrastructure Asset Management Plan 2015-2020	*“In line with national guidance and good practice, Enfield will develop lifecycle plans for different asset groups and apply this to the management of its highways maintenance activities,..... this will enable predictive and timely intervention of appropriate maintenance methods and support budget requirements.”*
LB of Hounslow –Highways asset management Plan 2009	*“The move towards lifecycle management and long-term investment planning will enable a ‘right place, right time’ approach to investment that will reduce costs over the life of the asset and promote the long-term preservation of the asset.”*
LB of Barnet – Executive Committee Report: Planned Maintenance programme, 27th January 2015	*“The alternative option of recommending planned maintenance based on the old approach of “worst first” has been considered and rejected because this is an unsustainable approach and is associated with expensive short-term reactive repairs”*

3.2 Lifecycle Planning

A suitable analogy for lifecycle planning would be a house with painted wooden window frames. Once fitted you can either leave the windows to rot and replace the most weathered after 5 to 10 years (worst first strategy), or you can sand and repaint all of them every 2 years or so, extending the life of the frames considerably, possibly for an owner's lifetime. Investing in paint on a regular basis is significantly cheaper than replacing a window in its entirety. It also avoids having unsightly dilapidated features on your home. Again, the analogy to highway maintenance is valid as many roads look very poor before they are repaired, giving a bad impression of an area and generating local complaints.

The following illustration explains this principle in terms of highway asset management, and details how it can deliver the best value for the Council's investment.



The red line shows how a road deteriorates from when it is constructed, with a total life span of around 25 to 30 years. It deteriorates to the point where it needs surface reconstruction after around 10 years and reaches an unacceptable condition and needs full reconstruction after around 20 years.

If you wait and reconstruct the road in full after 20 years it returns to its "new" condition and begins to deteriorate again over the next 20 years – this is the Blue Line approach shown on the graph; the "worst first" method.

If you resurface the road at the point where it requires major treatment – the Orange Line approach - you would resurface and repair every 10 to 15 years at a lesser cost.

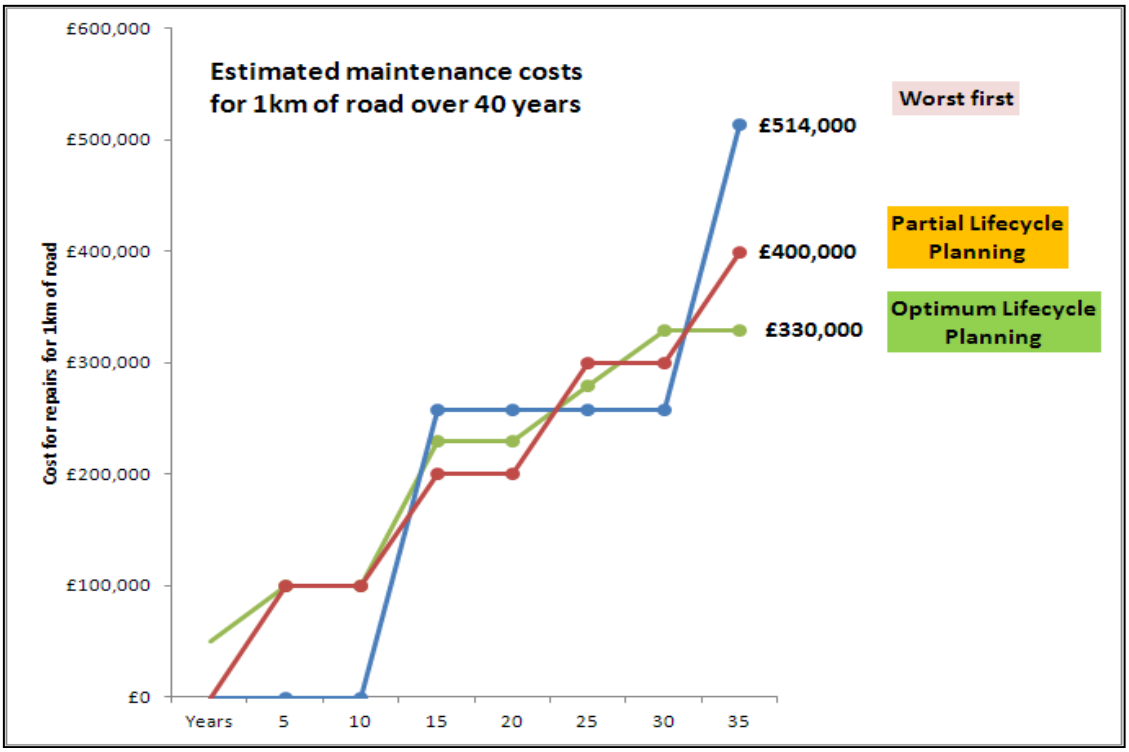
The Green Line approach shows how an optimum asset management strategy works. It involves a combination of regular thin surfacing repairs with medium-term major repairs undertaken as required. This approach has cost benefits in terms of the whole life investment costs.

There are two broad categories of road that need repair:

1. Those that are structurally unsound, needing major resurfacing works at a cost of around £257k per km, depending on the level of damage; or
2. Those where the surface is aging and brittle, which can be given a preventative treatment at a cost of around £100k per km by replacing the thin surface layer alone.

The following example shows how the maintenance of a 1km section of road can be planned in different ways.

Approach to asset Management	**Cumulative costs over 40 years (£000s)**							
Worst first	none	none	none	£257	none	none	none	£514
Partial Lifecycle Planning	none	£100	none	£200	none	£300	none	£400
Optimum Lifecycle Planning	£50	£100	none	£230	none	£280	£330	none
Years	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**



Lower cost treatments on a regular basis, prior to the road become structurally unsound, are cheaper than full resurfacing.

Exact costs cannot be calculated without understanding requirements, but assuming a wearing course replacement and localised structural repairs are needed every ten years or so (partial lifecycle planning model), total expenditure in the long-term could be as much as 25% less. The optimum lifecycle planning model involves lower cost

repairs to the surface layer every 5 years or so, with a major repair programme every 20 years. Costs could be significantly lower in this scenario, but to reach this point it would be necessary to have little to no repair backlog.

It is, however, clear that savings could be realised over time by initially adopting partial lifecycle planning over the “worst first” method. It involves lower spend over time to achieve the same end but has the benefit of maintaining the asset in good visual condition for a longer period. This process requires long term planning. It will therefore move away from the annual selection of roads to be resurfaced, favouring a long-term plan of preventative maintenance over 2 to 3 years along with a full resurfacing programme over the same period to address the backlog of full reconstruction schemes.

Although we can maintain road condition in a relatively stable state, we are unable to significantly reduce the estimated £43.5m backlog in asset maintenance. Our current approach therefore assumes that c15% of the unclassified network and 6% of our classified network will remain in need of repair. This represents a target reduction in both levels of maintenance backlog, which should reduce gradually over time, but may increase if funding levels are further cut.

In summary, we propose to increase the life span of our roads and reduce the percentage of roads in need of repair by moving away from the “worst first’ approach currently adopted and implementing a programme of preventative maintenance. This will form the basis of our Highways Asset Management Plan.

3.1 Programming Highway Maintenance

For the carriageway (road surface) we will identify:

1) Roads that are currently in very poor condition and need structural repair for full resurfacing / reconstruction; and
2) Roads that have poor surface / ride quality, but which are structurally sound, and which can therefore be treated with lower-cost thin surfacing to extend their working lives.

Initially we propose to implement Partial Lifecycle Planning, involving development of a programme of thin surfacing treatments on roads that are not necessarily in the worst condition, but where investment now will extend their lifecycles and reduce costs in the long-term. These will be identified through assessment of the surface condition index.

All our roads are assessed through machine surveys or by visual inspection over a two-year inspection cycle. We therefore have up to date information on the condition of our roads and understand which need major repairs and which are showing signs of surface deterioration alone.

We will increase the life span of our roads by identifying the point at which we can refresh the road surface to prevent more serious defects developing. On these roads we will replace the thin surface layer and fix areas where the road structure is damaged.

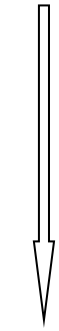
This means that our annual carriageway maintenance programme will be divided between two distinct programmes of work;

1) Reconstruction schemes and
2) Preventative maintenance schemes.

We initially propose to develop a 2-year programme of both structural and preventative maintenance. A 2-year programme will allow for the best whole life options to be identified while allowing for any emerging issues to be considered taking into account the 2-year condition surveys that are undertaken.

By projecting forward the anticipated need over a 2-year period the best whole life options be identified.

Our works programme will therefore be defined and reported for approval as follows:



Cabinet reporting	Maintenance Programmes for:	Approvals
End 2016/17	2017/18	Cabinet Approval for two year programme & implement 17/18 prog.
	2018/19	
End 2017/18	2018/19	Cabinet Ratification & Implement
	2019/20	Cabinet Approval for two year programme
	2020/21	
End 2018/19	2019/20	Cabinet Ratification & Implement
	2020/21	Cabinet Approval for two year programme
	2021/22	
End 2019/20	2020/21	Cabinet Ratification & Implement
	Etc	

As thin surface treatments are cheaper than full resurfacing, customers will see more miles of road maintained each year as a result of the adoption of whole life planning principles, although many of our worst performing roads may not be maintained whilst we begin to invest in preventative treatments.

3.2 Carriageway Maintenance

There is a backlog of around £43.5m of carriageway and footway maintenance works; therefore, we need to get the balance right between investment in replacement and investment in preventative works.

At present, using the “worst first” approach, our maintenance budgets are prioritised and allocated based on condition surveys for the following road hierarchies:

- A-Road (Principal Road) maintenance is prioritised on the basis of London-wide condition surveys commissioned by TfL (note that Principal Road maintenance is funded by Transport for London. It is not proposed to apply preventative maintenance principles to the principal road network as the programmes need to be developed and agreed with TfL).
- B & C Roads – Roads in need of maintenance are identified and prioritised from the results of an annual independent network condition surveys along with a process of engineering inspections and assessments.
- Unclassified Roads – Haringey undertakes network condition surveys by coarse (CVI) and detailed (DVI) visual inspections.

