

An Asset Management Approach for Highway Infrastructure

Incorporating:
The Highway Asset Management Framework
The Highway Asset Management Policy
The Highway Asset Management Strategy

August 2018

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Executive Summary

The Kirklees Council Asset Management Approach for highway Infrastructure has been designed to direct and inform service users and those involved in service delivery about the way in which Kirklees Council intends to maintain its highway network. Particular emphasis has been placed on service delivery improvements and how outcomes will be realised through the asset management process strategically, tactically and operationally.

This approach should be read in conjunction with, or at least with reference to, other publications such as:

- Well Managed Highway Infrastructure: A Code of Practice
- Highway Infrastructure Asset Management Guidance Document
- Current legislation

This approach has been determined in the context of:

Kirklees Corporate Vision, Values, Key Strategies and Performance Framework
<http://www.kirklees.gov.uk/beta/delivering-services/corporate-plan.aspx>

Our vision

“Our vision for Kirklees is to be a district which combines a strong sustainable economy with a great quality of life – leading to thriving communities, growing businesses, high prosperity and low inequality where people enjoy better health throughout their lives.”

and Local Transport Strategy <https://www.westyorks-ca.gov.uk/transport/transport-strategy/>

Focused on West Yorkshire but recognising the importance and impact of links with the wider Leeds City Region, the Transport Strategy 2040 is:

To enhance business success and people’s lives by providing modern, world class well-connected transport that makes travel around West Yorkshire easy and reliable.

The key objectives that we must address to realise this ambition are

Economy: Create a more reliable, less congested, better connected transport network

Environment: Have a positive impact on our built and natural environment

People and place: Put people first to create a strong sense of place.

1 Introduction

Kirklees Council recognises the importance of its highway infrastructure and how an effectively managed and maintained network contributes to the local economy and achievement of its corporate goals. We understand that effective asset management is a platform to deliver clarity around standards and levels of service, and to work collaboratively to make best use of available resources.

This document sets out how the Council will best manage the highway network taking into consideration stakeholder needs, local priorities, asset condition and best use of available resources. It presents the Council's approach for the management of our highway assets and allows planning over both the short and long term, whilst delivering a minimum whole life cost approach to our highways assets.

2 The Highway Asset

Kirklees maintains a diverse set of highway infrastructure assets connected with around 1900km of predominantly urban road network.

The highway infrastructure is the Council's most valuable asset. The gross replacement cost, calculated in accordance with the requirements for Whole of Government Costs (in June 2017), is estimated to be £4.6billion and the depreciation at £0.65 billion.

3 Identifying Stakeholder Needs

Kirklees participates in the National Highways and Transportation Network (NHT) Public Satisfaction Survey which is carried out annually by an independent organisation. The survey collects public perspectives on, and satisfaction with, Highway and Transport Services in Local Authority areas.

It gives participating Authorities:

- A better understanding of how they are performing in the eyes of communities.
- A consistent datum for setting service levels and a means of measuring the impact of service improvements
- Access to the best performers and the opportunity to learn from the good practice of others
- Full transparency of data for benchmarking purposes

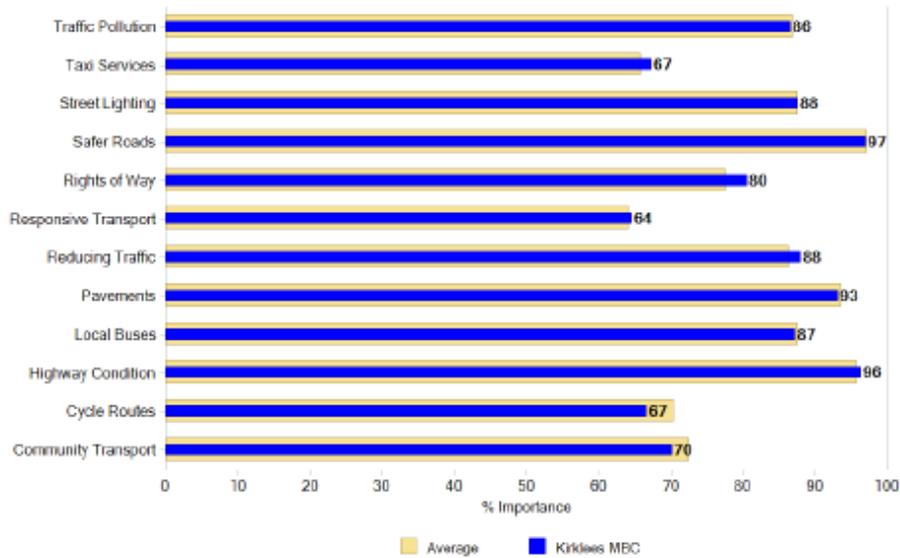
An Asset Management Approach for Highway Infrastructure

The survey helps identify important themes. The ranking and performance identified helps establish the priorities for budget and programme.

Question 1 (2017) asks what residents consider important

Q1 How important, if at all, do you consider the following ...?

