Hartlepool Borough Council
Transport Asset Management Plan

HARTLEPOOL
BOROUGH COUNCIL

HARTLEPOOL BOROUGH COUNCIL TRANSPORT ASSET MANAGEMENT PLAN

Date Amended : March 2023

Developed in Collaboration with the Tees Valley Engineers Group

DOCUMENT PRODUCED BY TRAFFIC AND HIGHWAYS

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1. Executive Summary

The Hartlepool Transport Asset Management Plan (TAMP) is the framework for an integrated asset management approach to the Borough's transport assets. The County Surveyors' Society (CSS) document "Framework for Highway Asset Management" provides the following definition of the process as applied to transport networks:

"Asset management is a strategic approach that identifies the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers."

The Transport Asset Management Plan is a strategic document that is intended to develop and improve the way that the highway management and maintenance functions are carried out within the Borough. It will allow the authority to take a longer term approach to highway management and allow for the optimal allocation of resources based on customer needs and demands.

For the purposes of this document the assets have been broken down into a number of relevant groupings:

Carriageways
Footways
Cycleways
Structures
Drainage
Street Lighting
Traffic Signals and Telematics
Public Rights of Way
Trees, Hedges, Verges & Planted Areas
Unlit Signs
Barriers and Safety Fences
Road Markings & Studs

The implementation of the plan involves the active participation of all the key stakeholders within the borough of Hartlepool including; staff, management, council members, other interested bodies and perhaps most importantly the people of Hartlepool.

An Asset Management working group was previously set up with the aim of producing this document along with the implementation of the improvement actions identified as part of this process. The group comprised of Council Officers with the assistance of an external consultant with the intention to drive forward the asset management process within the council.

The plan has been developed over a number of years which will enable systems to be established to manage all transportation assets on a long-term basis using whole life costing within a framework of statutory requirements, customer expectations and sustainable funding.

The key drivers for the adoption of asset management for transport networks include:

- ***Linkage with the Council's Local Transport Plan (LTP).***

  It was a requirement of the Provisional LTP that the Council submit a TAMP progress report. Hartlepool Borough Council submitted such a report, which outlined the contribution that transport asset management will make to strategic LTP objectives and how the TAMP is intended to be produced.

- ***Whole of Government Accounts and Asset Valuation***

  The progressive introduction of Whole of Government Accounts will place an onus upon local authorities to value their transport assets. The CSS has produced the "Guidance Document for Highway Infrastructure Valuation" to help drive this process. Asset management will help Hartlepool Borough Council produce the key inputs to enable valuation in accordance with this guidance.

The TAMP will increasingly become the tool the authority will use to ensure effective targeting of budgets.

2. Introduction

2.1 Purpose of the Transport Asset Management Plan

The purpose of this document is to set out an approach for Hartlepool Borough Council for the management of its transport assets. It is based upon the CSS framework document for Highway Asset Management Plans.

The Transport Asset Management Plan pulls together all the relevant strategies, goals, objectives, plans and methods in use within the Council.

The development process of the TAMP assesses the strengths and weaknesses of existing systems and methods in managing the transport and highway assets and the highway network. The plan will enable an asset management system to be developed for managing highway assets on a long-term basis using whole life costing within a framework of statutory requirements, customer expectations and sustained funding.

2.2 What is Asset Management ?

Asset management represents more than simply an integration of existing management systems and data. It builds on existing processes and tools to form a continuous improvement framework that complements and supplements existing practice.

Definition

Asset management means different things to different people. The CSS adopted the following definition for the purpose of their framework document and for application to UK highway networks.

"Asset management is a strategic approach that identifies the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers."

The definition brings together themes that define an asset management approach:

- **Strategic Approach** - a systematic process that takes a long term view
- **Whole of Life** - the whole-life/life-cycle of an asset is considered
- **Optimisation** - maximizing benefits by balancing competing demands
- **Resource Allocation** - allocation of resources based on assessed needs.
- **Customer Focus** - explicit consideration of customer expectations

2.3 Why Asset Management ?

The Value of Road Networks

It is widely accepted that transport infrastructure is vital to the economic well being of the country. For most local authorities their road network is the most valuable community asset under their control. Despite this there is a growing realisation that the management of these vital and valuable assets is not receiving the attention or funding required for the provision of the optimal state of repair and operation.
The asset groups that are considered in this plan are :

Asset Groups	Group Elements
Carriageways	Road Infrastructure,Kerbs
Footways	Footway Infrastructure
Cycleways	Cycleway Infrastructure
Structures	Bridges,Retaining Walls,Footbridges,Sign Gantry, Culverts (greater than 1.5m),Embankments
Drainage	Gullies
Street Lighting	Street lights, illuminated signs
Traffic Signals & Telematics	Traffic signals,CCTV
Trees, Hedges, Verges & Planted Areas	Grass Verges,Trees,Hedges,Flower & Shrub Beds,Planters
Unlit Signs & Street Furniture	Non Illuminated Signs, benches, nameplates etc
Barriers & Safety Fences	Safety Barriers,Pedestrian Barriers
Road Markings & Studs	Road Markings & Studs

Table 2.1 Asset Groups and Elements

Transport assets constitute the most valuable infrastructure that Hartlepool Borough Council manages. The extent and estimated value for the key assets is set out below:

Asset	Length or Quantity	Estimated Value
Carriageways	400km	£266m
Footways	629km	£70m
Cycleways	58km	£1.3m
Structures	95 (qty)	£48m
Drainage	20400	Unavailable
Street Lighting	13,386	£12.7m
Traffic Signals and Telematics	Unavailable	Unavailable
Public Rights of Way	95km	£350,000
Trees, Hedges, Verges & Planted Areas	11,000 (qty)	£1.1m
Unlit Signs and Street Furniture	15,968	£3m
Barriers and Safety Fences	1470	£400,000
Road Markings & Studs	Unavailable	Unavailable
Total		**£431m**

Table 2.2The estimated value is based on a set of CIPFA national rates

Challenges Facing Highway Authorities

Highway authorities exercise their duties to maintain, operate and improve their highway assets under increasing pressures that include:

- Limited resources
- Mature networks
- Increased accountability
- Increasing public expectations

Whilst individual responses to these challenges vary there is a trend towards a more structured approach to the management of road assets. The Tees Valley highway authorities are implementing asset management principles as a means of delivering improved transport and highway services to the public.

2.4 The Drivers for the use of Transport Asset Management

The 2005 Code of Practice for Highway Maintenance Management

The Code was originally launched in July 2005 (updated October 2016). It recommends the use of an Asset Management Plan.

Local Transport Plan

The Local Transport Plan describes the transport strategy and implementation programme and sets the strategic direction and framework for its delivery. It is largely a performance management approach where the funding has to be used in a way that will ensure the strategic targets are met. Clearly an important part of progress towards targets will be using the funding available in a way that will maximise effectiveness and outcomes. Effective asset management is an essential part of this.

Whole of Government Accounts

The government is working towards the production of whole of government accounts (WGA). WGA accounts will be commercial-style accounts covering the whole of the public sector including local authorities. WGA will be produced on an accruals basis and will use Generally Accepted Accounting Principles (GAAP), adapted where necessary for government. This form of accounting is known as Resource Accounting and Budgeting (RAB). Under these requirements local authorities will be required to value their highway assets.

The valuation will be required to not only assess replacement value but also to assess the level and rate of depreciation in order to record current value in their accounts. Experience internationally and locally (with other government

departments) shows that meeting these accounting requirements demands a detailed knowledge of the asset (including condition and maintenance backlog). This in turn drives a need for robust processes, based around asset management plans, backed by databases providing valid, relevant and up to date core data on the assets. It is anticipated that the introduction of these requirements in this country will provide a similar demand for improved asset information.

In many other countries the introduction of legislation requiring asset valuation has been the catalyst for the development of asset management practice and in particular for the publication of asset management plans.

Please refer to Section 9 in this plan for further information on this topic.

2.5 Aim of Hartlepools Transport Asset Management Plan

Hartlepool are seeking to enhance the current approach to transport asset management, thereby becoming more effective and improving the ability to meet national and local objectives and customer needs. The intention is to develop 5-year programmes, the first two years of which will be in some detail and the latter three being indicative.

As the plan is developed it will;-

- Continue to identify improvements in the information and systems necessary to refine this process.
- Include all highway and transportation assets.
- Adopt best practice.
- Monitor the condition and performance of assets.
- Prioritise greatest need.
- Use optimisation tools to develop options for current and future service delivery, forward financial planning and investment and asset renewal programmes.
- Provide value for money by optimising the long-term life cycle costs of assets and through improved system and practices.
- Achieve corporate objectives.
- Enable the Council to meet the government's future requirements for financial planning for transport.
- Demonstrate effective management of assets on behalf of customers and stakeholders.
- Planning for future asset requirements based on projected demand and service levels.
- Seek the views of asset group users on appropriate service levels.
- Increase confidence in future planning and programmes.

The adoption of a formalised asset management approach builds on the

foundations of existing practices. This plan will set out practices in regard to these elements as far as is possible. Where changes are identified in the information and systems necessary to refine this process they are set out in the improvement plan.

2.6 TAMP Structure

The Transport Asset Management Plan contains a number of sections which are outlined below.

Section 1: Executive Summary

Sets out the rationale for the Plan, its key components and the means by which it has been approved.

Section 2: Introduction

Provides an overview of the asset management process and the way that it's approached in the TAMP.

Section 3: Policy Framework

Describes the contribution of asset management to the priorities set out in the document titled Sustainable Hartlepool Community Strategy.

Explains the relative contributions of each of the transport assets to the LTP shared priorities of reducing congestion, improving safety, improving air quality and increasing accessibility.

Sets out how the asset management approach will be a key factor in ensuring that the Council maximises its achievements in each of these areas.

Section 4: Levels of Service

Identifies the various service levels applicable to the assets. For each asset, 4 differing levels of service are defined:

- **Statutory** (i.e. that which is required by law)
- **Existing** (that which the Council currently provides)
- **Requested** (that which is requested/desired by service users, political commitments etc)
- **Optimum** (the level of service that represents best engineering practice)

Estimated costs are provided for the varying levels of service. An **attainable** level of service will be developed in the light of likely available budgets.

Section 5 : Inventory

Outlines the individual asset groups for which the Local Authority is responsible for maintaining. Attributes such as lengths and quantities are explained in this section as well as general condition data.

Section 6: Risk Management

Provides an objective assessment of the risks associated with the various levels of service. These assessments will aid trade offs between service levels (i.e. service prioritisation).

Risks are assessed in terms of:
• Safety
• The reputation of the Council
• Finance
• Environment
• Loss of network availability and congestion

Section 7: Life Cycle Planning

Contains synopses of life cycle plans for each of the assets and the key conclusions to be drawn from them.

Section 8: Service Priorities

This is a key section of the Plan. Contains a set of tools to enable service prioritisation. These techniques will be further developed and hence applied to future budget allocations. These techniques include:

• Whole Life Costing
• Investment Profiling
• Formulation and analysis of works programmes and their implications in terms of finance and performance measures.

Section 9: Whole of Government Accounts (WGA)

Explains what is required of the Authority within this field and its progress so far including actual asset valuations. The section also includes explanations of Gross Replacement Cost and Depreciation Replacement Cost calculations for the main asset groups.
It is expected that this final section will hold more importance as time goes on as it is proposed that future highway maintenance budgets will be partly determined by an Authorities WGA figures.

3. POLICY FRAMEWORK

The planning and delivery of services will be integrated within the corporate aims and objectives and coordinated with other business objectives. This is crucial in ensuring a high quality service that offers good value for money to the people of Hartlepool.

3.1 STRATEGIC OBJECTIVES

In developing the vision for Hartlepool, the Council has identified the sustainable Community Strategy themes as follows;

- Jobs and the Economy
- Lifelong Learning and Skills
- Health and Care
- Community Safety
- Environment & Housing
- Culture and Leisure
- Strengthening Communities

Highway management can contribute to achieving the Council's strategic objectives by focusing on the achievement of four operational objectives. The objectives have been developed to maximise the highway management contribution to the Community Strategy themes.

The four objectives are: -

- To keep the highway network safe and well maintained at all times of the year
- To reduce congestion on the network by co-coordinating the works programmes of all those organisations affecting the network
- To apply the principles of Local Agenda 21 via the increased use of low noise surfacing, recycled materials and by the adoption of a whole life costing strategy for treatment identification and selection
- To manage and monitor service performance and improvement through the effective use of performance management tools

Managing highway maintenance needs to be consistent with arrangements for managing an authority's wider asset base such as land and property set within the context of an asset management regime. The key principles of asset management are:

- focus on lifecycle costing

- management strategies for the long term
- establishing and monitoring levels of service
- managing risk of failure or loss of use
- sustainable use of physical resources
- continual improvement.

3.2 LEGISLATION

Much of highway maintenance activity is based upon statutory powers and duties contained in legislation and precedents developed over time as a result of claims and legal proceedings. It is crucially important that all those involved in highway maintenance, including Council Members, have a clear understanding of their powers and duties, and the implications of these.

Even in the absence of specific duties and powers, authorities have a general duty of care to users and the community to maintain the highway in a condition fit for its purpose. This principle should be applied when developing policy and strategy.

In addition to a general Duty of Care, there are a number of specific pieces of legislation which provide the basis of powers, duties, and responsibilities relating to Highway Maintenance, regulating the environmental affects of operations, and Health and Safety:-

- The Highways Act 1980
- The New Roads and Street Works Act 1991
- Road Traffic Regulations Act 1984, and the Traffic Signs and General Directions 2015
- Road Traffic Act 1988
- Road Traffic Reduction Act 1997
- The Local Authorities (Transport Charges) Regulations 1998
- The Transport Act 2000
- Traffic Management Act 2004
- Railways and Transport Safety Act 2003
- National Parks and Access to the Countryside Act 1949
- Countryside Act 1981
- Wildlife and Countryside Act 1981
- The Environmental Protection Act 1990
- The Weeds Act 1959
- Ragwort Control Act 2003
- Rights of way Act 1990
- Countryside and Rights of Way Act 2000
- European Water Framework Directive 2000
- The Clean Neighbourhoods and Environment Act 2005
- The Environmental Assessment of Plans and Programmes Regulations 2004

- The Health and Safety at Work Act 1974
- Management of Health and Safety at Work Regulations 1992
- Construction (Design and Management) Regulations 1994

4. Levels of Service

4.1 What are Levels of Service ?

Levels of service describe the quality of services provided by the asset for the benefit of the customers. They are composite indicators that reflect the social, economic and environmental goals of the community. In relation to the TAMP, levels of service are therefore the manner by which the highway authority engages with the customer and are about reflecting the customer's interests in terms that can be measured and evaluated.

4.2 Use of Levels of Service

Levels of service are a way in which a highway authority can determine whether or not it is meeting customer expectations and its statutory obligations in the delivery of its highway service.

4.3 Key Considerations

Factors affecting levels of service are:

Customer expectations

The purpose of any actions taken by the highway authority are in the interests of its customers. Their views should therefore be considered when developing levels of service. This means more than simply surveying areas of interest and levels of satisfaction. It also means being able to demonstrate a tangible link between customer preferences and the levels of service provided.

Ultimately this may mean consideration of customers preferences. For example, consider whether or not customers are prepared to pay more for a higher level of service on verge maintenance rather than the condition of footpaths. This type of consultation will take place when costed alternative options are available on which to consult.

Legislative requirements

Statutory duties apply to many highway maintenance activities. These are often not absolute, but put the onus on authorities to demonstrate they have taken “reasonable” actions to maintain the highway.

This plan identifies the key legislation that a highway authority must adhere to and identifies how they impact on the levels of service which councils are required to provide as a statutory minimum.

These statutes are open to a degree of interpretation and in developing service options a legislative minimum has been identified.

Best Practice Guidelines

A number of best practice guidelines exist that directly influence the levels of service provided. Whilst these best practice guidelines are not statutory duties they do represent a description of accepted good practice and can, for example, form part of a reasonable defence against a liability claim if the authority is able to demonstrate compliance with them.

The main documents relevant to this plan are:

- **Well Maintained Highways** – Code of Practice for Highway Maintenance Management
- **Well-Lit Highways** – Code of Practice for Road Lighting Management
- **Management of Highway Structures** – A Code of Practice

The plan will typically identify where these codes are being applied and in instances where they are not being adopted, the rationale behind the decision not to apply the guidance given in the codes will be clearly stated.

Affordability

The service options described below identify, amongst others, an economically optimum level of service which is the most efficient way of delivering an acceptable level of service over the long term. Due to other pressures on Council funding and other pressures on the network it may not be possible to deliver the funding required to deliver the optimum solution. This is one of the primary reasons for presenting service options. In doing so decision makers will be able to decide upon the relative merit of competing funding needs based upon improved data on both existing and predicted future performance, risk and cost.

4.4 Current Levels of Service

What is the current level of service?

The Levels of Service describe the quality of the service provided to the asset for the benefit of the customer. These are composite indicators that represent the social, economic and environmental goals of the community. Levels of service are therefore the manner by which the Council, as highway authority engages with the customer and are about reflecting the customer's interests in terms that can be measured and evaluated.