50% of the network is surveyed each year, so that a fully updated condition assessment is available every 2 years.

The annual network condition surveys undertaken for the above road hierarchies generate condition scores for the road surface, structure and edge defects. These scores are combined into an overall structural condition score.

Under the HAMP process, we will utilise condition surveys to determine which roads will be suitable for preventative maintenance. Roads with high (i.e. poor) structural scores will be prioritised for the major resurfacing scheme programme.

We will then list roads with high surface defect scores, i.e. with few underlying structural problems but high levels of surface defects. These roads will form a first draft preventative maintenance programme for “thin surfacing” treatments.

It should be noted that the travelling public are unlikely to note the difference between full resurfacing and thin surfacing treatments as both will provide smooth, new surfaces with high levels of skid resistance. Given that thin surfacing is less than 50% cheaper than full resurfacing, replacement of the surface alone will mean that much more visual surfacing improvement will be deliverable in a given year, i.e. more miles of resurfacing will be completed.

We will also take account of a range of factors other than road condition in our decision making, including:

- ✓ Application of local knowledge and judgement by Haringey engineers to ensure that included roads are a logical fit for the programme;
- ✓ A review of customer requests and complaints;
- ✓ Collision data indicating a high incidence of wet weather accidents (which indicates that the surface condition may be polished and lacking in skid resistance);
- ✓ The hierarchy of the road in terms of its usage and function, such as high-volume bus routes or the presence of schools, hospitals etc; and
- ✓ Interfaces with other works programmes, such as local improvement schemes, utilities work or developer funded improvements that may include plans to resurface the road.

We will adopt a network hierarchy based on highways maintenance needs; which will give us the opportunity to take account of the actual highway maintenance needs of roads, which can be greater (or less) than their road classification would otherwise indicate.

We will divide the budget between preventative maintenance schemes and structural based schemes in order to achieve a cost-effective balance of preserving roads that have not yet fully deteriorated; whilst fixing those that have. We may deviate from the absolute priority order where, for instance, 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. We will also consider any roads that are nominated for inclusion by councillors and/or highways inspectors.

We will allocate a proportion of the annual highway maintenance budget to delivering “short section” route improvements. This is where a section of a route is in poor condition, but the overall corridor is in a reasonable structural or surface condition.

We will not define a fixed programme for this budget each year but will use it to identify and repair lengths of road where there are a significant number of repairs required, and hence where a full resurfacing of the section would be faster and more effective

than continual pothole repairs. This short section programme may also be used for emergencies, such as where foul weather creates significant damage to a section of road and a localised repair would not be sufficient.

3.3 Footway Maintenance

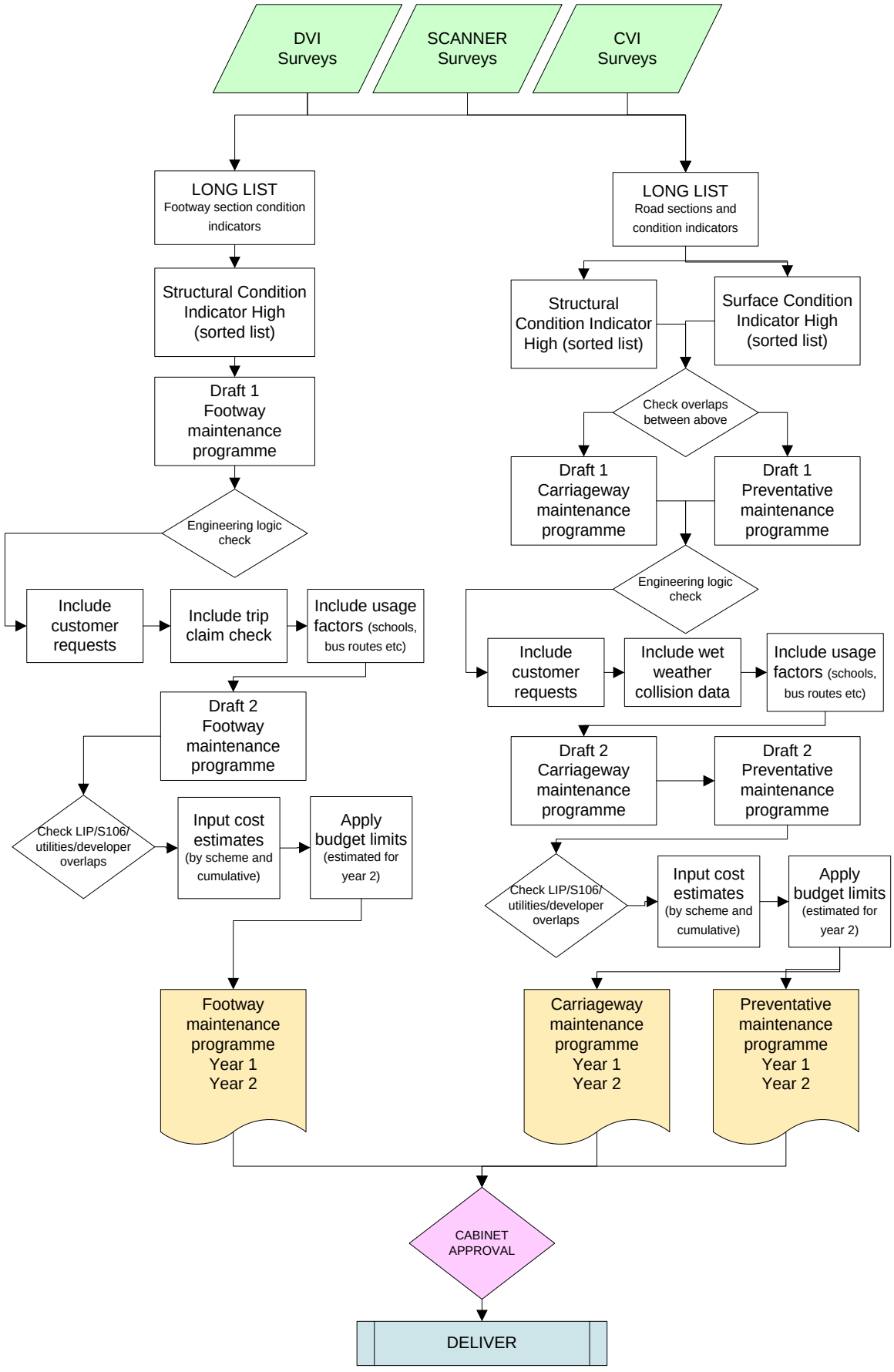
Our footway programme (pavement resurfacing) will not use preventative maintenance techniques as these cannot be applied to slab surfacing, which is predominant within the borough.

Prioritisation will be carried out using the results of condition surveys of the network. As with the carriageway surfacing programme, we will take account of customer and councillor requests, although the core programme will be based on an analytical assessment of condition and relative risk. The emerging programme will also be checked against claims records from trips and falls as well as being reviewed to ensure there are no overlaps with planned improvement schemes or utilities works.

The short section programme (described above) will also be used for footway maintenance where there is significant damage to a section of footway and/or a significant number of defects are identified where a localised repair would not be enough.

3.4 Maintenance Programme Development

The following flowchart provides a graphic illustration of the prioritisation process that we will adopt.


DVI Surveys
SCANNER Surveys
CVI Surveys
LONG LIST Footway section condition indicators
LONG LIST Road sections and condition indicators
Structural Condition Indicator High (sorted list)
Structural Condition Indicator High (sorted list)
Surface Condition Indicator High (sorted list)
Check overlaps between above
Draft 1 Footway maintenance programme
Draft 1 Carriageway maintenance programme
Draft 1 Preventative maintenance programme
Engineering logic check
Engineering logic check
Include customer requests
Include trip claim check
Include usage factors (schools, bus routes etc)
Include customer requests
Include wet weather collision data
Include usage factors (schools, bus routes etc)
Draft 2 Footway maintenance programme
Draft 2 Carriageway maintenance programme
Draft 2 Preventative maintenance programme
Check LIP/S106/ utilities/developer overlaps
Input cost estimates (by scheme and cumulative)
Apply budget limits (estimated for year 2)
Check LIP/S106/ utilities/developer overlaps
Input cost estimates (by scheme and cumulative)
Apply budget limits (estimated for year 2)
Footway maintenance programme Year 1 Year 2
Carriageway maintenance programme Year 1 Year 2
Preventative maintenance programme Year 1 Year 2
CABINET APPROVAL
DELIVER