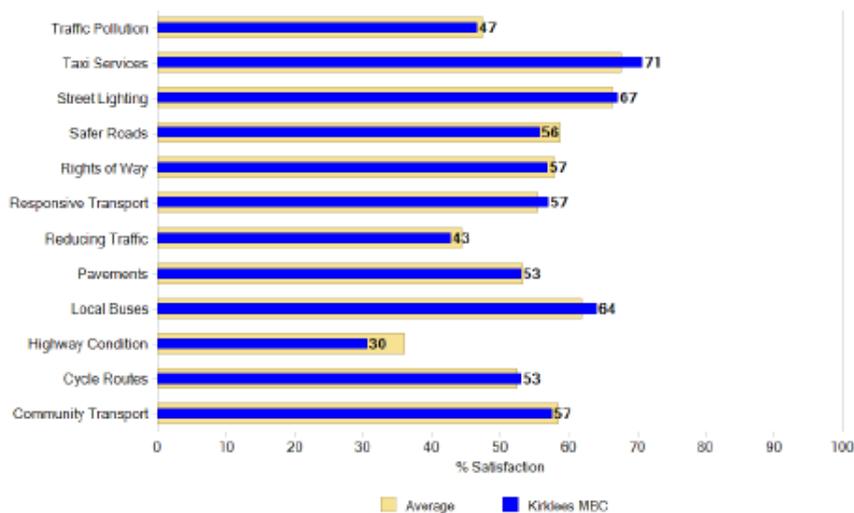
This graph shows your 'Importance' results for Question 1 and compares them with the average results of all other Authorities in the survey. Uses unweighted data.



Whilst Question 2 (2017) asks about satisfaction

Q2 Now thinking about roads and transport locally, how satisfied or dissatisfied are you with the following ...?

This graph shows your 'Satisfaction' results for Question 2 and compares them with the average results of all other Authorities in the survey. Uses unweighted data.



Further analysis is available <http://www.nhtnetwork.org/nht-public-satisfaction-survey/findings/>

4 Integrated Network Management

In developing highway infrastructure maintenance policies Kirklees manages the wide variety of highway assets as an integrated set with an approach to assessing and undertaking maintenance that is used across all assets. This extends to the totality of highway network management functions to include traffic management, parking and other regulatory functions.

Moreover highway infrastructure maintenance policies are developed integrally with the overall management of the network for the benefit of all transport users so that there is a holistic approach to provide consistent and appropriate levels of service and the ability to change modes as easily as possible.

This integrated approach considers the needs of all road users, particularly vulnerable users, in planning and managing the network. When schemes are planned and programmed works are incorporated that add value to the safety, priority, integrity or quality for all users.

5 Highway Asset Management

Highway infrastructure asset management is an established and widely recommended approach to highway maintenance defined as

“A systematic approach to meeting the strategic need for the management and maintenance of highway infrastructure assets through long term planning and optimal allocation of resources in order to manage risk and meet the performance requirements of the authority in the most efficient and sustainable manner”.
(*Highway Infrastructure Asset Management Guidance – UKRLG/HMEP, May 2013*)

Essentially, knowing all about our assets and using that information to plan and prioritise how we look after them

Asset management promotes a business-like way to make better use of limited resources and delivers efficient and effective highway maintenance. It takes a long term view of how highways may be managed, focusing on outcomes by ensuring that funds are spent on activities that prevent expensive short-term repairs. This makes the best use of public money whilst minimising the risk involved in investing in highway maintenance.

6 Highway Asset Management Framework

The Constituent councils of the West Yorkshire Combined Authority (WYCA) – Kirklees Council, Leeds City Council, Bradford Metropolitan District Council, Calderdale Council, Wakefield Council with the inclusion of City of York Council, have developed an asset management framework as a basis for working together collaboratively to drive best practice through shared knowledge, experience and

resources. This results in a more consistent approach to the way that highways assets are managed across the region.

The Asset Management Framework reflects the guidance provided by the Highway Maintenance Efficiency Programme (HMEP) document 'Highway Infrastructure Asset Management' and the National Code of Practice 'Well-Managed Highway Infrastructure'.