The tables below indicate the current Level of Service that the council provides taken from a matrix of customer surveys, performance indicators etc as defined by the Tees Valley Engineers Group, they will be updated annually upon receipt of the latest information from various sources.

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
%	Rank		<29	30-59	60-89	90-100	
			Sufficient to maintain safe vehicle passage / worst case first maintenance schedule.	Sufficient planned maintenance to stabilise condition of network, reducing dependence on reactive maintenance.	Investment in structural maintenance sufficient to bring about incremental reductions in backlog each year, further reduction in dependence on reactive maintenance.	Network in sustainable condition with constant annual investment in real terms. Minimal reactive maintenance.	
Carriageways			25	50	75	100	
		NI 168 (%age of network requiring maintenance soon)	>15%	10-15%	5-9%	<5%	
15	3				7		11.25
			0	0	1	0	
		NI 169 (%age of network requiring maintenance soon)	>20%	10-20%	5-9%	<5%	
10	4			8			5
		BVPI 224b (%age of network requiring maintenance soon)	>25%	12-25%	8-11%	<8%	
20	2				10		15
			0	0	1	0	
		% Customers satisfied with the condition of carriageways. (KBI 23)	<40%	40-49%	50-65%	>65%	
50	1		17				12.5
		% 28 day defects repaired within timescale.	<95%	95-97%	98-99%	100%	
5	5						Value Not Entered
Overall LoS							43.75

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
%	Rank		<29	30-59	60-89	90-100	
			Reactive maintenance sufficient to keep the footways safe for pedestrians. Reactive maintenance demand at affordable level.	Sufficient planned maintenance to stabilise condition of network, reducing dependence on reactive maintenance.	Investment in structural maintenance sufficient to bring about incremental reductions in backlog each year, further reduction in dependence on reactive maintenance.	Network in sustainable condition with constant annual investment in real terms. Minimal reactive maintenance.	
Footways			25	50	75	100	
		BV 187 (%age of network requiring maintenance soon)	>25%	16-25%	5-15%	<5%	
25	2						Value Not Entered
		% Customers satisfied with the condition of footways. (KBI 11)	<40%	40-49%	50-65%	>65%	
60	1		21				15
		% Footway safety inspections completed with defined timescales.	<95%	95-97%	98-99%	100%	
15	3					100%	15
Overall LoS							15

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
%	Rank		<29	30-59	60-89	90-100	
			Reactive maintenance sufficient to keep the cycleways safe for users. Reactive maintenance demand at affordable level.	Sufficient planned maintenance to stabilise condition of network, reducing dependence on reactive maintenance.	Investment in structural maintenance sufficient to bring about incremental reductions in backlog each year, further reduction in dependence on reactive maintenance.	Network in sustainable condition with constant annual investment in real terms. Minimal reactive maintenance.	
Cycleways			25	50	75	100	
		% Customers satisfied with the condition of cycleways. (KBI 13)	<40%	40-49%	50-65%	>65%	
60	1						Value Not Entered
		% Customers satisfied with the number of cycleways. (WCBI 08)	<40%	40-49%	50-65%	>65%	
25	2						Value Not Entered
		National Cycle Route. (Increased usage)	<5%	6-10%	11-20%	>21%	
15	3						Value Not Entered
Overall LoS							0

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
%	Rank		<29	30-59	60-89	90-100	
			Predominately reactive maintenance with minimal intervention to prevent asset deterioration. Little repairs for non-safety defects. Inspections identify potential safety issues only.	Programme of Inspections determine condition. Short-term programme of planned works and routine maintenance. Condition stabilised at a serviceable level. Insufficient resources to repair all non-safety defects.	Programme of Inspections determine condition. Short to medium term programme of planned works and routine maintenance. Investment in structural maintenance. Reduction in backlog and dependence on reactive maintenance.	Programme of Inspections determine condition. Long-term programme of planned maintenance and routine repairs with minimal reactive maintenance. Investment in structural maintenance leading to elimination of maintenance backlog. All bridges capable of carr	
Structures			25	50	75	100	
		Bridge Stock Condition Indicator.	40-64	65-84	85-94	95-100	
80	1						Value Not Entered
		Number of bridges with restrictions. (weight/ width)	>15	10-15	5-9	<5	
20	2					1	20
Overall LoS							20

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
			<29	30-59	60-89	90-100	
%	Rank		No cyclic maintenance. High no. of faults. No column painting, poor appearance and reduced life. Increasing backlog of obsolete columns, replacements restricted to potential hazards.	No cycle maintenance, high number of faults, poor appearance. Faults repaired in 5 to 10 days, stable column replacement.	Cyclic maintenance undertaken, faults minimised, appearance improving. Customer reported failures completed in 3-5 days. Replacement columns at a level where obsolete units and potential hazards reduced. Accurate inventory.	Cyclic maintenance undertaken, customer reported faults repaired within 3 days (other than NEDL faults) street scene enhanced by appearance. Column replacement backlog eliminated. Increased use of high quality equipment.	
Street Lighting			25	50	75	100	
		BVPI 215a (Contractor))	>10 days	5-10 days	3 – 5 days	<3 days	
40	1					1.23	40
		BVPI 215b (Supplier)	>20 days	12-20 days	7-12 days	<7 days	
10	4			16.4			5
		% columns older than design life.	>30%	20-30%	10-20%	<10%	
20	3			23			10
		% Customers satisfied with service. (KBI 25)	<50%	50-65%	65-85%	>85%	
30	2				72		22.5
Overall LoS							77.5

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
%	Rank		<29	30-59	60-89	90-100	
			No remote monitoring. Refurbished only as part other improvements. Ad-hoc inspection regime, no cleaning.	Some remote monitoring. Annual programme of refurbishment. Annual inspection, bulk lamp change every 2 years.	All signal installations remotely monitored. No installation older than 15 years. Annual inspection, clean and bulk lamp change.	All signal and controlled crossings have remote monitoring and intelligent transport systems. No installation older than 10 years. Bi-annual inspection and clean, annual bulk lamp change.	
Traffic Signals			25	50	75	100	
		BVPI 165 (% of installations with disabled facilities)	<50%	50-69%	70-90%	>90%	
30	2					100	30
		% satisfaction with M.C. signals service.	<50%	50-64%	65-80%	>80%	
20	3						Value Not Entered
		% of installations with Urban Traffic Control.	<50%	50-69%	70-95%	95%	
10	4		40				2.5
		% outages repaired within timescales.	<50%	50-79%	80-90%	>90%	
40	1						Value Not Entered
Overall LoS							32.5

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
			<29	30-59	60-89	90-100	
%	Rank		Reactive inspection and maintenance only. Little action to increase disabled access. Maintenance backlog increasing.	Limited inspection programme. Rectification of signage & furniture faults limited. Reactive cutting back of vegetation. Backlog of surface improvements relatively stable.	Basic Inspection regime. Rectification of signage & furniture by next inspection. Cutting back programme on priority network. Reduced backlog of surface improvements. Disabled provision.	Routine Inspection of all PROW's. Rectification of signage & furniture by next inspection. Annual cutting back programme. Backlog of surface improvements eliminated. Annual programme to improve disabled access.	
Public Rights of way			25	50	75	100	
		BVPI 178	<55%	55-69%	70-90%	>90%	
20	2					96.93	20
		% Customers satisfied with PROW's. (KBI 15)	<40%	40-49%	50-65%	>65%	
80	1						Value Not Entered
Overall LoS							20

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
			<29	30-59	60-89	90-100	
%	Rank		Reactive maintenance of urban verges and rural verges. Little annual planting, reactive maintenance to dangerous trees.	Routine cyclic maintenance of urban verges, rural verges cut one swathe width to provideclear sight lines. Annual weed clearing/ pruning to shrub beds. Annual planting of amenity sites. Reactive maintenance to dangerous trees.	Routine inspection and cyclic maintenance of verges and trees. Minimum grass cut of 10 x per annum. Shrub and rose bordrs pruned in accordance with species. Trees surveyed every 5 years, routine maintenance undertaken.	Adopted Policy for maintenance and management of "soft estate".Inspection and integrated cyclic maintenance of verges and trees including traffic islands and sight lines. Minimum grass cut of 13 x per annum. Annual primary survey of trees, full survey every 3 years. All required maintenance identified carried out.	
Trees, Hedges and Verges			25	50	75	100	
		Frequency of routine inspection of trees.	>10 years	5-10 years	4 years	<3 years	
10	4					3	10
		No. of grass cuts per annum.	<5	5-9	10-13	>13	
30	2				12		22.5
		% Customers satisfied with weed spraying. (HMBI 08)	<40%	40-49%	50-65%	>65%	
20	3					2	20
		% Customers satisfied with Service. (HMBI 07 + 14 '/. 2)	<40%	40-49%	50-65%	>65%	
40	1						Value Not Entered
Overall LoS							52.5

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
			<29	30-59	60-89	90-100	
%	Rank		Reactive maintenance only. Refurbishment safety testing and sign renewal dependant on improvement programme	Annual refurbishment on priority basis. Reactive maintenace only, annul signage clean on priority routes. Sign renewal and safety testing dependant on improvement programme	Annual inspections of signs, street furniture and barriers, programme of safety testing on priority routes. Annual sign clean. Basic inventory details held.	Annual inspection and maintenance programme. Annual sign clean and programme of replacement. Full programme of safety testing on all routes. Full inventory details held on computerised system.	
Unlit Signs, Street Furniture, Barriers and Safety Fencing			25	50	75	100	
		% of safety barrier tested.	<50%	50-64%	65-80%	>80%	
40	2					100	40
		% Customers satisfied with the condition of unlit signs and street furniture. (HMBI 04)	<50%	50-65%	65-80%	>80%	
60	1						Value Not Entered
Overall LoS							40

Asset Group		Description	Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS
%	Rank		<29	30-59	60-89	90-100	
			Reactive maintenance only.	Reactive maintenance and programme of refresh on priority routes only.	Annual ispection of all lining and refresh of all lining at 70% intervention level.	Annual ispection of all lining and programme of refresh of all lining at intervention level.	
Road Markings and Studs			25	50	75	100	
		% Customers satisfied with the condition of road markings. (HMBI 03)	<50%	50-65%	65-80%	>80%	
50	1						Value Not Entered
		Frequency of Inspection of Road Markings and Studs.	>3 years	2 years	1years	<1 year	
50	2						Value Not Entered
Overall LoS							0

			Minimum Service Level	Fair Service Level	Good Service Level	Excellent Service Level	Current LoS	Calculation
%	Rank	Asset Group	<29 25	30-59 50	60-89 75	90-100 100		
20	1	Carriageways	0	43.75	0	0	10	
15	2	Footways	15	0	0	0	3.75	
5	7	Cycleways	0	0	0	0	0	
12	3	Structures	20	0	0	0	3	
8	5	Drainage	0	31.25	0	0	4	
12	4	Street Lighting	0	0	77.5	0	9	
8	6	Traffic Signals	0	32.5	0	0	4	
5	8	PROW's	20	0	0	0	1.25	
5	9	Trees, Hedges & Verges	0	52.5	0	0	2.5	
5	10	Street Furniture and Fencing	0	40	0	0	2.5	
5	11	Road Markings and Studs	0	0	0	0	0	
		Overall Level of Service					**40**	**Fair Service Level**

4.5 Customer Expectations

Since Viewpoint 1000, Hartlepool Borough Council's Citizen's Panel, was terminated the Council made the decision to sign up to the National Highways and Transportation survey (NHT) which consults 3300 randomly chosen members of the public to gauge their opinion on matters relating to highways and transport. The data collection exercise usually operates between June and August allowing the release of the results in October each year. The TAMP document will subsequently be updated when this information becomes available.

4.6 Legislative Requirements

The role of the Highway Authority as asset manager is governed by an extensive range of legislation. In relation to highway maintenance, much is based on statutory powers and duties contained in legislation and precedents developed over time as a result of claims and legal proceedings. Even without specific powers and duties, highway authorities have a general duty of care to users and the community to maintain the highway in a condition fit for its purpose.

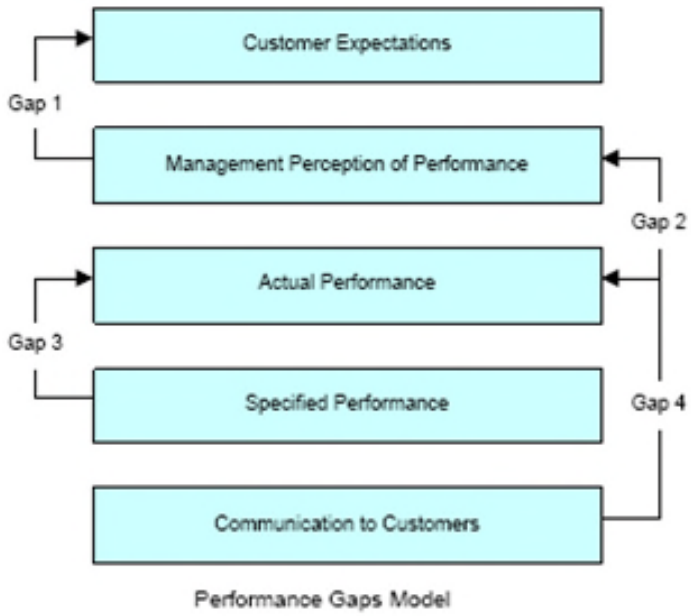
Where the council elects to exercise its powers, these generally incur a duty, e.g. Council's power to erect road signs, creates a duty to maintain them.

These considerations directly affect the levels of service that the council provides by establishing the statutory (or minimum) level of service that must be provided.

4.7 Performance Management

Levels of service and the measurement of supporting performance indicators are used to provide information on the difference between current and desirable performance. Where they exist, the examination of these performance gaps will in turn enable the identification of options for improvement. An initial evaluation of performance gaps can be undertaken by simply identifying those performance measures where the target measure has not been met.

It should be noted that a performance gap could exist for a number of reasons as follows:



Performance Gaps Model

Gap 1: Customer Expectations – Management Perception: The customer's expectations of the service provided do not match the service provider's management perception of what is to be provided.

Gap 2: Management Perception – Actual Performance: The management perception of the service quality does not match the actual quality of service being provided

Gap 3: Actual Performance – Specified Performance: The service is not being delivered to the quality specified in the relevant standards and/or contracts.

Gap 4: Actual Performance – Communication to Customers: There has been inadequate communication with the customers resulting in them having a skewed perception of the service delivered.

All of these possibilities should be considered in establishing what performance gaps exist. The reason for the gap will significantly influence the plans for addressing the issue.

4.8 Service Options

A developed asset management approach is intended to facilitate better decision making by providing enhanced information to support the decision making process. In practical terms this means the identification and assessment of Service Options.

Once the requirements driving the asset group's service level have been identified it is necessary to develop service options around these and evaluate them. This process should clearly identify the service options applicable to the particular asset group and state the basis on which the preferred option(s) is selected.

Service Option Identification

The following are the service option categories selected by the Council for inclusion in the TAMP

- **Statutory** (Minimum) Meeting statutory or legislative requirements only
- **Existing** Is the effect of a continuance of current funding levels
- **Requested**: is one based on customer expectations and political aspirations
- **Optimum Service:** Assesses constraints as well as desires to identify an economically optimal Level of Service. This option is determined from the life cycle planning process.
- **Attainable Service:** Re-interprets the optimum option in the light of available resources. (E.g. budget constraints). **Note** that this service option has not yet been considered at this stage.

From information gained during the preceding section on Requirements, Asset Owners were able to develop specific service options applicable for each of their individual asset groups.

Service Option Evaluation

Once the service options for each of the asset groups had been identified they were evaluated against an agreed common set of criteria. These criteria include the following:

- The Benefit of the service option
- The Risk implications on adopting the service option
- Financial considerations, i.e. the overall cost of adopting the service option

All asset management decisions result in a combination of cost, benefit and risk. Historically, of these three elements, cost has been the most readily communicated and understood.

Understanding cost is however an incomplete picture. Many authorities have in the past adopted a process of budget evaluation that is based largely upon historical precedence.

To enable robust evaluation of these options, it will be necessary to use the life cycle planning process to quantify indicative work packages that would be necessary to deliver each of the service options. This will ensure that sufficient supporting information is produced to rank the options on cost and overall impact on the assets life cycle criteria. (E.g. an increase or decrease in the asset's age profile or overall condition etc).

Once evaluation of service options has been completed, it is possible to present for approval "a menu" of network wide options.

Determination of Final (Attainable) Service Option

It is anticipated that following evaluation of the selected service options and their subsequent review and approval by senior council officers, a "Final" or **Attainable** Service Option will be determined for each asset group. This of course could be a mix of options that makes the most efficient use of current funding and resources, but provides the best long-term solution for the management of the asset.

