

Derbyshire County Council

Transport Asset Management Plan April 2008



Derbyshire County Council

Transport Asset Management Plan

Version 3.0

April 2008

Version Number	Purpose	File Name	Date of Issue
0	First Draft	TAMP v0	12/2/2008
1.0	Second draft	TAMP v1.0	17/3/2008
2.0	Third draft – with comments from DCC	TAMP v2.0	26/3/2008
3.0	Final draft with photographs	TAMP v3.0	18/4/2008

EXECUTIVE SUMMARY

Using the transport network is part of everyday life. Derbyshire County Council recognises that efficient transport is a pre-requisite for the economic and social development of the County. This Transport Asset Management Plan (TAMP) was developed to enable an efficient and well balanced transport system to be provided for Derbyshire's residents and visitors.

Derbyshire County Council's transport network includes over 5000km of highways, as well as supporting public transport through cycle routes, public rights of ways, canals, bus stations and shelters, on - street parking, school buses and vehicle fleet. This network is the largest and most visible asset the Council is responsible for. The transport asset network is fundamental to



the delivery of the Council Plan with its aims of maintaining and improving the economic, social and environmental well being of the community and businesses. The network reflects the character and quality of the local areas that it serves and makes an important contribution to the wider Council

priorities including regeneration, social inclusion, education, employment, recreation and health. The highway network forms the larger and more visible part of the transport asset and in order to deliver these aims and strengthen local communities, it is crucial that the local highway network is adequately maintained, and this includes not just the carriageways and footways, but also bridges, street lighting, traffic signs, and the wider highway asset.

What is Asset Management

“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”

Framework for Highway Asset Management, County Surveyors Society, April 2004

In other words, Asset Management takes a strategic view of information, systems and processes to better manage resources, assets and the associated data so as to meet customer expectations and ensure the long term sustainability of the highway infrastructure

Derbyshire's Transport Asset Management Plan (TAMP)

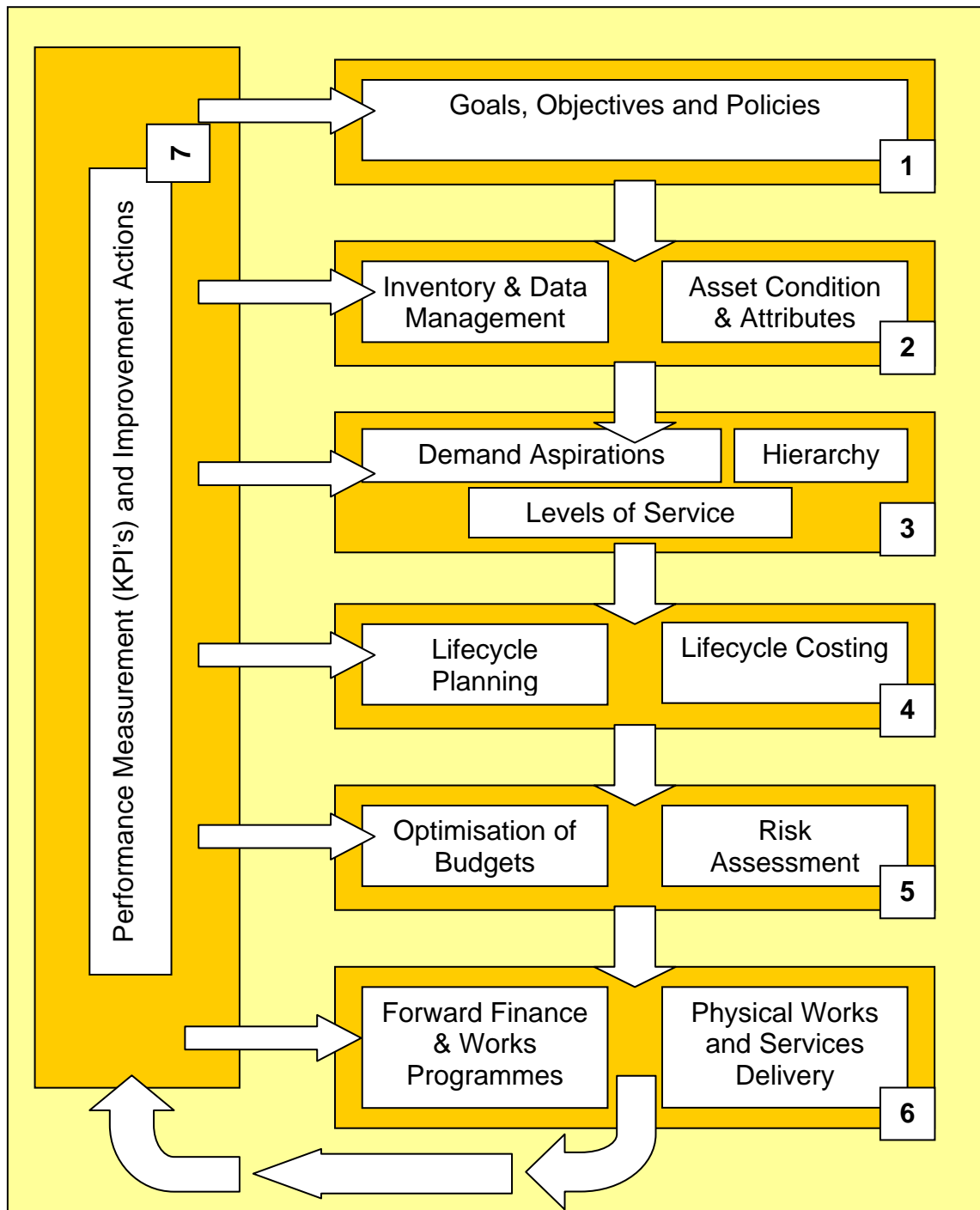
In February 2008, the Council produced their Highway Asset Management Plan (HAMP), which describes the detailed process for developing and implementing an asset management approach for the management of the highway asset. This process was presented to the HAMP working group in a workshop in November 2007, where it was agreed that the same process was to be developed and adopted for the wider transport infrastructure. As a result, this first draft TAMP was developed.