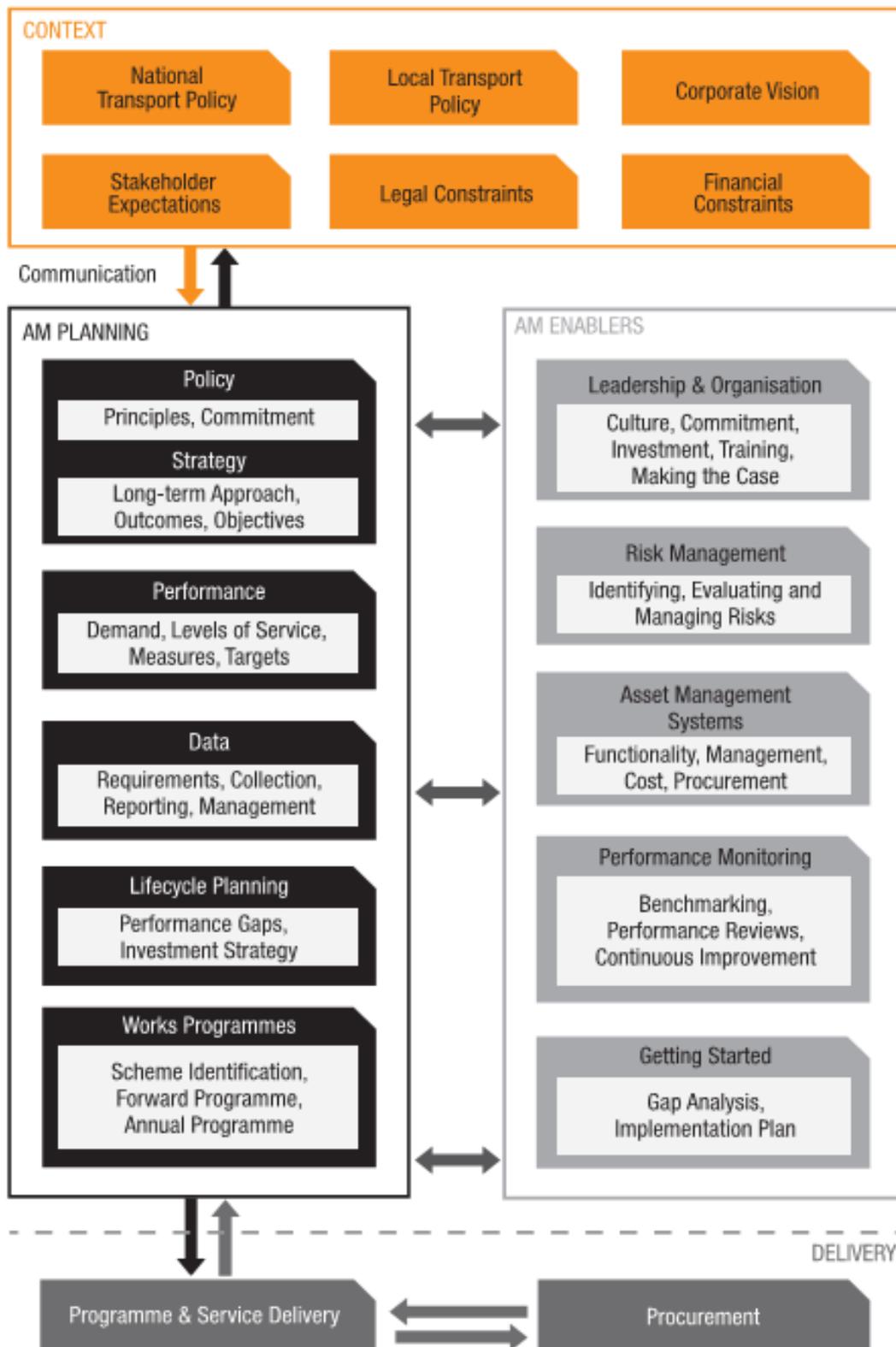
The national guidance on an asset management framework is shown diagrammatically in figure 1. The strategic documents needed to implement this framework are shown diagrammatically in figure 2.

7 Statutory Obligations

The core functions of highway maintenance are based on statutory powers and duties contained within the relevant legislation. Local authorities also have a general duty of care to maintain the highway in a condition that is 'fit for purpose'.

The Highways Act 1980 sets out the main duties of highway authorities in England and Wales. This Act is fundamental to highway maintenance as it imposes a duty to keep highways in repair at the public expense. Almost all claims against local authorities relating to highway functions arise from an alleged breach of Section 41 of the Act. However, there is provision for a defence against such actions (section 58) - 'that the authority has taken such care as in all the circumstances was reasonably required to ensure that the part of the highway to which an action relates was not dangerous for traffic'.

The Highways Act sits within a much broader legislative framework specifying powers, duties and standards for highway maintenance and management



(Highway Infrastructure Asset Management Guidance – UKRLG/HMEP, May 2013)