5. Inventory

To deliver the Goals and Objectives in Chapter 2 and achieve the required Levels of Service in Chapter 3 it is necessary to appreciate the extent of the highway network, the range of assets involved and the condition of the components that sustain it. Equally it is important to understand that the highway is an engineering structure and that to manage and maintain it effectively and efficiently requires knowledge of the individual assets, how many there are, the condition they are in and the materials used. This is inventory and condition data and along with knowledge of the functional requirements provides the quantitative and qualitative measures of the highway assets.

Hartlepool Borough Council currently utilises the CONFIRM Asset Management system by Pitney Bowes MapInfo to house it's inventory and subsequent condition information.
The majority of the data was collected some years ago and the main asset groups namely carriageways, footways and street lighting are up to date and contain the most recent additions.

Alongside the above CONFIRM system, a GIS system is also maintained of the highway assets producing a graphical alternative to the textual database version.
The table below summarises the councils highway asset inventory.

Inventory Item	Where Held	GIS Availibility	Update
Carriageway	CONFIRM	Y	Monthly
Footways	CONFIRM	N	Monthly
Benches*	CONFIRM	Y	Never Updated
Car Parks	CONFIRM	Y	Annually
Crash barriers	CONFIRM	Y	Bi-annually
Cycleways	CONFIRM	Y	Annually
Dog Foul Bins*	CONFIRM	Y	Annually
Gullies	CONFIRM	Y	Quarterly
Heritage Signs*	CONFIRM	Y	Never Updated
Highway Trees	CONFIRM / External	Y	Annually
Street Nameplates*	CONFIRM	Y	Never Updated
Non Illuminated Signs*	CONFIRM	Y	Never Updated
Pedestrian Barriers*	CONFIRM	Y	Never Updated
PRoW	CONFIRM	Y	Annually
Salt Bins	Spreadsheet	Y	Annually
Structures	Structures Database	N	Annually
Street Light Columns	CONFIRM	Y	Monthly
Beacons	CONFIRM	Y	Monthly
Bollards	CONFIRM	Y	Monthly
Illuminated Signs	CONFIRM	Y	Monthly
School Flasher	CONFIRM	Y	Monthly

* indicates a partial or non updated dataset

5.1 Carriageways

Hartlepool Borough Council as a Highway Authority is responsible for over 360 km of carriageways.
For maintenance management purposes, the network of roads is divided into sections. These sections enable the accurate location of condition data, defects and inventory items. Network referencing data is robust and reliable, since it is used frequently to facilitate the collection of carriageway condition data.
Inventory data for carriageways is regularly updated within the CONFIRM database and contains information such as lengths, widths, areas and surface materials.

Hartlepool Carriageway Lengths by Hierarchy

Carriageway Hierarchy	A (km)	B (km)	C (km)	Unclassified (km)
Lengths	36.2	8.6	22.5	298.3
Total				365.6

Above data was taken from HBC's R199b dataset

The carriageway inventory data is robust and reliable, since network referencing information is used frequently to facilitate the collection of road condition data. This serves as a check of this referencing and any discrepancies that become apparent are addressed via rectification of the base data.
The network referencing data is currently held on a UKPMS database within the CONFIRM management software.

The councils UKPMS network is also available on the Council's GIS mapping system and provides a graphical image of the current condition of the network based upon the UKPMS results. A colour code method is used based upon red for failure, amber for inspection required and green for good condition.

Carriageway hierarchy as defined in the Highway Network Management Plan.

Category	Hierarchy Description	Type of Road General Description	Description
1	Motorway	N/A	N/A
2	Strategic Route	Trunk and some Principal “A” roads between Primary Destinations	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.
3a	Main Distributor	Major Urban Network and Inter-Primary Links. Short - medium distance traffic	Routes between Strategic Routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40 mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety.
3b	Secondary Distributor	Classified Road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions	In rural areas these roads link the larger villages and HGV generators to the Strategic and Main Distributor Network. In built up areas these roads have 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On-street parking is generally unrestricted except for safety reasons.
4a	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions	In rural areas these roads link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two way traffic. In urban areas they are residential or industrial inter-connecting roads with 30 mph speed limits, random pedestrian movements and uncontrolled parking.
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic	All other roads not included above. In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGV’s. In urban areas they are often residential loop roads, back streets or cul-de-sacs.

The CONFIRM system is used to store inventory and condition data about most of the authority's highway assets including lighting, signs, drainage gully's etc and hence this system is Hartlepool's main asset management software.
The network referencing methodology involves dividing each of the Council's carriageways into sections and recording a number of attributes against each section. Whenever any of these attributes changes, a section break is made. Therefore any given network referencing section will only have one value for each of the following attributes:

Section Label
Section Length
Road Name
Description (including start and end point)
Road Class
Road Hierarchy
Urban or Rural
Start Node
End Node
Speed Limit*
DOT Classification
Surface Type
Construction Type
Traffic Level
Vehicular Traffic
Step Level
Footway tied to Carriageway
Primary direction
Diversion Quality*
Drainage Status*
Nominated Flag*
Feature Type
Area
Ward
Eastings
Northings

* Fields exist within the database but as yet are unpopulated

Basic carriageway inventory data is held within the UKPMS system. This is recorded against the network referencing sections on a chainage basis. The following inventory attributes are stored:

Width
Construction Type
Surfacing Type

5.2 Footways

Complete inventory data for category 1, 1a and 2 footways is held on the CONFIRM database. The total length of all footways are shown below

Category (footway hierarchy)	Length (km)
1	12
1a	0
2	82
3	118
4	363
Total	**577**

Footway Hierarchy as defined in the Highway Network Management Plan.

Category	Category Name	Description
1(a)	Prestige Walking Zones	Very busy areas of towns and cities with high public space and streetscene contribution.
1	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes.
2	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres etc.
3	Link Footways	Linking local access footways through urban areas and busy rural footways.
4	Local Access Footways	Footways associated with low usage, short estate roads to the main routes and cul-de-sacs.

Basic footway inventory is held on CONFIRM. Footway attributes held on CONFIRM are:

- Width
- Length
- Footway hierarchy
- Surface type

5.3 Cycleways

Cycleways are the paved routes provided specifically for cyclists. Some cycleways are simply delineated from the carriageway by means of white line markings, but the majority are links between carriageways often shared with pedestrians.

Many of the policies and practices associated with the management of cycleways are the same as those for footways. **This Life Cycle Plan will identify those areas in which the management of cycleways differs from that for footways.**

Cycleways constructed as part of new housing estates are added to the relevant footway inventories.

The location of the cycleway will determine which adjacent legal order is used. In general terms if a new cycleway is going to be part of the footway/carriageway the Highways act would come into force.
If the cycleway is remote from the carriageway then it would be the Cycleways Act.

There is currently incomplete inventory data for the Council's cycleways.

The value of shared cycleways (i.e. those within the carriageway or footway) will be included in the valuations for these asset elements.

Cycleways within the carriageway or footway will be subject to the life cycle considerations as identified in the life cycle plans for these asset elements.

The effect of trees within or close to cycleways is significant and should be incorporated into the life cycle planning process. Tree root damage and vehicle overrunning significantly reduce the life expectancy of cycleways.

The expected life of a cycleway will be significantly reduced if there are no edgings at each side of the cycleway. In locations where such restraint is not present, maintenance will be required more frequently. Therefore such designs and locations need to be addressed as part of the life cycle planning process.

Locations affected by trees need to be identified and addressed in the life cycle plan. Adjustments could take the form of increased frequencies of local treatments and/or reconstruction.

Burn Valley Gardens Cycleway

Category	Description
A	Cycle lane forming part of the carriageway, commonly 1.5 metre strip adjacent to the nearside kerb. Cycle gaps at road closure point (no entries allowing cycle access).
B	Cycle track, a highway route for cyclists not contiguous with the public footway or carriageway. Shared cycle/pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated.
C	Cycle trails, leisure routes through open spaces. These are not necessarily the responsibility of the Highway Authority, but may be maintained by an authority under other powers or duties.

	Length (m)	Width	Area (m^2)
Cat A	12503	1.5	18754
Cat B	10157	1.5	15235
Cat C	4519	1.5	6778

5.4 Structures

Hartlepool Borough Council is responsible for approximately 95 bridges and culverts of varying types and sizes, and approximately 1.9 km of retaining walls.

The majority of inventory data was gathered in the late 80's and is checked / updated at each general inspection. The extent and reliability of the inventory data varies, but generally is very good, with the exception of retaining walls where some assumptions have had to be made.

The following tables provide an overview of the HBC owned inventory stock held within the authority's in-house structures database.

Str No	Name	Owner	Road Class	Span (mm)	Width (mm)	Deck Area (m^2)
1101	Hart Railway Bridge	HBCED	A	28000	15240	426.7
1124	Hart By-Pass Cattle Creep	HBCED	A	5500	15500	85.3
1127	East of Hart Culvert	HBCED	A	1500	45000	72.0
1206	Newburn Bridge (West)	HBCED	A	26556	12000	318.7
1243	A179 Viaduct	HBCED	A	27000	5989	323.4
1244	Cleveland Road Culvert	HBCED	A	1300	14000	36.4
1305	Claxton Bridge	HBCED	A	7620	34550	263.3
1311	Fairfield Farm Culvert	HBCED	A	600	5000	6.0
1312	Newton Bewley Culvert	HBCED	A	900	48000	86.4
1402	Greatham Armco	HBCED	A	4570	43586	199.2
1405	Graythorp Bridge	HBCED	A	18180	22050	400.9
1407	Greatham Creek	HBCED	A	25100	11500	577.3
1420	Coronation Drive Culvert (north)	HBCED	A	3300	140000	462.0
1421	Seaton Snook Culvert	HBC/NW	A	600	10000	12.0
1422	Sheepfolds Culvert	HBCED	A	600	10000	6.0
1432	Brenda Road Culvert	HBCED	A	600	20000	12.0
1450	Teesbay retail park storm overflow	HBCED	A	4000	74000	296.0
1214	Middleton Road (south)	HBCED	B	14741	8087	119.2
1401	Tofts Bridge	HBCED	B	23165	15240	353.0
1447	The Stell Station Rd Culvert No 1	HBCED	B	3300	11000	36.3
1448	The Stell Station Rd Culvert No 2	HBCED	B	1075	11000	11.8
1116	Elwick Village Culvert	HBCED	B	675	10000	12.7
1112	Spring Culvert	HBCED	B	600	8000	4.8
1113	Church Culvert	HBCED	B	750	15000	11.3
1114	North Lane Culvert	HBCED	B	450	14000	18.9

1226	Easington Road Culvert No 1	HBCED	B	900	24000	21.6
1445	The Stell Railway Culvert No 1	HBCED	B	1680	163000	273.8
1103	Church Bridge	HBCED	C	2000	8500	17.0
1123	Amerston Culvert	HBCED	C	1300	8000	10.4
1211	Catcote Road Culvert	HBCED	C	1500	28000	84.0
1222	Baden Street	HBCED	C	3500	11000	38.5
1122	Dalton Field Footbridge	HBCED	F	450	4000	1.8
1108	Winterly Hills Footbridge	HBCED	F	600	4000	2.4
1309	Gunners Vale Footbridge	HBCED	F	600	4000	4.8
1449	The Stell B.S.C. Culvert	HBCED	U	600	15000	27.0
1106	Belly Well Culvert	HBCED	U	700	8500	12.3
1137	Playing Field Culvert	HBC	U	750	80000	120.0
1110	Bogle Beck Culvert	HBCED	F	800	3000	2.4
1109	Lambs House Culvert	HBCED	F	900	5000	4.5
1434	North Gare Culvert	HBCED	F	900	9000	8.1
1435	Golf Course Culvert	HBCED	F	900	9000	8.1
1126	Hart Culvert	HBCED	U	900	12000	10.8
1313	Claxton House Culvert	HBCED	F	1000	4000	4.0
1236	Valley Drive/Parklands Way Culvert	HBCED	U	1000	23000	23.0
1237	Valley Drive/Hylton Road Culvert	HBCED	U	1000	95000	95.0
1240	High Tunstall Culvert	HBCED	U	1200	12000	14.4
1239	School Footbridge	HBCED	F	1800	1500	2.7
1216	Egerton Road Culvert	HBCED	U	1900	19500	74.1
1119	Saxon Church Footbridge	HBCED	F	2000	1000	2.0
1202	Summer Hill Footbridge	HBCED	F	2000	2600	5.2
1210	Ambleside Culvert	HBCED	F	2000	17000	34.0
1212	Colwyn Road Culvert	HBCED	U	2000	10000	20.0
1235	Valley Close Culvert	HBCED	U	2100	25000	52.5
1238	Hardwick Court Culvert	HBCED	U	2100	25000	52.5
1229	Brookes Bridge	HBCED	F	2200	5000	18.5
1111	Dalton Beck Footbridge	HBCED	F	2500	5500	13.8
1125	Windmill Walk Footbridge	HBCED	F	2700	500	1.4
1433	Sheepfolds Footbridge	HBCED	F	3000	2100	6.3
1104	Dalton Piercy Bridge	HBCED	U	3000	6000	18.0
1417	Greatham Hall Footbridge	HBCED	F	3200	3200	10.2
1443	Kinterbury Close Culvert	HBCED	F	3300	10000	33.0
1444	Lord Nelson Close Culvert	HBCED	F	3300	10000	33.0
1442	Warrior Drive Culvert	HBCED	U	3300	30000	99.0
1438	Fens Footbridge	HBCED	F	3500	770	2.7
1118	North Hart Farm Footbridge	HBCED	F	4000	1000	4.0
1121	Deer Walk	HBCCS	F	4000	50000	200.0
1308	High Stotfold Footbridge	HBCED	F	4000	1000	4.0

1321	Low Stotfold Footbridge	HBCED	F	4000	1000	4.0
1403	Greatham Old	HBCED	U	4000	6000	24.0
1105	Char Beck Footbridge	HBCED	F	4200	500	2.1
1320	Claxton Beck Footbridge	HBCED	F	4200	1200	5.0
1437	Dunns Hill Footbridge	HBCED	F	4200	1100	4.6
1102	Amerston Beck Footbridge	HBCED	F	4500	1000	4.5
1120	Crimdon Beck Culvert	HBCCS	F	4500	90000	405.0
1246	Ambleside Footbridge	HBCED	F	4750	1000	4.8
1250	Water Company Vaults	HBCED	U	4870	11000	160.7
1451	The Piggeries Footbridge	HBCED	F	5000	1000	
1228	Dalton Nook Footbridge No.1	HBCED	F	5400	1000	10.8
1441	Lower Claxton Footbridge	HBCED	F	5800	1000	5.8
1406	Cloff Bridge	HBCED	F	6000	1000	6.0
1139	Bellows Burn Footbridge	HBCED	F	6850	900	6.2
1418	Greatham Beck Footbridge	HBCED	F	9000	1200	10.8
1414	West Meadows Footbridge	HBCED	F	12500	1000	12.5
1310	Claxton House Footbridge	HBCED	F	15000	750	11.3
1207	Greatham Street Footbridge	HBCED/Ntwk Rail	F	20000	1800	36.0
1117	Middlethorpe Farm	HBCCS	F	51360	3400	174.6

5.5 Drainage

Hartlepool is responsible for a drainage asset which includes almost 21,000 gullies.

The inventory information was initially collected circa 2002-2003, gully locations within new developments are added as and when the information becomes available. The degree of accuracy is reasonable, although the

position of individual elements such as drainage runs is not complete.

There is no data to confirm the length or location of ditches, whether highway or private, although the Highway Inspectors are generally aware of where these are located. We also have very little information to confirm the position, size, depth, gradient, outfall or ownership details of piped highway drainage systems.

There is no formalised system for managing inventory data relating to manholes, catchpits and soakaways. Some information exists relating to the number per road but there is no indication as to the type, size or exact location of the units.

5.6 Street Lighting

Hartlepool's street lighting asset includes over 13,300 lighting columns and is held within the CONFIRM system. Confidence in the data is high.

There is only limited information on the location of buried cables. There are some plans of circuits for a few projects, but these plans have not been updated and repairs have not been recorded. Procedures are being put in place to record this cable information within the CONFIRM streetlighting database.

Inventory Summary

Columns	Illuminated Signs	Bollards	Beacons	School Flashers	Feeder Pillar
13386	606	361	52	9	90

The Asset consists of the following:

- Street lighting columns (various heights ranging from 5 metres to 12 metres)
- Illuminated road signs.
- Illuminated bollards.
- Feeder pillars
- Beacons
- School Flasher Units

Cables

Any type of street lighting equipment can be electrically supplied by one of two methods, these being:
Distribution Network Operator (DNO) supply. This type of supply is not the responsibility of Hartlepool Borough Council.
Private cable network. This type of supply is owned and maintained by Hartlepool Borough Council and constitutes approximately 5% of the total network.

Generally both types of supply are buried underground in ducting.
Control Pillars If a private cable network is used to supply any street lighting, a control point /existing streetlight column or control pillar will need to be installed to determine where the DNO supply finishes and the private supply starts.

Feeder pillars consist of a metal box installed at ground level and contain electrical isolation and overload current devices.