The Derbyshire TAMP has been produced to facilitate the development of an Asset Management approach to the management of the County's transport asset. It sets out how it will encompass transport user needs and expectations within an economic framework based on meeting "reasonable" maintenance operation targets across the County. This first TAMP, which was developed based on the final HAMP, largely focuses on the highway network and provides the starting point for including the other transport assets. It is a live document with identified areas for further development. However, the process developed for the highways is the same as that to be adopted for the asset management of the wider transport.

Derbyshire's highway asset supports private, public and business transport needs in a diverse environment, from the heights of the Dark Peak to the lower levels surrounding the River Derwent. The current asset comprises 5100 km of carriageways and footways, 1100 bridges, 450 km of retaining walls, 86000 street lights, 61km of safety fencing as well as traffic signs, white lining, traffic signals, pedestrian barriers. The total replacement of these assets across the County is conservatively estimated at £4,000 million. With regards to the wider transport asset, the Council is responsible for the management of a variety of assets and services, including of 22 km of canals with 6 working locks and almost 5000 km of Public Rights of Way (PROW).

What does the TAMP set out to achieve?

This TAMP sets out how the Council can achieve substantially improved value for money and better maintenance work, when compared to current practices. This principally involves the development of a systematic approach to maintenance by investing in the use of the Asset Management techniques and the TAMP details how this approach will be based upon a better understanding.



The TAMP Process

A Strategic approach to the Asset Management System

1. **Goals, Objectives and Policies**

This TAMP aims to provide the link for the Strategic, Tactical and Operational delivery of the Council Plan and Local Transport Plan.

2. **Inventory and Data Management / Asset Condition and Attribute**

This TAMP sets out the need to develop a knowledge and understanding of the extent, condition and liability of all of the Council's transport assets, essential to ensure its efficient management. The systematic management of this data is the key to maximising the efficiency and economic savings to be made by placing the Council in a position to become proactive in its approach to managing maintenance budgets and works.

3. **Demand Aspiration / Hierarchy / Levels of Service**

This TAMP develops and documents Levels of Service that support the Council's community outcomes based on customer expectations, statutory requirements and the hierarchy of the network. The Levels of Service are demand led and concentrate at present on the highways assets, delivering the level of maintenance appropriate to the role of each asset within the network to maintain and build strong communities.