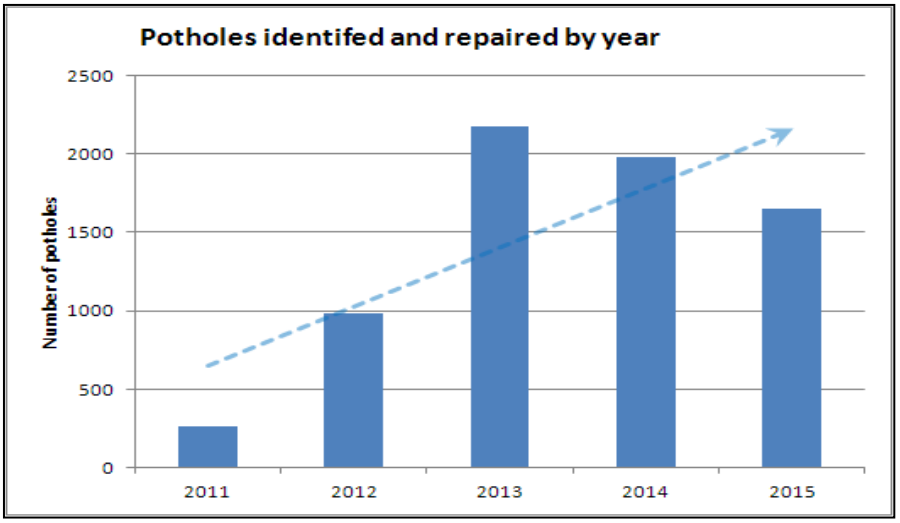
4. Reactive Highway Maintenance

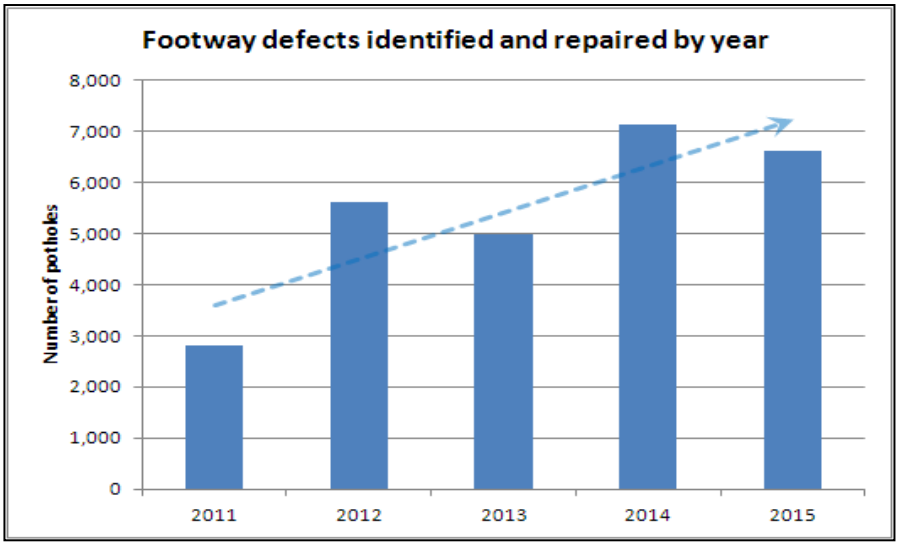
4.1 Highway Condition

This Highway Asset Management Plan addresses the challenges associated with planned highway maintenance.

Reactive highway maintenance is the process by which the Council inspects the public highway and responds to complaints regarding defects such as potholes, damaged signs, blocked gulley's etc. It differs from the planned maintenance programme as it relies on the use of Council revenue funding to effect repairs, whereas planned maintenance utilises capital funding.

The following graphs illustrate the number of highway potholes and footway defects identified and repaired over the previous five years:





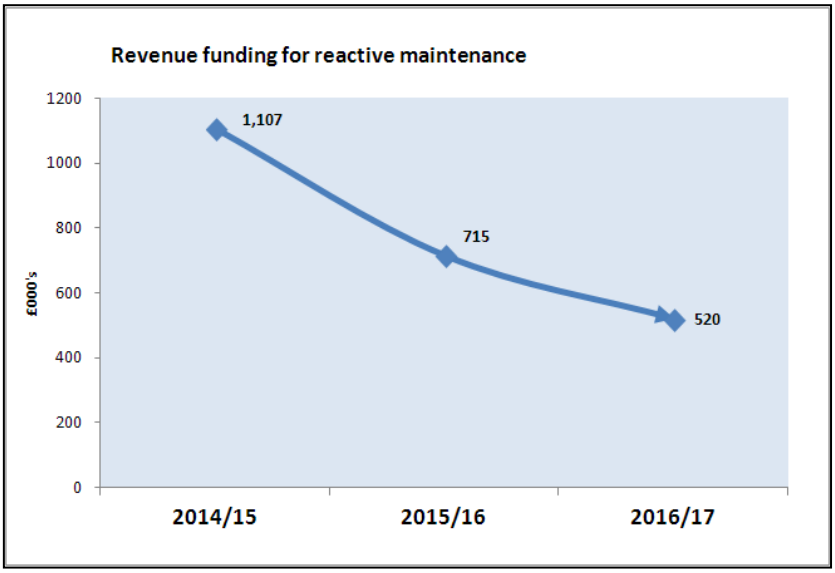
Although the numbers vary, overall the number of highway defects shows a gradual increase over time.

Figures from 2011 appear notably low, but these pre-dates the most recent highways contract and are likely to indicate an improvement in identification and repair since the new contract was introduced. In addition, additional funding for inspection and repairs

was allocated between 2013/14 and 2014/15 the Council also introduced improved methods for defect reporting, including enhanced online reporting, which has lead to an increase in the numbers reported by year.

There are a particularly high number of footway defects within the borough, which is reflected in the very high % of footways requiring structural maintenance.

The pressure on revenue funding is particularly severe due to austerity measures introduced since the 2008 global financial crisis. This has lead to an ongoing reduction in revenue based funding, which impacts on resource levels and revenue based investment, including reactive highway maintenance. This may also be a direct cause of the increase in defects.



4.2 Highway Reactive Maintenance Strategy

A new reactive maintenance strategy has been developed which reflects current national guidance on best practice.

The new strategy sets out a robust defect inspection, recording, and rectification regime for safety inspection to address faults that represent a risk to all road users and thereby minimise the risk of resulting claims for damages against the Council. It defines the way in which defects will be prioritised in order to ensure the safety of the travelling public whilst minimising unnecessary “early stage” repairs to minor defects

This strategy will be underpinned by a new highway safety inspection manual to ensure a consistent approach and standards across the borough. The manual defines a move towards a more risk-based approach to determine which defects need urgent repair having regard for the level of vehicular, cycle and pedestrian use. The Council is also carrying out a structural re-organisation that will in future ensure that highway safety inspections are carried out by a dedicated team operating alongside the planned maintenance team.

The approach to prioritisation and identification of works will also contribute to addressing the notably poor footway condition in the borough. The short section repair programme will be particularly helpful as it will provide an investment budget each year that can be used to target lengths of footway that have multiple defects, and which could therefore be repaired as part of a wider capital maintenance programme, as opposed to

piecemeal reactive repairs of individual defects as and when they are inspected or reported.

The diagram below illustrates how this new assessment process will operate:

Impact Assessment

			IMPACT			
			little or negligible impact	minor or low impact	noticeable impact	major, high or serious impact
			1	2	3	4
PROBABILITY	very low probability	1	1	2	3	4
	low probability	2	2	4	6	8
	medium probability	3	3	6	9	12
	high probability	4	4	8	12	16

Resulting defect categorisation

Risk factor	Category of defect	Response
16	2 hour ECO	Attend and take appropriate action within 2 hours
9 to 12	7 days	Complete permanent repair within 7 calendar days
4 to 8	28 days	Complete permanent repair within 28 calendar days
1 to 4	N/A	Subject to monitoring and incorporation in funded programmes where opportunities arise

5. HAMP Financial Plan

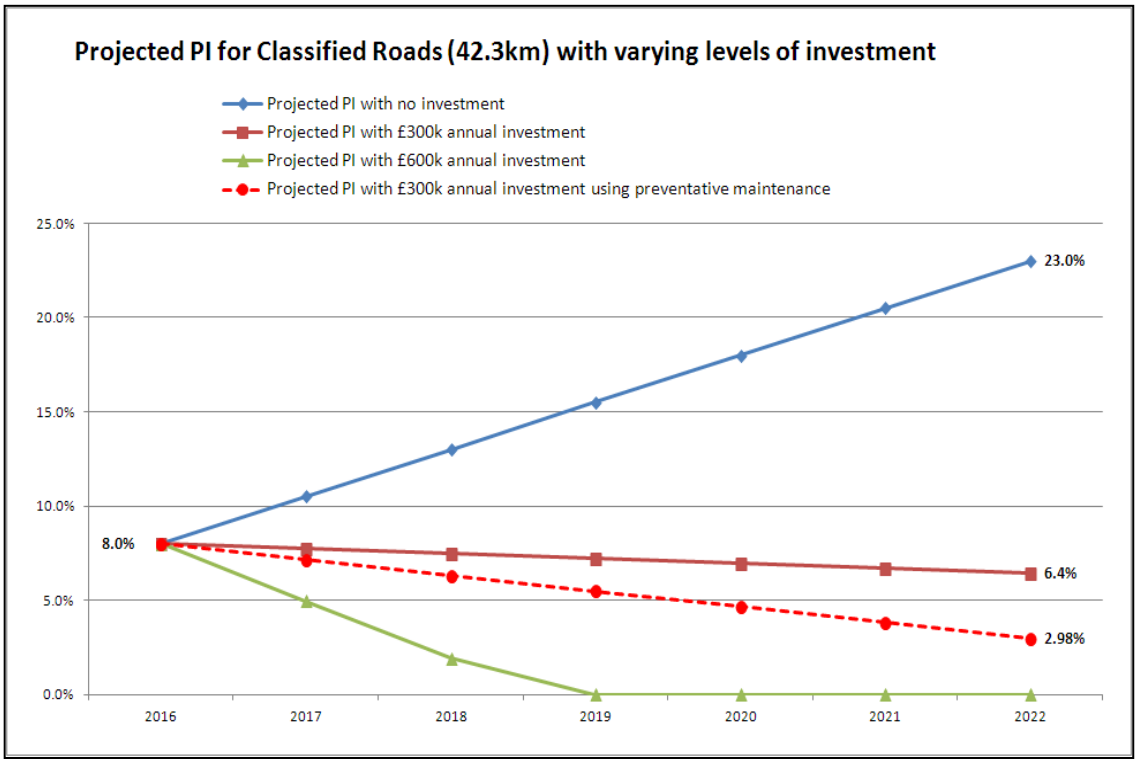
5.1 Highway Investment & Performance Indicators

The level of investment in highway maintenance is inexorably linked to the extent to which the maintenance backlog can be addressed. Reducing the maintenance budget below a certain level will lead to an increase in the backlog; and maintaining at a low level will only serve to maintain the network in a stable condition or improve it very gradually over time. This can be demonstrated by comparing the value of annual investment plans against the predicted level of improvement to the maintenance backlog.

Performance Indicators (PI) for the network are expressed as the percentage of the network requiring structural maintenance. PI figures for the previous four years, to 2015/16, are presented in Section 1.3 of this HAMP. Each year a percentage of the network deteriorates to the point at which it needs structural maintenance, therefore the performance indicator is gradually increasing (worsening) over time if no investment is made. The rate of deterioration varies by the type of road or footway and its usage. In other words, a very busy classified carriageway or town centre footway will deteriorate faster than an unclassified residential access road.