Figure 1 – Asset Management Framework

An Asset Management Approach for Highway Infrastructure

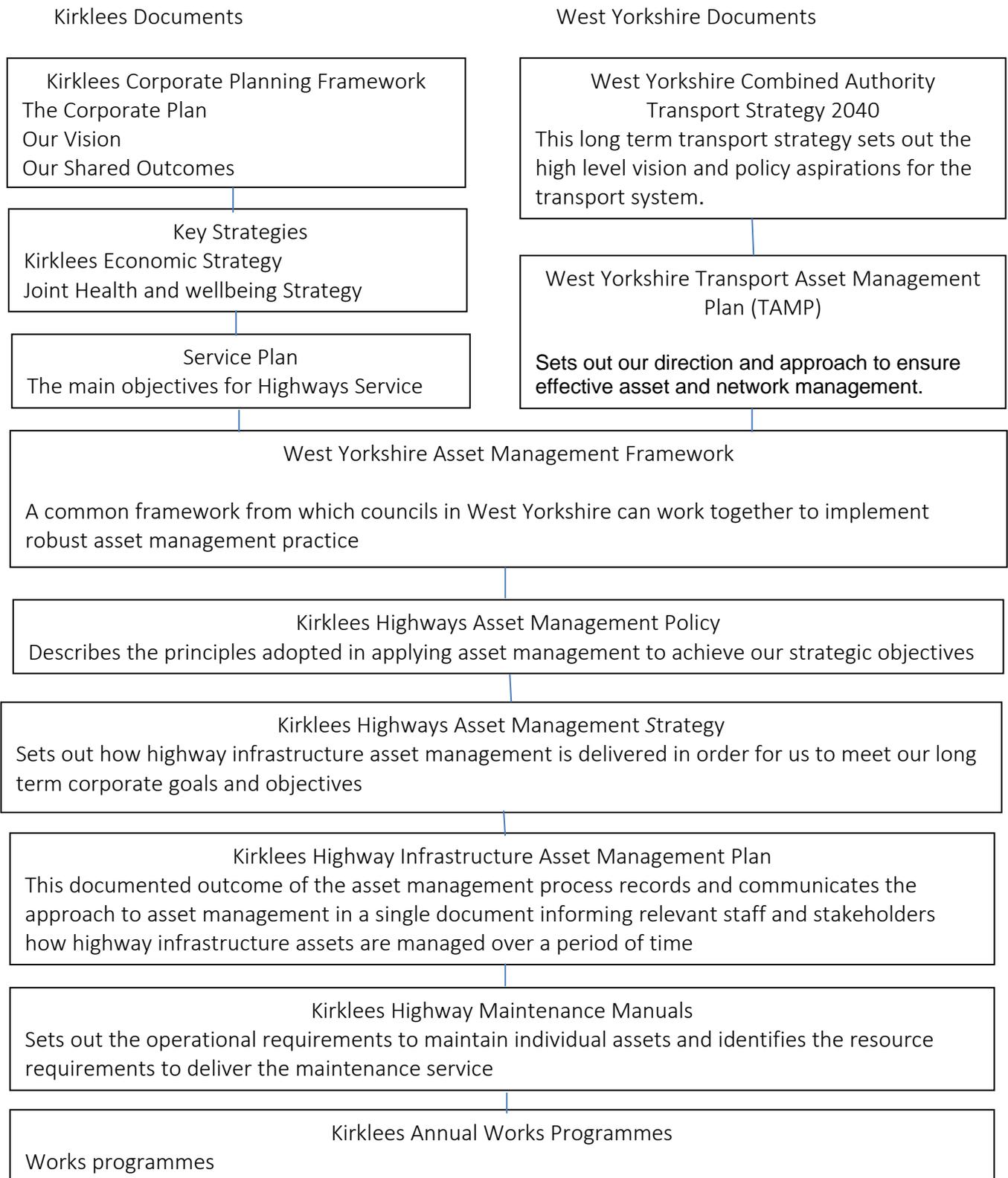


Figure 2 – Asset Management – Strategic Documents

8 Highway Asset Management Implementation Plan

Figure 3 represents the structure for the implementation of asset management for Kirklees within the WYCA context

