Re BARNET LONDON BOROUGH

DRAFT

Network Recovery Plan Approach
DRAFT HAMP Addendum A

March 2014 | Version 1: July 2014

We care about place

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Section 1
Setting the Scene

Setting the scene

This draft approach to a Network Recovery Plan approach to Highway Asset Management is Re.'s commitment T3-78.

It is promoted as a key initiative to address the realities of inadequate funding for highway infrastructure maintenance.

The LBB network maintained under a service contract agreement with Re. Partnership comprises some 5,000,000m2 of carriageway and 3,000,000m2 of pedestrian footways.

Current levels of planned maintenance replace less than 0.5% by area each year during which time the rate of deterioration greatly exceeds this level of replacement.

The highway network deteriorates year by year due to wear and environmental factors. If this deterioration is not addressed the value of the network depreciates. If maintenance is not carried out, a maintenance backlog occurs which deterioration adds to.

A Network Recovery Plan aims to address the maintenance backlog and to arrest depreciation in the network.

Before we can start to recover the network, we need to know what condition it is in. We do that by carrying out technical surveys on the highway network that identify certain defects. This collected data then undergoes an engineering assessment that adheres to central government guidelines to produce an overall condition index. However, we are able to refine the assessment to give better targeting of the sites requiring attention.

The network can then be classified according to the index, into scarlet, red, amber, yellow and green levels. Red represents areas that need attention, amber are areas that will need attention in the near future, yellow areas are showing signs of deterioration whilst green is generally good. Scarlet sites require substantial intervention with hot materials.

Network Hierarchy – Risk Assessment

The Network Recovery Strategy will be approached in conjunction with a review of the network operational hierarchy which ,subject to analysis being completed, will beneficially assist with prioritisation of network repairs i.e. focus expenditure to parts of the network most used and most important.

Section 2
Addressing the problem

Addressing the problem

The aim of the Network Recovery Plan is to recover the network to reach a sustainable steady state at a minimum cost.

The result is to move from an expensive, reactive maintenance regime to a more planned, affordable programme. It will identify and intervene in areas of concern. Those sites of concern will incorporate targeted repairs, where necessary, and the extensive use of planned, preventative maintenance techniques.

To start to recover the network we must address two main areas:

(i) the maintenance backlog must be tackled.

The maintenance backlog has been defined as the value of the work required to remove the 'red' areas i.e. to turn them green

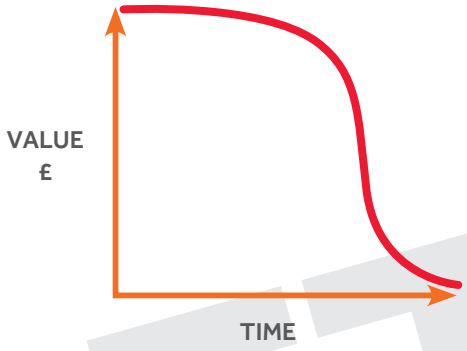
(ii) the natural deterioration of the network.

Deterioration occurs on the highway due to a number of reasons.

- Ageing process. Oxidation of bituminous materials occurs over a period of time causing surfacing to become loose and eventually to break up.
- Traffic Loading. Vehicles, especially heavy goods have a detrimental affect on the carriageway, actually causing defects by wear or making existing defects worse.
- Damage. This can be described as events that compromise the road surface. A good example would be poor utility reinstatements. Utility work needs to be rigorously policed in order maintain high standards of workmanship and materials
- Water, either standing on the highway or penetrating the underlying structure of the road, due to poor drainage. .

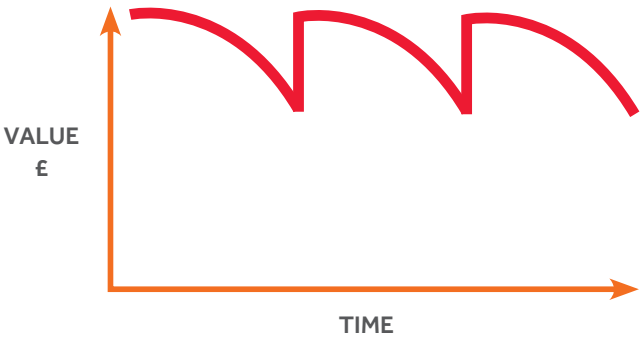
The loss in value of a highway due to deterioration is known as depreciation, which is the cost of maintaining an asset over a life cycle.

The rate at which depreciation occurs can be represented on this graph.



It can be seen that when a certain point is reached in time, the depreciation accelerates rapidly resulting in higher maintenance costs. The time for bitumen to age to reach this point is 10 years as defined in the TRL Report 24.

The Network Recovery Plan attempts to address the roads that are further down the curve (the backlog), but also to treat the roads that are near the 'tipping point' with a preventative measure. Preventative techniques will extend the short term life, will delay the depreciation and have the benefit of being easier, cheaper and quicker to apply.



Section 2

Addressing the problem

Overview of approach

- Roads that have already failed will need a more extensive structural repair.
- Applying preventative maintenance techniques, with targeted repairs to address any underlying structural problems, will make financial resources go further.
- Roads suffering increasing rates of deterioration are targeted with preventative-maintenance techniques to stop them failing and to delay depreciation.
- The preventative-maintenance techniques are surface treatments.
- The overall approach achieved is one of full-life costing.

Section 3
Types of treatment

Types of treatment

There are many treatments available to us making use of new developments and innovations. Using our engineering skills and judgement, we can apply surface treatments with targeted repairs as opposed to more costly reconstruction treatments.

All carriageway and footway sites targeted are given a detailed Engineering inspection. These inspections produce a bespoke, detailed design for the repair works at each location.