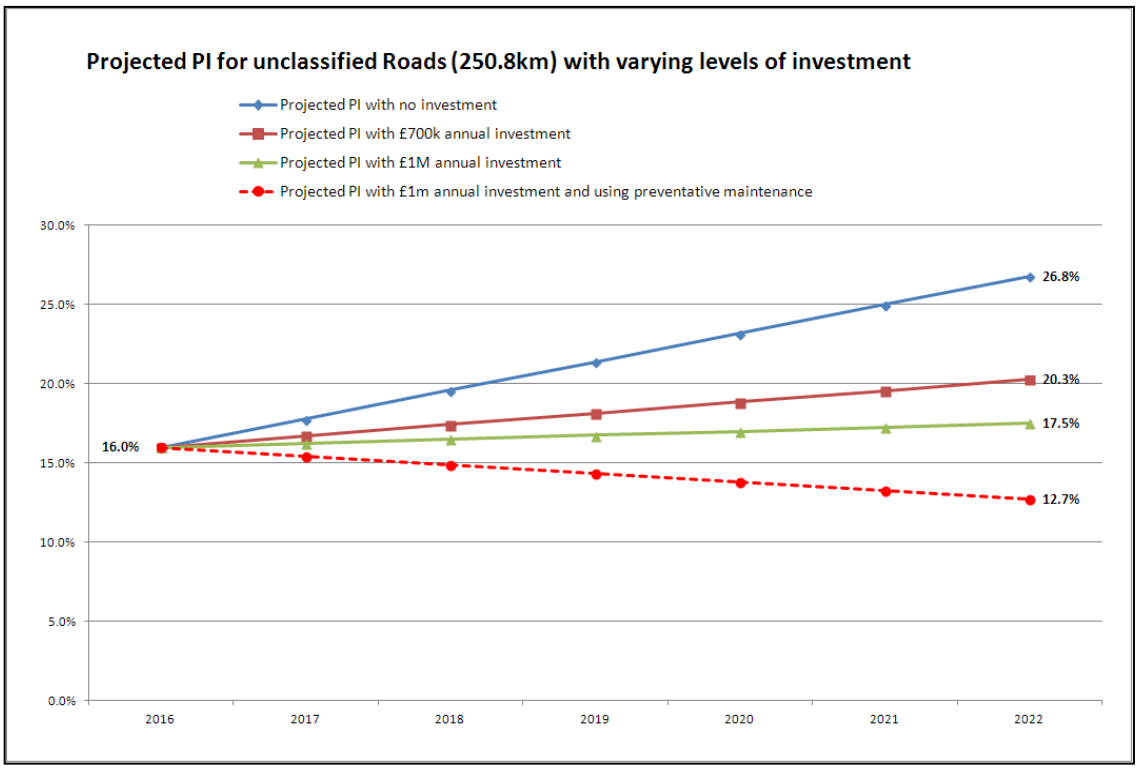
The annual highway maintenance investment plan provides a specific budget to undertake maintenance on a percentage of the network, thereby reducing the PI. There needs to be a balance between the amount invested and the extent of the highway asset's deterioration. Insufficient investment will only maintain the PI, i.e. deal with the percentage of the network that deteriorates each year without addressing the backlog. Too little investment will lead to deterioration.

The relationship between investment and deterioration is demonstrated in the following graphs, which illustrate how classified roads (B and C), unclassified roads and footway PIs will change over a 5 year period with varying levels of investment.



For the classified road network:

- If no action were taken, the maintenance backlog would increase to around 23% within 5 years, costing £2,500,000;
- With a £300k annual investment, the backlog is predicted to gradually decrease from 8% to around 6.4%, equating to a reduction from £870,000 to £700,000;
- A £600,000 annual investment would clear the backlog within 2 years; and
- Using preventative maintenance techniques with a budget of £300k, the rate of deterioration is estimated to reduce by up to 30%, and on this basis the backlog could potentially be reduced to less than 3% in 5 years, around £200,000.

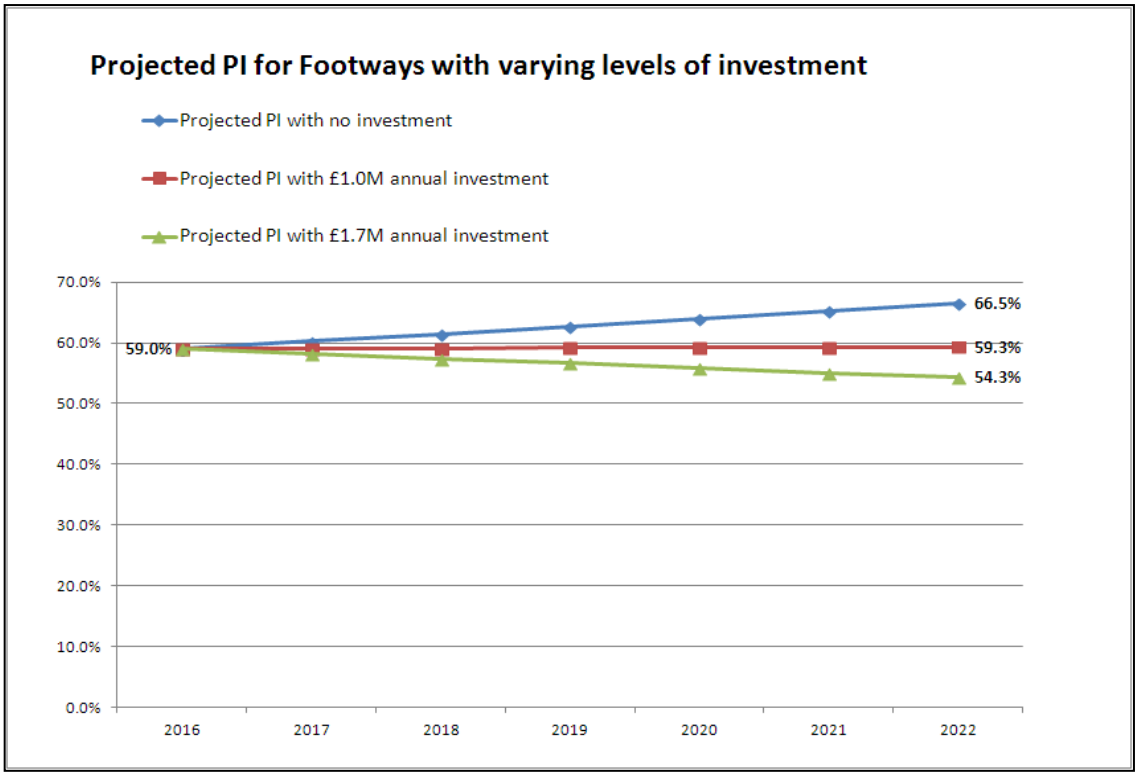


For the unclassified road network:

- If no action were taken, the maintenance backlog would increase to 27% within 5 years, rising from £10,300,00 in 2015/16 to over £17,000,000 by 2021/22;
- With a £700k annual investment, the backlog would continue to increase to over 20%, or 13,000,000;
- Even if there were a £1m annual investment, the backlog is predicted to remain at a steady level, even potentially worsening to 17.5% ;
- Using preventative maintenance techniques, the backlog could potentially be reduced to less than 13% in 5 years, to around £9,000,000.

This model demonstrates how preventative maintenance can maximise the benefits that the Council gains from its investment plans, providing better value for money and delivering more on the ground.

It also shows the importance of maintaining robust levels of investment in planned highway maintenance, as a reduction to below the threshold values shown could lead to a rapid deterioration in the network's condition and a significantly growing backlog that could take many years to clear.



For the footway network:

- If no action were taken, the maintenance backlog would increase to include two thirds of the network within 5 years, with a cost to clear of c£49,500,000 in 2017 rising to £55,700,000 by 2022;
- With a £1m annual investment, the backlog would stay at the same level, i.e. this level of investment will only cover the continuing deterioration of the network and not address the backlog;
- With a £1.7m annual investment, the backlog is predicted to improve gradually over the next 5 years to around 54%, reducing the backlog by 5%, or nearly £4,000,000.

In summary, the value of future investment will determine the extent to which the PI is reduced, and hence the backlog reduced. This in reality means the amount of roads and pavements that are in poor condition and are potentially unsafe for road users.

Delivery of the annual planned maintenance programme will be measured against these % changes in PI levels. However, these PIs can only be achieved if investment levels are at a minimum level of c£3m per annum.

PI levels will improve with increasing budgets and the targets will be adjusted if additional funding is provided in a given year.

Appendix A describes the proposed performance indicators to be adopted for the HAMP 2016 over the coming 5 year period.

PIs for overall asset condition have been based on the graphs shown above. The reduction in % indicators is predicated on maintaining a minimum £3m annual capital investment programme.

5.2 Capital Spend

Based on the performance indicators in Section 6.1, it is proposed to adopt the following funding split for the highways maintenance programme to reflect existing capital allocations.

