THE ROYAL BOROUGH OF
KENSINGTON
AND CHELSEA

Highways Asset Management Plan

September 2017

Version 1

Contents

1 Introduction - What is the purpose of this plan?

1.1 The Highways Act 1980 places a statutory duty on the Council, as a local highway authority, to ensure that all roads and footways, for which it is responsible, are maintained in a safe condition. We also aim to provide a road network with a condition and environment which meets the standards set by the Council for our residents and visitors, whilst ensuring that all funds available for the service are used as effectively and efficiently as possible in order to maintain our assets.

1.2 Asset management is an important tool in achieving these objectives. The principles of asset management can be summarised as follows:

- Complying with statutory obligations
- Meeting users' needs in terms of accessibility, usability, comfort and safety
- Ensuring availability, especially during severe weather
- Maintaining reliability during day-to-day wear
- Enhancing condition
- Minimising cost over time
- Reducing the impact on the environment

1.3 Asset management is widely accepted as a means to deliver a more efficient and effective approach to management of highway infrastructure assets through longer term planning and ensuring that levels of service are defined and achievable for available budgets.

1.4 The scope of the highway maintenance function is very wide ranging and includes services provided by other Council departments, such as the Environment, Leisure and Residents' Services (ELRS) department (in relation to street cleansing, gully cleaning and winter maintenance) and Planning (in relation to trees).

1.5 Maintenance activity can be categorised as:

- **Reactive**: Responding to inspections, complaints or emergencies, e.g. fixing potholes, street light outages and repairing broken paving slabs
- **Routine/ Cyclical**: Lamp replacement, painting lamp columns, structural tests, cleaning sculptures, gully cleansing, carriageway marking, tree pruning and other activities
- **Programmed**: Planned schemes/projects, primarily of resurfacing, reconditioning or reconstruction, replacement of end of life assets and projects where there may be enhancement or changes to the asset
- **Regulatory**: Inspecting and regulating the activities of others, electrical testing
- **Winter Service**: Providing salting and clearance of snow and ice
- **Emergencies**: Providing a planned emergency response

1.6 This Highways Asset Management Plan (HAMP) outlines our approach to maintaining the assets managed by the Transport and Highways Directorate and aims to identify actions which will lead to continuous improvements and result in a more effective and efficient service.

1.7 This HAMP will focus mainly on our approach to maintaining the Highway, i.e. carriageway and footway, as this accounts for the greatest annual spend in the Transport and Highways budget (around £3.8m a year), although one-off spending on bridge maintenance and structures is significant.

2 What assets are we responsible for?

2.1 The Transport and Highways Directorate is responsible for the following assets:

- Public Highway, i.e. carriageway and footway
- Signs (including street name plates and Legible London totems) and line markings
- Bridges, i.e. Albert Bridge, Chelsea Bridge, Ladbroke Grove Canal Bridge, Stanley Bridge and Acklam Road Footbridge
- Embankment river wall from Chelsea Bridge to Chelsea Creek, although the Transport and Highways department is responsible only for the highway supporting the section from Chelsea Bridge to Chelsea Marina where the road turns. The remainder of the wall is owned by the Council, but is not the responsibility of Transport and Highways department.
- Highway lighting, including Belisha Beacons and lamp column electric vehicle charging points
- Drainage, i.e. gullies
- Street furniture, i.e. bollards, cycle stands, benches and guardrailing
- Tree pits
- Feeder Pillars
- Pay and Display machines

2.2 Appendix A provides a breakdown of these assets. Transport for London (TfL) are responsible for the following assets in the borough:

- Red routes (Transport for London Road Network)
- Traffic lights
- Signalised crossings, e.g. Pelican, Puffin, Toucan
- Cycle hire station infrastructure
- Most bus shelters (80 of the 226 bus shelters in the borough are provided and maintained under contract to the Council)

2.3 The Council has 15 electric vehicle charging points operated and maintained by Blue Point London.

2.4 A description of highway maintenance policies, standards and service delivery mechanisms can be found in the Council's Highways Maintenance Management Plan, which is currently under review.

It is recommended that we carry out a "critical friend" review of the current Highways Maintenance Management Plan to assess whether any of our processes or approaches can be improved with a view to publishing a revised Highways Maintenance Management Plan in 2018/19.

2.5 The UK Roads Liaison Group (UKRLG) New Codes of Practice *"Well-managed Highway Infrastructure"* was published on 28 October 2016. The new Codes of Practice provide advice on lighting, structures and highway maintenance for local highway authorities and takes a risk-based approach to managing highway assets. This means that the new Codes of Practice do not outline any minimum or default standards but include case studies, educational information and illustrate good practice in particular circumstances. The previous Codes will remain valid until 28 October 2018 or earlier if the Council has moved to a risk-based approach before this time.

It is recommended that we review the Council's Highways Maintenance Management Plan in light of the new UK Roads Liaison Group Code of Practice on Highway Maintenance.

It is recommended that we move to a risk based approach to maintenance standards before 28 October 2017, to allow time for adjustment of these standards, if necessary, before 28 October 2018.

2.6 Whilst the Council, as highway authority, is responsible for maintaining the public highway, roads in the Council's housing estates are maintained by contractors procured by the Kensington and Chelsea Tenants Management Organisation (KCTMO). KCTMO is responsible for the management of nearly 10,000 properties on behalf of the Royal Borough of Kensington and Chelsea.

2.7 Roads are categorised on the basis of the volume and composition of traffic using it. Principal roads are signed "A" roads which are heavily trafficked roads which carry Heavy Goods Vehicles (HGVs) and buses. Non-principal roads are signed "B" and "C" roads which generally carry more local traffic but are busier than most residential streets (which tend to be unclassified or "U" roads).

2.8 15.7 km of the A roads in the Royal Borough are the responsibility of Transport for London (TfL):

- Addison Crescent (part)
- Addison Road (part)
- Ashburnham Road (part)
- Battersea Bridge
- Brompton Road (part)
- Gunter Grove
- Holland Road
- Knightsbridge
- Pembroke Road (part)
- Redcliffe Gardens

- Chelsea Embankment (part)
- Cheyne Walk (part)
- Cremorne Road
- Cromwell Gardens
- Cromwell Road
- Earl's Court Road (part)
- Edith Grove
- Finborough Road
- Tadema Road (part)
- Thurloe Place (part)
- Warwick Gardens
- Warwick Road
- West Cromwell Road
- West Cross Route
- Westway

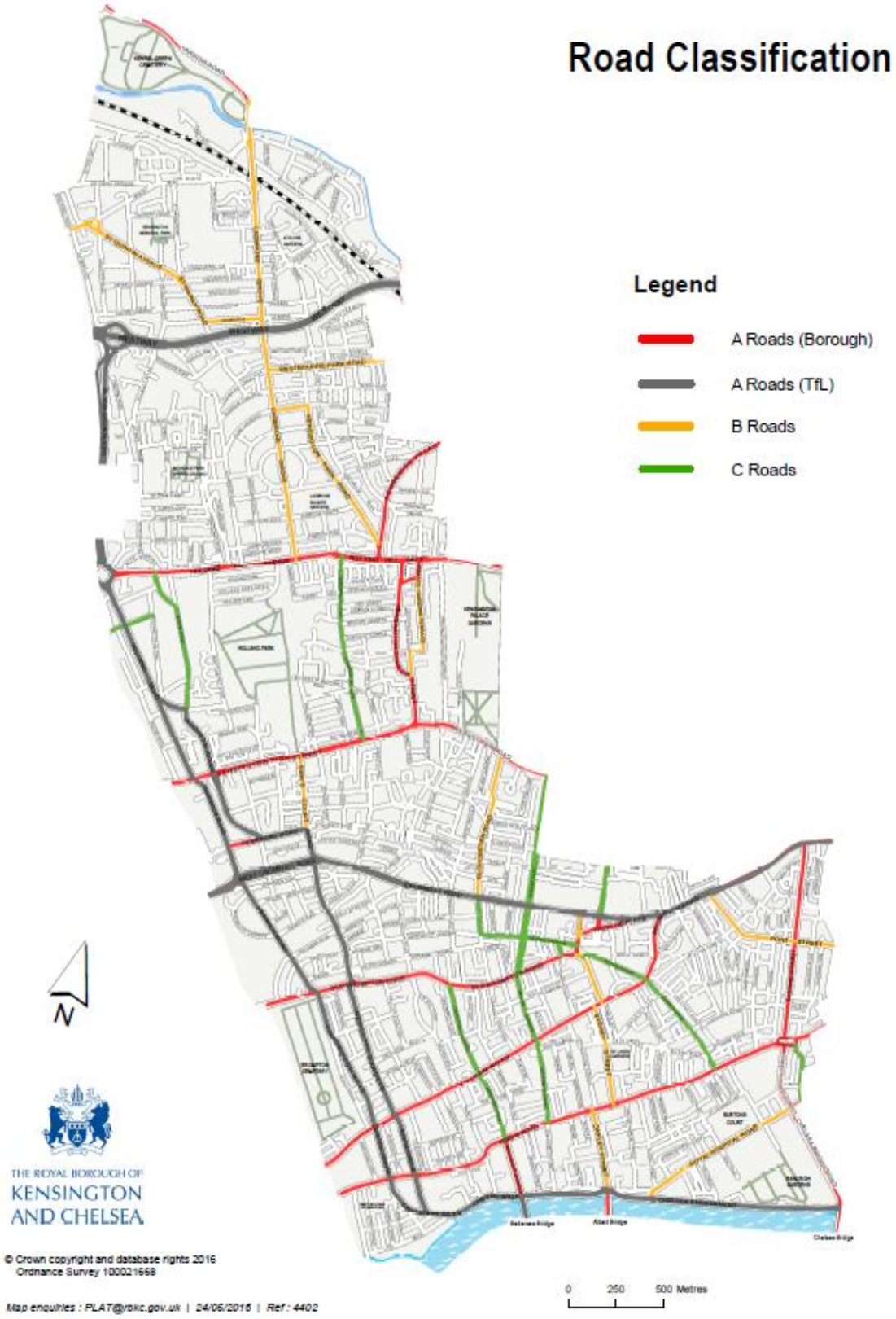
2.9 We have no maintenance responsibility for these roads or the adjoining footways, however we are still responsible for street cleansing, street name plates and any statues and memorials. We are not responsible for signs, road markings and other street furniture on these roads.

2.10 The Council is responsible for maintaining 188.3 km of highway:

- 16.7 km of principal classified (A) roads in the borough (excluding the TLRN) - the maintenance of these roads is partly funded by Transport for London (TfL) via a bid process (the shortfall is met by Council funds);
- 10.2 km of classified B roads;
- 6.9 km of roads which have been historically classified as C roads. Although this classification is no longer used, the DfT still requires local authorities to report on the length of their C road network; and
- 154.5 km of unclassified "U" road (excluding private roads and roads on KCTMO managed land).