In general the Council is confident about the accuracy of the above data as the borough was surveyed in 2005 and all Hartlepool Borough Council illuminated street furniture was identified and digitised on GIS and details entered into the database.

The inventory is held in an SQL Server 2006 database within an application called CONFIRM Streetlighting.

The Council is currently undertaking a program of lamp replacement in the town by converting its entire stock to low energy LED lanterns. Inventory records within the Asset database / GIS system will be updated regularly to reflect these changes.

Attribute information for columns include :

Wind Exposure	Material
Attatchment Type	Mounting
Bracket Configuration	Number of approved attachments
Bracket Projection	Number of Brackets
Bracket Type	Number of Lamps
Column Height	Number of Lamps per Lantern
Column Manufacturer	Number of Lanterns
Column Type	Number of Luminaries
Control Gear	On a Bridge
Control Type	Paint Colour
Cross Section	Pedrestian Density
Environment Situation	Protective Coating
Fixing	Road Environment
Flange Base	Root Protection
Gear Position	Salting of Road
Ground Conditions	Serivce Owner
Height	Sign Face Material
Illumination Position	Sign Height
Isolation	Sign Width
Lamp Control Gear Type	Switching

Lamp Type - Bollard	Traffic Sign Cat
Lamp Type - Columns	Traffic Sign category
Lantern Model Reference	Traffic Sign Diag No
Lantern Type	Traffic Speed
Lateral Feed	Unit Type
Manufacturer	Wattage

Installation Date (commission date).

Dates recorded as after 1990 are reasonably accurate. The 1968 date was a default date for equipment installed at the time of the 1989 survey, where the actual installed date wasn't known. Columns can be older or younger than that date.
Site surveys would need to be carried out for all records with a commission date of 1968 to 1980 in order establish the manufacture date and hence the likely commission dates. This data could then be entered into the CONFIRM database.

Private Cables

The units supplied by private cables are known.
The route, and source of the circuit is not recorded.
The order of the units connected to the circuit is not known.

Useful life expectancy of private cable connections cannot easily be determined. Most of the underground cables are PVC insulated. These types of cables can have a life expectancy of greater than 50 years, but this is very much depend upon the environment the cables are installed. Issues that can reduce the life expectancy are:

- Incorrect installation i.e. not laid within a bed of sand or cable ducting not used for crossings.
- Changing environment i.e. cables experiencing heavy goods vehicles travelling over them.
- Ingress of water into the cable. This effect can be increased by the number of underground cable joints.
- Damaged caused by construction work, in particular excavation by machine.

All private cables are electrically tested every six years (to comply with BS7671 IEE wiring regulations) the results of these tests indicate if a cable has failed

electrically or more importantly is about to fail. Any cables that are highlighted as about to fail are investigated thoroughly. This would involve testing the entire surrounding private cable network that is connected into the potentially failed unit and making a judgement whether to replace the entire private network back to the supply point (feeder pillar) or just replace the localised area.

Generally speaking as private cable last longer than street lighting columns underground private cables are replaced when the street lighting column is replaced. It is therefore difficult to predict the age of underground cables.

Feeder pillars have a relatively high life expectancy of greater than 50 years compared to street lighting columns. This is mainly down to their height (typically less than 1metre) and hence reduced windage effects. But as with private cables, life expectancy can be reduced due to poor installation and lack of maintenance, in particular painting.

Age Profiles

Lighting

Residual Life	1 to 15 years	16 to 29 years	>=30 years
Columns	3622	6821	2943

5.7 Traffic Signals and Telematics

Hartlepool Council's telematics asset, which includes some 26 junctions and 22 pedestrian crossings.

The general details of the installations are maintained on an Access database. More detailed information on the sites as well as histories of amendments and improvements are contained on paper files.

Current confidence levels on the asset data are:

- Access database 90%
- HBC paper files 75%

Many of the recent alterations to equipment have been included on the paper files but this information is not held in alternative formats.

The Access database does not hold data on the specific items on each site, some paper files hold more detailed information, but this is inconsistent. The older the installation the less information is held on file.

Asset data

Asset	Total
Junctions	28
Pegasus	0
Pelican	13
Puffin	14
Cycleway	0
Toucan	3
Vehicle Activated Signs (VAS)	35
Wig-Wag	0
CCTV	0
Remote Monitoring System	1
Fault Management System	0

This covers traffic controlled by signals, some of which are linked together into an Urban Traffic Control (UTC) system, some others are remotely monitored and pedestrian crossing facilities controlled by signals.

Middlesbrough Council is the lead Authority for the Maintenance and Management of Transport Telematics for the Tees Valley Authorities of Middlesbrough, Hartlepool, Stockton and Redcar and Cleveland.

The Asset consists of the following:

Signal controls at junctions

These are the usual traffic signals at junctions that give priority to different streams of traffic. Most sets of traffic signals at junctions also include facilities to control pedestrians crossing.

Signalised crossings: Pelican, Puffin, Toucan and Pegasus crossings

Pelicans have the green man indicator at the opposite side of the road to the pedestrians. These crossings have a flashing green man and a flashing amber traffic light. Puffins are the next generation of crossing with the pedestrian indicator on the same side as the pedestrian. There is no flashing green man or amber traffic light. A Toucan crossing allows both cyclists and pedestrians to cross and will show a green cycle symbol at the same time as a green man. Pegasus crossings allow horses to cross and have special arrangements for the

horses to wait.

Vehicle activated signs

These signs can show many different things. Most commonly they indicate the speed limit and slow down. They house speed detection equipment and are triggered when speeds exceed a pre-set threshold.

Wig wags

These are flashing amber lights that are triggered to go off when an event happens e.g. a fire engine leaving a fire station.

Centrally held technology to maintain and manage equipment

Middlesbrough Council, as the lead authority, hold two remote monitoring systems which can dial up a central computer and tell it when certain faults occur at the signals. Those signals that are not on a remote monitoring system are connected to the Urban Traffic Control system, which effectively links the signals. Middlesbrough also has a Fault Management System that allows faults to be reported electronically to our maintenance contractor and their performance monitored. This system allows fault histories to be logged so that installations that are experiencing difficulties can hopefully be identified and fixed before major breakdowns occur. None of the vehicle activated signs or wig wags are connected to the central office.

Useful Life of Asset

Signalised junctions are generally considered to have a design life of about 10 years. Department for Transport London and the Regions (DTLR) rules oblige manufacturers to keep parts for each design for 10 years after manufacture ceases. In practice they tend to be available for less time than this. Replacement is therefore necessary at about 15 years otherwise faults can take much longer to repair.

Poles

Until approximately 3 years ago, poles were not galvanised. This means that those installed prior to this will need to be replaced after approximately 15-20 years. If the plastic coating is damaged, e.g. by a road traffic accident, then the pole is susceptible to rust and replacement becomes necessary.

Cables

They could last the life of the site and on sites with good cable ducts and duct access chambers, replacement of cables is a minor issue. However, up to the 1990's it was common to install traffic signals with the absolute minimum of ducts and chambers, or run cables alone. This means that replacement becomes difficult and expensive.

Signal heads

The actual signal heads are plastic and so do not deteriorate. However, the backboards fade, usually after about 10 years, and need replacing. In addition, if the supplier's release upgraded heads the companies only supply spares for about 5 years. If a problem of this nature occurs at a site it is usual to replace all heads to ensure consistency and remove any possibility of confusion.

Brackets

Brackets have only been galvanised in the last 2 years. The older type should have a life of 15 years but, as with poles, this is less on the coast. The major problem is with fixing kits that hold the brackets onto the poles being corroded by the salty air. There have been instances on the coast where these brackets have become dangerous and one hit from a passing vehicle would cause the bracket and head to fall.

5.8 Public Rights of Way

Hartlepool Borough Council is responsible for approx 96km of public rights of way of which covers both urban and rural areas.

The path network is recorded on the Hartlepool Definitive Map and Statement (often referred to as simply the "Definitive Map"). The Definitive Map is paper based last updated in 2001 and is scheduled to be updated in 2015.

The majority of inventory data is based only on a 100% of BVPI results from surveys throughout each financial year across the whole of the Borough.

Footpaths	for use by public on foot only,
Bridleways	for use by public on foot, horseback and cycle only
Byways	for use by public on foot, horseback, cycle and motorised vehicle ,

Public Rights of Way (PROW) lengths are given in the table below:

Footpath	Bridleway	Byway
84.14 km	5.81 km	5.68 km
87.99 % of total network	6.07 % of total network	5.94 % of total network

The table below represents the various path types throughout the Borough. Most of the path are unsurfaced (54.48%) and are within the rural/urban fringe areas of Hartlepool.

Surface Type	Percentage Covered
Cross Arable Field	3.04%
Arable Field Edge	14.11%
Natural	37.32%
Surfaced	45.52%

The surfaced routes in Hartlepool include a percentage of shared farm tracks, paths through churchyards and private drives with public rights over them for which HBC would not maintain.

Asset	No. of Assets Borough-wide
Signpost	129
Waymark Posts	113
Highway Authority Barrier	3
Steps/revetment/boardwalk	23
Bridges/culverts	44 (some not HBC, see below)
Stiles	146
Gates	71

Network Extent and Hierarchy

Hartlepool Borough Council is responsible for 95.63km of public rights of way. The network exists within both urban as well as rural areas, being used for recreational and utilitarian purposes, and comprises a mix of surfaced and unsurfaced paths. The network comprises of:

Footpaths	for use by public on foot only,
Bridleways	for use by public on foot, horseback and cycle only
Byways	for use by public on foot, horseback, cycle and motorised vehicle ,

NB. Gates and stiles are primarily authorised for the purposes of stock control and are normally installed and owned by land managers. Whilst they are not considered to be HBC assets, the Borough Council has a duty to contribute 25% of maintenance costs towards the repair of structures. Therefore HBC would be responsible for maintenance of 54 stiles and gates at a borough level based on a 100% sample survey data.

Bridges are normally the responsibility of the highway authority and are the most valuable PROW asset set owned by the county council.

The Council's Technical Services deals with roads and bridges and is responsible for the maintenance of 34 bridges over PROW in Hartlepool. The majority of these are bridges over 1.8 metres in length and are bridges that have been historically maintained by this team. The following table breaks these bridges down into two types.

Bridge Type	Total
Footbridges	27
Culverts	7

BVPI 178 - is a measure of 'ease of use' of an authority's PROW functions and the percentage of total length of footpaths and other PROW, which were easy to use by members of the public.

'Ease of Use' is defined as a route that is:

- Signposted or waymarked where they leave the road in accordance with the authority's duty under S27 of the Countryside Act 1968 and to the extent necessary to allow users to follow the path (a PROW wholly within a built up area and with a hard surface provided along its complete length and with a clearly defined route may be excluded from measurement).
- Free from unlawful obstructions and other interference, (including overhanging vegetation) to the public's right of passage.'
- Surface and lawful barriers (e.g. stiles, gates) in good repair and to a standard necessary to enable the public to use the way without undue inconvenience.

The information on signposting is more accurate. A 2 year signposting project to install higher quality roadside signposts was completed in 2001/2.
The path network is recorded on the HBC register, known as the Definitive Map and Statement (often referred to as simply the "Definitive Map"). The Definitive Map is a legal document established under the National Parks and Access to the Countryside Act which the council, as surveying authority, has a legal duty to keep up to date under the Wildlife and Countryside Act 1981. The Definitive Map provides a record of every known PROW but there may be, and often are, other ways which may be public but which are not currently recorded on the Definitive Map and the Wildlife and Countryside Act 1981 has provisions for amending the

Definitive Map accordingly.

The Definitive Map is at present paper based and was last updated in 2001. The Council is looking to update the Definitive Map within the next two years and is also looking to digitise the Definitive Map but this work will not be complete for some years.
So far a detailed record of the previously recorded BVPI 178 survey data is available, dating from its inception to the last survey in 2013-14. The Council still considers the BVPI 178 inspection and surveying methodology to be sound and valid, and looks to continue this surveying approach in future years.

5.9 Trees, Hedges, Verges and Planted Areas

There are a considerable number of trees, hedges, verges and planted areas contained within the council's highway network. An external contractor was employed to carry out a survey in 2002 and subsequently identified 10,347 highway trees. The Council is currently undertaking a survey spanning 3 years to update it's inventory and is expected to be completed in April 2015. Each tree will subsequently be plotted on Arcview GIS.

Although a comprehensive inventory does not exist, a "ballpark" estimate has been made on the quantity of council hedges (15km) and verges (12,000km).

Verge, tree and hedge records exist on a variety of GIS and paper records.

Verge and landscaped areas are updated from the section 38 Agreement plans at the time new highways are handed over by the developer.

Hartlepool Borough Council has signed up to the Tees Valley Biodiversity Action Plan (TVBAP) which is being implemented through the Community Strategy.

A couple of our road verges have been designated in the Local Plan as what are now called Local Wildlife Sites, they are: Hart Bypass which is the outcrops of rock along the Hart Bypass and a stretch of Easington Road, north of the Hart to Haswell Walkway, which is included as part of the Hart to Haswell Walkway Local Wildlife Site. The Council reports to Defra annually on the proportion of our Local Wildlife Sites that are in positive management and would want to avoid any operations that might damage the wildlife interest on those sections of road verge.

Given the substantial area that they cover, road verges can make a significant contribution to the conservation of biodiversity if managed appropriately. Road verges with botanical interest should generally be cut once a year in early Autumn and the cuttings removed. Road verges whose biodiversity interest is other than primarily botanical should not be cut except for safety reasons or for overriding aesthetic reasons.

The TVBAP also has an action plan for Ancient & Species-Rich Hedges, some of which may be found along highway verges.

5.10 Unlit Signs and Street Furniture

The Unlit Signs and street furniture component of the Council's highway network, (more than 17,000 in number) is small in overall value, but never less an important asset group this information is held on the CONFIRM asset database and spatially linked to the GIS system.

Asset sub-element	Quantity
NI Signs	3868
Nameplates	3879
Bollards	7332
Bus Shelters / stops	662
Seats/Benches	240
Crash Barriers	70
Heritage Signs	40
Pedestrian barriers	1470
Total	**17561**

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5.11 Barriers and Safety Fences

Inventory records for this data set are limited. There is no data available on the length of any barriers though their locations are known via an entry in the asset database and the departments GIS systems. There is also no formalised system for managing or updating the inventory data.

Asset sub-element	Quantity
Barriers and Safety Fences	1540

5.12 Road Markings and Studs

There is no formalised system for collecting, maintaining or updating inventory data relating to road markings and studs. There is, however some limited information in respect of regulatory markings.

6. RISK MANAGEMENT

6.1 Introduction

The role of risk management in the context of asset management:

The assessment of comparative risk is a key asset management tool. It can be used at a tactical level within the asset management process to assist with option appraisal and selection via assessment of the comparative risks of:

- Providing differing levels of service
- Funding works on different assets or
- Funding improvements to the network as opposed to maintenance works

Risk Analysis framework currently used at Hartlepool Borough Council :

Hartlepool Borough Council already has in place a comprehensive corporate document for managing risk across the whole organisation, entitled "Hartlepool – Risk Management Strategy". This document, however, tends to lend itself to managing higher level corporate / strategic risks rather than the tactical / operational risks encountered in the asset management process.
It is not the intention of the Transport Asset Management Plan to either repeat or replace the processes and detail contained within the above document, but to supplement and add detail where necessary.

6.2 The Risk Management Process

In summary, the four main steps of Risk Management can be broken down into:

- Identifying Risks
- Assessing Risks
- Managing and Controlling Risks
- Reviewing & Reporting Risks

The Transport Asset Management Plan has dealt mainly with the first two sections: Identifying Risks and Assessing Risks. In particular regarding Assessing Risk, an updated "Impact Description Table" that better fits with the tactical level risks encountered in asset management is provided below.

6.3 Identifying Risks

The *Hartlepool – Risk Management Strategy* has identified the main tactical risks that could affect each of the assets.
Once these risks were identified, it was determined how the different Service Options (statutory, existing, optimum & requested) would impact upon these risks in either an adverse or positive way (i.e. decreases or increases the likelihood or severity of the risk).

Two examples of typical risks are:

i) Carriageways - Condition Worsening, leading to need for major structural strengthening
ii) Drainage - Gullies becoming blocked, leading to flooding on the highway.

6.4 Assessing Risks

Once the risks were identified, an assessment of their likelihood and impact was carried out. This was done in a consistent manner to give a balanced view of the risk levels associated with the different service options.
Please refer to the following tables of LIKELIHOOD and IMPACT taken from *Hartlepool – Risk Management Strategy*. Note that as discussed earlier, the impact table has been modified for use on the lower level tactical risks encountered in the asset management process.