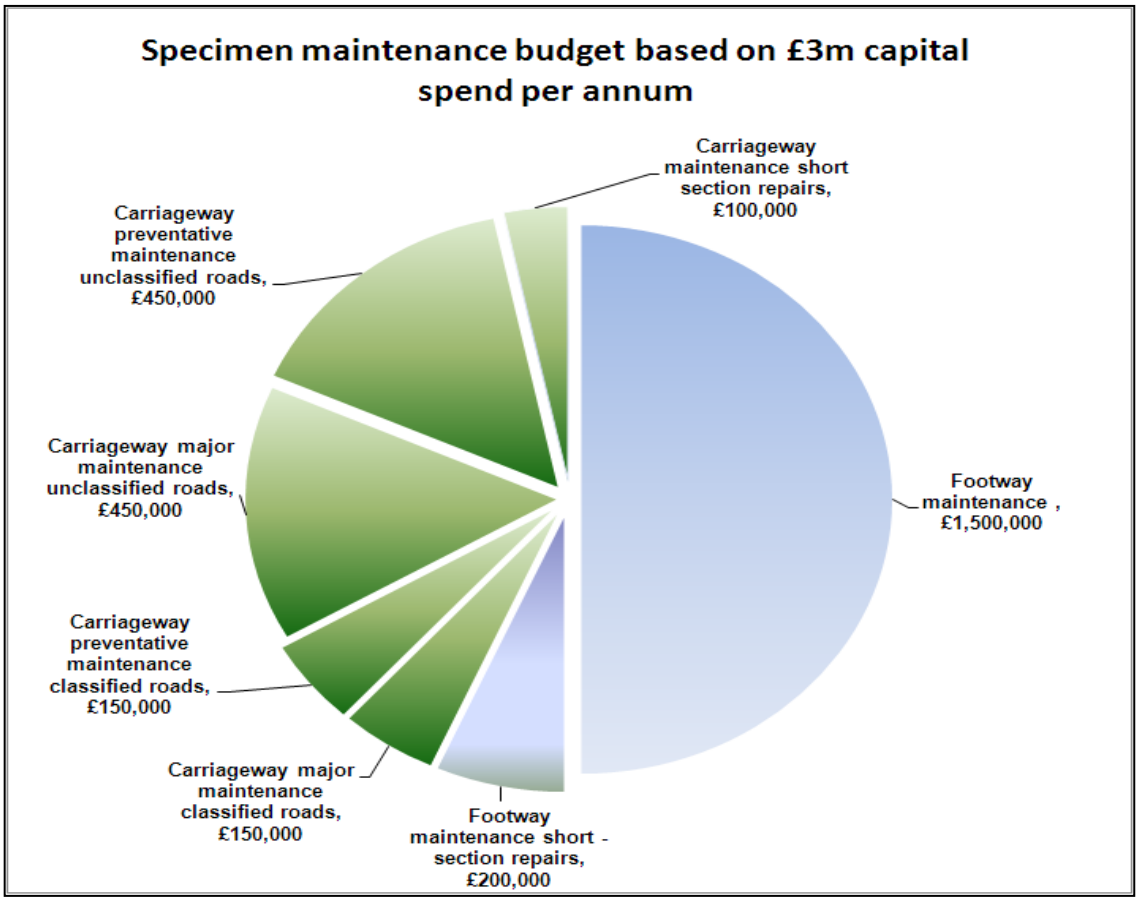
A “balanced” division between investment levels is proposed to ensure that the plan addresses Haringey’s current network condition and seeks to improve that condition through a combination of major and preventative maintenance investment.

Percentage Allocation of Highways Capital Maintenance Budget per annum:

Type	% of budget spend	Notes
Footway maintenance	50%	Plus allocation of short section programme funds
Carriageway maintenance classified Roads	10%	50% of budget invested in preventative maintenance
Carriageway maintenance unclassified roads	30%	
Short section investment footway and carriageway	10%	Budget to be allocated in-year based on need

If there is any reduction or increase in funding over coming years, the percentage splits shown will be applied to revised budgets.

Assuming a £3m highways maintenance budget each year, this would provide the following budget for each programme element:



Initially preventative maintenance investment will represent 50% of the total annual budget for carriageway resurfacing. This proportional spilt will be adopted from the 2017/18 financial year onwards.

The greatest level of investment will be in footway maintenance, reflecting the significant percentage of the footway network that is need of maintenance.

A higher level of investment is planned to reduce the large maintenance backlog and address areas where clusters of defects are identified, and hence where a full resurfacing scheme would be more effective than a series of individual defect repairs.

6. Flood & Water Management

6.1 Lead Local Flood Authority liabilities and responsibilities

In the wake of extensive flooding in 2007, UK government commissioned Sir Michael Pitt to review the situation and make recommendations. This subsequently led to the Flood and Water Management Act (FWMA) which received Royal Assent on the 8th April 2010.

Since the enactment of FWMA in 2010, local authorities (both county councils and unitary authorities) are designated as Lead Local Flood Authorities (LLFAs). LLFAs are responsible to lead in matters of managing local flood risks, such as risks of flooding from surface water, ground water and ordinary (smaller) watercourses. This also includes ensuring co-operation between the Risk Management Authorities (RMAs, as defined by FWMA 2010) in the LLFA area.

Haringey is the Lead Local Flood Authority under the new powers. As such, it has the following duties and responsibilities:

- Carry out works to manage local flood risks[7].
- Maintain a register of assets[8].
- Regulate ordinary watercourses (outside of internal drainage districts) to maintain a proper flow[9].
- Prepare and maintain a strategy for local flood risk management.

To prepare a strategy for local flood risk management, Haringey has a duty to coordinate views and activity with other local bodies and communities through public consultation and scrutiny, and delivery planning. It also has a duty to consult Risk Management Authorities and the public about their strategy.

The role of LLFA brings both greater responsibility and enhanced opportunity, as Haringey is better placed to co-ordinate programmes of work with other bodies, and to secure financial and technical contributions. This allows far greater scope in meeting the challenge of managing the Council's drainage assets now and in the future through greater collaboration and a 'whole catchment' approach to understanding how best to manage water from rainfall to outfall.

Haringey also has responsibilities for ordinary watercourses under the Land Drainage Act 1991. The Act was amended in 1994 in relation to the functions of internal drainage boards and local authorities.

6.2 Haringey's Asset Management responsibilities

The FWMA 2010 requires Haringey to establish and maintain a record of assets. The LLFA asset register is intended by the Department for Environment, Food and Rural Affairs (Defra) to be a 'one stop shop' to hold information on assets under an LLFA's responsibility, and to include Main Rivers and water company assets.

[7] the power for works in relation to minor watercourses sits with either the district council or unitary authorities outside of IDB areas
[8] physical features that have a significant effect on flooding
[9] powers under the Land Drainage Act 1991

Many of the assets on Main Rivers, for example, highway bridges and culverts, are owned by the Haringey in their role as Highways Authority, whereas the Environment Agency has responsibility for maintaining the main watercourse.
As LLFA, Haringey has responsibility for all flood assets within the Borough.

6.3 Managing Haringey's Flood Assets

Haringey works with the Risk Management Authorities (e.g. Haringey Highways, Environment Agency, Thames Water) and with other relevant organisations to steer local flood risk management activities.

Partnership working between the Council, Risk Management Authorities, other relevant organisations and local communities is key to managing flood risk in the future, funding future flood schemes and helping communities to become more resilient to flooding. Haringey gathers information on flooding related assets (standard and sustainable drainage systems, gullies etc) at sites across the Borough. This information is included in the asset management system 'Confirm', a software package that allows users to develop the system to their requirements. Confirm is a robust tool for holding and reporting Asset Data.

There is a wealth of historic drainage information available through as-built drawings, adoption records and local surveys. More data is continually being added to the asset register as it is collected.

When assets are maintained, they are plotted on to a borough map and given a unique ID. This data continually informs the ongoing work of plotting the entire highway drainage network. It also assists in decision making on ownership and maintenance responsibilities, as well as informing flood modelling to predict and reduce the likelihood and / or scale of flooding events.

6.4 Gully Cleansing

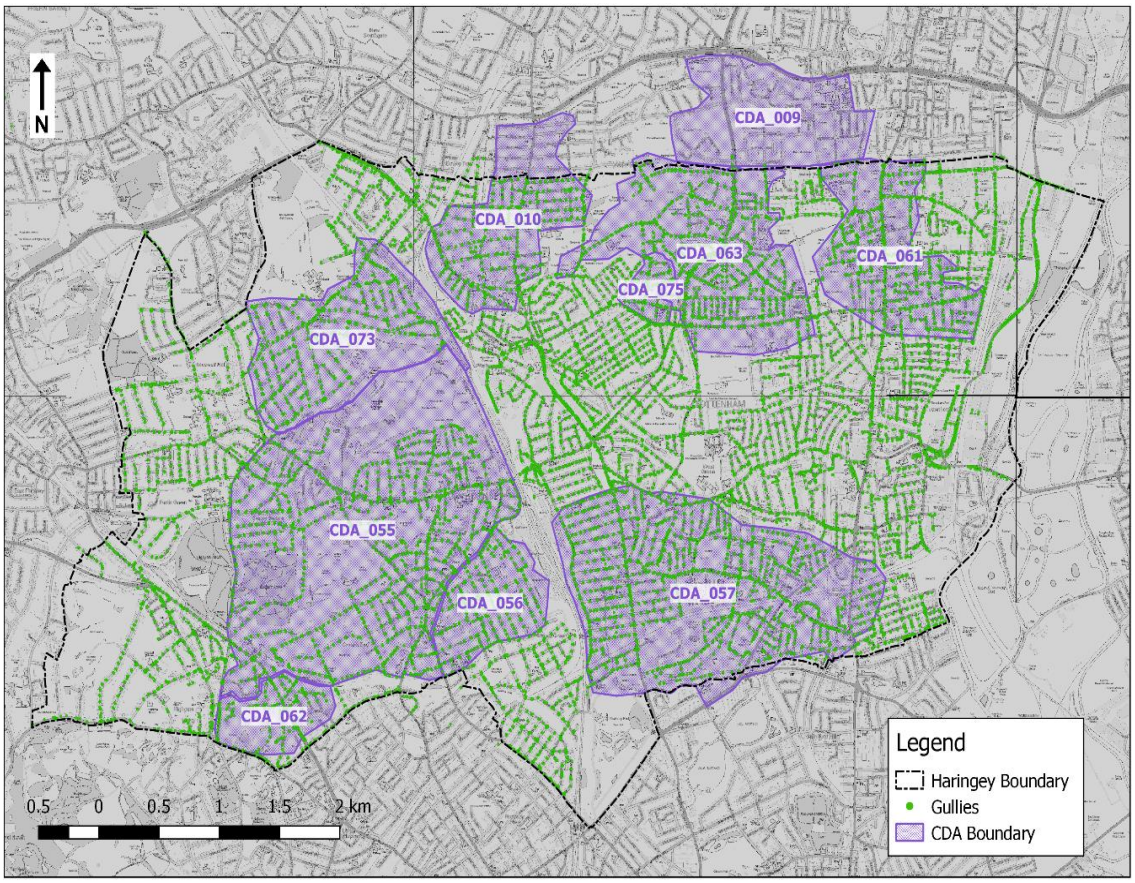
Information is gathered on the location, condition and performance of road gullies. Each gully is inspected and grouped into a performance category based on historic records of blockages and local ponding.

Haringey uses this information to decide on cleansing frequency and whether any specific repair, replacement or upgrading is required to bring gullies up to an acceptable performance level. This enables a risk-based approach to their future maintenance

Haringey is working to enhance its understanding of whole catchments, so it is better able to model the predicted performance of the Borough's drainage systems and resources accordingly.