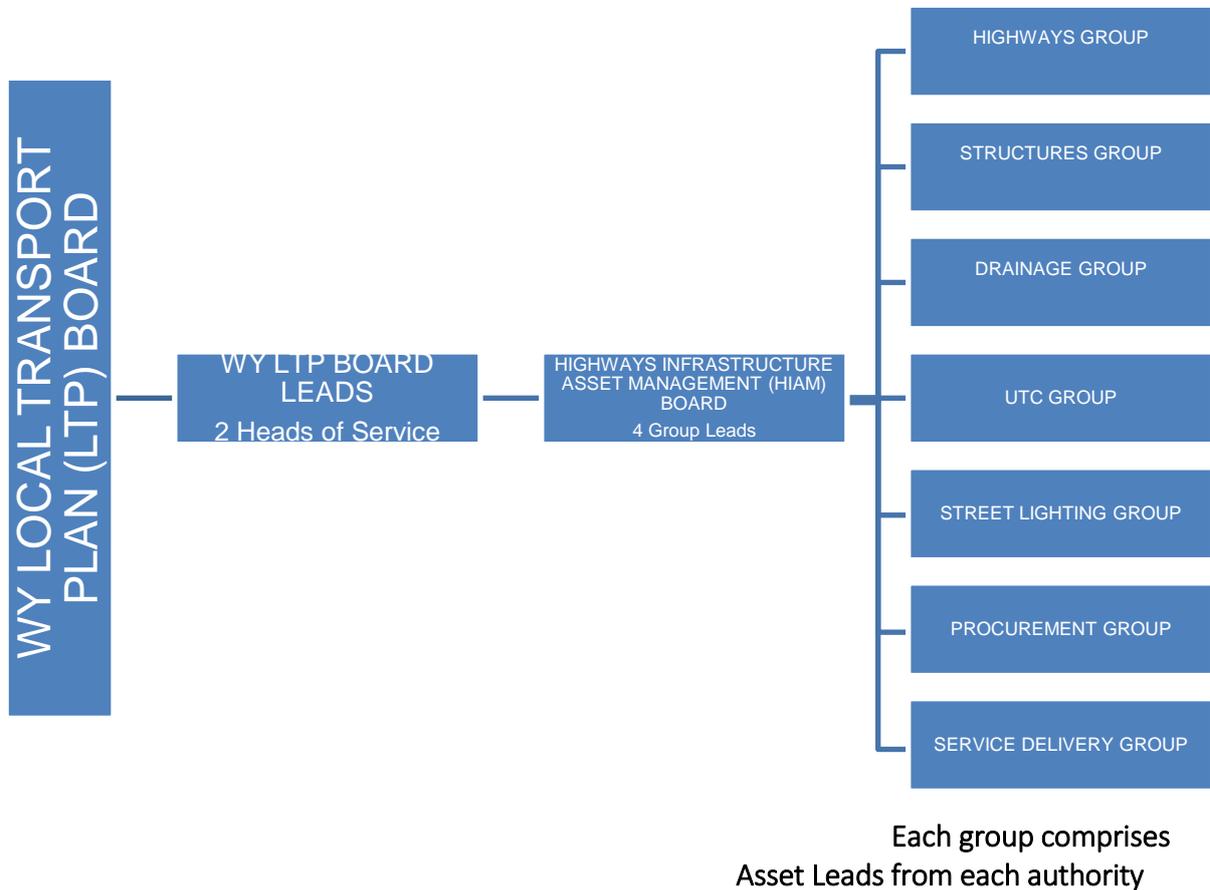


Figure 3 – Asset Management Implementation Plan

9 Highway Asset Management Policy

The WYCA Asset Management Framework includes overarching policy statements, to provide strategic direction and communicate purpose in applying asset management to achieve each authority's objectives. These have been adopted into a Kirklees Highway Asset Management Policy shown in figure 4.

The Asset management Policy is a high level document that confirms The Council's commitment to highways asset management and demonstrates how an asset management approach aligns with the Council's corporate vision and strategic objectives

Kirklees Highway Asset Management Policy

The Policy describes the principles adopted in applying asset management to achieve our strategic objectives

The Council recognises the vital role played by the local highway network in supporting the Authority's Corporate Planning Framework – The Corporate Plan, Our Vision, Our Shared Outcomes and Service Delivery Plan.

The Council advocates an asset management approach for the maintenance of the local highway network in order to help build a strong local democracy.

Issues

- A need to meet our statutory duty of maintaining a safe highway network.
- A need to contribute towards the delivery of the local authority and West Yorkshire Combined Authority corporate visions and objectives.
- A need to maintain the highway assets in an efficient a manner as possible to make the most of limited budgets.
- A need to meet the requirements of local businesses and the public who tell us that road condition is very important and that the current condition is less than satisfactory.

Objectives

We will embrace asset management principles to

- Identify and agree realistic performance targets for the highway assets.
- Focus on investing in more planned preventative maintenance to minimise disruption, reduce third party claims and make available funds go further.
- Use whole life costing techniques to minimise the cost of asset ownership over the long-term.
- Adopt maintenance strategies that balance the priorities of the customer with the optimised use of available budgets.
- Use lifecycle planning techniques to understand the funding need of the highway assets.
- Make a compelling, evidence based business case to support internal and external funding bids.
- Provide key decision-makers with all of the information required to make those decisions with full knowledge of the associated impacts and consequences.
- Work collaboratively to explore, understand and implement best practice both internally through 'Champion Councils' and externally through industry engagement.

Figure 4 – Kirklees Highway Asset Management Policy

10 Service Delivery

The organisational structure of Kirklees highways operation delivers highway maintenance services through a number of teams as shown in figure 5