Description and definitions of LIKELIHOOD of the risk occurring:

Likelihood	Risk Rating Score	Description
Unlikely	1	Likely to occur once every 25 Years/Up to a 1% chance of occurrence
Possible	2	Likely to occur every 10 years/Up to a 20% chance of occurrence
Likely	3	Likely to occur every 5 Years/Up to a 80% chance of occurrence
Almost Certain	4	Likely to occur every 3 Years/Over a 90% chance of occurrence

Descriptions and definition of IMPACT of the risk should it occur

Risk Rating Score	*Impact*	Health and Safety	Social	Service Delivery	Cost	*Reputation*
1	Low	Minimal safety implications (single event)	Nil – will have an negligible impact on the community	Minimal disruption to a single service	Up to £5,000	Managed/reported to Service Unit Local Media (Short Term duration)
2	Medium	Property damage only (single event)	Low – will have a small impact on the community	Significant disruption to a single service	Up to £50,000	Managed/reported to Departmental Management Team Local Media (Medium/Long Term duration)
3	High	Slight injury (single event)	Medium – will significantly impact on the community	Significant disruption to multiple services	Up to £250,000	Managed/reported to Corporate Management Team Regional Media (Short Term duration)
4	Extreme	Serious injury (single event)	High – will have a major impact upon the community	Major disruption to multiple services	Over £250,000	Managed/reported to Members Regional/National Media (Medium/Long Term Duration)

NOTE:

1. When selecting an “Impact” category, the descriptions for that category should be selected on an “OR” basis, i.e. it is only necessary that the risk matches one of the descriptions within the box for the corresponding Impact to be selected.

6.5 Risk Ranking

Once the likelihood and impact for each of the service options has been determined, the scales for both of these items can be multiplied together to provide a "final" score for that option which can then be used to rank the four service options.
For example:

Service Option Risk Ranking

Service Option	Likelihood	Impact	Score	Ranking	Comments
Statutory	X	Y	(X x Y)	1st	
Existing	X	Y	(X x Y)	2nd	
Requested	X	Y	(X x Y)	3rd	
Optimum	X	Y	(X x Y)	4th,etc	

NOTE: The scores can also be plotted on the Risk Prioritisation Matrix below, taken also from the *Hartlepool – Risk Management Strategy*

Risk Prioritisation Matrix – Managing the Risk

		Likelihood			
		Unlikely (1)	Possible (2)	Likely (3)	Almost Certain (4)
Impact	Extreme (4)	4	8	12	16
	HIgh (3)	3	6	9	12
	Medium (2)	2	4	6	8
	Low (1)	1	2	3	4

Risk Categories

	Very High Risk	NB for explanation of risk categories - refer to *HBC document for Managing Risk*
	High Risk	
	Medium Risk	

An example of Risk Assessment

CARRIAGEWAYS - **CONDITION WORSENING, LEADING TO NEED FOR MAJOR STRUCTURAL STRENGTHENING:**

Service Option	Likelihood	Impact	Score	Ranking	Comments
Statutory	4	4	16	1st	i.e. possibility of cat 2 road closure
Existing	2	3	6	2nd	
Requested	1	2	2	3rd	
Optimum	1	2	2	3rd	

CARRIAGEWAYS - **PLOT OF EACH SERVICE OPTION FOR RISK OF CONDITION WORSENING:**

		Likelihood			
		Unlikely (1)	Possible (2)	Likely (3)	Almost Certain (4)
Impact	Extreme (4)	4	8	12	16 -Stat
	High (3)	3	6 -Exist	9	12
	Medium (2)	2 – Req. / Opt	4	6	8
	Low (1)	1	2	3	4

Overall Assessment

To significantly reduce the need for increased major structural strengthening works, it is necessary to move from the existing Level of Service towards that which is requested.

6.7 The Risks Associated with the Assets

The key tactical risks associated with Carriageways are:

- Level of maintenance of the network leading to very poor performance as measured nationally by the BVPI processes, possibly resulting in intervention by central government.

- Level of maintenance leading to the necessity for full depth reconstruction of parts of the network, which is the most expensive treatment.

- An increase in the number of people killed or seriously injured due to carriageway surface condition.

- Failure to demonstrate improvement in performance

- An increase in the carriageway maintenance backlog, with the attendant decrease in the value of the asset.

- Low levels of public satisfaction with the condition of carriageways.

The key tactical risks associated with Footways are:

- Level of maintenance of the network leading to very poor performance as measured nationally by the BVPI processes, possibly resulting in

intervention by central government.

- An increase in the number of successful third party claims associated with trips, falls etc.

- Failure to demonstrate improvement in performance
- An increase in the footway maintenance backlog, with the attendant decrease in the value of the asset.

- Low levels of public satisfaction with the condition of footways.

The key tactical risks associated with Cycleways are:

- An increase in the number of successful third party claims associated with surface defects and falls.

- An increase in the cycleway maintenance backlog, with the attendant decrease in the value of the asset.

- Low levels of public satisfaction with the condition of cycleways.

The key tactical risks associated with Structures are:

- Structure fails owing to inadequate maintenance.

- Structure fails owing to flood or extreme weather conditions.

- More expensive repairs due to inadequate maintenance.

- Third Party damage from flooding due to a waterway blockage at a bridge or culvert.

- Weight restriction needs to be applied to a structure.

- Strengthening/refurbishment of bridge leading to traffic disruption.

- Failure or severe damage to a substandard bridge (but subjected to frequent monitoring inspections) where full traffic loading is still permitted.

- Injury sustained by Highway user as a result of a defect.

The key tactical risks associated with Drainage are:

- Blocked gullies, piped systems, soakaways and pumped systems leading to flooding of the highway and/or private property.

- Structural condition of the drainage network deteriorating.

- Inadequate/damaged drainage network causing deterioration of carriageway.

- Third Party claim from Highway user due to flooding resulting from blocked drainage network

The key tactical risks associated with Street Lighting are:

- Low level of maintenance and replacement resulting in poor performance as measured by BVPI processes possibly resulting in intervention by central government.

- Reduced road safety due to poorly maintained lighting, leading to increased accidents and increased numbers of people killed or seriously injured.

- Increase in accidents suffered by pedestrians in poorly lit areas.

- Increased accidents and numbers of people killed or seriously injured due to poor structural condition of street lighting columns.

- An increase in the street lighting maintenance backlog, with the attendant decrease in the value of the asset.

- Increased crime and disorder associated with poor street lighting.

The key tactical risks associated with Traffic Signals and Telematics are:

- Low level of maintenance leading to the necessity for full site replacement.

- Increased accidents and numbers of people killed or seriously injured due to the failure of the equipment.

- Failure to demonstrate improvement in performance

- An increase in the maintenance backlog, with the attendant decrease in the value of the asset.

- Low levels of public satisfaction with the operation of telematics equipment.

- Low level of maintenance leading to poor performance against requirements of Traffic Management Act, possibly resulting in intervention by central government.

The key tactical risks associated with Public Rights of Way (PROWs) are:

- Low level of maintenance and replacement resulting in poor performance as measured by BVPI processes.

- Bridge damage or failure leading to possible personal injury or closure of the highway.

- Bridge asset deterioration due to inadequate maintenance.

- Failure to cut paths brings the council into disrepute with land managers and public and makes enforcement difficult.

- Surface deterioration can deny use of a path.

- Surface deterioration resulting in injury to public, damage to vehicles, harm to the Council's reputation and closure of the highway.

- Asset deterioration due to inadequate maintenance.

The key tactical risks associated with Trees, Hedges, Verges and Planted Areas are:

- Falling trees or dropping branches leading to injury/damage to the Highway user and/or private property.

- Falling trees or dropping branches leading to blockage of the highway.

- Obstruction to highway visibility can increase risk of accidents.

- Debris build-up at edge of carriageway leading to accidents due to

reduced carriageway width and loss of surface texture.

- Landscape areas and verges become overgrown and unkempt leading to low levels of public satisfaction.

The key tactical risks associated with Unlit Signs and Street Furniture are:

- Missing or illegible signs that will reduce safety or cause delay and disruption to the Highway user.

- Asset deterioration due to inadequate maintenance.

The key tactical risks associated with Barriers and Safety Fences are:

- Poorly maintained safety fencing allowing vehicles to reach hazards.

- Pedestrians not being fully protected when using the highway.

- Damage to verges, paved areas and property by inappropriate vehicle use.

- Asset deterioration due to inadequate maintenance with the attendant decrease in the value of the asset.

The key tactical risks associated with Road Markings and Studs are:

- Missing or unreadable markings or road studs that will reduce safety or cause delay and disruption to the Highway user.

- Asset deterioration due to inadequate maintenance.

7. Life Cycle Planning

7.1 Introduction

Transport assets have life cycles that include the following phases:

- Creation/Acquisition
- Maintenance
- Renewal or Replacement
- Upgrading
- Disposal or Decommissioning

Consideration of each of the above phases for the Council's transport assets will help drive a shift towards longer-term asset management and planning. Such a longer-term approach is a key element of the asset management approach.

7.2 The Life Cycle Planning Process

Detailed life cycle plans have been produced for the following transport assets:

1. Carriageways
2. Footways
3. Cycleways
4. Structures
5. Drainage
6. Street Lighting
7. Traffic Signals & Telematics
8. Public Rights of Way
9. Trees, Hedges, Verges & Planted Areas
10. Unlit Signs & Street Furniture
11. Barriers & Safety Fences
12. Road Markings & Studs

For each of these assets, the following aspects were considered in detail:

Inventory: Information detailing the extent of the asset, split into relevant groups. Includes important data deficiencies or systems issues. Based upon this data, an estimate of the value (Gross Replacement Cost) of each asset has been made.

Condition: Sets out the current condition of each asset. Details the inspection methods and survey regimes used, the data collected, where it is stored and the degree of confidence in the data. Where appropriate this section includes statements and standards that define the desired condition of the asset.

Option Appraisal: Details how options are identified and appraised for each phase of an asset's life.

Budget Optimisation: Reviews how budgets are currently distributed between assets and the processes in place for assessing competing demands upon available budgets.

Performance Gaps: The gaps between present condition and that which is desired.

7.3 Carriageways

The main purpose of the carriageway network is to provide safe and unobstructed flow for all categories of road user.

Condition

The condition of carriageways is monitored by a number of Best Value Performance Indicators (BVPI's). These are:

- NI168 – Condition of Principal ('A') Roads
- NI169 – Condition of non-principal, classified ('B' and 'C') Roads
- BVPI 224(b) – Condition of Unclassified ('U') Roads (No longer reported on)

These indicators are used throughout England and enable comparisons between authorities.

Assessing Condition
Carriageway condition is assessed via a variety of methods. Condition surveys are undertaken to ascertain information on the nature and severity of carriageway deterioration in order to determine the most appropriate maintenance treatment and thereby ensure value for money.
The survey methods available in Hartlepool include:

SCANNER (Surface Condition Assessment of the National Network of Roads)
Previously described as TRACS – Type Surveys (TTS). Scanner surveys are automated high speed vehicular surface condition surveys which collect the following data: -

Road Geometry
Survey Speed
Longitudinal Profile
Wheeltrack Rutting
Texture Profile

Cracking (both in the wheel paths and for the whole carriageway)

COARSE VISUAL INSPECTION (CVI)
Visual survey carried out from a slow moving vehicle or on foot to collect basic

defects in accordance with UKPMS requirements on the highway network. CVI surveys are carried out on all roads within the network excluding unsurfaced roads. The survey is also used to target carriageway schemes submitted for the 5-year programme.

GROUND PENETRATING RADAR SURVEYS (GPRS)
SCRIM
The Sideway-force Coefficient Routine Investigation Machine (SCRIM) is used to monitor the in service skid resistance of parts of the hierarchy. Refer to Skid Resistance policy.

GRIPTESTER
The Griptester is used to measure the in service skid resistance of parts of the hierarchy.
Refer to Skid Resistance policy.

Assessing Condition

Carriageway Defects

There are a number of performance measures used to assess the condition of roads. Best Value Performance Indicators (BVPI's) enable the condition of the Council's carriageways to be compared with those managed by other authorities. The Best Value Performance Indicators for carriageways are:

- NI168 – Condition of Principal ('A') Roads
- NI169 – Condition of non-principal, classified ('B' and 'C') Roads
- BVPI 224(b) – Condition of Unclassified ('U') Roads (No longer reported on)

These indicators are used throughout England and enable comparisons between authorities.

Each of these indicators provides a measure of the percentage of carriageways that are in need of further investigation and/or repair. Therefore the lower the figure for these indicators, the better the condition of our carriageways.

NI168 is derived from surveys of the 'A' road network carried out by a machine called a SCANNER. This measures a number of defects, including rutting, texture depth, cracking

and ride quality.

NI169 is also derived from SCANNER surveys. However, up to year 2005/6 the condition of 'B' and 'C' roads were measured by visual surveys called Coarse Visual Inspections (CVI).

BVPI 224b is derived from CVI surveys of a minimum 25% sample of the Unclassified road network each year. From 2006/07 the length of network used to calculate the BVPI has changed. Previously, only that current year's survey data was eligible (based on a minimum 25% network coverage per annum) but from 2006/07 the figure in Hartlepool was based on 100% network coverage. All CVI data collected since 31st March 2003 is valid but a minimum of 25% must be no older than 31st March 2006. This indicator is no longer reported.

Current Condition

Due to the changing nature of condition surveys over the years it is difficult to compare results by those which were previously measured by TRACS-TYPE / CVI surveys and the current SCANNER results.
It is hoped that the surveys for 'A', 'B' and 'C' roads will remain constant for the foreseeable future which will enable direct comparisons to be made over a number of years.

Unclassified roads were previously measured by CVI by taking a 25% sample rotated every four years. Since the sample of roads was different each year (in the cycle) direct comparison proved difficult, therefore, the Council has adopted the stance to survey 100% of it's unclassified network every year to enable these comparisons to be made.

Desired Condition

Hartlepool Borough Council is striving to achieve median to top quartile performance for all classes of road, in comparison with other English Councils.

A comparative performance shows that we have to improve upon our current level of service to achieve this aim.

Option Appraisal

Creation/Acquisition

Most new carriageways are built by developers and are subject to the development control process before they are adopted by the authority as being maintainable at public expense. The development control procedure enables the Council to be sure that new carriageways have been constructed to the requisite specification. Maintenance issues are considered as part of this process, with commuted sums being charged for items that attract particularly high maintenance overheads.

Processes are in place to ensure that new carriageways are placed on the Council's street gazetteer and are network referenced. New carriageways then become subject to the relevant inspection and cyclic maintenance regimes, as well as being integrated into the inventory data collection rolling programme.

Maintenance, Renewal or Replacement and Upgrading

New Carriageway Surface

The maintenance treatment for carriageways may be categorised as:

- Cyclic: e.g. sweeping
- Reactive: e.g. emergency rectification of dangerous defects, removal of dangerous litter / detritus and zonal repairs arising from safety inspections.
- Planned: e.g. surface dressing, plane and inlay. These treatments are largely preventative.

Planned maintenance also includes works designed to upgrade or renew carriageways and increase their residual life. These treatments may include major structural overlays and full depth reconstruction.

Disposal or Decommissioning

In the vast majority of cases, carriageways need to last forever. The only way that a carriageway can cease to be highway is via the formal legal process called Stopping Up. It is rare for carriageways to be stopped up, therefore the duties in terms of maintaining carriageways continue to rest with the authority.

Budget Optimisation

Funding for carriageways maintenance, upgrade and renewal is split into revenue and capital.

Capital

Capital expenditure for maintenance is used to improve the life of carriageways by strengthening or replacing the asset, e.g. overlaying a carriageway surface.

Capital funding comes from central government via the Local Transport Plan (LTP) process topped up by Council borrowing. LTP funding is allocated on the basis of a split between integrated transport and maintenance, with the latter divided up between roads, bridges and lighting.

Revenue

Revenue expenditure is used for recurring routine maintenance such as patching and surface treatments.

The Council may supplement their capital allocation by using prudential borrowing. Whilst such borrowing may provide capital funds, it has associated debt charges, which have implications on the amount of revenue available for several years thereafter.

There have been successive “real term” reductions in the revenue budget and increases in the amount of uncontrollable budget, e.g. additional contributions to highways liability fund.

The decision on whether to use prudential borrowing will be influenced by the ability to meet the debt charges.

Borrowing could have two effects

(a) To increase the ‘gearing’ of any budgetary changes on the controllable parts of the budget and
(b) To increase the use of capital funding as a substitute for revenue.

Note: This can be done on repair works that have a long lasting effect e.g. patching prior to surface dressing, and are essential to keeping the highway assets in a safe condition. This, in turn, reduces the amount of capital available for improvements to the strength and condition of the road network.

Future investment needs to maximise the life cycle of the assets and to minimise the revenue implications both in terms of works and debt charges.

Performance Gaps

One method of defining performance gaps in terms of carriageway condition is to utilise BVPI values. However, these gaps will continue to be somewhat difficult to monitor until such time as consistency in measurement of BVPI’s is achieved.

Given these caveats, some performance gaps can be determined through comparison

between current condition of carriageways and the desired condition.

Similarly, performance gaps can be determined in terms of Hartlepool's position relative to other authorities and its desired position in terms of carriageway condition based BVPI's.

7.4 Footways

Footways are located beside carriageways to provide safe and unobstructed access for pedestrians. These also include the access links between footways on separate carriageways.