4. **Lifecycle Planning and Costing**

A key component in maximising the life of an asset whilst minimising the budget and resource implications. The lifecycle plans consider the whole of the assets' life and "cost modelling" maps the investment required to maintain the asset over a long term period of 15 - 20 years. This approach enables planned maintenance to be carried out on the network at the right time in order to achieve value for money, delivering the agreed Levels of Service and meeting key Performance Indicators.

5. **Optimisation of Budgets and Risk Assessment**

The TAMP focuses a risk based approach to optimising budgets to deliver forward works plans. It takes the above lifecycle cost profiles and balances the risk involved in providing the agreed Levels of Service against key Performance Indicators and the available budget to deliver value for money, efficiency and well maintained highways across the entire transport network of the Council.

6. Forward Finance and Works Programmes

The TAMP will enable a 5 year forward works 'strategic' budget to be identified for all transport assets. It will also provide clear indications as to the nature of planned maintenance required to improve the network as a whole by considering asset condition and lifecycle costs against the provision of the desired Levels of Service.

7. Key Performance Indicators (KPI)

This TAMP will document KPI's based on those referred to in the LTP and those necessary for CPA and later CAA purposes. It will take into account any forthcoming changes, using threshold levels and quantifiable measurements to relate to Levels of Service and reflecting the critical success factors of the Council associated with the delivery of services.

Key to the above stages will be ensuring that the Asset Management approach remains at the forefront of the Council's strategies, by considering;

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 – maximising benefits by balancing competing demands.

Resource allocation – allocating resources based on assessed needs.

Customer focused – explicit consideration of customer expectations.

This TAMP aims to support provision of detailed information on assets to enable longer term need to be identified and;

- Establish a clear relationship between Department for Transport and Central Government policies, and Derbyshire's policies, objectives and the delivery of Levels of Service;
- Establish a clear relationship between Derbyshire's Council Plan, the Local Transport Plan, local policies and objectives and the delivery of works programmes;
- Establish Key Performance Indicators that will enable the "value for money" for highway maintenance to be considered more effectively against other local transport spending and the wider Council funding;
- Establish year on year asset valuation, based on the Gross and Depreciated Asset Values to meet HM Treasury's goals of Whole of Government Accounting and provide the facts for making a better case for Derbyshire's transport infrastructure.
- Deliver a sustainable infrastructure for the future meeting the needs of stakeholder and customer expectations.

The TAMP will provide the basis of a Business Plan for not only the development and continuity of the Asset Management approach but for the long term aims and objectives of the Environmental Services Department to be realised.

An action plan has been drawn up for early implementation and embedment of Asset Management practice within the department and a Strategic Environmental Assessment of the TAMP is under development.

To assist the Council in achieving these aims, Derbyshire County Council are working in partnership with Atkins, in the production of both a Highway Asset Management Plan and the Transport Asset Management Plan. The partnership approach aspires to bring to fruition the Asset Management ethos and practice to the Environmental Services Department of the County Council.



GLOSSARY OF TERMS

Access	Database
BVPI	Best Value Performance Indicator
CIPFA	Chartered Institute of Public Finance and Accountancy
Confirm	Maintenance Management System
CSS	County Surveyors' Society (for County Councils)
CVI	Coarse Visual Inspection
DCC	Derbyshire County Council
DfT	Department for Transport
Dmaps	Derbyshire's map linked browser
DSO	Direct Service Organisation
DVI	Detailed Visual Inspection
Excel	Spreadsheet
GAAP	Generally Accepted Accounting Practice
Geostore	Geographical based centralised datastore
GIS	Geographical Information System
HAMP	Highways Asset Management Plan
ITN	Integrated Transport Network
LTP	Local Transport Plan
NSG	National Street Gazetteer
ODPM	Office of the Deputy Prime Minister
OS	Ordnance Survey
PAS55-1	Publicly Available Specification (for Asset Management)