Haringey undertakes an annual programme of routine gully maintenance and cleaning that is focused on the areas designated in the Surface Water Management Plan (SWMP) as Critical Drainage Areas (CDA) and the gullies therein. All other gullies in the borough are maintained on a reactive basis based on the scale of the problem and level of public risk.

CDAs and Gullies in Haringey



6.5 Maintenance Programmes

There are two types of maintenance programme:

1. ***Reactive Maintenance -*** fixing what is broken as it is reported by the public or inspectors - items requiring reactive maintenance are mainly gullies.

2. ***Planned Maintenance -*** a proactive approach to surveying asset condition and analysing that condition data. There is also a high-level predictive approach applied by the Authority, which involves hydraulic modelling to establish critical drainage areas (CDA).

Items included within planned maintenance programmes are as follows:

- Gullies and associated drainage system repairs and improvements (other than reactive maintenance).
- Sustainable Drainage Systems (SuDs), which includes features such as Rain Gardens, Swales, Treepits, Soakaways, Permeable paving, etc.

LBH is currently implementing new technologies into the gully cleansing operations to provide real-time information of gullies cleansed and any issues found. Data collected is uploaded into the asset database to inform future gully cleansing and capital drainage scheme work in the Borough.

6.6 Proactive Maintenance

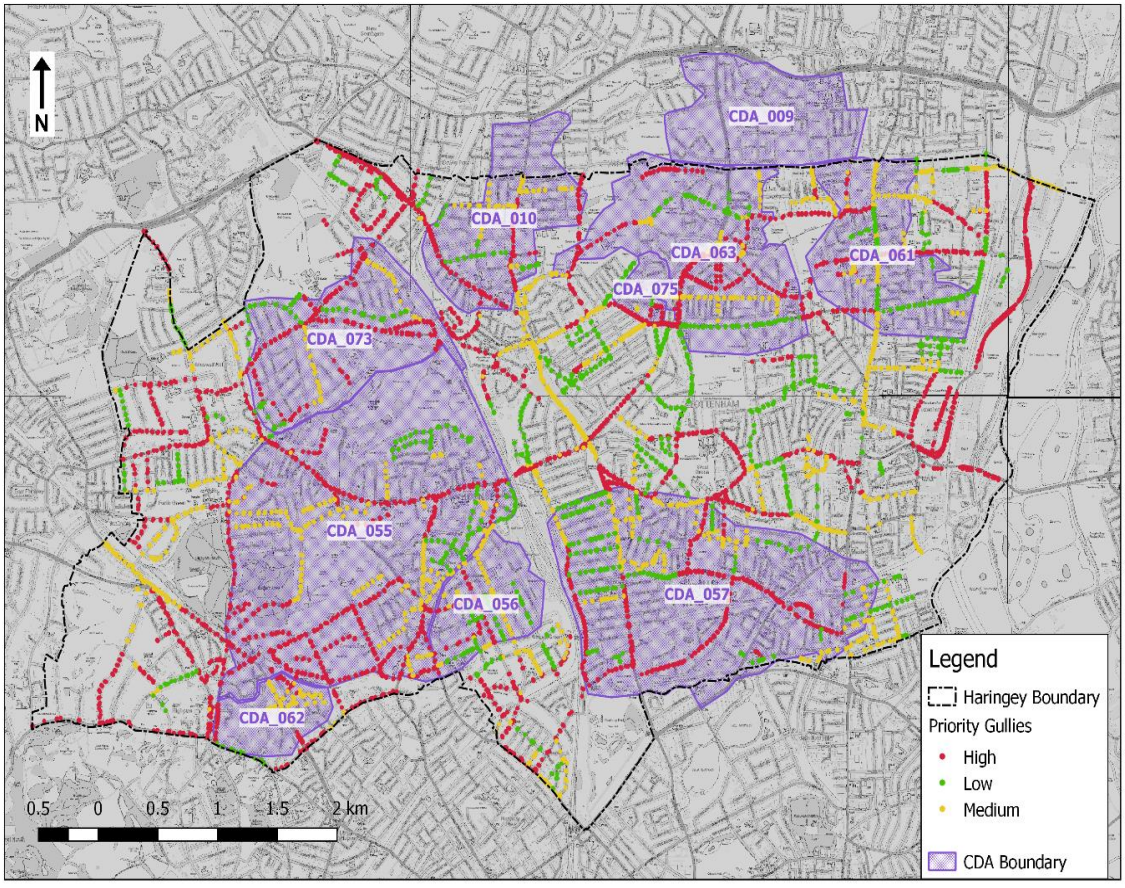
Haringey has completed a study to identify locations and roads with critical gullies within the Critical Drainage Areas. An integrated catchment model was used to identify these locations in conjunction with historical flooding data and other available information (land coverage, location of trees etc.). As a result, the borough has now identified:

- High Priority Roads, where gullies requiring cleaning every year.
- Medium Priority Roads, where gullies need cleaning once in every two years.
- Low Priority Roads, where gullies are cleaned once every three years

The relative priority of the various gullies on the network are illustrated below. This is a 'Risk-Based Approach' to the management of drainage assets in line with the recommendations in the 2012 Highways Maintenance Efficiency Programme (HMEP) Guidance on the Management of Highway Drainage Assets.

This method provides the most effective way for Haringey to maximise the limited budgets available for routing maintenance. It utilises condition data from the boroughwide inspection and cleansing programme to form a maintenance regime which takes account of risk, i.e. how drainage assets perform in respect of their capacity, their location on the network hierarchy and any other localised conditions.

Distribution of priority gullies within and outside CDAs



6.7 Summary

Haringey will continue to take into consideration the evolving roles and responsibilities required under their Flood and Water Management Plan, the London Plan and recently Proposed Surface Management Action Plan.

We will apply a 'Risk-Based Approach' to the management of drainage assets in line with the recommendations in the 2012 Highways Maintenance Efficiency Programme (HMEP) Guidance on the Management of Highway Drainage Assets.

We will identify and investigate flooding hot-spots using available modelling as well as records and data from various sources including public complaints, maintenance records, and flood risk maps.

We will maintain drainage assets in good working order to reduce the threat and scale of flooding, paying attention to locations known to be prone to problems, so that drainage systems operate within their designed efficiency.

We will continue to work with all relevant bodies, such as the Environment Agency and Thames Water, to address water management issues and to cooperate in service delivery and information sharing.

Our approach to flooding and potential alleviation solutions (especially Sustainable Urban Drainage) will be joined-up, with the goal of building flood resilience.

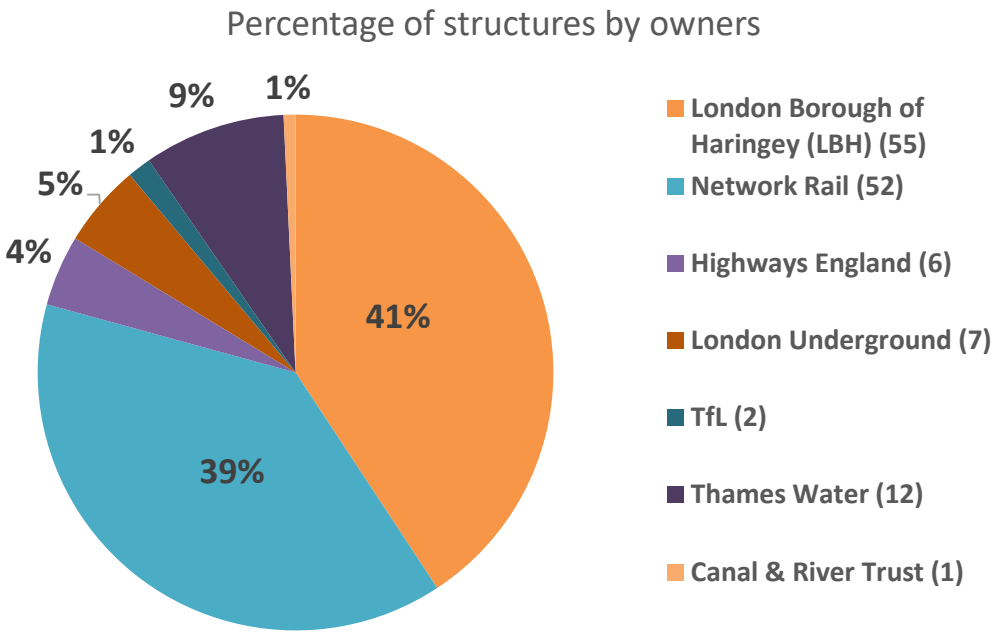
7. Managing Haringey's Structural Assets

7.1 Structures in Haringey

Haringey has a total of 140 bridges, footbridges, subways and culverts. These structures are critical to connect communities, provide safe routes for pedestrians and cyclists, and join up transport systems.

Structural assets within Haringey are owned and maintained by a variety of stakeholders, as shown below.

Summary of structure by owners



72% of structures maintained by Haringey are road bridges, 14% footbridges and the remaining 12% are made up of culverts, subways, tunnels and retaining walls.
The management of structural infrastructure must be conducted appropriately and responsibly.

This asset management strategy sets out the principles and processes that Haringey is committed to adopt to deliver a sustainable system of management and delivery.

7.2 Maintaining Structures

All structures, irrespective of their type and structural form deteriorate over time. Each structure is made up of several individual components that deteriorate at different rates and to different extents. It is therefore impractical to consider the deterioration of a whole structural asset.

Specific common components of structures across the Haringey network must therefore be assessed. If these components are managed and maintained appropriately, deterioration of the whole structure can be minimised.

The processes and key elements required for effective management of the Council's structural asset infrastructure combines management, financial, engineering and technical practices to ensure that the required service levels of structures are met by the most efficient means with consideration for fiscal and resource limitations.

Specifically, the purpose of the plan is to:

- Demonstrate responsible stewardship of bridge and major culvert infrastructure.
- Manage the risks associated with maintaining bridges and major culverts.
- Provide input into long term financial planning.
- Support community engagement to determine customer priorities and requirements.
- Optimise spending on bridge and major culvert infrastructure by taking a whole of life approach.
- Guide the development of maintenance practices.
- Drive continuous improvement

7.3 Structural Inspections

Inspections are carried out by Haringey's Inspectors, Engineers and subcontractors in accordance with DMRB Standard BD 63/17 'Inspection of Highway Structures'.