Condition

Assessing Condition


Footway Defects

The condition of busier footways (hierarchies 1, 1a and 2) were previously assessed via Detailed Visual Inspection (DVI) which is a walked, visual survey that records the condition of the footway. One hundred percent of these footways were surveyed each year.
This DVI data was used to produce BVPI 187 which is the percentage of category 1, 1a and 2 footways in need of further investigation and/or repair.

However from 2011/12 the council ceased collecting this data specific to BVPI 187 and instead utilises the safety inspection results obtained via the Councils team of highway inspectors. The Council inspects all footways for defects, with the frequency of inspections dependent on footway hierarchy. These inspections enable the recording of dangerous defects, which are then scheduled for repair.

Desired Condition

The optimum condition of the Council's footways from an engineering and minimum whole life cost perspective would be to achieve a steady state situation based upon timely intervention..

The authority is committed to improving the condition of the Council's footways.

Option Appraisal

Creation/Acquisition

Many new footways are built by developers and are subject to the development control process before they are adopted by the authority as being maintainable at public expense through the relevant sections of the Highways Act 1980. The development control procedure enables the council to be sure that new footways have been constructed to the requisite specification.

New footways may be requested by Councillors, residents, and other bodies such as

Parish Councils.

Maintenance, Renewal or Replacement and Upgrading

The maintenance treatments for footways may be categorised as

- Cyclic: e.g. sweeping and weed control
- Reactive: e.g. rectification of dangerous and patching, edgings
- Planned: e.g. slurry sealing and resurfacing. These treatments are largely preventative.

Planned maintenance also includes works designed to upgrade or renew footways to their original design lives. These treatments may include replacement of flagged and concrete footways with bituminous materials.

Disposal or Decommissioning
In the vast majority of cases, footways need to last forever. The only way that a footway can cease to be highway is via the formal legal process called 'Stopping Up'. It is very rare for footways to be stopped up other than those associated with new developments. Therefore the duties in terms of maintaining footways continue to rest with the authority.

Budget Optimisation

Revenue
The vast majority of footway work is funded via revenue.

The distribution of revenue funds for footway works is based on condition surveys and carriageway lengths.

Performance Gaps

Footway performance is no longer measured via the previously used BVPI 187, the council instead utilises the data from its extensive footway safety inspection regime in order meet the requirements of Whole of Government Accounts. Consequently by fulfilling its WGA targets the council has a means of measuring the performance of the footway asset on an annual basis.

7.5 Cycleways

Condition

Assessing Condition

Cycleways within the carriageway or shared with the footway are inspected with the shared asset. This is applicable to condition surveys used to produce BVPI's and safety inspections.

Cycleways that are not associated with a carriageway or footway are inspected in accordance with the frequencies and intervention levels for lower category footways, as identified in the Highway Network Management Plan.

New cycleways adopted as part of new housing developments are inspected as footways.

Option Appraisal

Creation/Acquisition

New cycleways are generally created as part of developments. Such cycleways are subject to development control procedures and hence become highway maintainable at public expense.

Cycleways are also created by the Council. Most are adopted although some are subject to Permissive Rights of Access and are therefore not technically highway.

Under the Cycle Tracks Act, 1984, the highway authority may designate a footpath, or part of a footpath, as a cycle track. This has the effect of converting the relevant section of footpath into highway maintainable at public expense. Cyclists are entitled to use bridleways and byeways.

Budget Optimisation

Capital

The vast majority of cycle route development is funded from the LTP capital budget.

There is currently no separate budgetary allocation for cycleways maintenance.

7.6 Structures

Structures are mainly bridges or culverts over or under highways including PROW (public rights of way) bridges. Culverts under 600mm diameter are deemed to be drainage. Structures also include retaining walls, gantries and stairs owned by the Council.

Condition

Assessing Condition

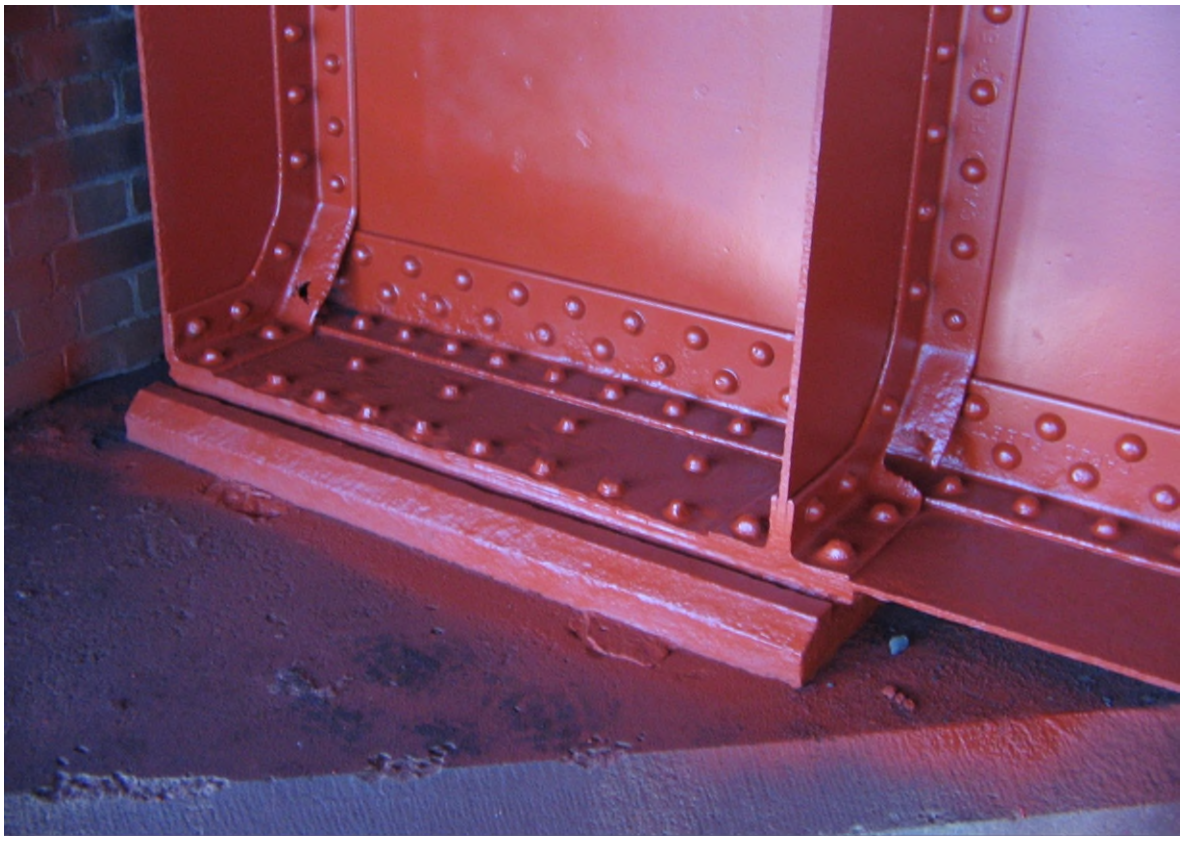
Structures are inspected in four ways:

- General Inspections -All structures are visited once every two years, for a general inspection during which Bridge Condition Index Data and inspection parameters are gathered and recorded for each bridge.

- Principal Inspections – these are scheduled every 6-10 years on a set of significant structures – generally those exceeding 5m in span, where a more detailed inspection is undertaken, which could also include material testing being carried out.

- Special or Monitoring Inspections – where only partial inspections have been possible, further special inspections are set up. These might include: confined space entry, CCTV, boat access, scaffold/platform access, team access etc.

- Emergency Inspections – these usually arise as a result of a road traffic accident or complaints from members of the public where a quick response is required to check for structural damage and to make the bridge safe for the highway user.



With each type of inspection, data is collected using the CSS Bridge Condition Index criteria and is analysed with a Microsoft Excel database.

The Bridge Condition Index for each bridge is determined from parameters that are gathered during inspections. These parameters are then combined and modified according to the size of the structural elements and their importance in the structure to produce an index for each bridge. These are then combined to produce an index for the entire bridge stock. There is an average index, which covers all elements of a structure, and a critical index that includes only data from the high importance elements of the structure.

Current Condition

The Average Condition Index for those bridges, which have been evaluated using the CSS system is summarised below. This currently accounts for 57% of the bridgestock.

Very Good	30 %
Good	43 %
Fair	26 %
Poor	1 %
Very Poor	0 %
Severe	0 %

Desired Condition

The existing values give a target for maintaining the steady state, although caution must be exercised in making any assumption until several years bridge condition data has been collected and trends established.

Figures in the Best Practice and Optimum columns represent the Council's first attempt at setting targets and will need to be reviewed over the first 4 years of operation as data is collected.

Average Condition Index for Bridges

Level	Current %	Steady State %	Best Practice %	Optimum %
Very Good	30	30		
Good	43	43	>97	>80
Fair	26	26	<1	<18
Poor	1	1	<1	<1
Very Poor	0	0	<1	<1
Severe	0	0	0	0

Option Appraisal

Creation/Acquisition

Hartlepool Borough Council acquires responsibility for structures via the following processes:

- Adoption of new structures that are constructed as part of new highways schemes and new developments, e.g. the Marina Way development. HBC typically has input into the design process and such structures become the responsibility of the authority after the expiry of a maintenance period.

- New structures on the Public Rights of Way network become the responsibility of HBC to maintain.

- Structures are from time to time transferred from private ownership to that of HBC. Typical transfers are from the port authority and housing developers and for HBC to accept responsibility for such structures, they must be constructed to appropriate standards. Commuted sums are usually paid to the authority to offset the cost of future maintenance.

Maintenance, Renewal or Replacement and Upgrading

The maintenance treatments for structures may be categorised as:

- Cyclic: e.g. painting, cleaning and the removal of vegetation

- Reactive: e.g. response to vandalism, repairing flood damage or damage resulting from road traffic accidents

- Planned: e.g. replacement of joints and bearings, brick and concrete repairs.

Disposal or Decommissioning

Structures may be decommissioned because they are no longer required

Structures are occasionally disposed of or demolished if their condition has deteriorated to such an extent that they are no longer safe and if the level of usage does not warrant the structure being replaced. Either a stopping up or a diversion of the highway would be required.

Budget Optimisation

Capital

Historically capital funding for structures has been derived from the LTP bidding mechanism. This funding covers major maintenance schemes including re-painting, concrete repairs and replacement of waterproofing/joints. The asset management approach will enable needs based bids for funding to be formulated, via the LTP process.

Revenue

The revenue funding for the maintenance of structures has not been based on condition measures or the demands placed on the network but is a set amount.

The vast majority of this budget is spent on minor remedial maintenance arising from bridge inspections and also includes the in house staff costs for inspections and management of the bridge stock.

Performance Gaps

In the area of highway support, inventory data is weak. There are 22 known retaining walls and the data for these structures is incomplete. In addition there could be a significant number of walls that we don’t know about.

The assessment of bridges using the CSS bridge condition indicator system has commenced but the assessment of the remaining bridges is required to produce a bridge

stock condition indicator that can be used as a benchmark for future years.

7.7 Drainage

This covers all the infrastructure that plays a part in draining surface water from the highway.

Condition

Assessing Condition

Damaged gullies are recorded during safety inspections, routine cleansing activities, other surveys or from public reports. Blocked ditches or roadside grips are, however, seldom noticed during safety inspections and problems are frequently discovered during the course of other works and/or via reports received from the public.

Piped systems, manholes, outfalls, attenuation systems, catchpits, soakaways and SUDS (sustainable urban drainage systems) do not have a regular inspection regime. Faults are only discovered following detailed inspections of the highway, reports by the public or when the system is in need of clearance or repair.

Current Condition

The condition of the visible, regularly visited sections of the network (e.g. gullies) is generally known and in reasonable order. However, the condition of the remainder of the network, which is largely underground, is less well known.

Desired Condition

The frequency of cleansing is designed to prevent water from accumulating on the highway, within the constraints of the Council's budget. To assist in the achievement of this target, sites of known flooding have a higher frequency of cleansing.

Ideally, piped systems should be jetted on a cyclic basis to keep them clear and free flowing, rather than waiting for problems to occur. Grips should be fully functional whether connected to a ditch or as a soakaway. Outfalls should also be inspected on a cyclic basis and any necessary work completed on a planned basis.

Option Appraisal

Creation/Acquisition

The drainage asset is added to when new roads are constructed. New developments that are adopted by the Council as highway maintainable at public expense include drainage infrastructure.

Major maintenance schemes carried out on existing carriageways and footways often include enhancing the drainage of the highway and thus also add to the asset. Additional gullies are provided to deal with specific drainage problems.

Maintenance, Renewal or Replacement and Upgrading

The maintenance of highway drainage may be categorised as:

- Cyclic: e.g. gully emptying and cleansing of grips
- Reactive: e.g. clearing blocked gullies and repairing damaged ironwork.
- Planned: e.g. renewals and replacements of existing infrastructure. Very little planned maintenance is carried out for purely drainage purposes; it is usually associated with the maintenance of carriageways and footways.

Disposal or Decommissioning

Drainage items may be decommissioned because they are no longer required, for instance where a carriageway or footway is realigned, thus rendering existing gullies redundant. Where existing highway is Stopped Up, the drainage elements within that length of highway cease to be maintainable at public expense.

Budget Optimisation

Capital

When capital budget is used to improve the drainage asset, this is normally undertaken as part of major highway maintenance schemes.

Schemes developed to specifically improve drainage are assessed for priority against competing demands for capital funding. Drainage improvement schemes represent a small proportion of the total capital allocation.

Revenue

The revenue budget supports routine maintenance of the asset. The budget is allocated annually and is largely historically based. Revenue expenditure is monitored monthly against the relevant budget headings.

Performance Gaps

The drainage network inventory is incomplete and is not regularly updated. This causes problems when utilities request location details of underground apparatus. If such apparatus cannot be accurately located, there is a risk of damage to drainage pipes and other appuratus.

Frequent reports of flooding suggest that parts of the network are not in a desirable condition or is inadequate. Without regular inspections and cleaning cycles for piped systems, manholes, catchpits, soakaways and ditches, the condition of this asset is largely unknown.

The yearly frequency of mechanical roadside grip clearance keeps most grips in a reasonable condition. Debris often collects in the mouth, preventing the flow of water into the grip and it is difficult to clean through to the outfall ditch in several cases. Blockages are common, causing localised flooding and leading to public dissatisfaction.

The ironwork in the carriageway and footway is assessed during the safety inspections but only obvious defects are recorded. Ironwork in verges is not inspected, but problems are frequently reported by the public.

7.8 Street Lighting

This covers all highway lighting associated with carriageways, footways, illuminated signs and bollards, zebra crossings and car parks.

Condition

Assessing Condition

A percentage of columns receive an annual structural inspection in addition to six yearly electrical testing. These inspections are carried out by the public lighting service.

Current Condition

Desired Condition

From a safety point of view all equipment with less than 1 year's residual life needs to be replaced in order to maintain the asset in a steady state.

Option Appraisal

Creation/Acquisition

Hartlepool's lighting asset is increased when new roads are built.

New developments that are adopted as highway maintainable at public expense usually add to the lighting asset.

New development are generally covered by Section 38 or 278 agreements The street lighting team plays a significant part in ensuring the specification for all new developments meet the required standards to allow the local authority to adopt these assets.

Once adopted all items of street lighting furniture will be maintained by the Street Lighting section. This includes "standard maintenance" and "basic maintenance". The latter includes basic fault repairs undertaken including lamp, fuse & minor component replacements, but all other maintenance is only carried out on receipt of an order.

Maintenance, Renewal or Replacement and Upgrading

The maintenance of lighting may be categorised as:

- Cyclic: e.g. cleaning of lanterns and painting of columns.

- Reactive: e.g. repairing faulty lamps and photocells and reacting to accident damage.

- Planned: e.g. obsolete column and lantern replacements and illuminated sign post replacements.

The Authority is currently undertaking a major project to have both its entire streetlighting stock converted to LED lamps and those columns over thirty years of age replaced.

Disposal or Decommissioning

Lighting may be removed when parts of the highway are Stopped Up. Lighting is also decommissioned when changes to the highway network require the reduction in number or relocation of lighting.

Performance Gaps

There are gaps in the inventory data held for this asset. This includes the installation dates (and hence age) of pre 1990 lighting columns in the CONFIRM database and information on the Council's cable network.

From a safety point of view all equipment with less than 1 year's residual life needs to be replaced in order to maintain the asset in a steady state. In subsequent years this will also need to include equipment that currently has 2 years residual life remaining.

7.9 Traffic Signals and Telematics

This covers traffic controlled by signals, some of which are linked together into an Urban Traffic Control (UTC) system, some others are remotely monitored and pedestrian crossing facilities controlled by signals.

Condition

Assessing Condition

Many of the signalised junctions and controlled crossings are connected to either the remote monitoring system or the urban traffic control system. The automatic reporting provided by this system allows the Council to assess trends and determine if remedial measures are needed to deal with recurring faults.

It is proposed that as part of the Maintenance Contract, the contractor will carry out an audit to verify equipment and condition at each site. These reports will comprise a condition questionnaire, a printout of the settings for the installation and a set of photographs.