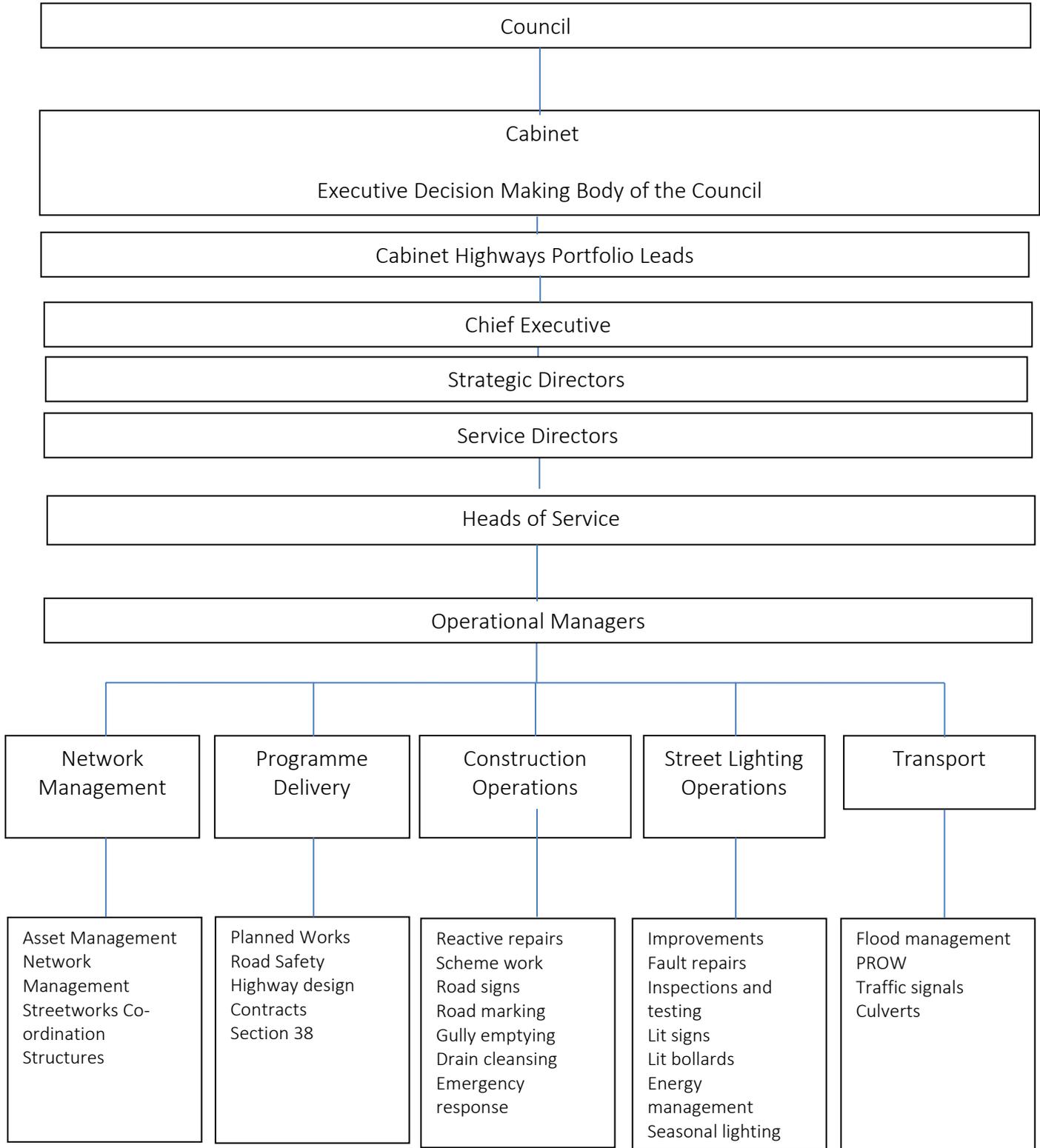


Figure 5 – Kirklees Organisational Structure

11 Highway Asset Management Strategy

This Highway Infrastructure Asset Management Strategy sets out how the asset management policy is to be achieved, how highway infrastructure asset management is delivered for Kirklees to meet its long term corporate goals and objectives.

Asset Management Objectives or Levels of Service

The Strategy is structured around the core objectives, also known as Levels of Service, for highway asset maintenance.

Within a strategy these are public facing broad statements that describe the key requirements or expectations of stakeholders when they use the highway asset, or when it directly affects them in some other way. They are expressions of desired outcomes for stakeholders and are concerned with how the asset performs in supporting the delivery of those outcomes, rather than in performance in a technical sense.

Our core objectives for highway maintenance are Network Safety, Network Serviceability, Network Sustainability and the Customer Service.

The links to Council Vision / Shared Outcomes are shown in figure 6.

Level of Service	Aim	Headline Outcomes	Link to Council Vision	Link to Council Shared Outcomes
Network Safety	Asset management makes a positive contribution towards a safe network	Meeting users' needs for safety Complying with statutory obligations	Great quality of life People enjoy better health throughout their lives	People in Kirklees live in cohesive communities, feel safe and are safe / protected from harm
Network Serviceability	The performance of each asset in the highway contributes to meeting stakeholder expectations	Ensuring availability Ensuring accessibility Achieving integrity Maintaining reliability Resilience Managing condition	Thriving communities Growing businesses High prosperity	People in Kirklees live independently and have control over their lives
Network Sustainability	Affordable management of the highway with reduced impact on the environment	Minimising cost over time Maximising the value of the economy Maximising environmental contribution	Strong sustainable economy	Kirklees has sustainable economic growth and provides good employment for and with communities and businesses People in Kirklees experience a high quality, clean, sustainable and green environment People in Kirklees are as well as possible for as long as possible
Customer Service	Best value Local focus	Informed consultation, levels of service, information etc.	Thriving communities Growing businesses	Kirklees Council works smart and delivers effectively and efficiently

Figure 6 – Levels of Service and Council Vision / Values

Each Level of Service is supported by a framework of performance measures to enable both individual aspects of performance to be measured as well as the overall level of service. Performance targets are set and reviewed annually to enable auditing and monitoring of the asset management strategy.

Performance measures are communicated to external and internal stakeholders in accordance with a Communications Policy / Plan.

Asset Data Management

Our asset management planning and decision making relies on appropriate asset data comprising information on what highway infrastructure assets we have, where they are and how they perform.

We collect asset data on the highway inventory, asset performance, and financial needs.

An inventory of the highways asset is the foundation of the asset management system. Knowledge of the extent and the overall condition enables an overall view of need and a consistent approach.

The highway asset has been divided into asset groups. Each group is then broken down into asset elements (See Appendix A).