2.11 Figure 1 shows the A, B and C roads in the Royal Borough.

Figure 1: RBKC Road Classification



2.12 Footways are classified as:

- Prestige Walking Zone with high visual standards (Category 1a)
- Primary Walking Routes serving main shopping and business areas, and main pedestrian routes to transport interchanges, football stadia and exhibition centres (Category 1)
- Secondary Walking Routes feeding primary walking routes or serving local shopping centres, schools, bus stops etc. (Category 2)
- Link Access Routes which are most footways serving residential areas (Category 3)
- Local Access Route which are low usage footways such as short cul-de-sacs (Category 4)

2.13 We are not responsible for third party assets within our assets, such as gas and water pipes or private forecourts or areas not maintained at Public Expense. However, the effect of works carried out by utility companies in maintaining and repairing their assets has a significant impact on our assets. Once a road has been opened, it will deteriorate much more quickly than a road which has not been opened, regardless of the quality of the re-instatement.

2.14 The Council's annual planned maintenance programme and list of schemes to be undertaken is usually approved by a Key Decision Report in February or March each year. The planned maintenance programme for 2017/18 can be found in Appendix C. Once the programme has cleared governance, the Network Management team send it out to utilities companies for them to check against their own programmes and identify potential clashes.

3 What is our current budget and how is it spent across the borough?

3.1 Table 1 shows how the Highways budget (contained with the Transport and Technical Services division) fits in with the overall Council revenue budget.

Table 1: Council's revenue budget (£m)

	2013/14	2014/15	2015/16	2016/17
Adult Social Care	75.8	79.6	74.6	75.1
Children's Services	137.0	132.1	128.6	122.7
Environment, Leisure and Residents' Services	44.6	42.4	42.7	39.3
Housing Services	32.1	38.5	39.6	41.6
Library, Archive and Heritage Services	5.4	5.4	4.5	4.6
Planning and Borough Development	6.7	6.9	6.5	6.6
Public Health	21.4	22.4	21.2	21.6
Transport and Technical Services	32.3	32.2	30.2	30.4
Corporate Services	54.5	65.9	60.1	62.2
Adult and Family Learning Services	1.3	1.3	1.3	1.3
Other, e.g. financing changes	9.0	3.7	7.7	2.6
Total Council Revenue Budget	**420.3**	**426.7**	**417.0**	**408.2**

3.2 Table 2 shows how the Highways maintenance and projects spend (contained with the Transport and Technical Services division) has changed over the same years.

Table 2: Total highways maintenance and projects spend (£m)

	2013/14	2014/15	2015/16	2016/17
Highways maintenance and projects spend	14.324	14.501	14.116	13.713
Total Council Budget	**420.3**	**426.7**	**417.0**	**408.2**
Highways maintenance and projects spend as percentage of total Council budget	3.4%	3.4%	3.4%	3.4%

3.3 Table 2 excludes improvement works funded by private developers (through s106 and s278 agreements) and Local Implementation Plan (LIP) funding received from Transport for London in support of the Mayor's Transport Strategy.

4 When is the right time to maintain assets and how much does it cost?

4.1 Our approach to highway maintenance is to carry out the optimum amount of planned maintenance to minimise the need for more expensive reactive repairs. This makes the best use of our resources and helps achieve our objective to maintain our assets at the minimum "whole life" cost.

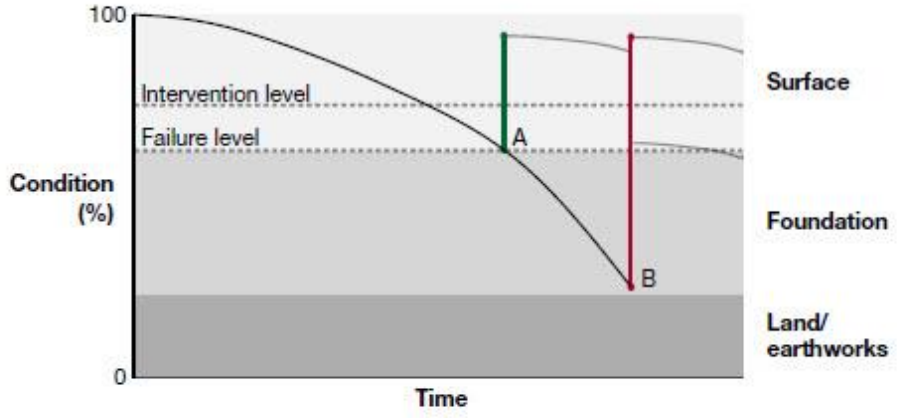
4.2 Preventative measures can mitigate against the effects of severe weather:

- Gritting roads with salt, will lower the freezing point of water and prevent cracking due to extreme cold. However, gritting can also cause detrimental effects to street furniture through increased risk of rusting.
- Keeping gullies clear of blockages will mean that surface water will drain away and not flood the road.

4.3 Figure 2 below is an extract taken from the report *"Going the Distance: Achieving better value for money in road maintenance",* produced by the Audit Commission in 2011. It illustrates the benefit of carrying out maintenance at the critical stage of deterioration in the condition of a road. A road can be economically restored by suitable intervention at Point A on the chart. If that point is missed and the condition allowed to deteriorate further, then a more expensive intervention may be required below the failure threshold (shown at Point B on the chart) to bring it back to standard.

Figure 2: Deterioration in the condition of a road

Figure 7: **Failure to intervene at the right time and with the most appropriate treatment will result in poor roads and represents poor value for money**



Source: Professor Martin Snaith, University of Birmingham

4.4 Whilst the report focuses mainly on roads, the same principle applies to pavements. We identify the critical stage of deterioration through condition surveys.

4.5 We use the condition surveys to rank roads or sections of roads in a priority listing. The budget then determines how many roads from the list are included in the work programme each year.

4.6 Yorkstone paving makes up around 30 per cent of the borough's footways. Around 10 per cent of this is relayed under planned maintenance, so in total around 3 per cent of planned maintenance is relaying Yorkstone, i.e. 10% *

30% = 3%. Around 0.3 per cent of Yorkstone paving is replaced during planned and reactive maintenance so 0.1% in total, i.e. 0.3% * 30% = 0.1%

4.7 Table 3 shows the cost per square metre of planned and reactive carriageway and footway maintenance.

Table 3: Cost per square metre of planned and reactive maintenance

	Carriageway (cost per sq m)	Footway (cost per sq m)		
		ASP	Yorkstone	Average
Planned maintenance	£20	£70	£142 (around 3 per cent)	£72
Reactive maintenance	£54	£43	£70 (around 0.1 per cent)	£43

4.8 These are average costs based on 2016/17 contract prices. There is a wide variation on actual costs because of factors such as depth, banding, materials and whether or not weekend or night supplements are payable.

4.9 On the face of it, Table 3 would suggest that reactive maintenance is more economical for footways. However, the planned maintenance average costs includes kerb stone relay and some renewal, including breaking out of bedding material and replacing it.

4.10 Reactive maintenance might be as simple as relaying an existing stone on the existing base. This does nothing to address issues such as overall deformation or subsidence of the footway.

4.11 Planned maintenance involves replacing (not relaying) all stones and will invariably also include excavation and replacement of the base. In order to ensure appropriate lines and levels it will also usually be necessary to relay the kerb, and this is relatively expensive. In addition, kerb works prior to relaying will also often require a small percentage to be replaced if it is damaged beyond use. These costs are included in the planned maintenance figure but are not usually required for reactive work.

5 What have we spent on maintaining assets over the last five years and what has been the impact on their condition?

5.1 TfL pay for a Detailed Visual Inspection (DVI) for all ‘A’ roads in London. The DVI survey is carried out by the Road 2010 team based in LB Hammersmith and Fulham. This data is double checked by a senior RBKC highways engineer who uses the data and his own observations to formulate a bid for TfL LIP funding. The Council usually has to supplement the LIP funding on the principal road network, as the TfL LIP allocation is not sufficient to maintain the carriageways to the required standard.

5.2 Table 4 shows how the Highways maintenance revenue budget was allocated over the last five years and how the road condition has changed over this period of time, where a number more than 100 indicates a deterioration across the network compared to the condition of the network in 2011/12, i.e. 200 would indicate twice as many defects found by RBKC's Highway engineers in their annual survey of roads compared to the number of defects found in their 2011/12 survey.

Table 4: Highways maintenance revenue budget (£m)

	2011/12 (£m)	**2012/13 (£m)**	**2013/14 (£m)**	**2014/15 (£m)**	**2015/16 (£m)**	**2016/17 (£m)**
LIP allocation for A roads (planned)	0.187	0.25	0.3	0.282	0.337	0.279
Other Carriageway (planned)	1.262	0.902	0.891	0.909	0.867	0.851
Carriageway (reactive)	0.171	0.174	0.178	0.18	0.182	0.185
Footway (planned)	2.555	2.032	2.073	2.099	2.154	2.022
Footway (reactive)	0.411	0.429	0.438	0.467	0.479	0.456
Total highways maintenance spend	**4.586**	**3.787**	**3.880**	**3.937**	**4.019**	**3.793**
Percentage of spend on planned carriageway maintenance	89%	87%	87%	87%	87%	86%
Relative condition of carriageway indexed to 2011/12	100	97	130	171	173	167
Percentage of spend on planned footway maintenance	86%	83%	83%	82%	82%	82%
Relative condition of footway indexed to 2011/12	100	78	131	163	156	124

It is recommended that officers continue to seek best practices from and benchmark against other boroughs, with a view to maintaining quality at a reduced cost and improve the efficiency of the service. Appendix B shows how the condition of the Council's A roads compares with that of neighbouring boroughs.

6 How do we maintain our assets?

Asset Management Systems

6.1 Currently, we use a system called GEOWORKS to record where works have taken place. If we want to map where these works took place, we do this manually via the Council's GIS mapping system (ArcGIS). However, GEOWORKS has built-in mapping and Customer Relations Management (CRM) functionality, although we do not currently use these features of the system. If these features were used, then faults and requests for highway enforcement reported via streetline could be managed in the CRM database and represented geographically so that enforcement could be better targeted

thereby increasing the effectiveness of enforcement which in turn would increase income to the Council (via Fixed Penalty Notices) and reduce costs in terms of the time staff spent in dealing with streetline requests.

It is recommended that officers investigate using the mapping and CRM functionality of GEOWORKS so that faults and requests for highway enforcement reported via streetline can be managed in the CRM database and represented geographically so that enforcement can be better targeted.

6.2 We currently pay around £20,000 a year for our GEOWORKS licence. However other asset management systems exist, for example, CONFIRM, Symology, Mayrise and Bentley (formerly known as Exor). The costs of these systems varies, for example an integrated asset management system such as CONFIRM would cost around £99,000 a year.

It is recommended that officers investigate the costs and benefits of changing our works ordering system from GEOWORKS to another asset management system.

Service Response Times

6.3 In general, any fault which poses an immediate danger is made safe within two hours. Significant failures, which cause disruption but do not pose any immediate danger, are rectified within 24 hours. All other faults are rectified within 28 days. Gullies blocked by concrete, especially outside active building sites take longer to rectify, as we do not want these gullies blocked again, so we will wait until the builders have completed their work. Out of hours' emergencies are handled by the Duty Officer, who will co-ordinate any responses.