PROW	Public Right Of Way
PSG	Programme Sponsoring Group
RMMS	Road Management Maintenance System
SCANNER	Surface Condition Assessment for the National Network of Roads
SCOTS	Society of Chief Officers of Transportation in Scotland
SCRIM	Sideway-force Coefficient Routine Investigation Machine
SORP	Statement of Recommended Practice
TAG	Technical Advisors Group (for District and Unitary Councils)
TAMP	Transport Asset Management Plan
UKPMS	United Kingdom Pavement Management System
WGA	Whole of Government Accounts

CONTENTS

Executive Summary	iii
Glossary of Terms	vi
Contents	vi
1 Introduction	6
1.1 Preamble	6
1.2 Scope of the TAMP	6
1.3 Outline of the TAMP	6
1.4 The Transport Asset	6
1.5 Stakeholders	6
1.6 Asset Management	6
1.7 The Drivers for Asset Management	6
1.8 The Benefits of Asset Management	6
1.9 Asset Management Regime	6
2 Goals, Objectives, Levels of Service and Performance Targets	6
2.1 Overview	6
2.2 Goals	6
2.3 Objectives	6
2.4 Linkages	6
2.5 Levels of Service	6
2.6 Identification of Levels of Service	6
2.7 Performance Framework	6
2.8 Performance Targets	6
2.9 Stakeholder Expectation	6
2.10 Translation of Council Objectives into Quantified Targets	6
2.11 Level of Service Performance Scale	6
3 Asset Base and Characteristics	6
3.1 Overview	6
3.2 Existing Data	6
3.3 Existing Asset Storage and Management	6
3.4 Data Management Related to the TAMP	6
3.5 Asset Register	6

3.6	Future Data Collection and Verification of all Records.....	6
3.7	Data Collection – The Way Forward for Highway Asset Inventory	6
3.8	Sharing Data	6
3.9	Data Management Procedures	6
3.10	Support System Development.....	6
4	Future Demand.....	6
5	Lifecycle Plans	6
5.1	Overview	6
5.2	Current State of Lifecycle Planning	6
5.3	Process Map	6
5.4	Development of Lifecycle Approach.....	6
6	Life cycle cost models.....	6
6.1	Lifecycle Cost Plans	6
6.2	Work Plans and Financial Plans.....	6
7	Risk Management.....	6
7.1	Overview	6
7.2	Current State	6
7.3	Risks Associated with the TAMP.....	6
7.4	Risk Management Strategy	6
7.5	Risk Management Framework	6
7.6	Risk Matrix.....	6
7.7	Risk Register	6
8	Monitor, Review And Continual Improvement.....	6
8.1	Overview	6
9	Asset Valuation	6
9.1	Background	6
10	The Wider Transport Asset	6
10.1	Overview	6
10.2	Canals	6
10.3	Public Transport	6
10.4	Cycleways and Cycle Routes.....	6
10.5	Public Rights of Way (PRoW)	6

10.6	Bus Services	6
10.7	School Buses	6
10.8	On –Street Parking.....	6
10.9	Vehicle Fleet.....	6
Appendix A - References		6
Appendix B – Roles and Responsibilities		6
Appendix C – Phases of deliverables		6
Appendix D – Performance Targets measured on Network.....		6
Appendix E - Asset Classification and Hierarchy		6
Appendix F – Confirm and Geostore systems		6
Appendix G – Existing Asset Inventory & Condition Data.....		6
Appendix H – Example of Risk Management		6

List of Figures

Figure Exec.1 – The TAMP Process.....	iv
Figure 1.1 – Asset Management Regime	6
Figure 1.2 – Relationship between strategic documents	6
Figure 1.3 – Asset Management Planning.....	6
Figure 2.1 – Goals, Objectives, Levels of Service and Performance Targets.....	6
Figure 5.1 – Lifecycle Plan	6
Figure 5.2 – Lifecycle Plan Development	6
Figure 6.1 – Maintenance Backlog	6
Figure 6.2 – Predicted Expenditure	6
Figure 9.1 – The Asset Valuation Menu	58
Figure 10.1 – Key Contents of HAMP, TAMP & CAMP	59