Inspection and survey regimes for highways assets, particularly to inform national guidance and statutory requirement, provide us with good quality information on our major assets. The knowledge of the asset is not complete. An asset information strategy determines where gaps exist and a judgement is made on the cost / use / maintenance of asset data to determine the value in extending the inventory.

Data has been collected in several formats across various asset management platforms. It is proposed that data is consolidated as far as is practical into a bespoke asset management system to maximise effectiveness and drive the consistent approach. Much of the information is in a format that complements a GIS based platform.

Financial information is collated to support budget decisions, financial planning, asset valuation, the prioritisation of maintenance activities and to determine value for money.

Management Hierarchy

Knowledge of the asset has enabled us to determine a Management Hierarchy for each asset type

Our Management Hierarchy for each asset takes into account current and expected use, resilience, local economic and social factors such as industry, schools, and hospitals as well as the desirability of continuity and of a consistent approach for walking and cycling.

Lifecycle Planning

This detailed knowledge and hierarchy enables lifecycle planning, the approach of the maintenance of an asset from construction to disposal.

We use lifecycle planning as a tool to predict future performance of asset groups based on investment scenarios and maintenance strategies.

This covers creation of a new asset, routine maintenance, renewal or replacement and decommissioning of the asset.

One of the aims of good asset management is to improve co-ordination between highway improvement and highway maintenance schemes. Taking into account the cost and implications of maintaining the asset at the design stage will ensure that whole life costs of schemes are optimised. The Asset Management Strategy aims to raise awareness of this issue, in accordance with national guidance, by ensuring that any new infrastructure, with internal or external funding, has adopted the most appropriate design option and the most appropriate materials.

HMEP has developed life cycle planning toolkits that we use in conjunction with our own asset data to allow deterioration modelling for all major highways assets. Life cycle planning for major asset groups is detailed in the Highway Infrastructure Asset Management Plan.

Understanding how long specific maintenance treatments last, the relative cost of these treatments and the levels of service provided are essential pre-requisites to good asset management. When considered alongside defined outcomes life cycle planning enables the development of investment strategy to deliver a defined level of performance, or where funding is constrained, to quantify the effect of funding scenarios on the levels of service that can be delivered

Risk Management

Successful implementation of the asset Management Framework requires a comprehensive understanding and assessment of the risks and consequences involved.

Optimally the network would be operated at the lowest level of risk but as the financial demands of maintaining the network to that standard exceed the available budget it is important to understand to what risks the Council is exposed when making decisions on investment strategies, setting levels of service, and identifying engineering standards.

The Council's Risk management strategy defines the approach to managing risk across the Authority. Deteriorating asset condition and reductions in funding are a high risk for the Authority within the risk matrix assessment

We have a risk based approach for all aspects of highway infrastructure maintenance consistent with the Code of Practice Well-managed Highway Infrastructure (October 2016)

Budget Allocation and Works Programme

Inherent to this process is a need to understand the influence of budget decisions on customer satisfaction and delivery of the corporate priorities. Furthermore, the impact that investing on one asset element may have on the overall performance of other asset elements, as well as the whole asset, is examined.