Streetlighting

6.4 Investment for street lighting and sign assets is prioritised by inspections or manufacturers recommendations on life expectancies, i.e. bulk lamp replacements to reduce lamp failures so fewer lights are not working. Electrical testing is carried out every six years, so one sixth of the stock is tested each year. Structural Testing is also carried out every six years on columns and illuminated signs over twelve years of age, again one sixth of the stock is tested every year. However, if an area has a high number of faults reported, this will be reduced to every three years. One sixth of the stock is also visually inspected every year.

6.5 Street lighting engineers also carry out a programme of night scouting throughout the year to ensure the assets are working at the key time they are needed. Any faults are recorded and raised for repair or inspection. Nightly inspections meant that the whole borough is checked every two weeks in the winter and every three weeks in the summer.

6.6 UKPN is the network distributor of electricity in RBKC, there are procedures in place for notification of their network faults and supply of new connections. Often street lighting faults/ outages will be out of the Council's control, as it will not be an asset fault but a supply issue.

6.7 To enhance the life of our stock, lighting columns are repainted every ten years. We replace older stock with more energy efficient stock and retro-fit some of the existing stock with electric vehicle charging points. We also take a risk based approach to replacing street lights assets, e.g. structural testing reduces the risk of columns failing in-situ, electrical testing reduces the chance of electrical shock and repainting maintains the protective coatings of equipment.

Street furniture and Structures

6.8 With regards to the maintenance of street furniture e.g. seats/ benches, metal bollards, these are inspected at the same time as the rest of the highway in respect of any safety implications and condition surveys are carried out approximately every two years by a highways officer (or is reported by a member of the public) for the maintenance work e.g. cleaning, repainted, repaired or replaced. Statues, fountains, horse troughs and war memorials are cleaned by a specialist company once a year, with ad-hoc cleaning as and when required.

6.9 In respect of highway structures, data collected through our inspection regime determines the need for investment in repair works. The condition of all structural elements is established and the severity/extent of any deterioration and its priority for repair is ranked. Also national guidelines indicate what cyclical maintenance/refurbishment is required as paint systems, some materials and lighting elements have a limited lifespan and therefore need replacing. We carry out specific inspection regimes on our bridges and this data is entered on to BridgeStation, a London wide asset management programme which assist LoBEG (London Bridge Engineering Group), determine larger scale asset management costs. Generally, RBKC carry out cyclical refurbishment every eight years, and any repairs are carried out at the same time. However, major refurbishment works which are non-critical can be delayed due to restrictions on road traffic network and river movements, closures etc.

Signs and Lines

6.10 A survey of all parking and non-illuminated signs and posts is carried out by a lighting engineer three times a year. Spending is then prioritised according to any faults found, with damaged or missing safety critical signs/ posts replaced first, then damaged or missing non-safety critical, e.g. parking signs, replaced next. Sign replacements for wear and tear, e.g. faded signs, are replaced depending on budgets at the end of the year.

6.11 A, B and C roads are remarked annually and the rest of the borough is remarked on a rolling programme which takes around two years to complete under the current budget. Lining changes as a result of changes to traffic orders are made

approximately three times a year. Faded markings are repainted as soon as possible after they are reported. The Council has a contract for controlling weeds which come up through the pavement.

Drainage

6.12 Potential locations for a Sustainable Drainage System (SuDS) are determined by taking into consideration the location of planned maintenance and neighbourhood improvement schemes and comparing them to flooding hotspots identified within the updated Surface Water Management Plan (SWMP). Levels of investment are determined on a case by case basis. Maintenance costs, including long term maintenance, are considered throughout the design process with a view to minimising any increase and encouraging community involvement where possible. The long term maintenance of SuDS schemes will most likely require the input from contractors employed by other Council departments, e.g. routine cleansing and maintenance of specialist plant material.

It is recommended that Transport and Highways officers work with other Council departments to agree a Memorandum of Understanding in relation to how the long term maintenance of SuDS schemes is funded.

6.13 Gullies are cleaned through a contract run by ELRS. Transport and Highways are responsible for blocked gullies. Blocked gullies are pressure jetted in the first instance to clear blockage. If the blockage cannot be cleared, then the work is prioritised and added to the gully reconstruction programme. Priority is given to alleviating water pooling problems on the public highway. This helps to prevent accidents due to floods and icy roads. We have been replacing damaged/blocked gully pots with plastic pans to protect the health and safety of construction workers, as these are light weight and easier to handle.

Winter Maintenance

6.14 The winter maintenance budget is spent as and when the weather decrees a need to call out the gritters, this will also dictate the cost of grit replenishment. Grit stocks are replenished before the start of the winter period and then replaced once a third of the 1,500 tonnes has been used.

Carriageways and Footways

6.15 The Council inspects principal roads and other heavily used footways, such as shopping areas, once every month, link roads once every three months and minor roads every six months. We use the information from our regular inspections to support the preparation of our annual maintenance work programme. Appendix E provides a link to our Highway Safety Inspection, Assessment and Recording procedure manual.

6.16 Our records of inspections along with any remedial action we have taken are valuable tools in defending claims made against the Council for accidents and

personal injuries. Table 5 provides a summary of the cost of insurance claims over the past few years

Table 5: Insurance claims

	Cost of footway claims	Cost of carriageway claims	Total cost of insurance claims
2010/11	£122,317	£450	£122,767
2011/12	£29,900	£25,735	£55,635
2012/13	£59,143	£15,814	£74,957
2013/14	£46,051	£1,117	£47,168
2014/15	£21,367	£46,420	£67,787
2015/16	£11,268	£2,100	£13,368

6.17 Our programme of carriageway resurfacing is compiled on a "worst first" basis, based on relative condition. Data is collected via an in-house annual visual survey, and this is supplemented by SCANNER and DVI surveys for A roads.

6.18 Visual defects such as potholes and surface cracking can often be addressed by a minor localised repair rather than extensive carriageway resurfacing. However widespread wheel-track deformation or cracking in a road may not appear to be serious, but if left unchecked the road will quickly deteriorate requiring far more extensive remedial work in the future.

6.19 By renewing the surface course (and sometimes the binder course) in a timely manner we are preventing or minimising damage to the deeper construction layers by sealing the road. This in turn avoids the much greater expense and disruption which would be caused by the need for full depth reconstruction.

6.20 Table 6 shows how much it costs per square metre to resurface a road to different depth levels, for a typical job (between 500 and 1000 square metres). Most resurfacing is done at surface level during normal working hours however principal roads, which are used more, are resurfaced at the medium level at night and weekends when 35 per cent is added to the normal working hours cost.

Table 6: Cost of different levels of resurfacing

Treatment required	Cost per sq m
Surface: 40mm resurfacing (working day)	£13.57*
Medium: 100mm resurfacing (night and weekends)	£34.79*

* subject to change year-on-year and through changes in contracts

7 What level of funding is required to achieve and sustain our target conditions?

7.1 We define the maintenance backlog as the cost of repairing all highway assets with a known defect not currently on the annual maintenance programme. Each team develops their individual maintenance programme, as assets require specialist maintenance treatment and regimes. This HAMP focusses on the highways maintenance (carriageway and footway) backlog, which has been calculated based on our current contract rates. Regardless of whether or not this backlog is addressed, there is a cost associated with keeping the overall network condition constant. This is referred to as steady state.

7.2 In order to estimate how much funding we need to ensure that our roads remain in good condition (steady state), we first need to estimate how long it will be before a road which has recently been resurfaced will start to deteriorate to a level which will require a reactive maintenance intervention. This amount of time will be dependent on a number of factors, e.g. amount of traffic (and type of traffic, e.g. Heavy Goods Vehicles, Buses etc.) using the road, whether the road has been opened for utility works and weather (as severe cold or heat can break down the road surface). With these caveats in mind, officers estimate that an A Road will need to be resurfaced, on average, every 10 years, B and C roads every 15 years and all other roads every 25 years. Pavements take longer to deteriorate and are not so sensitive to wear and tear from usage (as higher quality materials are used on the major thoroughfares). Therefore, pavements on A roads would need to be replaced every 15 years, on average, and other pavements would need to be replaced once every 35 years. To achieve this frequency of planned maintenance the Royal Borough would need to spend £3.719m a year - £1.531m on carriageway planned maintenance and £2.188m on footway planned maintenance.

7.3 Table 7 shows the assumptions made in estimating how much funding is required to achieve this level of planned maintenance.

Table 7: Level of funding required for planned maintenance

	Length (km)	Carriageway assumed width (m)[1]	Carriageway sq m (length x width)	Footway assumed width (m)[1]	Footway sq m (length x 2 x width)	Total carriageway resurfaced in 25 years (A roads every 10 years, B and C roads every 15 years)	Total footway repaved once every 35 years (A roads every 15 years)
A roads	16.7	9.0	150,465	3.8	126,336	376,163	294,784
B roads	10.2	10.7	108,693	2.9	58,290	181,155	58,290
C roads	6.9	8.9	61,354	3.0	41,589	102,256	41,589
U roads	154.5	8.1	1,253,811	2.2	669,064	1,253,811	669,064
Total	188.3		1,574,323		895,279	1,913,386	1,063,727
Cost of carriageway resurfacing each year (sq m x £20/ 25 years)						**£1,530,709**	
Cost of footway resurfacing each year (sq m x £72/ 35 years)							**£2,188,239**

[1]Average width was calculated by dividing the area of each type of road by the length for that classification of road

7.4 In 2016/17, we replaced about 28,800 sq metres of footway. Based on the assumptions given in para 7.2, we should be replacing 30,392 sq metres of footway a year. Similarly, we resurfaced about 58,800 sq m of carriageway in 2016/17. Based on the assumptions above we should be replacing estimated 76,535 sq m of carriageway a year.

7.5 It should be noted that the annual planned maintenance programme is driven by the condition of the roads and not on a cyclical process of renewing roads irrespective of condition.

7.6 Table 8 summarises the backlog and steady state costs for carriageways and footways for planned works.

Table 8: Carriageway and footway backlog and steady state requirements for planned works

	Backlog (£m)	Steady state (£m/yr)	Spend 2016/17 (£m)
Carriageway (planned)	£2.411	£1.531	£1.130
Footway (planned)	£0.114	£2.188	£2.022
Total	**£2.525**	**£3.719**	**£3.152**

8 What impact will the current budget have on asset condition?

8.1 The extent of our resurfacing programme is determined by available funding. This results in a cumulative backlog of roads where resurfacing is required but is not carried out. This backlog is increasing year-on-year. Where road surfaces are left to decline, there is a corresponding increase in reactive maintenance requirement. Reactive carriageway maintenance is relatively expensive (see Table 3). As the reactive spend increases it diverts funding away from planned preventative maintenance and thus feeds into a spiral of decline. We attempt to keep the amount of footway which requires reactive maintenance to a minimum, as faults which require reactive maintenance, such as broken slabs and potholes, have the potential to cause injury. We therefore try to ensure that any deterioration is dealt with under planned maintenance and so the highway does not deteriorate to such a level that would require reactive maintenance.