All highway structures are subject to routine inspections in accordance with best practice. These include two main types of inspections, general and principal.

General inspections (GIs) are usually undertaken every two years for each structure, and principal inspections (PIs) every six.

In addition, special inspections are undertaken when an issue requiring further investigation has been identified.

Based on the results of the inspections, structures are assigned two numerical Bridge Condition Index (BCI) ratings:

1. Average BCI score (BCIave)
2. Critical BCI score (BCIcrit)

These reflect, respectively, the overall condition of the structure based on all elements surveyed, and the condition of the most structurally - and safety-critical (loadbearing) elements of the structure. These are rated separately, as a bridge with an acceptable overall condition could still require priority capital maintenance to address sub-standard critical elements.

A higher BCI score represents better condition of the asset. The condition index bands and rankings adopted by Haringey for risk assessment purposes are as follows:

Bridge condition indices and risk ranking.

BCI Score Range	Structure condition (based on BCIave)	Structure condition (based on BCIcrit)	Risk ranking
90-100 Very good	No significant defects in any elements; structure is in a very good condition overall	Insignificant defects/ damage; capacity unaffected	Low
80-89 Good	Mostly minor defects/damage; structure in good condition overall	Superficial defects/damage; capacity unaffected	Low
65-79 Fair	Minor-to-moderate defects/damage; structure is in a fair condition overall; one or more functions of the bridge may be significantly affected	Superficial defects /damage; capacity may be slightly affected	Medium
40-64 Poor	Moderate-to-severe defects/damage; structure is in poor condition overall; one or more functions of the structure may be severely affected	Moderate defects/ damage; capacity may be significantly affected	Medium
0-39 Very Poor	Severe defects/damage on several elements; one or more elements have failed; structure is in very poor condition; structure is unserviceable	Possible failure or actual failure of critical element; severe defects/damage; capacity may be severely affected; structure may need to be weight restricted or closed to traffic	High

7.5 Structural Reviews and Assessment

Structural reviews are undertaken to ascertain the adequacy of structures to carry specified loads when there are significant changes in their planned usage, loading levels, condition or assessment standards.

The Structural Review process considers several criteria in the form of a Risk Assessment (See BD101/11 for guidance on a Structural Review and Assessment System).

Structural Reviews are identified on a priority basis and include structures which have deteriorated to an extent that they are considered likely to affect their design or assessed capacity. Structures where there are potential changes to their imposed loading are also considered for review.

Initially, we quantify the load bearing capacity of a structure in accordance with appropriate standards.

Assessments may only require consideration of a limited number of elements to inform the design of a repair scheme. If an assessment shows the structure cannot carry the specified loading, it will be assessed as part of a value management process.

Consideration is given to weight restrictions, impact of closures, strengthening or replacement requirements and time scales for action.

7.6 Bridge Scour

Bridge Scour is a key issue after major flooding events, such as those experienced in London in 2014\15. Scour at bridges is acknowledged as one of the greatest generic risks to Network closure. Early preventative maintenance is crucial to reduce the impact of future flood events.

Haringey utilise their structures data base to identify scour issues. The database is part of a London-wide combined system called BridgeStation.

All inspection records where scour has been recorded as text in the inspector's comments are noted. A scour report is then produced to plan remedial works at affected bridges.
Remedial works to scour on structures are prioritised for the primary route network but are also considered highly important on non-primary routes. Preventative maintenance work to address scour issues is particularly important and provides a very high return in terms of whole life costing and maintaining a safe network.

7.7 Maintenance Strategy

Haringey's maintenance strategy is based on each structure's condition index (BCI). This assists in justifying the investment needed to improve the bridge stock to the required level; and to maintain it at that level.

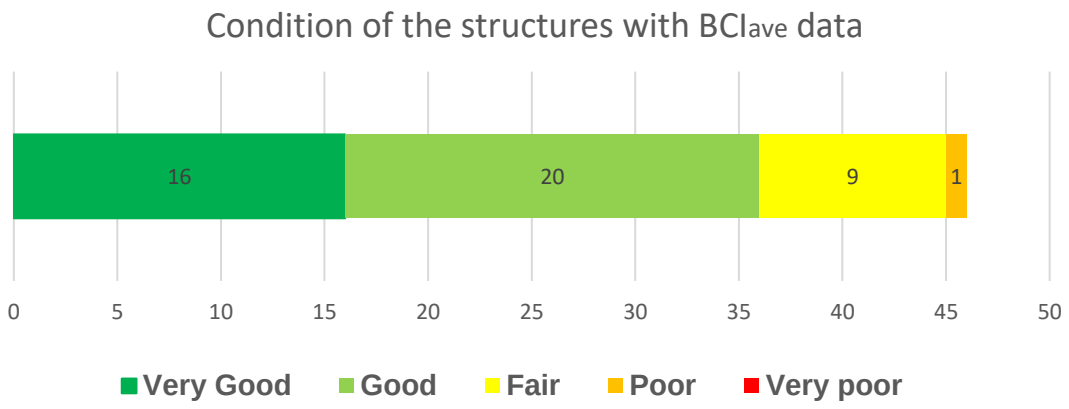
Routine maintenance activities can be classed as:

1. Cyclic - carried out on an annual basis with the timings based on historical experience.
2. Steady state – ad-hoc to maintain the condition of the structure by protecting it from deterioration or slowing down the rate of deterioration.
3. Reactive - usually emergency work dealt with urgently on the grounds of safety such as emergency repairs following a bridge strike.

Essential maintenance work can also be reactive and occurs when major repairs are identified and must be carried out quickly before the structure becomes unsafe; such as to prevent defects leading to much more significant defects that would be very costly to repair.

Haringey is committed to ensuring that all structures are assessed and allocated a condition index to enable future planning.

Of the Haringey structures that have BCI data available, the majority are in very good or good condition, and 1 has been classified as poor, as illustrated below.



7.8 Legislative Requirements

In addition to providing service standards at a level agreed with the community, Haringey formulate the service requirements of infrastructure with consideration to codes of practice, standards and legislative requirements. These include:

- Management of Highway Structures: Code of Practice, TSO, 2005
- Inspection Manual for Highway Structures – Volume 1: Reference Manual, TSO, May 2007
- Inspection Manual for Highway Structures – Volume 2: Inspector's Handbook, TSO, May 2007
- Guidance Document for Performance Measurement of Highway Structures: Part B1: Condition Performance Indicator, 2007
- BD 63 Inspection of Highway Structures, DMRB 3.1.4, TSO
- BD 27 Materials for The Repair of Concrete Highway Structures, DMRB 3.2.2, TSO
- BA 35 Inspection and Repair of Concrete Highway Structures, DMRB 3.2.2, TSO
- British Waterways Direction: Asset Inspection Procedures (AIP 2008), June 2008
- Network Rail – NR/L3/CIV/006 – 1D – Level 3 Handbook for the examination of structures – Part 1D: Competency, preparation for examinations and other common requirements, September 2009
- Network Rail – NR/SP/CTM/017 – Specification – Competence & Training in Civil Engineering, June 2006
- London Underground – Category 1 Standard – 1-050 – Civil Engineering – Common Requirements, Issue No: A3, July 2010
- London Underground – Manual of Good Practice – G-050 – Civil Engineering – Common Requirements, Issue No: A3, December 2009
- London Underground Guidance Note – G1056 – Unit 6 – Inspect the condition of Bridges and Structures (Knowledge, Understanding and Observation) Assessment Checklist for Bridges and Structures Inspectors, Issue: A1, May 2011

7.4 Well-managed Highways Infrastructure Code of Practice

The 'Well-managed highway infrastructure' is a code of practice published in October 2016. It requires local authorities to adopt a risk-based approach to highways infrastructure management.

As noted, most bridges in England are subject to general inspections at a fixed calendar interval of 24 months, with principal inspections undertaken every six years. This approach is without regard to the condition of the bridge, i.e. newer bridges with little or no damage are inspected with the same frequency as older, more deteriorated bridges. This creates inefficiency in the allocation of inspection resources.

In future, risk assessments will be undertaken based on the likelihood and consequence of failure for specific bridge components. The likelihood of failure will be determined through attributes based on design, loading, and condition characteristics, whilst the consequence of failure will be based on expected structural capacity, public safety, and serviceability.

By combining the expressions of likelihood and consequence for each component, an optimum inspection interval for a structure will be determined through application of risk matrices.

Risk based inspection planning in Haringey will deliver the following benefits to residents and infrastructure users:

- It will optimise inspection intervals and ensure that the greatest effort is targeted at the highest risk structures.
- It will maintain a consistent level of risk across the network.
- Enable identification of the critical structures on the network.

7.9 Summary

80% of the 140 structures within Haringey are owned by the Borough and Network Rail. The remaining 20% are owned by other authorities, including TfL, Highways England, London Underground, Thames Water and the Canal & River Trust.

Haringey will adopt risk-based assessments of all structures based on the likelihood and consequence of failure for specific bridge components.

The likelihood of failure will be determined based on design, loading, and condition characteristics, whilst the consequence of failure will be based on expected structural capacity, public safety, and serviceability.

An optimum inspection interval will be identified for each structure through application of risk matrices.