The process to allocate maintenance budgets is shown in figure 7

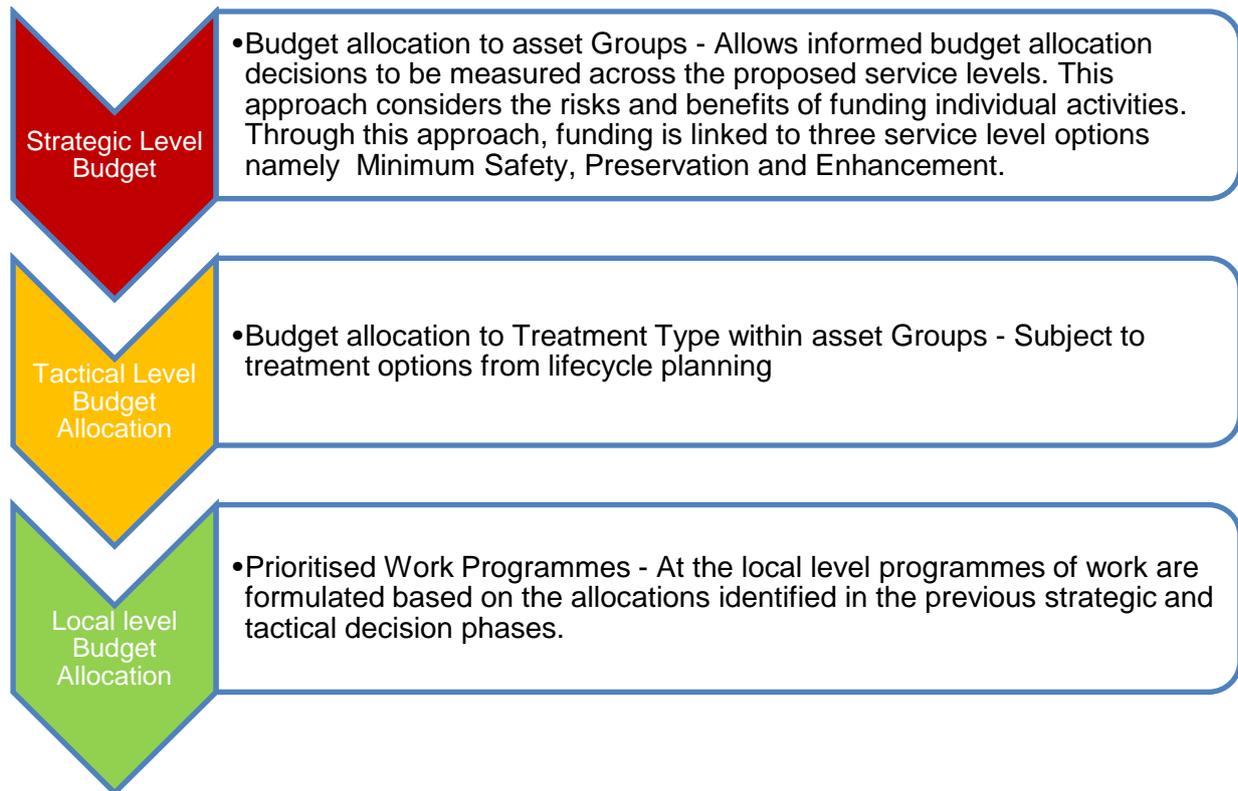


Figure 7 – Budget Allocation Process

12 Sudden Asset Failure

This Strategy advocates a planned and risk based approach to Asset Management, but there may be exceptional circumstances in which a particular asset fails rapidly, beyond prediction. In this event, programmes of work will be re-prioritised across all asset groups in order to facilitate the inclusion of additional schemes.

13 Gross Replacement Cost and Depreciated Replacement Cost

Whole of Government Accounts (WGA) has set requirements for the way the value of the highway asset is reported to HM Treasury in the Authority's audited accounts. When the WGA process has been fully implemented, Authorities will be required to meet the strict requirements for financial reporting of their highway asset. For this to be achieved there is a need for accurate and detailed inventory information and performance data.

Asset management practices are in place to satisfy the financial reporting requirements defined in the Transport Infrastructure Assets Code. This detailed knowledge enables the calculation of long term investment needs and fuels the argument for increased investment to reduce the backlog of repair.

14 Benefits of the Asset Management Strategy

Kirklees goal is to improve public satisfaction with its highway service whilst maintaining value for money and continuing to provide a safe highway network, in line with corporate priorities

The asset management strategy supports continual review and improvement of its processes and procedures, ensuring, as far as possible, that the standards identified in relevant legislation and codes of practice are adopted and that our customers receive a good and efficient service that reflects the resources available.

15 Review

The asset management policy and strategy are high level documents that take a long term view and will only be updated when there is a change in policy or approach.

Customer feedback has been through the NHT survey and the annual outcomes will be communicated to key stakeholders by way of a summary of their survey outcome reports.

An Asset Management Approach for Highway Infrastructure

Appendix A: Highways Assets Managed by Kirklees Council

Asset Type	Asset Group	Asset Quantity	Asset Unit
Highways	Carriageways		
	Principal Roads	210	km
	Roads Connecting communities	240	km
	Unclassified Roads	1450	km
	Total	1900	km
Highways	Footways and Cycleways		
	Primary Walking Route	29	km
	Secondary Walking Route	65	km
	Link Footways	76	km
	Local Access Footways	2129	km
	Cycleways	34	km
	Total	2333	km
UTMC	Traffic Signal Installations		
	Traffic signal junctions	132	no.
	Puffin Crossing	90	no.
	Toucan Crossing	3	no.
	Wig Wag	2	no.
	Total	227	no.
Structures	Bridges and Other Highway Structures		
	Bridges ($\geq 1.50\text{m}$ Span)	212	no.
	Tunnel	1	no.
	Retaining wall - estimate	400	km
	Footbridge	215	no.
	Culverts ($\geq 1.50\text{m}$ Span)	94	no.
	Subway	8	no.
	Other Structures (mast arm, sign gantries etc)	11	no.
	Other Structures ($\geq 1.50\text{m}$ Span) with partial liability (i.e. 3rd Party bridges/culverts carrying adopted highways)	143	no.
Street Lighting			
	Lighting Columns	50213	no.
	Illuminated Bollards	2075	no.
	Illuminated Signs	5466	no.
	Zebra Crossing	432	no.
	Feeder pillars	251	no.
	Refuge island beacons	285	no.
	Variable Message signs	12	no.
	Subway units	85	no.
	Total	58805	no.

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Appendix A: Highways Assets Managed by Kirklees Council

Asset Type	Asset Group	Asset Quantity	Asset Unit
Other Asset Group			
	Highway Drains - estimate	250	km
	Highway Gullies and connections	75653	no.
	Surface Water pumping station	1	no.
	Highway Trash Grilles	60	no.
	Road Signs	not measured	no.
	Road Restraint Systems (crash barriers)	not measured	no.
	Pedestrian Guardrail	not measured	m
	Trees	not measured	no.
	Verges - estimate	2,500,000	m2