8.2 At present the highway maintenance budget split in RBKC so 86 per cent is spent on planned works and 14 per cent on reactive works. If current budget levels are maintained, then this split will inevitably shift towards more of the available funding being spent on reactive works.

8.3 In 2016/17, we budgeted £1.13m on planned carriageway maintenance and £2.022m on planned footway maintenance. This is approximately 74 per cent and 92 per cent respectively of the amount officers estimate is required to achieve the target condition. The impact of this is that the likelihood of a road requiring reactive maintenance is greater as the road will have deteriorated further before it is replaced thus leading to more defects being found.

8.4 We can already see the effect of the reduction in planned carriageway maintenance over the years. The 2016/17 budget of £1.130m is 78 per cent of the 2011/12 budgeted figure of £1.449m (and would be less than 78 per cent if we allowed for inflation). The cumulative effect of a reduction in budget over the years has led to treatment worth £3.5m being identified for planned carriageway work in 2016/17 (a shortfall of £2.4m on the final budget figure of £1.1m).

9 What are our investment options going forward?

9.1 Our investment options going forward are:

- Option 1: Continue with the existing level of maintenance budget (not recommended): If current budgets are maintained, the backlog of remedial work required will increase, more reactive maintenance will be required which in turn will mean that there is less planned maintenance, thus feeding the spiral of decline.
- Option 2: Remove all backlog and increase level of maintenance budget to a level where a backlog does not re-occur: This is option is the most cost effective in the long term, however it is expensive (£2.5m to remove the backlog and an annual budget of £3.65m thereafter) and will cause a lot of disruption for residents as there will be many more road works in the borough than usual.
- Option 3: Increase the maintenance budget to the steady state level without removing the backlog: This option strikes a balance between a declining condition in the network and cost, i.e. we maintain the status quo rather than sinking further into decline.
- Option 4: Increase the maintenance budget to more than the steady state level so that the backlog is removed over four years: This would mean that the planned carriageway maintenance budget would be set to £2.1m a year and the planned footway maintenance budget would be set to £2.5m a year.

It is recommended that we start to redress the problem that shortfalls in previous years have caused by:
setting the planned maintenance of carriageway budget to £1.5m in 2018/19 and
setting the planned maintenance of footway budget to £2.2m in 2018/19

10 How do we decide our highways planned maintenance work programme?

10.1 The condition of the road network is constantly changing. The most common reason for unexpected deterioration of the road is reinstatements by, or on behalf of, statutory undertaker such as utility companies. A road which has been opened and filled, will not be as durable as one which has been allowed to wear naturally. Severe cold weather can also impact on a road's durability.

10.2 The Council's highway maintenance programme, comprising carriageway resurfacing and footway repaving, is based on an annual condition survey of all roads in the Royal Borough. In the case of the carriageways, on our principal road network (A roads), we carry out both visual inspections and quantitative surveys to assess the condition of these roads. On all other roads and all footways, we rely on visual inspections conducted by experienced highway

engineers. The visual inspection produces a condition score for each section of road with any defect, based on the percentage of defectiveness of the different parameters, such as broken paving slabs, undulations and ponding. In 2016/17, a Detailed Visual Inspection (DVI) survey was carried out for all roads in the borough, i.e. B, C and U roads were surveyed, in addition to the A roads which are surveyed annually. The results can be found in Appendix D. The DVI survey cost around £30,000 and if carried out annually will enable a year-on-year graphical evaluation of the condition of the road network to be established. The survey validates the highway engineer's visual survey and provides confidence in the engineers' condition categories, i.e. the same roads were highlighted as being in most need of attention from the DVI survey as well as the engineers' own survey.

It is recommended that the condition of the carriageway and footway be reassessed annually using a DVI survey and budgets adjusted to reflect the condition of the network.

10.3 The resulting list of sections of roads is then prioritised in order of overall condition score to provide a list of schemes. Each scheme is then costed, according to the work to be done, i.e. depth and material of resurfacing and the surface area to be covered. The prioritised costed schemes list is then cumulatively summed until the annual maintenance budget is reached to ascertain where the cut-off point is for the list of schemes which will go forward to form the next year's maintenance programme. Any schemes below the cut-off point will be held in reserve and will form the contingency list of schemes.

10.4 The list of schemes is further validated taking account of other factors outlined in Table 9 and results in the annual work programme.

Table 9: Factors which affect the annual work programme

	Reason	Source
Engineering defects condition rating	Early preventative maintenance that will defer structural failure.	DVI surveys and Engineers visual survey
Predicted decline of road based on road hierarchy	The volume and loading of vehicular, and pedestrian usage will determine the progression of defects.	Road hierarchy on GIS system
Local knowledge / Public requests	Identifies roads with a high proportion of complaints and requests.	Highway Inspectors, residents, members and public
Personal injury insurance claims	Reduces the number and type of personal injury insurance claims.	Insurance claims
Previous year 'reserve' schemes	Reserve scheme roads are already known to be in need of repair.	'Reserve' schemes not funded in the previous forward works programme
Areas requiring reactive maintenance	Reduces the amount of money spent on responsive repairs by pre-empting location where reactive maintenance is required based on the nature and volume of repairs.	Complaints, Highway inspector safety inspections and other officer observations.
Predicted location of future utility works	Utility works can reduce the life expectancy of roads by up to ten years. It is therefore better to resurface a road after utility works have taken place rather than before.	Reports of repeated water leaks in a given location or areas of high developmental activity. Long term programmes of utility companies if known.
LIP, private developer, private works, Council scheme and Council development works	Coordinating the Highways Maintenance program with other Council schemes and third party works means that disruption to residents and businesses is minimised through reduced network availability due to road closures. Avoids repeat of works in a short time period.	Regular discussion with Council staff responsible for LIP, private developer, private works, Council scheme and Council development works

It is recommended that officers also consider wider Council policy objectives when considering factors which affect the work programme e.g. see if the road surface was a contributing factor to traffic accidents, preferred routes for cyclists, e.g. Quietways, prioritising footways on routes with high footfall that are used to avoid main roads/pollution.

10.5 The reserve list of schemes is not long enough to form a five-year work programme and unlike many outer London boroughs, our highway network is continually changing due to utility works, developer works and ground movement so we need to survey every year to assess the condition of the network.

11 How do we coordinate works to minimise disruption?

11.1 Utilities need to provide the Council at least three months notice for Major works. Major works are defined as:

a) having been identified in an activity promoters' annual operating programme or are planned or known about at least six months in advance of the proposed start date for the activity; or

b) require a Temporary Traffic Regulation Order under the Road Traffic Regulation Act 1984 for any other activities other than immediate activities; or

c) having a duration of 11 days or more.

11.2 In 2015/16, just three per cent of the 9,644 permits issued in the borough fell into this category. Therefore, it is difficult to incorporate future utility works into the Council's medium term planning process because for approximately 97 per cent of all jobs that utilities undertake, the Council is given less than 11 days notice.

11.3 The Council receives money from Transport for London (TfL) to further the Mayor of London's Transport Strategy via the Council's Local Implementation Plan. The Council is required to bid for funding for specific schemes and so these works are planned in advance. Unplanned road improvements, e.g. resurfacing as part of a new development or works funded by a third party, are less common but have a positive effect.

11.4 Quarterly internal meetings are held between the Network Management team and the Highways, Projects, Structures, Private works and Development Control teams to discuss current programmes, issues and coordination. A spreadsheet of all known planned works, both utility and Council, is updated monthly to help identify clashes and potential for collaborative works.

11.5 A section 58 (s58) 'Restriction on works following substantial works' notice is sent to all promoters at least three months prior to works commencing to allow utilities to identify and complete any known works prior to the Council's works commencing. The s58 notice protects a road for up to five years if reconstructed or has significant design changes, and up to three years for resurfacing works.

11.6 The s58 notice is also uploaded onto the street works register and any promoter submitting a permit to work in any road subject to a s58 restriction will receive an alert.

11.7 Two types of work are exempt from s58 restrictions: Emergency works and new supplies. When appropriate to do so, the Network Management team request that the area of reinstatement be increased so that it becomes either a full or half road width reinstatement as this is helps with both the visual intrusion of the reinstatement and also means that the road is less likely to deteriorate as quickly as a partial reinstatement. This agreement needs to be in place before utility works commence.

11.8 The Network Management team hold quarterly coordination meetings with utility companies. The planned maintenance and schemes programme are discussed along with the utilities annual programmes and planned works. These are again cross referenced to identify any clashes or the potential for collaborative working.

11.9 Any clashes are coordinated to ensure that utility works are completed prior to the Council's own works commencing. If this is not possible then we look to see if the Council's works can be deferred.

It is recommended that officers plan highways maintenance work so that traffic order changes required to accompany streetscape reviews, e.g. reduction in the number of zig-zags leading to zebra crossings, are made before resurfacing is carried out so that lining changes are implemented on the new surface.

12 How do our streetscape, sustainability including flood management, and air quality policies affect our asset maintenance strategy?

12.1 Appendix E provides links to our streetscape guide, flood management policy and air quality and climate change policies.

Streetscape

12.2 All work affecting the public highway must be carried out in accordance with the Council's Streetscape Guide. This forms a reference manual of good practice for all concerned with the design and implementation of streetscape schemes and the maintenance of the highway. There is little point creating beautiful streetscapes if they are allowed to be ruined by poor maintenance. Major projects, such as Exhibition Road, have special maintenance regimes setting out care details for the special surfaces, equipment and furniture used. Council officers ensure that utility companies reinstate their excavations to match the existing surfaces as required under the current legislation. Where inspections show work to be unacceptable, a defect fee is charged and the reinstatement redone. To ensure that utility companies use the correct type of Yorkstone in relevant areas, the Council has an arrangement to supply slabs.

12.3 The Council also has a rolling programme of area-wide streetscape reviews (each review generally covers two wards). Part of the review process involves reviewing all existing signs, posts and other street furniture with a view to removing anything no longer required and rationalising what is needed to minimise the number and size of signs.

Flood risk

12.4 Our asset management strategy affects flood risk in two ways:

- Maintenance of existing drainage systems and provision of alternative systems

- Provision of Sustainable Drainage Systems (SuDS) in the Highway, for example at Arundel Gardens: These are water management measures designed to drain surface water run-off in a manner that could slow, reduce and treat it providing a more sustainable approach than discharging it directly to the sewer system. SuDS can take different forms from rainwater harvesting systems to permeable surfaces and bioretention ponds. The Arundel Gardens scheme was a complex and expensive scheme, funded by Thames Water. New SuDS schemes are likely to be significantly cheaper and focus more on planting materials and creating green space at surface level rather than sub-surface retention schemes. Rainwater will be directed into these green areas rather than gullies. The ideal solution is to incorporate these measures into the regular planned maintenance regime making them business as usual. The Council also has a specific policy (policy CE2) to stop paving front gardens where planning control exists. If the Council had an integrated asset management system, we could identify areas which have flooded due to Thames Water pipe bursts and ask Thames Water to replace the pipe before we resurfaced.