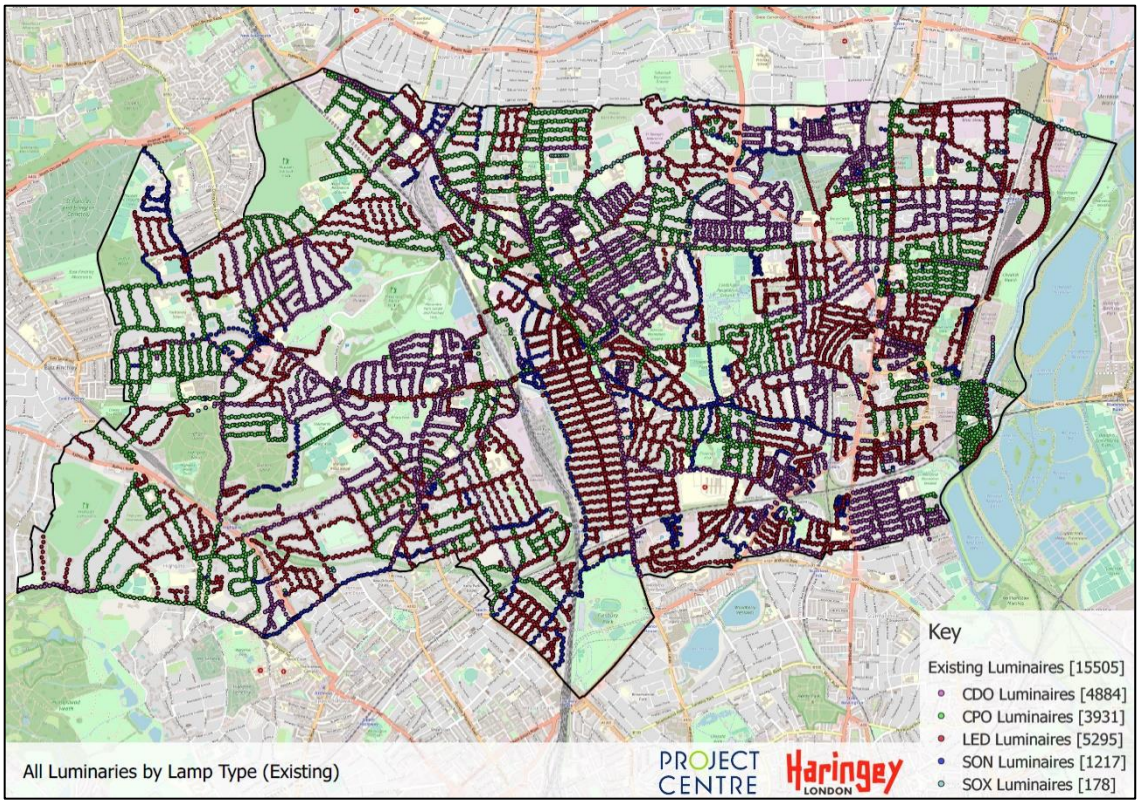
This approach will deliver a range of benefits to residents and infrastructure users, delivering a consistent level of risk by ensuring that the greatest effort is targeted at the highest risk structures.

8. Maintaining Street Lighting

8.1 The Street Lighting Asset

Including street lights, there are approximately 21,000 electrical assets maintained by Haringey. This includes illuminated signage and bollards. These assets are owned by the Borough, Homes for Haringey, and Haringey Parks.

Haringey has 15,505 street lights on their highway network. This includes column and wall mounted street lights of various styles and a variety of types of columns, brackets, and luminaires. The location of all 15,505 street lighting points in the Borough are shown below.



Of the total 15,505 street lights, 5295 (34%) are provided with new low-energy LED luminaires, 57% with standard white light bulbs and 9% with older high-energy sodium bulbs. All existing street lighting is operated from dusk till dawn via a photocell.

Existing Luminaire Type	**Total No.**	**Percentage:**
LED (light emitting diodes)	5295	34.15%
CPO (white light bulbs)	3931	25.35%
CDO (white light bulbs)	4884	31.50%
SON (High-pressure sodium “yellow” lamps)	1217	7.85%
SOX (Low-pressure sodium “yellow” lamps)	178	1.15%
Total	**15505**	**100.00%**

8.2 Street Light Maintenance

The current process for street lighting maintenance involves visual inspection of the network during the hours of darkness to identify failed lighting units. These reports, along with any received from the public, are combined to form an ongoing replacement programme.

In addition, Haringey inspects the condition of street lighting columns and undertakes an annual programme of column replacement based on risk of failure.

Haringey maintains a digital database of all street lighting assets, which also provides information on the type of luminaire in use and the structural condition of the column itself.

Most of the existing lamp type luminaires on the network are now obsolete and are no longer supplied by the manufacturers. Street lighting luminaires using old-fashioned high-intensity discharge lamps are therefore being phased out and replaced with equivalent LED lighting systems.

8.3 LED Lighting

The design life for LED luminaires is more than 100,000hrs (c25 years), and each generates only half of the carbon emissions of standard lamp units, as well as utilising significantly less energy to operate. LED is therefore considered the default luminaire of choice and the way forward.

Energy costs are predicted to rise by a fifth in the coming year, and by as much as 4% per year thereafter. Increasing energy demands and costs have led to major changes within the street lighting industry to reduce energy consumption and increase efficiencies. Haringey is unable to control the increasing costs of electricity tariffs and therefore must find other ways to reduce energy costs i.e. energy consumption.

LED luminaires are equivalent in terms of light output; however, LEDs offer many other benefits over lamps such as:

- Greater lighting efficiency per Watt of power.
- Reduced maintenance as there are no lamps to replace.
- Improved colour rendition and stability.
- Improved lighting control and reduced light pollution.

Existing luminaires could be replaced with new LEDs on a “one for one” basis over a long period of time as older units fail. However, a programme of replacement that seeks to replace all high-energy lights with low-energy LED over a much shorter period could provide significant savings in the medium-term, particularly given the rising costs of energy.

8.4 Central Management System (CMS)

A Street Lighting Central Management System (CMS) is an intelligent control system used to manage street lighting networks. This system “connects” all street lights through a wireless control system. It could allow Haringey to control levels of illumination to better reflect highway usage and risk.

CMS is a tool designed to assist engineers to manage street lighting networks. It can provide information on “non-working” lights and reduce the number of lamps that

illuminate during the daytime due to operational faults. Inspection of street lights would not therefore be necessary, as maintenance would be optimised to deal with known failures, leading to a more responsive service for the public.

CMS cannot fix faults; however, CMS can quickly and automatically detect some luminaire faults enabling optimal maintenance.

8.4 Summary

With an imminent increase in energy tariffs applicable to many local authorities, there is increasing focus to reduce energy consumption and costs.

London Borough of Haringey will reduce energy use on the street lighting network to enable energy saving and carbon emission targets to be achieved whilst delivering cost savings over time.

Key to the street lighting energy saving strategies will be the use of new technologies, including energy efficient LED luminaires and a Central Management System (CMS) to intelligently monitor and control the street lighting network.

9. Next Steps - Future HAMP Development

This HAMP is a flexible document, which will change over time, to reflect evolving budgets and policies, and to reflect our progress in implementing whole life planning principles to all elements of the highway infrastructure.

We will further develop our approach to highways asset management by applying detailed assessment criteria and by expanding the scope of the HAMP to consider how all highway assets could be managed using a whole-life planning approach.

Appendix A – Performance Indicators

The following performance indicators will be adopted to enable us to measure and record our success in delivering this HAMP.

Indicators Reported Monthly

Measurement	Description
% Reported/ Number repaired	Urgent road defects repaired
% Reported/ Number repaired	Urgent footway repairs completed
Number	Personal injury claims received and processed
% refuted	Personal injury claims successfully refuted
% and £ progress against budget	Maintenance expenditure

Indicators Reported Quarterly

Measurement	Description
% of plan delivered	Principal and non-principal classified network resurfaced
% of plan delivered	Unclassified road network resurfaced
% of plan delivered	Footway upgrade programme completed
% of plan delivered	Progress against all programmed road resurfacing

ASSET CONDITION - Indicators reported annually – TARGET PI's AS SHOWN (based on minimum £3m pa spend)

Measurement	Description	BASE 15/16	16/17	17/18	18/19	19/20
% Red Category	**Principal** classified road network requiring structural maintenance	**4%**	**TFL PI**			
% Red Category	**Non-principal** (B & C) network requiring structural maintenance	**8%**	**7.2%**	**6.3%**	**5.5%**	**4.7%**
% Red Category	**Unclassified** road network requiring structural maintenance	**16%**	**15.4%**	**14.9%**	**14.3%**	**13.8%**
% Red Category	**Footway** network where structural maintenance required	**59%**	**58.2%**	**57.4%**	**56.7%**	**55.9%**

Appendix B – Links to Corporate Strategy

This Highways Asset Management Plan has been developed to reflect the vision, objectives and action plans contained within the Council's Corporate Plan 2015-18 **Building a Stronger Haringey Together**.

The Corporate Plan sets out an agreed vision for what kind of borough we want Haringey to be. It is a plan for the borough, a plan which sets out how we will work together to make Haringey an even stronger place than it is now.

We have encapsulated our Plan in the following graphic:

The corporate plan is innovative as it proposes to change the way services are delivered, with a much stronger focus on prevention rather than spending greater sums on problem solving

This HAMP complements the corporate plan in having a strong focus on preventative investment and sets out an innovative approach to asset management that seeks to arrest deterioration of the highway assets that are so important to the borough's economy.

The Corporate Plan also promises to deliver better services to residents in a timely, effective, efficient and satisfactory way to provide a clean, well maintained and safe borough where people are proud to live and work.

It promises to make our streets, parks and estates clean, well maintained and safe and to provide value for money. We promise to get better value out of every pound spent by integrating a value for money culture in everything that we do, with a much stronger focus on measuring cost and performance, while ensuring that efficiency targets are built into all council contracts.

The HAMP closely aligns with this promise as it seeks to maximise the value we get from our highways maintenance investment through careful and pragmatic maintenance planning over the whole lifecycle of our roads and pavements.

Action Plan

The Corporate Plan states that “by investing in our roads, pavements and lighting we will further improve the safety of our roads and the flow of traffic”.

The action plan commits to a review of how we deliver parking enforcement, parks and highways services to make sure they are customer focused and operated in the most effective and efficient way possible.

This HAMP contributes to a wider commitment to review how we deliver highways services and underpins a proposed approach to operate these services in the most effective and efficient way possible.

How will we know that we have been successful?

We will measure our performance against the performance indicators listed in Appendix A above.

We believe that this HAMP will enhance the look and feel of our residential roads by improving the condition of our streets, pavements and street lighting.

We will also have safer roads with fewer accidents for pedestrians and other road users.

Our investment plan will also meet the Corporate Plan objective to invest “in planned works for roads and pavements to prevent and reduce the future resources required for reactive maintenance e.g. potholes”.