Scarlet areas are deemed to have already failed and will need a more extensive repair. By applying maintenance techniques, with targeted repairs to address any underlying problems, resources can be made to go further .Amber and yellow areas can be targeted with preventative techniques to stop them becoming red and to delay depreciation. These are in the form of surface treatments of which there are a number of options.

Carriageways:

100mm Inlay with Hot Materials
Replace the top 100mm surface by machine.

40mm Inlay with Hot Materials
Replace the top 40mm surface by machine.

Micro Asphalt with membrane and targeted pre patching
Thin extra layer of 10mm added to a surface with a membrane to increase the strength. This is a preventative measure that will arrest deterioration and extend the life span by 10 years.

Micro Asphalt with targeted pre patching
This is similar to the above, but without the structural membrane. This will be used on roads that are not subjected to as much heavy traffic.

Renew Binder Course with later Surface Dressing.
Put a new layer of cheaper blacktop on the top and apply a preventative treatment at a later date.

Surface Dressing with targeted pre patching
This is a preventative treatment that includes patching defects first, followed by an application of bitumen with chippings as a new running surface. Again 10 years life can be expected of the treatment.

Restorative Clause 950 Bitumen Preservative
A bitumen emulsion with restorative properties that will seal a surface and arrest deterioration for 5 years.

Targeted Repairs
We will use a full range of techniques for targeted repairs:

- Jet patching
- Infra-red repairs
- Hot materials
- Reinforced slurry
- Proprietary products.

Of course, these techniques have been equally applied to reactive maintenance to drive down costs.

The final version will include some pictorial and/or cross section design illustrations of the treatments

Section 3
Types of treatment

Footways

Reconstructing failed footways is labour intensive, time consuming and, consequently, very expensive (unit cost circa £65 per square metre) and we propose the progressive replacing of paved footways with bituminous materials in the quieter streets with little footfall.

Prestige Town Centre footways and public specaes and any footways subject to Conservation Area requirements would not be affected.

Comment: This will only be done after discussing and developing a new policy for material types and its discussion and approval by the LBB Environment Committee.

Most networks' footways need substantial maintenance. The Capita's Engineers have devised:

- A policy for improving the overall condition of the footways by the reintroduction of planned, preventative maintenance
- a set priorities for repair based on use by the public and condition.
- An integrated approach to maintaining the carriageways and footways so that the relative priorities are resolved.

The basis for the approach is the footway condition surveys which are systematically done and analysed through the Pavement Management System (PMS).

The approach includes assessing the trends in third-party claims in conjunction with the Insurance and Risk Manager, and Service Requests (SRs) and for any clusters of problems on a particular footway.

This means that:

- We only initially deal with the busiest footways, on a planned basis
- The rest of the footway network, will continue to be repaired based on the Safety Inspection System Policy, as necessary, to keep the Section 58 defence in place against third-party claims, until they receive planned attention
- The quieter flagged footways will be re-laid with flexible materials. However, some of the less-busy flagged footways are in very bad condition and have to be replaced
- The flexible footways will be repaired and sealed up with bituminous slurry. That will give them at least an extra ten years of life.

Again we produce targeted sites, subject to detailed Engineering inspection giving us the correct repairs and techniques.

Section 4
Third Party Claims

Third Party Claims

For both carriageway and footway programmes, the lists of candidate streets will be cross-checked with the GIS layer showing third-party claims. In that way any concentrations of claims could included in the programmes.

The effect of the Network Recovery Programme on the level of such claim instances/opportunities will be a significant reduction.

The Network Recovery Strategy presents the opportunity to work with the LBB Insurance and Risk Manager to develop focussed 'Invest to Save' schemes to reduce the Council's annual financial liability arising from the self insured policy.

Section 5
Outputs and Outcomes

Outputs and Outcomes

This section is under development reflecting pending changes in Asset Management Accounting concerning Depreciated Replacement Cost and the latest condition survey backlog projections. The final version will include an agreed Network Recovery Plan reflecting available funding.

Applying Asset Management condition analysis and experience, we can model the deterioration of the highway network and produce a Network Recovery Plan to:

- Remove the maintenance backlog
- Stop the deterioration and
- Return the network to a steady-state condition that is sustainable.

We propose to produce a fully designed, priced capital programme for the first year of the Plan and priced programmes of work and target sites for the next four years, until the highway network reaches steady state.

Thereafter, the overall planned maintenance programme runs at approximately half the cost of the annual deterioration.

As a result of following the Network Recovery Plan, and carrying out treatments every year, deterioration can be arrested and the value of the highway network maintained.

The ultimate outcome for the Network Recovery Plan is that it can be devised and delivered such that will cost less each year that the annual depreciation rate.

Indicative Projections.

Based on the 2012 condition surveys the highway maintenance backlog, using the traditional treatments used in Barnet so far, has been estimated at £97.3 million (£56.5 m on carriageways and £40.8 m on footways). This equates to a required investment of £20m per year for 5 years which is clearly not affordable under the current financial climate.

This Network Recovery Plan is based on preventative type treatments which are cheaper and quicker to apply and will extend the life of the carriageway. Preliminary calculations put the cost of the recovery plan to about £6.5m per year over a 6 year period, with an added 3% inflation.

This cost is considered affordable by the Council, particularly bearing in mind that this investment will produce the following additional benefits:

- A reduction of the reactive maintenance costs from the current level of 2m to the level of the current Revenue budget of less than £0.5.
- A reduction in insurance related claims from the current level of an estimated £1m per year to say £200K.

More accurate figures are currently being prepared, using the latest condition surveys of the Barnet's network, to accurately evaluate the cost and benefits of the Network Recovery Plan.

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