12.5 The depth and duration of standing water can be reduced by:

- the installation of additional road gullies or alternative drainage systems;
- the maintenance and cleaning of gullies to ensure drainage systems are operating at capacity;
- the maintenance of Thames Water sewers; and,
- looking for opportunities to reduce flood risk to critical transport infrastructure whilst upgrading the existing drainage network in partnership with Thames Water, Network Rail and Transport for London.

Air Quality

12.6 Our asset management strategy impacts on air pollution and its effects by:

- Ensuring maintenance works are coordinated to minimise disruption and allowing traffic to flow; and
- Providing locations where electric vehicles can charge; and
- Maintaining carriageways so that there is minimal dust release from abraded road surfaces, preventing dust gathering within cracks on the road surface which is then released back into the atmosphere when vehicles pass over it and ensuring a smooth road surface to encourage cycling thereby reducing vehicle emissions; and
- Maintaining footways to provide safe pedestrian access and continued modal shift to walking.

12.7 Research[1] has shown that the type and condition of a road surface will affect the wear of the tyres and the amount of surface abrasion of the road surface.

[1] http://www.lowemissionstrategies.org/downloads/Jan15/Non_Exhaust_Particles11.pdf

These factors, in turn affects the amount of particulate matter released into the atmosphere. High friction causes the greatest wear of both the tyre and the road surface. However, high friction road surfaces provide greater safety as there is less risk of wheel spin and sliding. It is common on approaches to roundabouts and traffic signal controlled junctions that "anti-skid" is used to improve the traction between tyres and the road surface. Anti-skid will lead to higher levels of particulate matter from the tyres, however, a balance needs to be struck, and there would be negative air quality effects if anti-skid were applied everywhere as a matter of course. At particular locations where there is a safety case for anti-skid, the safety benefits outweigh the air quality disbenefits.

12.8 Smooth road surfaces will reduce the amount of particulate emissions from the tyres, but such surfaces are likely to be identified as needing corrective action to improve safety at that location.

12.9 Uneven surfaces are also likely to shake loose particulates that have collected on the vehicle – either from the vehicle itself (brakes, tyres etc.) and also that have collected on the vehicle from resuspension, i.e. particulates lying on the road being disturbed by the wake of the vehicle.

It is recommended that "reducing particulate matter emissions by ensuring road surfaces are maintained through planned maintenance" be added to the Council's Air Quality Action Plan.

12.10 Use of highway assets to provide electric vehicle charging infrastructure support the Council's air quality objectives by reducing tail pipe emissions from vehicles in the borough. Electric vehicle charging can be provided by dedicated charging points, as is the case in electric vehicle parking bays, or by providing electric vehicle charging capability via retrofitting existing lamp columns.

13 How do we deal with "green" assets, e.g. trees, hedges, pocket parks and Sustainable Drainage Systems whose day to day performance is not as predictable as "harder" assets such as footways and carriageways?

Trees

13.1 The Council has responsibility for street trees, trees in parks and those growing within the grounds of Council housing, schools and Social Services sites. It is empowered by the Highways Act 1980 to plant and maintain street trees. Appendix E provides a link to the Council's Tree Strategy.

13.2 Of the 8,000 trees on the public highway within the Royal Borough, around 7,000 are managed by the Council's Tree Section and 1,000, growing alongside Red Routes, are managed by Transport for London.

13.3 Street trees are inspected on a three-year cycle. Occasionally trees are pruned outside of the three-year cycle, usually when there is a problem that cannot

wait. In the north of the borough, the shrinkable clay subsoil means that large street trees are pruned every two years as part of RBKC's Risk Limitation Strategy to avoid claims against the Council for building subsidence.

13.4 In general terms pruning may be needed to allow the free flow of pedestrians and vehicles, to give clear sight of traffic signs and to allow street lighting to function properly, to prevent damage to buildings and otherwise to contain trees within the limits of the surrounding environment.

13.5 Other problems with trees include root growth in the carriageway or footway, lifting the road surface or the paving causing a trip hazard. This is because tree roots are often unable to penetrate the highly compacted soil found beneath public footpaths and are found closer to the surface as a result of this. The Council's tree section work closely with the highways maintenance team investigating problems of raised paving close to trees.

13.6 Occasionally, tree growth infringes on or over the public highway, causing a safety hazard for vehicles passing (especially buses) or parking in the vicinity. We do not have a record of how many street trees partially obstruct the carriageway, although officers estimate the number could be around several hundred, to a varying degree. The Council has a general presumption against the felling of trees, even ones which infringe the public highway, and often receives complaints from residents if a tree is removed. Street trees are normally only removed when they are either dead, dying or dangerous. However, we occasionally have to remove street trees for insurance reasons when it can be proven that a tree is contributing to building damage caused by subsidence.

It is recommended that where tree growth obstructs the public highway (vehicular movements or parked vehicles) that, where possible, we replace the tree with a mature smaller tree which does not encroach upon the highway. In exceptional circumstances, the Council will construct a build-out to protect the tree. If the tree is located next to residents parking or yellow line then this build-out would be the width of the tree. In cases where the tree is next to a marked bay, and the whole bay needs to be removed to facilitate the build-out, we could utilise this space for SuDS, streetscape or air quality improvements, e.g. planters that contain plant species specifically chosen which have an air quality benefits or installing cycle parking to make best use of the space.

13.7 Each tree has a monetary value assigned to it, as obtained by the Capital Asset Value for Amenity Trees (CAVAT) system.

It is recommended that if trees are destroyed by a third party, the Council recovers from the third party: the CAVAT value of the tree plus the cost of removal and replacement of the tree and the cost of repaving around the tree, as a younger tree will be smaller than a mature tree and the unpaved area around its base will not need to be as large as the tree which was destroyed.

13.8 Prior to planting a new street tree, a trial hole may be excavated to investigate the nature of below ground conditions and to ascertain the presence or otherwise of underground services. The public highway is a hostile environment for establishing trees due to heavily compacted soil. Therefore, in general new trees are planted within special tree pits which promote root growth.

13.9 Statutory undertakers, such as companies supplying gas and electricity, are permitted to excavate the highway to carry out repairs and maintenance. Whilst there is no statutory guidance for them to follow in relation to trees, there is a code of conduct known as NJUG 10 Volume 4, which many are signed up to. Often, if problems arise, local negotiation results in satisfactory resolution.

13.10 Problems with carriageway works damaging trees is rare. Root damage during repaving of the footway are more common. Whilst NJUG 10 volume 4 is aimed at statutory undertakers maintaining apparatus, the same principles can also be applied to footpath maintenance. As part of the new Highways maintenance contract, we have made adherence to NJUG 10 Volume 4, and in particular, Section 1 – How trees are damaged, Section 3 – Planning of works and Section 4 – How to avoid damage to trees, a mandatory requirement of the successful bidder for both carriageway and footway works.

13.11 The Council maintains a general presumption against the use of street tree furniture such as tree grilles, using Breedon Gravel or porous resin bound materials between the trunk and footway paving. The irrigation tree surround is designed to be maintenance free. We use only lightweight, aesthetically and appropriate trunk guarding where necessary.

Sustainable Drainage Systems

13.12 Where permeable paving is used, for example, in Sustainable Drainage Systems, a visual inspection of the permeable area is carried out every three months and any vegetation, which is often a sign that there may be an increase in the level of sediment, is removed to ensure that the permeable surfacing is not damaged. Regular removal of sediment is required to ensure that the check dam orifices do not block and also ensure that no sediment transfers to other areas of the system (especially the permavoid units). Flow control and sump chambers are also inspected every three months.

14 What is our policy on adopting roads?

New Roads

14.1 The Council's Strategic Objective for "An Engaging Public Realm" is to endow a strong local sense of place by maintaining and extending our excellent public realm to all parts of the Borough, including new streets. The planning policies adopted to deliver this objective are included within the Local Plan, most notably policies CR1 and CR4. Policy CR1 requires a "*well connected, inclusive and legible network of streets to be maintained and enhanced*". Policy CR4 requires

"i*mprovements to the visual, functional and inclusive quality of our street, ensuring they are well designed and maintained to a high standard*".

14.2 The Local Plan emphasises the importance of design, workmanship and not least, street maintenance, in achieving the Borough's high quality streetscape. Policy CR4 (d) requires "*new streets to be built to adoptable standards".* Paragraph 33.3.5 of the Local Plan states:

"to ensure the public function of the road network is fulfilled, roads are 'adopted' by the local authority. This ensures that they are built to proper standards, and maintained for the expected levels of different types of traffic and pedestrians. It also ensures a level of uniformity and so aids, to an extent, social cohesion".

14.3 The Transport and Streets Supplementary Planning Document (SPD) 2016 provides information and guidance in support of the Consolidated Local Plan policies and explains how good streetscape is achieved. It states that "*developers proposing new streets will be obligated to make best endeavours to enter into an adoption agreement with the Council under section 38 of the Highways Act and to dedicate new streets as highway*".

14.4 The planning policy framework requires new streets to be designed and constructed to the adoptable standards. New streets will be adopted when these standards are achieved to the Council's satisfaction. The exact detail of the design and construction standard will vary on a site-by-site basis depending on the street proposed, the traffic it will be carrying and the sub-surface conditions. The details will be included in an adoption agreement.

14.5 The Council will positively consider adopting new streets where they are built to an appropriate standard. We are currently drafting an adoption guide to help developers understand what the Council expects of them when building a new street and expect it to be publically available in 2017/18.

14.6 No streets have been adopted in RBKC in the past ten years. Several adoption agreements have been signed so it is envisaged that several new streets will be adopted soon. If all planned new streets are adopted (and this is uncertain) these new streets would account for less than half a per cent of the borough's unclassified road network.

Existing private roads

14.7 We have not adopted an existing private road for many years. Proposals to adopt existing private roads would be considered in the same way as proposals to adopt new streets and would be effected under the provisions of Part XI of the Highways Act 1980.

15 Recommendations and actions

15.1 It is recommended that:

(i) we carry out a "critical friend" review of the current Highways Maintenance Management Plan to assess whether any of our processes or approaches can be improved with a view to publishing a revised Highways Maintenance Management Plan in 2018/19;

(ii) we review the Council's Highways Maintenance Management Plan in light of the new UK Roads Liaison Group Code of Practice on Highway Maintenance;

(iii) we move to a risk based approach to maintenance standards before 28 October 2017, to allow time for adjustment of these standards if necessary before 28 October 2018;

(iv) officers continue to seek best practices from and benchmark against other boroughs, with a view to maintaining quality at a reduced cost and improve the efficiency of the service;

(v) officers investigate using the mapping and CRM functionality of GEOWORKS so that faults and requests for highway enforcement reported via streetline can be managed in the CRM database and represented geographically so that enforcement can be better targeted;

(vi) officers investigate the costs and benefits of changing our works ordering system from GEOWORKS to another asset management system;

(vii) Transport and Highways officers work with other Council departments to agree a Memorandum of Understanding in relation to how the long term maintenance of SuDS schemes is funded;

(viii) we start to redress the problem that shortfalls in previous years have caused by setting the planned maintenance of carriageway budget to £1.5m in 2018/19 and setting the planned maintenance of footway budget to £2.2m in 2018/19;

(ix) the condition of the carriageway and footway be reassessed annually using a DVI survey and budgets adjusted to reflect the condition of the network;

(x) officers also consider wider Council policy objectives when considering factors which affect the work programme e.g. see if the road surface was a contributing factor to traffic accidents, preferred routes for cyclists, e.g. quietways, prioritising footways on routes with high footfall that are used to avoid main roads/pollution;

(xi) officers plan highways maintenance work so that traffic order changes required to accompany streetscape reviews, e.g. reduction in the number of zig-zags leading to zebra crossings or removal of hatch markings, are made before resurfacing is carried out so that lining changes are implemented on the new surface;

(xii) "reducing particulate matter emissions by ensuring road surfaces are maintained through planned maintenance" be added to the Council's Air Quality Action Plan.