The maintenance contract also allows for the reactive maintenance of one off faults and damage due to road traffic accidents.

Current Condition

Signalised junctions are generally considered to have a design life of about 10 years. Department for Transport London and the Regions (DTLR) rules oblige manufacturers to keep parts for each design for 10 years after manufacture ceases. In practice they tend to be available for less time than this. Replacement is therefore necessary at about 10 years otherwise faults can take much longer to repair.

Desired Condition

Although the best practice industry standard is a maximum age of 10 years, 15 years is not unreasonable and considerably reduces the risks associated with older installations.

This reduction of the asset age could form the basis of a target for improvement of this asset, for example reduce maximum asset age to 15 years in 3 years.

Option Appraisal

Creation/Acquisition

New telematics equipment is created when new roads are constructed, such as the Marina Way Development.

Integrated transport improvements, safety schemes, major schemes and new developments also add to the inventory of such equipment.

Maintenance, Renewal or Replacement and Upgrading

The maintenance of telematics may be categorised as:

- Cyclic: e.g. signals lamp changes every 6 months.
- Reactive: e.g. replacing blown lamps and replacing equipment damaged in accidents.
- Planned: e.g. upgrading equipment on the basis of age (Annual funding requirement has been identified to address programme of replacement as a result of the increase in number of installations)

Disposal or Decommissioning

Equipment is removed and decommissioned when it is no longer necessary. For instance, the installation of a new signalised junction with pedestrian crossing facilities may render a nearby pedestrian crossing unnecessary.

Budget Optimisation

Capital

Funding for new and improvement schemes may be generated through a bid as part of the LTP process.

Revenue

Budgets have been set historically, with some allowance for inflation.

The increased number of installations has had a major impact on the maintenance budget and the need for a programme of planned maintenance.

Performance Gaps

There is a significant percentage of transport telematics over the designed 10 year life span (85%), with 30% of these being over 25 years old.

There is always demand for more signalised crossings and signalised junctions. Government guidance is steering local authorities to upgrade Pelicans to Puffins to remove the flashing amber and the associated pedestrian vehicle conflict. No funding has been made available for this.

There is an existing funding gap. The current routine maintenance budget is insufficient to cover any replacements or renewals; the shortfall is currently due to a lack of non-routine (planned) maintenance budgets.

7.10 Public Rights of Way (PROWs)

These cover all categories of Public Rights of Ways recorded on the register, known as the Definitive Map. This includes Footpaths, Bridleways and Byways Open to All Traffic (BOATs).

Condition

Assessing Condition

This bridge was washed away during heavy rainstorms. It is located at the coast close to Crimdon Beck

Performance indicator surveys – 100% of the network is surveyed annually. Each path is surveyed completely against pass/fail criteria. Condition scores are determined based on national criteria set out in the BVPI standard (Good, Missing, Attention and Replacement required).

Reactive/Proactive Surveys - Hartlepool responds to reports on the state of the path network from a number of sources such as user/pressure groups, Parish Councils, the general public and Path Countryside Volunteers. Staff also undertake additional condition surveys.

Current Condition

ACS PI012 data has been gathered since 2009/10 (previously BVPI 178). The 'ease of use' result for 2009/10 was 84%. Conversely 16% of the network did not satisfy the easy to use criteria detailed above over the same period.

There is also circumstantial evidence from the general public that the state of the network is acceptable. The source of this information is the Rights of Way Improvement Plan (consultations with the Parish Councils, Landowners, User Groups and the General Public).

Desired Condition

Evidence from ACS PI012 sampling, requests from the public, user groups and parishes, and information gathered from recent consultations suggest strongly that the current condition of the asset is in accord with the desired condition. This includes signposting, waymarking and vegetation cutting.

There are no standards nationally for rights of way, for asset condition – the only requirement being the legal one that all paths should be signed where they leave the metalled road. For ACS PI012, Hartlepool Borough council is in the top quartile when compared with other authorities.

Option Appraisal

Creation/Acquisition

New paths can be created via a legal process that will add a route to the Definitive Map and Statement. Once added to the Map, the path maintenance and management becomes the responsibility of Hartlepool Borough Council. Such processes are rare. Legal diversions of routes are the more preferred use of Public Path Orders

Maintenance, Renewal or Replacement and Upgrading

The maintenance of rights of way may be categorised as:

- Cyclic: e.g. surface clearance, vegetation clearance
- Reactive: e.g. repairs to damaged signs, stiles and path furniture etc
- Planned: e.g. replacement of outdated and irrelevant countryside furniture with up to date and accessible countryside furniture, waymarks, surface improvements etc

Disposal or Decommissioning

Although rights of way rarely cease to exist, there is a legal mechanism whereby they can be extinguished or stopped up. These legal processes remove the right of way from the Definitive Map and therefore from the use of the public. The process is known as a Public Path Order.

Budget Optimisation

Revenue

Primarily based on previous year's budget. Budget prioritisation processes exist to bid for additional funding as well as programme budget reductions. These do occasionally result in additional funding for projects that both benefit the countryside Access team and the Local Transport Management Team. Revenue funding covers the costs for mainly

vegetation cutting, waymarking, signposting, resurfacing of small areas of rights of way and minor structural works.

Capital

Bids are made annually to the HBC LTP allocation, mainly for major refurbishments and surfacing works. The bid comprises a mix of essential maintenance and improvements.

7.11 Trees, Hedges, Verges & Planted Areas

The verges are the margins between the highway boundary and the paved surfaces. Any trees, hedges or planted areas that lie within the verges are the council's responsibility.

Condition

Assessing Condition

Reports of dangerous or nuisance trees and hedges are received from highway inspectors, councillors and the general public. Trees maintained on the council's behalf are inspected and if their condition is in doubt they will be given a detailed assessment by an arborist.

Current Condition

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Tree Condition

A full condition survey of all Council highway trees was conducted during 2005 by an independent arboricultural consultant.

The following information was recorded:

- Species;
- Diameter at Breast Height (DBH);
- Condition survey, including major defects and an indication of immediate remedial work required to mitigate identified hazards.
- Prioritisation in terms of risk (high, medium, low)
- A broad indication of cost of remedial work required (broad indication of cost depending on work required, location, size of tree etc)

- Recommendations for future inspection cycle regimes

Overall, the general condition of highway trees in the borough was found to be good. A full report was produced and handed to the Neighbourhood Services Department.

Following the adoption of the Hartlepool Tree Strategy 2011 – 2016 a cyclical programme of tree inspection including not only trees in parks and recreation grounds but also adjacent to highways and in public open space has been implemented. These inspections are carried out by the Councils own Arboricultural Officers with the resulting remedial works carried out by in-house tree work teams. This has meant that all publicly owned trees in Hartlepool are currently subject to a ground - based visual inspection on a three yearly basis.

Verges

Rural verges are cut twice yearly, usually starting at the beginning of May. Additional cutting will be undertaken, if necessary, on safety grounds. There is a problem with overrunning of verges, which is unsightly and can lead to third party claims for wheel damage to vehicles. A further concern is the creeping of road width due to carriageway edge patching.

The Council maintains planted areas.

Desired Condition

All council highway trees are deemed to be in a sound and safe condition

All hedges cut back so that there is no obstruction to the highway or footway. Cutting back to be done outside the bird-nesting season unless it constitutes an immediate hazard. In cases where an immediate hazard has been identified cutting back will be done following consultation with the Council's ecologist.

Make more contribution to urban verges to maintain them at an aesthetic standard. Rural verges to be cut 2 times a year to a 1.2 metre swathe but left uncut beyond this except where there is a specific safety, aesthetic or biodiversity related reason to do so. Visibility splays more often if they become a hazard.

Option Appraisal

Creation/Acquisition

Most new trees, verges and landscaped areas are planted by developers and are subject to the development control process before they are adopted by the authority as being maintainable at public expense. The development control procedure enables the Council to be sure that new trees, verges and landscaped areas have been planted to the requisite specification. Maintenance issues are considered as part of this process, with

commuted sums being charged for items that attract particularly high maintenance overheads.

Not all trees and highway verges become the responsibility of the highway authority as some are designated public open space.

Processes are in place to ensure that new trees, verges and landscaped areas are placed on the Council's records. These then become subject to the relevant inspection and cyclic maintenance regimes, as well as being integrated into the inventory data collection rolling programme.

Maintenance, Renewal or Replacement and Upgrading

The maintenance for this asset group may be categorised as:

Cyclic:

- Some urban trees are scheduled to be pollarded every 5 years.
- For urban verges, the full highway verge width receives approximately 16 cuts per year.
- All rural verges receive 2 cuts per year, for the first 1.2 metre swathe and visibility splays at junction, bends and signs. Rural verges are left uncut beyond the 1.2 metre swathe though additional localised cutting may be undertaken where required for safety reasons.
- A management regime has been devised by the Council for the roadside SNCI and those stretches of road verge of particular botanical interest.
- The Council carries out cyclic maintenance on planted areas.

Reactive:

- Maintenance on highway trees is often a reactive service.
- For privately owned trees that pose a risk to safety, the owner will be contacted to undertake the work at their expense.
- Hedges will be cut back if they are dangerous on report from the public. Most hedges are owned by the adjacent landowner and if they fail to make the hedge safe the Council will carry out the work. (Note: hazards can exist with overgrown hedges)
- The Council generally maintains planted areas in urban areas and housing estates.

Planned:

- Very little planned maintenance (renewals or replacements etc) is undertaken on these assets. If the verge is over 1.2m wide, then the Council will plan to cut back the scrub and vegetation to the highway boundary every 5 years.

- Trees are planted in some urban areas to replace those that have to be removed due to “die-back” or because of likely property damage.

- Where evidence exists of persistent damage to highway verges consideration will be given to hard landscape.

Disposal or Decommissioning

Trees will generally be disposed of on safety grounds i.e. due to disease or damage.

In the vast majority of cases, verges and landscaped areas are expected to last in perpetuity. The only way that verge areas can cease to be highway is via the formal legal process called Stopping Up. It is very rare for verge areas to be stopped up other than those associated with new developments. Therefore the duties in terms of maintaining verges and landscaped areas continue to rest with the authority.

Removal of any hedgerow or part of a hedgerow will be subject to the terms of the Hedgerow Regulations 1997 and its subsequent amendments.

Budget Optimisation

Capital

There is usually a small annual allocation of capital funding for these assets. This comes about when planting or other maintenance is part of a capital scheme.

Revenue

The revenue budget supports routine maintenance of the asset and is based on inventory for verges and landscaped areas and historical precedence for trees and hedges.

Performance Gaps

There is a low level of annual expenditure on the maintenance of highway trees and hedges.

There are numerous requests from residents for lowering the height of trees or hedge cutting.

The current budget structure does not facilitate the easy analysis of actual expenditure trends against budget allocation.

7.12 Unlit Signs and Street Furniture

This covers all the official non-illuminated street furniture that is intended to guide, inform or control the travelling public.

Condition

Assessing Condition

Both unlit signs and other items of street furniture are inspected as part of the regular saftey inspections that are carried out by the highway inspectors and other staff may also note the need for repair or replacement as part of their normal day to day highway duties. In practice it can be difficult to assess their condition when the prime objective of the inspection is to protect users of the highway from dangerous defects mainly in the carriageway or footway surface. Only obvious problems, such as dangerous signs and missing or damaged signs, are likely to be recorded during these safety inspections.

There are no specific detailed condition inspections undertaken on unlit signs anywhere on the network.

Current Condition

In most cases the condition of the signs and other street furniture will be checked and reported back and fed into the asset database as a part of the monthly inspections.

Desired Condition

All signs are visible and legible at distances which allow them to be read by highway users, as they pass at speeds appropriate to the type of road, during day or night. All missing or defective signs are to be repaired promptly.

Existing signage should be reviewed when completing an improvement on any given site. An inventory needs to be created and new assets added with a record of the type of asset and preferably a photograph. There should also be an on going review of all materials being used.

Option Appraisal

Creation/Acquisition

Amendments to the existing highway network may generate the installation of new unlit signs.

Hartlepool's Unlit Signs asset is increased when new roads are built. For instance, the Hart Lane / Whiltshire Way Junction Improvement has added a number of new unlit signs to the highway inventory.

New developments that are adopted as highway maintainable at public expense usually add to the unlit signs asset.

Maintenance, Renewal or Replacement and Upgrading

The maintenance treatments for unlit signs may be categorised as:

- Cyclic:

At present there is no cyclic maintenance regime.

- Reactive:

Unlit Signs are cleaned and repaired upon report, although most signs are neither inspected nor cleaned.

Reflective Markers and Bollards are only cleaned and repaired upon report.

Missing or illegible signs are replaced, subject to budget, when reported by police, council staff or the public.

- Planned:

Very little planned maintenance (renewals or replacements etc) is undertaken on signs, reflective markers and bollards. In some cases signs and bollards may be replaced/upgraded as part of traffic management or safety schemes.

Disposal or Decommissioning

Unlit signs may be removed when parts of the highway are Stopped Up. Unlit signs are also decommissioned when changes to the highway network require the reduction in number or relocation of signing.

Budget Optimisation

Capital

When capital budget is used to improve or add to the asset, this is normally undertaken

as part of a Traffic Management or Safety Scheme, e.g. speed restriction or accident prevention. These types of schemes represent a small portion of the overall annual capital allocation, but can add a considerable quantity of new signs to the highway inventory with no corresponding increase in the revenue budget to maintain them.

Revenue

The revenue budget supports routine maintenance of the asset and is based on experience of previous expenditure.

Performance Gaps

A full inventory for all unlit signs and street furniture, was last undertaken over three years ago.

The current condition of all unlit signs across the network is not known, but it is recognised that a proportion of this asset is not in a desirable condition.

The provision of speed restrictions across the borough and other traffic management and safety schemes are all funded from the capital budget, but with no corresponding increase in the revenue budget to maintain them.

Accident damage, vandalism and theft have all increased substantially in recent years, which means that many signs have to be replaced well before the end of their serviceable life. In many cases, there is no revenue budget available to fund their replacement and therefore many sign plates are left missing from posts.

Unlit signs are not inspected regularly; therefore damaged or missing assets will not be replaced unless noted by staff or reported by the public.

There is no check undertaken on sign “loss of reflectivity” at either installation or subsequent cleaning / inspection.

There is a lack of funding for renewals of unlit signs, markers and bollards when they become damaged or are missing. This can lead to a poor impression of the maintenance of this asset in some locations.

7.13 Barriers and Safety Fences

Pedestrian and safety barriers are provided to separate and protect various categories of highway user from each other, e.g. guardrails near traffic lights separate pedestrians from vehicles; safety barriers on central reservations of dual carriageways separate opposing flows of traffic. Barriers may be provided to protect the highway user from specific hazards, e.g. bridge parapets, embankments.

Condition

Assessing Condition

Safety barriers are routinely inspected on a bi-annual basis.. Pedestrian barrier defects will only be repaired if they are picked up during routine carriageway / footway safety inspections or reported by members of the public.

All other types of fences are not inspected and therefore the condition of these assets is only known from observation by council staff or public report.

Current Condition

There are a number of types of pedestrian barriers (guardrails) used for differing circumstances. Some of those that serve to protect the public from vehicles at junctions or other constrictions are vulnerable to vehicle impact and are repaired if in a dangerous condition. Timber barriers and fences are subject to vandalism and may need repair or replacement. All defects identified during safety inspections are repaired as a matter of urgency.

Desired Condition

Fences and barriers should be in a serviceable condition and fit for their purpose. All sub-standard safety fencing should be replaced. Where required, barriers should be re-painted at appropriate intervals to extend components expected life.

Option Appraisal

Creation/Acquisition

Amendments to the existing highway network, or changes in legislation, may generate the installation of new Pedestrian and Safety Barriers.

New developments that are adopted as highway maintainable at public expense can add to the Barriers and Safety Fences asset.

Maintenance, Renewal or Replacement and Upgrading

The maintenance treatments for Barriers and Safety Fences may be categorised as:

- Reactive:
    - For safety barriers and pedestrian barriers, dangerous sections will be

made safe within 24 hours and permanent repairs are targeted for completion within 28 days. Repair within 28 days is often not achievable as this is often carried out by specialist contractors.

- Very little planned maintenance (renewals or replacements etc) is undertaken on safety fences or barriers.

Disposal or Decommissioning

Pedestrian and Safety Barriers may be removed when parts of the highway are Stopped Up. They are also decommissioned when changes to the highway network require their reduction in number or relocation.

Budget Optimisation

Capital

The capital budget is derived from Central Government as part of the LTP process. The Council may allocate capital funds in order to fund improvement or maintenance works that upgrade the asset. The Traffic Management or Safety Engineering Teams will usually generate any proposal for significant additional fencing, (excluding that undertaken as part of larger road schemes).

Revenue

The revenue budget supports routine maintenance of the asset and is based on historical precedence. A summary of current capital and revenue expenditure is shown in the table below:

Performance Gaps

A full inventory survey for all safety and pedestrian barriers across all road classes has not been undertaken since 2003. The current condition of all safety fences was determined by a survey conducted by Durham County Council in September 2013, the resultant information was entered into the CONFIRM system so a maintenance history is obtained.