(xiii) where tree growth obstructs the public highway (vehicular movements or parked vehicles) that the Council construct a build-out to protect the tree. If the tree is located next to residents parking or yellow line then this build-out would be the width of the tree. In cases where the tree is next to a marked bay, and the whole bay needs to be removed to facilitate the build-out, we could utilise this space for SuDS, streetscape or air quality improvements, e.g. planters that contain plant species specifically chosen which have an air quality benefits or installing cycle parking to make best use of the space.

(xiv) if trees are destroyed by a third party, the Council recovers from the third party: the CAVAT value of the tree plus the cost of removal and replacement of the tree and the cost of repaving around the tree, as a younger tree will be smaller than a mature tree and the unpaved area around its base will not need to be as large as the tree which was destroyed.

16 How will we know if this HAMP is working?

16.1 We will monitor the assets against the following benchmarks/ targets outlined in Table 10.

16.2 Whilst this HAMP has focussed on carriageway and footway maintenance, it should be noted that all highway budgets, e.g. streetlighting, gully cleansing etc. have reduced year-on-year. The targets set in Table 10 have assumed that existing budgets are maintained. It will be difficult, if not impossible, to meet the targets set if budgets are reduced further.

Table 10: Benchmark and targets for monitoring the HAMP

	Indicator	Source	Current Score (2015/16)	Target Score (2021/22)
1	Resident satisfaction with “Repair of roads and pavement”	Annual Survey of Londoners	77	80
2	Resident satisfaction with “Street lighting”	Annual Survey of Londoners	88	90
3	Percentage of Principal roads where maintenance should be considered	NI 168 (BVPI 223)	6	5
4	Percentage of Non-principal roads where maintenance should be considered	NI 169 (BVPI 224a)	3	2
5	Percentage of unclassified roads where maintenance should be considered	DfT return (RDC0130)	22	10
6	Number of gully faults a year	BVPI	340	300
7	Number of Sustainable Drainage Systems in the borough		0	15
8	Average number of days taken to repair street light under the control of the authority	BVPI 215a – PO 15	2.8 days	1.5 days
9	Percentage of street lighting outages repaired on time	PI 16	78.5%	99.9%
10	Faults as a percentage of street lighting stock	PI 16a	21.5%	10.0%
11	Percentage of structural failures from those lighting columns tested	PI 16b	2.6%	1.0%
12	Percentage of street lights working as planned	PI 22L	99.8%	99.9%
13	Average annual electricity consumption per street light	PI 29a	Total Column consumption divided by number of lighting points 4,478,112 / 13,694 equates to 327.0 Kwh's Per lighting point	Total Column consumption divided by number of lighting points 3,824,480 / 13,687 equates to 279.4 Kwh's Per lighting point

Ends

Appendix A – register of assets, data sources and users of asset data

Table A1: Road length and width

Asset	Length	Footway width	Carriageway width	Lane km	Responsible officer
Principal motorways	0km				Antoneta Horbury/ Kola Azeez
A roads	16.7 km	3.8m	9.0m	42.5 lane km	Antoneta Horbury/ Kola Azeez
B roads	10.2 km	2.9m	10.7m	20.1 lane km	Antoneta Horbury/ Kola Azeez
C roads	6.9 km	3.0m	8.9m	15.8 lane km	Antoneta Horbury/ Kola Azeez
U roads	154.5 km	2.2m	8.1m	313.7 lane km	Antoneta Horbury/ Kola Azeez
Backlanes	0.8km (historic)				Antoneta Horbury/ Kola Azeez
Data source	GIS (ITN)	DVI survey 2017	DVI survey 2017	Derived from Arcview (Dual Carriageway x 2 Single Carriageway x 2 Roundabout x 1 Slip Road x 1 Traffic* x 1)	Antoneta Horbury/ Kola Azeez
Data used by	DfT, CIPFA	CPIFA	CIPFA	TfL	
Category 1a – Footway (A roads)	33.4km	3.8m			Antoneta Horbury/ Kola Azeez

Category 1 – Footway (B roads)	20.4km	2.9m			Antoneta Horbury/ Kola Azeez
Category 2 – Footway (C roads)	13.8km	3.0m			Antoneta Horbury/ Kola Azeez
Category 3 – Footway (Unclassified roads)	309km	2.2m			Antoneta Horbury/ Kola Azeez
Category 4 - Footway	0				Antoneta Horbury/ Kola Azeez
Data source	Double length of carriageway for road class [GIS (ITN)]	DVI survey 2017			Antoneta Horbury/ Kola Azeez
Data used by	CIPFA, TfL	CIPFA			

Table A2: Register of assets and data sources

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
Footway in need of repair within 1 year	30,000 sq m	-	-	72	Historical average	CIPFA	Tom Powell
Footway in need of repair within 2 to 5 years	120,000 sq m	-	-	72	Historical average	CIPFA	Tom Powell
Footway in good condition	792,000 sq m	-	-	72	Total less above	CIPFA	Tom Powell
Verges	0 sq m	-	-	-	Engineers Annual survey of streets	CIPFA	Tom Powell
Other types of streetlights (i.e. Bracketed)	446	25	40	2,521	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Columns up to 6.0m	6,404	24	40	2,144	Geoworks	CIPFA	Graham Shoesmith

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
Street lighting - Columns up to 8.0m	747	28	40	1,736	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Columns up to 10.0m	312	28	40	1,796	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Heritage columns	673	28	100	5,675	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Feeder pillar small	94	12	40	1,765	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Feeder pillar large	2	5	40	3,400	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Illuminated bollards	431	10	20	436	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Metal hooped bollards (LED)	351	12	25	895	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Street lighting masks (Exhibition Road)	26	5	40	27,588	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Special 8m conical columns	312	12	40	3,697	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Special 10m conical columns	313	8	40	4,122	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Special 10m stainless steel clad columns	90	15	40	8,843	Geoworks	CIPFA	Graham Shoesmith

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
Street lighting - Heritage style 8m columns	262	15	40	4,865	Geoworks	CIPFA	Graham Shoesmith
Street lighting - Heritage style 10m columns	60	4	40	3,789	Geoworks	CIPFA	Graham Shoesmith
Street lighting – electric vehicle charging units	6	0.5	6	Commercially confidential	Geoworks	CIPFA	Graham Shoesmith
Illuminated signs - Circular 600mm I/ill on 1 steel post	1,113	23	40	1,234	Geoworks	CIPFA	Graham Shoesmith
Illuminated signs - Triangular 600mm I/ill on 1 steel post	419	23	40	1,234	Geoworks	CIPFA	Graham Shoesmith
Illuminated signs - Octagonal 900mm I/ill on 1 steel post	4	10	40	1,429	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Zebra crossing beacon post	253	20	40	1,612	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Zebra crossing beacon flood	140	4	25	489	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Tree flood light	52	12	25	683	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Flood light (set in ground)	117	8	20	683	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Chelsea Bridge flood light	108	7	25	394	Geoworks	CIPFA	Graham Shoesmith

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
Other illuminations - Chelsea Bridge LED flood light	240	7	25	500	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Chelsea Bridge Festoon lights	4,380	7	25	7.54	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Albert Bridge Flood lights	188	4	25	394	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Albert Bridge side wall flu/ fittings	258	4	25	490	Geoworks	CIPFA	Graham Shoesmith
Other illuminations - Albert Bridge festoon lights	3,640	4	25	7.54	Geoworks	CIPFA	Graham Shoesmith
Traffic signs non-illuminated - Warning	728	15	20	50	Arcview	CIPFA	Alan Moore
Traffic signs non-illuminated - Regulatory	209	15	20	50	Arcview	CIPFA	Alan Moore
Traffic signs non-illuminated - Directional	203	15	20	100	Arcview	CIPFA	Alan Moore
Traffic signs non-illuminated - Informatory	816	15	20	50	Arcview	CIPFA	Alan Moore
Traffic signs non-illuminated - Boundary	27	10	15	150	Arcview	CIPFA	Alan Moore
Traffic signs non-illuminated - Parking directional	12,039	10	15	25	Arcview	CIPFA	Alan Moore

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
Standard PGR1 guardrailing	1875 Linear m	Guardrailing is removed in line with the streetscape policy, so we are not purchasing any new guardrailing. Where we have to replace damaged items, we do so from a used stock.			Asset Survey 2015/ Arcview	CIPFA	Kola Azeez/ Tom Powell
Street name plates	3,952	15	20	150	Arcview	CIPFA	Alan Moore
Bins	508	2	10	632		CIPFA	Matthew Lawrence (ELRS)
Bollards	3,432	Bollards are removed in line with the streetscape policy, so we are not purchasing any new Bollards. Where we have to replace damaged items, we do so from a used stock.			Asset survey 2015/ Arcview	CIPFA	Kola Azeez/ Tom Powell
Gates	1 (Southern Row)	20	40	1,000	Asset survey 2015	CIPFA	Tom Powell
Trees	7,090	39	60	200	Ezytreev/Arcview	CIPFA	Kola Azeez/ Stephen Fuller
Seating	227	20	40	1,200	Asset survey 2015/ Arcview	CIPFA	Kola Azeez/ Tom Powell
Sign Posts	6,253	6	10	100	Arcview	CIPFA	Alan Moore
Cycle stands	1,798	10	25	£200	Engineer's records	CIPFA	Andrew Turner
Cycle hoops	848	10	25	£129	Engineer's records	CIPFA	Andrew Turner
Statues	12	-	-	-	Engineer's records		Peter Harvey
Non-drinking fountains	9	-	-	-	Engineer's records		Peter Harvey
Drinking fountains	2	-	-	-	Engineer's records		Peter Harvey
Horse Troughs	3	-	-	-	Engineer's records		Peter Harvey
Memorial Plaque	1	-	-	-	Engineer's records		Peter Harvey

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
War Memorial	3	-	-	-	Engineer's records		Peter Harvey
Ornamental Gate	1 (Cremorne Gardens)	-	-	-	Engineer's records		Peter Harvey
Variable message signs	0	-	-	-	n/a	CIPFA	Andrew Turner
Vehicle activated signs	0	-	-	-	n/a	CIPFA	Andrew Turner
CCTV	0	-	-	-	n/a	CIPFA	Andrew Vennard
Car park monitoring systems	0	-	-	-	n/a	CIPFA	Dominic Hurley
Road bridge	4	Albert Bridge – 146 yrs old; Chelsea Bridge – 79 yrs old; Ladbroke Grove Canal Bridge – 22 yrs old; Stanley Bridge – 107 yrs old;	-	-	Bridgestation	TfL	Anne Sexton
Footbridge	1	Acklam Road footbridge – 16 yrs old	-	-	Bridgestation	TfL	Anne Sexton
Retaining/river wall	1	145 yrs old	-	-	Bridgestation	TfL	Anne Sexton
Culvert.	0	-	-	-	n/a	TfL	Anne Sexton

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
Subway/Pipe subway	0	-	-	-	n/a	TfL	Anne Sexton
Piers/Other	0	-	-	-	n/a	TfL	Anne Sexton
Tunnels and Underpasses :Up to 150m long	0	-	-	-	n/a	TfL	Anne Sexton
Tunnels and Underpasses: 150m – 500m	0	-	-	-	n/a	TfL	Anne Sexton
Tunnels and Underpasses: + 500m	0	-	-	-	n/a	TfL	Anne Sexton
Columns	8,856	-	-	-	Geoworks	TfL	Graham Shoesmith
Luminaires	19,119	-	-	-	Geoworks	TfL	Graham Shoesmith
Gullies	10,500	-	-	-	Arcview	TfL	Vijay Kumar
Pipes	40 (EA) km	-	-	-	Arcview	TfL	Vijay Kumar
Other (drainage)	0	-	-	-	n/a	TfL	Vijay Kumar
Vehicular restraint system (central reservation guardrail)	0 km	-	-	-	n/a	TfL	Tom Powell
Pedestrian guard rail	1.875 km	-	-	-	Asset survey 2015/Arcview	TfL	Tom Powell
Signs and bollards	21,310 (EA)	-	-	-	Geoworks and Arcview	TfL	Alan Moore/ Graham Shoesmith
Other (metal bollards)	3,432	-	-	-	Asset survey 2015/Arcview	TfL	Tom Powell

Asset	Quantity	Age (years)	Lifespan (years)	Cost (£)/ unit	Data source	Data used by	Responsible Officer
Pumping stations	0	-	-	-	n/a	TfL	Vijay Kumar
Other (barriers)	0	-	-	-	n/a	TfL	Tom Powell
Tree pits	7,389	-	-	-	Ezytreev	TfL	Stephen Fuller
Feeder Pillar	89	-	-	-	Geoworks	TfL	Graham Shoesmith
Pay and Display machines	751	-	-	-	Arcview	TfL	Usha Dasari
Bays (parking spaces)	34,647	-	-	-	Parkmap	TfL	Usha Dasari
Yellow Lines	205 km	-	-	-	Parkmap	TfL	Usha Dasari

NB: n/a means not picked up in Asset Survey 2015

Appendix B – Condition of A road benchmarking with neighbouring boroughs for 2016/17

Borough	A roads with defects (DVI)
Kensington and Chelsea	6%
Westminster	9%
Camden	9%
Hammersmith and Fulham	14%
Wandsworth	10%
Inner London Average	10%

Appendix C – Highways planned maintenance programme 2017/18

FOOTWAYS

Road name	Location	Cost
Abbotsbury Road	1a Ilchester Place to opposite 17 (Park entrance)	13,000
Acklam Road	by lamp column 020, between crossovers	8,000
Adair Road	Appleford Road to Hazlewood Crescent	14,000
Addison Avenue	38 to St James Gardens	21,250
Airlie Gardens	South side	9,750
All Saint's Road	Westbourne Park Road to Lancaster Road, both sides	10,000
Allen Street	Stratford Road to Scarsdale Villas - west side	13,440
Anderson Street	Whole	12,000
Barkston Gardens	Garden Side opposite 41 to Opposite 83/101	6,300
Barlby Road	141 - 161 by Admiral Mews	6,000
Barlby Road	Ink Building, 136/137	9,800
Bolton Gardens Mews	Either side to entrance of Mews	5,600
Bramley Road	Wayneflete Square to 75	9,800
Burnaby Street	Tetcott Road to Chelsea Ram pub	7,000
Burnaby Street	Ashburnham Road to Tadema Road north side	6,750
Cadogan Gate	Sloane Street to Pavilion Road, north side	6,300
Cadogan Street	Draycott Avenue to opposite Halsey Street	17,000
Cambridge Gardens	St Marks Road to Ladbroke Grove. South Side	45,000
Cambridge Gardens	St Marks Road to Ladbroke Grove. North Side	41,500

Campden Hill Road	Uxbridge Street to 166	4,400
Campden Hill Road	Bedford Gardens to Sheffield Terrace	12,000
Campden Hill Square	Hillsleigh Road to 13	7,000
Campden Hill Square	1 to Holland Park Avenue	7,500
Campden Street	Peel Passage to Kensington Church Street	11,825
Campden Street	South side	22,000
Cathcart Road	Opposite 42 to 1	12,700
Chepstow Crescent	Chepstow Villas to 29	7,000
Chepstow Villas	Ledbury Road to 22	7,000
Chesham Place	Pont Street to 37 Lowndes Street	15,000
Colville Gardens	1 to 12	15,600
Colville Square	14 to 26	11,000
Convent Gardens	North side, and part south side	16,000
Cottesmore Gardens	North side	23,100
Courtfield Road	Ashburn Gardens to Gloucester - North side	13,350
Duchess of Bedford Walk	Duchess of Bedford House and Academy Gardens	56,700
Edge Street	Kensington Church St to 17-19	6,050
Edge Street	North side	9,000
Elm Park Gardens	Opposite 34 to Fulham Road	25,920
Elm Park Gardens	67 to 95	17,600
Elm Park Road	78 to Old Church Street	10,773
Elm Park Road	41 Elm Park Gardens to Beaufort Street	8,250
Elsham Road	12 to 19 large patch and outside 25	8,500
Elystan Place	Markham Place to Tryon Street	11,200
Elystan Street	Marlborough Street to Cale Street	18,000
Emperor's Gate	Grenville Place to Mcleod's Mews	5,000
Fawcett Street	10 to restaurant	4,000
Flood Street	75 to Redesdale Street	5,000
Flood Walk	South side	17,500
Fulham Road	Gunter Grove to 457	6,300
Fulham Road	60 to 70 (relay York)	8,000

Fulham Road	Elystan Street to 161	36,000
Gilston Road	Milbourne Grove to Priory Walk	21,060
Gilston Road	39 to Fulham Road	36,450
Gilston Road	Fulham Road to Milbourne Grove	8,000
Gloucester Road	South side From Boots to Cromwell Road	7,500
Gloucester Road	Queen's Gate Terrace to Queen's Gate Mews	9,600
Gloucester Road	Elvaston Place to Queen's Gate Terrace	20,000
Gore Street	East side	12,600
Harrington Road	Opposite 23 to Queensberry Place	9,350
Hazlewood Crescent	Gadsden House	12,600
Hazlewood Crescent	Holmefield House to opposite Gadsden House	15,400
Holland Park	78 to 58	80,500
Holland Park	37 to 57	80,500
Holland Park Avenue	54 To start of Pub	22,400
Holland Park Avenue	Clarendon Road to Lansdowne Road	39,200
Holland Park Avenue	Fronting Campden Hill square	14,400
Holland Street	Gordon Place to 13	11,200
Hyde Park Gate	8 to 34	48,600
Kelfield Gardens	St Helens Gardens to Finstock Road	14,700
Kelfield Gardens	Wallingford Avenue to Finstock Road	13,650
Kempsford Gardens	2 to 34	27,720
Kensal Road	275 to Middle Row	10,400
Kensington Church Street	Bedford Gardens to Sheffield Terrace	16,000
Kensington Court	Opposite 62-85 Kensington Court Mansions	5,000
Kensington Park Road	Westbourne Grove to 146	14,000
King's Road	Opposite Peter Jones	48,000
King's Road	Flood Street to Chelsea Manor Street	23,200
Kynance Place	South side	8,000
Ladbroke Grove	67 to 18 Lansdowne Crescent	26,730
Ladbroke Grove	19 Lansdowne Crescent to Lansdowne Road	13,500
Ladbroke Grove	330 to opposite Canal Way	22,400

Ladbroke Grove	Opposite 282 to Treverton Street	24,000
Lancaster Road	Ladbroke Grove to St Marks Road - North Side	37,100
Launceston Place	Kynance Mews to St. Albans Grove-Victoria Road	20,350
Ledbury Road	Chepstow Villas to 48, and 39-41	19,250
Lincoln Street	East side	5,000
Lordship Place	North side, and 7 Cheyne Row	8,000
Lots Road	101 to Kings Road	21,060
Malton Mews	South side	2,430
Manson Place	South side	15,000
Markham Square	31 to King's Road	11,500
Middle Row	Southern Row to 11	6,000
Netherton Grove	Both sides - cul-de-sac	46,980
Nevern Place	Templeton Place to Nevern Road north side	18,750
Old Brompton Road	87 to Cranley Place	9,600
Old Church Street	Elm Park Road to Mulberry Walk	11,550
Old Church Street	Opposite 135 to Opposite 125	6,370
Onslow Square	Opposite 44 to 52	10,500
Ovington Gardens	Brompton Road to 17	6,600
Ovington Street	West side	19,800
Palace Gardens Terrace	60 to 88 (relay York stone)	16,450
Peel Street	South side	24,200
Pelham Street	Thurloe Square to 63	15,200
Pembridge Square	8 to 14	13,500
Phillimore Gardens	Essex Villas to Upper Phillimore Gardens	11,500
Pond Place	Fulham Road to crossovers	7,800
Pont Street	Cadogan Place to Chesham Street	18,400
Portland Road	80 to 70 - Relay York	6,440
Queenberry Place	Opposite 20, to Harrington Road	8,250
Queen's Gate	79 to Cromwell Road	21,450
Queen's Gate Place	Queen's Gate to 5	18,700
Queen's Gate Terrace	Gloucester Road to Gore Street	32,000

Redcliffe Square	9 to The Little Boltons and opposite	18,500
Royal Hospital Road	Tite Street to Ormonde Gate	8,800
Selwood Place	Flank of 14 Selwood Terrace to 14	9,240
Sloane Court West	Whole	17,500
Sloane Gardens	1 to 59	39,000
Smith Street	King's Road to Woodfall Street	12,375
Sprimont Place	South side	9,500
St. Luke's Street	East side	11,000
St. Luke's Street	18 to 24	7,000
Stanford Road	40 to 54 (relay York stone)	7,000
Sumner Place	34 to Onslow Square	10,000
Sumner Place	13 to 23	8,750
Tadema Road	Burnaby Street to Damer Terrace east side	7,000
Tedworth Square	19 to 23 and 1 to 3	7,150
Thurloe Square	20 to 33	10,450
Thurloe Street	9 to Thurloe Square	5,000
Upper Cheyne Row	11 to 19	7,000
Walton Street	Beauchamp Place to Walton Place	12,500
Wellington Square	East side	14,000
West Row	East side	30,600
Westbourne Grove	Opposite 124 to Pembridge Villas	12,000
Yeomans Row	5 to Brompton Road, and opposite	10,400
Yeomans Row	4 to 64	20,000