There are areas where there are inadequate or non-existent fences, dictating the need to develop a comprehensive register of highway hazards in higher risk areas in order to assess the need for additional safety fencing and barriers.

The current process for capturing asset damage caused by vehicle accidents etc prevents the recovery of costs in many cases.

There is a lack of funding for renewals of barriers and safety fences when they become damaged or are missing. This can lead to a poor impression of the maintenance of this

asset in some locations.

7.14 Road Markings & Studs

Road markings cover all forms of white and yellow lines or symbols and may be thermoplastic screed or paint. Road studs are the “cats eye” equivalents used to indicate the centre or edge of a road.

Inventory

There is no formalised system for collecting, maintaining or updating inventory data relating to road markings and studs. There is, however some limited information in respect of regulatory markings.

Condition

Assessing Condition

The Council currently monitors the condition of Road Markings and Studs during the periodic safety inspections of the carriageway.

Desired Condition

All of the asset should be maintained in accordance with the standards laid out in the Highway Network Management Plan.

The layout of road markings and studs should always be assessed prior to renewal and following road resurfacing or surface dressing.

Option Appraisal

Creation/Acquisition

Amendments to the existing highway network, or changes in legislation, may generate the installation of new Road Markings and Studs.

New developments that are adopted as highway maintainable at public expense can add to the Road Markings and Studs asset.

Maintenance, Renewal or Replacement and Upgrading

The maintenance treatments for Road Markings and Studs may be categorised as:

- Cyclic:
    - The repair / renewal of existing road markings and studs on the highway network is undertaken following safety inspections.

- Reactive:
    - Reinstatement of existing road markings and studs. Sites are inspected following a report from the public, council staff or police and repair work may then be programmed depending on budget.

- Very little planned maintenance (renewals or replacements etc) is undertaken on road markings and studs. In most cases this work is only undertaken on parts of the network when re-surfacing or surface dressing is completed.

Disposal or Decommissioning

Road markings and studs may be removed when parts of the highway are Stopped Up. Road markings and studs may also decommissioned when changes to the highway network as a result of legislation, mandatory requirements or road safety schemes are required.

Budget Optimisation

Capital

When capital budget is used to improve the asset, this is normally undertaken as part of a highway maintenance or traffic safety scheme.

Revenue

The revenue budget supports routine maintenance of the asset. The predicted need is based on experience of previous expenditure.

Performance Gaps

A full inventory and condition survey of all road markings and studs has not been undertaken, however there are records available on the location and type of TRO markings.

The maintenance standards listed in the Highway Network Management Plan adopt a priority system for the reinstatement of markings. Consequently a large proportion of the asset on the non-principal road network is not in a desirable condition. Regular reports from the police and public, together with our own safety inspections, confirm this.

8. SERVICE PRIORITIES

8.1 Background

There will always be limited funds available to manage the Council's transport assets. Therefore it is vital that funds are used to best effect.

Choices have to be made for the complete range of transport assets and the timing of investment. Being able to make informed decisions will help get the best possible value for money from the available funding.

Due to the limited budgets available it is important to be able to objectively assess impacts when allocating funds.

Alongside investment priorities, the timing of investment is important. Informed decisions regarding when to invest in maintenance treatments help ensure that longer-term value for money is achieved.

Two techniques to help with service prioritisation are outlined here: whole life costing and investment profiling. It is proposed to further develop and apply these techniques to each of the assets, in the light of future budgetary allocations.

8.2 Whole Life Costing

Whole life costing is a means of establishing the total cost of ownership of an asset.

All costs associated with the asset are considered, from creation to decommissioning. Such costs will include those associated with building or acquiring new assets, routine maintenance, replacement, renewal or enhancement and disposal.

Whole life costing will enable informed decisions about competing demands for funding, as there will be an improved awareness of the total cost of managing assets.

The Council will be better equipped to forecast future cost demands, based upon the life expectancies of assets and the effect upon assets' lives made by improvement and maintenance treatments.

The process will help assess the cost of various maintenance treatments in the light of the effect upon the condition of assets and the risks associated with the varying levels of service.

It is imperative to achieve value for money when constructing and maintaining assets. Value for money is a key theme of the Council's LTP and whole life costing will help ensure that the funds available to the authority are used as efficiently as possible.

Whole life costing will help decide what maintenance treatments to use and at what point in an asset's life the appropriate treatment should be applied. Often treatments such as painting lamp columns, waterproofing bridge decks or surface dressing carriageways can avoid the necessity for more expensive treatments at a later date. The key is in the selection and timing of the treatment and it is here that whole life costing is pivotal.

Example of Whole Life Costing

Based upon knowledge of the Council's unclassified carriageways, their condition and ages, the authority may embark upon a programme of investment designed to minimise the whole life cost of maintaining these carriageways.

To help preclude the necessity for deeper, more expensive treatments (e.g. reconstruction) additional funds could be made available to help carry out preventative treatments to the unclassified carriageway network. Preventative treatments include inlays, overlays and surface dressing to help seal the carriageways against the ingress of water and to restore their surface texture. Knowledge of these carriageways, their normal life expectancies and the lives of the treatments suggest that the need for deeper treatments could be significantly reduced by such measures, if applied at the appropriate time. They also considerably reduce the incidence of potholes and thereby save on reactive repairs. Improvement to the camber of the carriageway and better falls can enhance drainage and save on maintenance.

An assessment can be made of the effect of these early treatments upon the condition of the Council's unclassified carriageways, as measured by the appropriate BVPI.

Future Work on Whole Life Costing

Whole Life Costing is contained within a number of the life cycle plans for the assets but needs to be developed further as the TAMP is implemented.

A number of more sophisticated works programming techniques are available that utilise the whole life costing philosophy, especially for carriageways. One such technique is outlined in the Forward Works Programming section of the TAMP.

The application of whole life costing does require data about assets, such as current

condition and rates of deterioration. To apply the technique to some other asset groups, further data collection will be required.

9. Whole of Government Accounts

1 Introduction

"Whole of Government Accounting" (WGA) guidance requires that Hartlepool Borough Council values its highways, and that this value is contained within the councils accounts. The TAMP takes account of national guidance namely;

- CSS Framework for Highways Asset Management, 2004 by the County Surveyors' Society (CSS) and Technical Advisors Group (TAG);
- Guidance document for Highways Infrastructure Asset Valuation 2005 by the CSS/TAG Asset Management Working Group;
- Guidance document Local Authority Transport Infrastructure Assets Review of Accounting, Management and Finance Mechanisms, published in 2010 by the Chartered Institute of Public Finance and Accountability (CIPFA).

The need for asset valuation is described as:

- Emphasising the need to preserve highway infrastructure by placing a monetary value on it;
- Demonstrating good stewardship by monitoring assets over time;
- Supporting WGA, and promoting greater accountability, transparency and improved stewardship of public finances;
- Supporting highway asset management;
- Placing the value of highway assets in context with other HBC assets.

Asset valuation is the calculation of the current monetary value of an asset. This value is defined as the Depreciated Replacement Cost (DRC), which is the Gross Replacement Cost (GRC), less the Accumulated Asset Consumption (AAC) where:

- The GRC is the cost of replacing the asset with a Modern Equivalent Asset, using standardised unit rates;
- The AAC is the depreciation in value due to ageing, usage, deterioration, damage, reduced service levels and obsolescence.
- The DRC is therefore defined as the current value of the asset.

Two different methods of valuation are used for highway assets:

1. Unit rates are used to produce the GRC for the infrastructure asset that, as a whole, is maintained at a specified level of service by the continuing replacement and refurbishment of its components. This is used for carriageways, including associated footways and minor assets such as lines, signs and drainage, and for highway structures.

The depreciation is the level of annual expenditure needed to maintain the level of service of the asset. This is known as Renewals Accounting.
2. Modern Equivalent Asset costs are used to calculate the GRC for assets that have finite service lives. These assets consist of traffic control systems, highway lighting and public rights of way.

2. Main Inventory Breakdown

2.1 Carriageways

The calculation for Whole of Government Accounts (WGA) for carriageways is based upon the following :

- For Gross Replacement Cost (GRC) the formula
'carriageway area (m^2) x unit rate (£/m^2)'

- For Depreciation Replacement Cost (DRC) a figure for the maintenance cost is obtained using the annual CVI / SCANNER condition survey results for each section of carriageway. Subsequently the DRC is simply calculated using 'GRC (£) – maintenance cost (£)'

2.2 Footways

The GRC figure is calculated as per carriageways.

For DRC the maintenance cost is calculated using a condition result based upon the information obtained from the highways inspectors safety inspections i.e. a 'condition score' is determined directly from the number of defects that have been collected over a specific street within a 12 month period.

2.3 Streetlighting

The Gross Replacement Cost is simply the 'as new' cost of a street lighting column multiplied by the number of columns.

As street lighting columns have a finite life before they are replaced, the DRC is calculated using a ratio of the 'remaining life (RL)' to the 'service life (SL)' of each column (or group of columns by age).
The calculation is thus :

DRC = (RL/SL) x GRC

Summary WGA Values for Carriageways, Footways and Streetlighting.

	GRC (£)	DRC (£)
Footway	76,086,000	42,300,746
Carriageway Total	451,283,000	264,288,092
Streetlighting	12,065,000	6,492,360

10. Five Year Highway Maintenance Plan

The rolling 5-year programme, detailed below2, is based upon information from various sources including annual condition surveys, highway inspectors feedback, Engineers knowledge and customer / member feedback.

Reconstruction works have been identified where other processes are not appropriate, and will be carried out in the interests of highway safety. Generally, however, other treatments such as re-surfacing and surface dressing, which are cheaper, but have a shorter term impact than full reconstruction, will be utilised. Main roads which carry higher volumes of traffic are resurfaced using Masterflex, which is a stone mastic asphalt material, whereas quieter, more lightly trafficked roads are done using Dense Bitumen Macadam (DBM). The most cost efficient material will always be utilised when undertaking resurfacing and repairs.

Year 1 2023/24

Street	**Location**	**Cost Est.**
Sections of KRN subject to inspections (A689, A179, etc)		£300,000
Mowbray Road	Section	£102,000
Easington Road	Section – Coast Road	£60,000
Catcote Road	Sections	£100,000
King Oswy Drive	Sections	£30,000
Worset Lane	Residential section	£25,000
Old Cemetery Rd Section		£20,000
Old School Lane	A179 to Village plus first section south of A179	£15,000
Throston Grange Ln Bottom section		£38,000
Brougham Terrace Section		£40,000
Elliott Street	Full	£22,000
Fens Crescent	Section	£26,000
Ridlington Way	Full	£30,000
Lizard Grove	Full x2	£16,000
Minch Road	Full	£24,000
Bond Street	Section	£12,000
Northlands Ave	Full	£9,000
Greatham Back Rd Sections		£30,000
Owton Close	Full	£9,000
Queen Tce, Seaton	Full	£12,000
Green Tce, Seaton	Full	£9,000
Jesmond Road	Chester Rd to Everett St	£52,000
Northgate	Sections	£50,000
Durham Street	Sections	£35,000
Macaulay Road	Section	£26,000
South Parade	Oxford St – Southburn Tce	£20,000

Egerton Road	Top Section	£28,000
Cresswell Road	Full	£35,000
Hindpool Close	Full	£18,000
Stonethwaite Close	Full	£22,000
Torbay Grove	Full	£18,000
Gainford Street	Full	£10,000
Clark St	Section	£25,000
Moorhen Road	Section	£15,000
Seaton Lane	Section	£30,000
Dalton Piercy Rd	A19 to Three Gates	£50,000
Cresswell Drive	Full	£9,000
Friar Terrace	Full	£15,000
Gladstone Street	Full	£15,000
Greatham High St	Section	£30,000
Sinclair Road	Full	£34,000
Sheriff Street	Bottom section	£15,000
Oxford Road bottom end		£60,000
Pounder Place	Full	£9,000

Year 2 2024/25

Street	**Location**	**Cost Est.**
Sections of KRN subject to inspections (A689, A179, etc)		
Burn Road	Tesco Section	£45,000
Raby Road	Sections	£30,000
Old Cemetery Rd	Section	£22,000
West View Road	Sections	£75,000
Huckelhoven Way	Sections	£60,000
Warkworth Drive	Full	£20,000
King Oswy Drive	Sections	£42,000
Warren Road	Sections	£38,000
Wynyard Road	Section	£45,000
Catcote Road	Sections	£135,00
Chester Road	Section	£35,000
Oxford Road	Sections	£58,000
Newhaven Court	Full	£24,000
Coal Lane	Sections	£29,000
Cranwell Road	Section	£24,000
Granville Avenue	Section	£32,000
Park Avenue	The Parade to Cresswell Rd	£28,000
Worset Lane	Section	£44,000
Beaconsfield St	Full	£12,000
Middlegate	Northgate to Sunniside	£23,000
Town Wall	Full	£62,000
Sandwell Chare	Full	£9,000
Friar Street	Full	£9,000
Church Close	Full	£10,000

Pinero Grove	Full	£8,000
West Park	Section	£18,000
Bransdale Grove	Full	£9,000
Dalton Back Lane	Section – A689 end	£65,000
Huntley Road	Full	£11,000
Callander Road	Full	£32,000
Casebourne Rd	Section	£36,000

Year 3 2025/26

Street	**Location**	**Cost Est.**
Sections of KRN subject to inspections (A689, A179, etc)		£345,000
York Road	Raby Rd to Victoria Rd	£95,000
Brenda Rd	Seaton Lane to Tofts Farm	£175,000
Catcote Road	Section – South Fens	£90,000
Seaton Lane	Brenda Rd to A689	£100,000
Moor Parade	Full	£66,000
Brierton Lane	Section	£55,000
York Place	Full	£80,000
Grosvenor Street	Grange Rd to School	£34,000
Roxby Close	Full	£16,000
Grainger Street	Full	£18,000
Thornhill Gdns	Full	£26,000
Kilmarnock Rd	Owton Manor Lane to Jedburgh Rd	£73,000
Parton Street	Full	£25,000
Stockton Road	Tanfield Rd to Loyalty Rd (S)	£32,000
Victoria St, H'land	Full	£13,000
Carroll Walk	Full	£33,000
Ivy Grove	Full	£26,000
Edgar Street	Full	£12,000
North Road, Seaton	Full	£14,000
Winterbottom Ave	Holdforth Rd to Warren Rd	£38,000
Coleridge Ave	Full	£15,000
Welldeck Gardens	Full	£13,000
Penrhyn Street	Full	£14,000
Farndale Road	Full	£8,000
Earlsferry Road	Full	£29,000
Troutpool Close	Full	£17,000
Eaglesfield Road	Full	£46,000
Rydal Street	Full	£17,000

Year 4 2026/27

Street	Location	Cost Est.
Sections of KRN subject to inspections (A689, A179, etc)		£330,000
Catcote Road	Sections. Full recon	£130,000
A1086	Coast Road to Durham Boundary Phase 1	£85,000
Bath Terrace	Full	£22,000
A1049 West View Rd	Sections	£90,000
Tristram Avenue	Section	£26,000
Heathfield Drive	Section	£22,000
King Oswy Drive	Sections	£82,000
Ardrossan Road	Full	£32,000
Hart Village	A179 to western village entrance	£75,000
A179	Tall Ships Roundabout	£46,000
A179	Hart Roundabout	£90,000
Oxford Road	Top end. Full reconstruction	£125,000
Charterhouse St	Full	£21,000
Rugby St	Full	£21,000
Uppingham St	Full	£21,000
Kingsley Avenue	Section	£42,000
Brierton Lane	A689 to Catcote Phase 1	£36,000
Mainsforth Tce	Newburn Bridge to Musgrave	£57,000
Dalkeith Road	Full	£50,000
Surtees Street	Full	£33,000
Milbank Road	Avondale Gdns to Allerton Close	£19,000
Alston Street	Full	£15,000
Radnor Grove	Full	£22,000
Cowper Grove	Full	£25,000
Chichester Close	Cul-de-sacs	£12,000

Year 5 2027/28

Street	Location	Cost Est.
Sections of KRN subject to inspections (A689, A179, etc)		£350,000
Catcote Road	Sections (Full reconstruction)	£140,000
A1086	Coast Road to Durham Boundary Phase 2	£125,000
Brierton Lane	A689 to Catcote Phase 2	£95,000
Park Road	Sections	£75,000
Brenda Road	A689 rbt to Oxford Road	£94,000
Braemar Road	(Concrete rd)	£136,000
Throston Grange Ln	Sections	£81,000
Marlborough Street	Full	£30,000
Rowell Street	Full	£27,000
Queen Street	Full	£16,000
Tees Road	Mayfair to Power Station	£145,000
Kesteven Road	(Full reconstruction)	£96,000
Percy Street	Full	£41,000
Lightfoot Crescent	Full	£28,000
Chaucer Ave	Full	£33,000
Retford Grove	Full	£14,000