CARRIAGEWAY

Road name	**Location**	**Cost**
Abbottsbury Road	63 to 39	15,520
Addison Place	Whole Road	12,160
Adela Street	All	8,200
Aubrey Road	Campden Hill Square to Aubrey Walk	8,800
Bramley Road	Whitchurch Road inc z ing to Freston Road inc junc.	9,280

Britten Street	Dovehouse Street to Sydney Street	9,800
Cadogan Gardens	16 to Draycott Place, west side only	8,820
Cadogan Place	Pont Street to Lowndes Street	12,320
Campden Hill Road	Phillimore Walk to 39	29,000
Campden Hill Square	2 to Holland Park Avenue	7,740
Campden Street	Whole	23,100
Chelsea Manor Street	St. Loo Avenue to Grove Cottages	16,500
Chepstow Villas	Kensington Park Road to 52	10,400
Chepstow Villas	23 to 52	14,700
Clarendon Road	Ladbroke Road in junction to Holland Park Avenue	12,800
Collingham Gardens	17 to 9	14,240
Cranley Gardens	15 to Cranley Mews	11,360
Draycott Place	Draycott Avenue to Cadogan Gardens	21,700
Drayton Gardens	Fulham Road to Priory Walk, no junctions	24,900
Edge Street	Whole	15,400
Egerton Gardens	Brompton Road to 1 Egerton Terrace	8,550
Elgin Crescent	Clarendon Road to Ladbroke Grove	75,000
Elm Park Gardens	East Leg 58 to Fulham Rd	29,400
Elm Park Lane	Full Length - Asphalt and Setts	40,000
Elm Park Road	Beaufort Street to Park Walk	16,800
Gloucester Road	73 to Courtfield Road inc junction	15,520
Gloucester Road	43 to 57	42,000
Gordon Place	Pitt Street to cul de sac	10,000
Harrington Gardens	Gloucester Road to Ashburn Place	23,520
Hillgate Street	Notting Hill Gate to 14	20,300
Hornton Street	Gloucester Walk to Sheffield Terrace	13,200
Kensington Park Road	76 to 92	13,600
Kensington Park Road	Elgin Crescent to 166	12,000
Kensington Park Road	Blenheim Crescent to Elgin Crescent	14,400
Ladbroke Grove	41 to 27 Full width?	40,800
Ladbroke Grove	Barlby Road to 5m before end of rail bridge	15,400

Ladbroke Terrace	Ladbroke Square to Ladbroke Road	14,700
Launceston Place/ St. Alban's Grove	Kynance Place to Victoria Road	29,400
Ledbury Road	Westbourne Park Road to Talbot Road	14,420
Mallord Street	Whole	16,800
Netherton Grove	Whole road	19,180
Old Church Street	Kings Road to 53	10,720
Philbeach Gardens	57 to 23	24,500
Philbeach Gardens	23 to 2	14,000
Powis Square	31 to 53	23,450
Queen's Gate	Kensington Road to Bremner Road s/bound	21,000
Queen's Gate	Cromwell Road to opp. 48 southbound	23,100
Redlcliffe Square	42 to 56 Colherne Rd	13,440
Royal Avenue	Opposite 2, to 45	16,100
Sheffield Terrace	Whole	28,700
Sloane Avenue	Petyward to Ixworth Place	30,800
St Charles Square	St Marks Road to 39	26,600
St. Loo Avenue	Whole	9,600
St. Luke's Road	Lancaster Road to Tavistock Road	17,500
The Boltons	1 to 15	26,600
The Boltons	16 to 28	26,600
The Little Boltons	19 to Old Brompton Road	23,800
Wilsham Street	Sirdar Road to St Ann's Road	16,800
Young Street	Whole	20,000
SETTS		
Adam & Eves Mews	38 to 58	42,500
Atherstone Mews	21 to Cromwell Road	36,000
Osten Mews	1 to 4	14,000
PRINCIPAL ROADS		
Chelsea Bridge Road	Ebury Bridge Road for 70m North bound only	19,360

Harrow Road	Junction Ladbroke Grove	24,700
Holland Park Avenue	Jnc Royal Crescent both sides. Split job in two.	11,825
Kensington Church Street	168 to Peel Street inc jnc - full width	38,808
Kensington Church Street	75 to Sheffield Terrace	40,425
Kensington High Street	274 to 294, east bound	30,030
Kings Road	Cadagan Gardens to Sloane Square full width	41,580
Kings Road	Langton Street to 464.- Full width	45,430
Old Brompton Road	93 to 37 near Glendower Place	61,600
Sloane Street	Junction with Pont Street	23,100

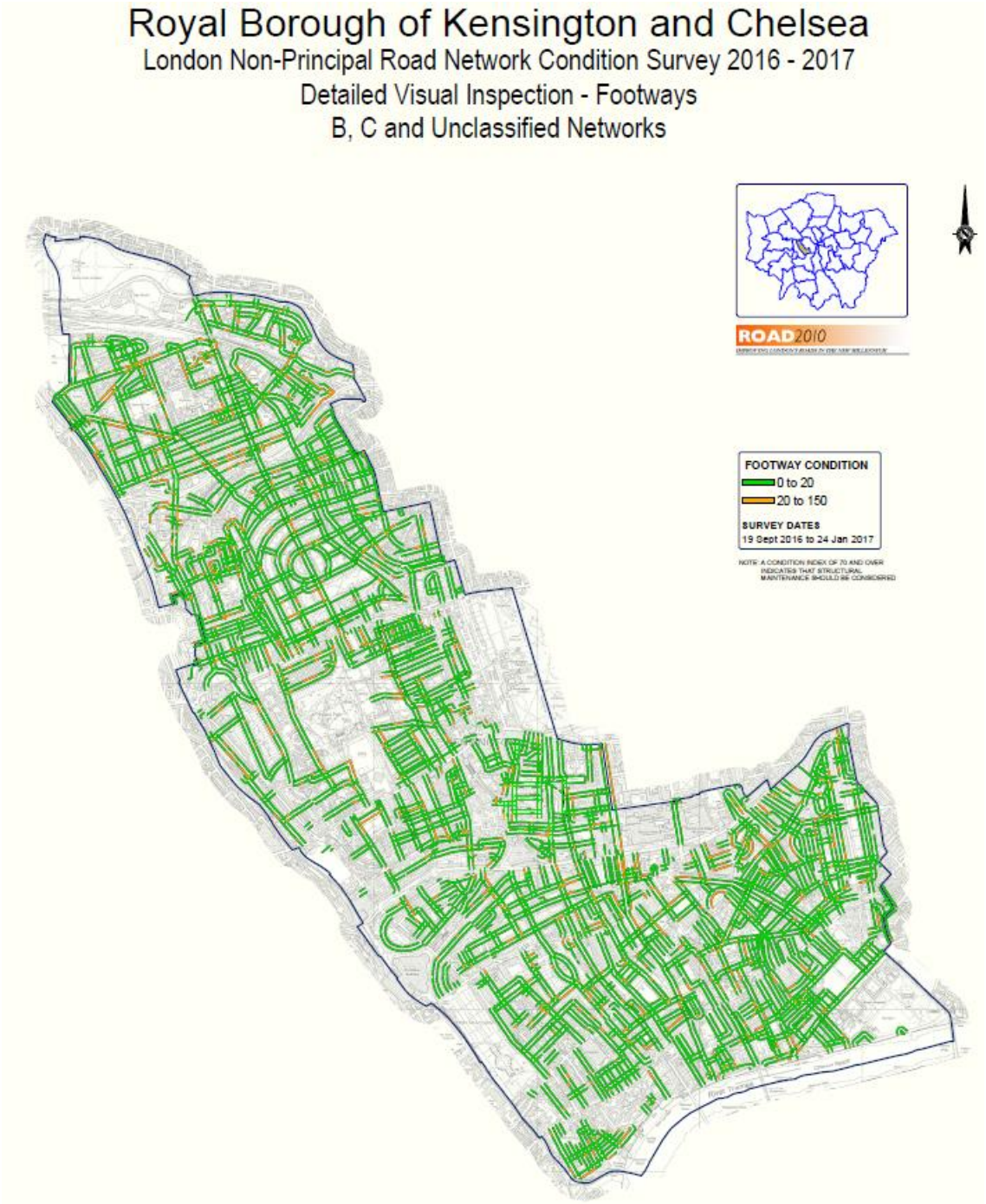
Appendix D – DVI survey results 2016/17

A road carriageway

A roads footway

B, C and U roads carriageway

B, C and U roads footway



Appendix E - Links to supporting documents

	Name of document	Description	Link
1	Streetscape Guidance	Streetscape policies and standards including detailed specifications	https://www.rbkc.gov.uk/parking-transport-and-streets/your-streets/streetscape/streetscape
2	Local Plan	Sets out the vision, objectives and detailed spatial strategy for future development in the Royal Borough up to 2028 along with specific strategic policies and targets, development management policies and site allocation	https://www.rbkc.gov.uk/planning-and-building-control/planning-policy/local-plan/local-plan
3	Local Flood Risk Management Strategy	Describes how localised flood risk will be managed across the borough	https://www.rbkc.gov.uk/planning-and-building-control/planning-policy/flooding/local-flood-risk-management-strategy
4	Strategic Flood Risk Assessment	A planning tool that enables the Council to select and develop sustainable site allocations away from vulnerable flood risk areas	https://www.rbkc.gov.uk/planning-and-building-control/planning-policy/flooding/strategic-flood-risk-assessment
5	Surface Water Management Plan	Outlines the predicted risk and preferred surface water management strategy for the Royal Borough. The report also defines Critical Drainage Areas which show a complex interaction of surface and sewer water flooding.	https://www.rbkc.gov.uk/planning-and-building-control/planning-policy/flooding/lead-flood-authority/surface-water-management
6	Air Quality and Climate Change Action Plan	Actions to improve air quality and reduce CO2 emissions	https://www.rbkc.gov.uk/sites/default/files/atoms/files/AQCCAP.pdf
7	Tree Strategy	Policy relating to how trees are planted, preserved and maintained	https://www.rbkc.gov.uk/planning-and-building-control/heritage-and-conservation/trees/tree-strategy
8	NJUG 10 Volume 4	Guidelines For The Planning, Installation And Maintenance Of Utility Apparatus In Proximity To Trees (Issue 2)	http://www.njug.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf
9	Well-managed Highway Infrastructure (Oct 2016)	The UK Roads Liaison Group (UKRLG) Code of Practice which takes a risk based approach to managing highway infrastructure assets	http://www.ukroadsliaisongroup.org/
10	Highway Safety Inspection, Assessment & Recording	Details inspection frequencies and defect assessments for different road and footway classifications	https://www.rbkc.gov.uk/highways-maintenance