List of Tables

Table 2.1 – Comparison of Goals against Objectives.....	6
Table 2.2– Comparison of Objectives against Levels of Service	6
Table 2.3 – Definition of Levels of Service	6
Table 2.4– Performance Framework Structure.....	6
Table 2.5 – Example of Performance Indicators.....	6
Table 6.1 – Asset Types Included in Asset Registers.....	6
Table 6.2 – Asset Condition Profile	6
Table 6.3 – Weighted Average Maintenance Costs.....	6

Table 6.4 – Asset Deterioration	6
Table 7.1: Description and definitions of Impact of the risk should it occur	6
Table 7.2: Description and definitions of Probability of the risk occurring	6
Table 7.3 – Probability Matrix	6
Table 7.4 – Managing Risk	6
Table 7.5 – Risk Register Definitions	6
Table 7.6 – Sample of Derbyshire County Council’s Risk Register	6
Table 8.1 – Process Review Dates	6

The Consultant will grant to the Council full copyright over documents produced as part of this contract. Where specific reference or application is made to Derbyshire’s methodology then an intellectual property right will rest with the Council. Not-with-standing this, the Council shall not wilfully withhold agreement to use any information developed in connection with this contract for the purposes of the consultant dealing with another client.

1 INTRODUCTION

1.1 Preamble

There is a need for a rational approach to the management of infrastructure assets in order that business needs can be identified in a way that meets the needs of stakeholders and the goals and objectives of the Council.

Asset Management is widely recognised as the rational approach that should be used and the one that is promoted by the Department for Transport (DfT), HM Treasury and other Government departments. The Transport Asset Management Plan (TAMP) sets out the development of this approach, which is needed in order to address the many challenges that Derbyshire faces over the next five years. These challenges include:

- A move away from new-build and focus on the maintenance of the existing assets and infrastructure;
- Increasing expectations from road users and stakeholders for safe and reliable journeys;
- Financial and logistical constraints on maintenance activities;
- Need to derive the most out of existing assets;
- Increasing role of private sector in the delivery of services;
- Need for greater accountability and transparency, e.g. Whole of Government Accounts;
- Increasing awareness of the link between “maintenance” and “business performance”.
- Climate change and sustainability.

The Council has made a decision to develop a TAMP by forming a partnership contract with the Highways Asset Management Group of Atkins.

1.2 Scope of the TAMP

It is intended that the TAMP will cover all transportation functions under the responsibility of Derbyshire County Council. This will include extensive consultation and cooperation between various stakeholders in the Council. The first draft TAMP includes the following transport assets:

- Highway Network
- Canals
- Bus Stations
- Cycleways and cycle routes
- Public Rights of Way
- School Buses
- On-street Parking

- Public Transport support (to be considered in future versions of the TAMP)
- Vehicle Fleet
- Bus Shelters

The impact of rail stations and airports on future demands on the rest of the transport networks is not considered at this time. It must be noted that currently there are some gaps in the information included in this TAMP and these will be filled in subsequent versions of the document. Furthermore, as the Asset Management approach becomes embedded in the Environmental Services Department, other transport assets may be added and linking the TAMP with the Corporate Asset Management Plan will also have to be considered.

This document is strongly linked to the Council's LTP and it aims to support the delivery of the transport objectives of the Council.

1.3 Outline of the TAMP

The TAMP reviews the objectives and goals of Derbyshire County Council in order to produce Lifecycle Plans, Works Plans and Financial Plans. To achieve this, the asset base, data management and the decision making process for future investment in the management of the Council's assets were closely examined.



This TAMP has been extensively built upon key existing policies, plans, data and records. The TAMP gives consideration to several guidance documents and Codes of Practice in its development and is consistent with legal, statutory and Government requirements. A complete list of references has been produced in Appendix A.

The roles and responsibilities of those who have been involved in the production of this Plan and future implementation of the TAMP are given in Appendix B.

1.4 The Transport Asset

Derbyshire's transport asset in 2008 may be summarised as:

- 671km of 'A' Roads, 474 km of 'B' Roads, 1,299 km of 'C' Roads and 2,658 km of unclassified roads, giving a total of 5,102 km. (3,170 miles);
- 324 km (201 miles) of cycleways and greenways;
- 4,978 km (3093 miles) of Public Rights of Way;
- 1,060 highway bridges and structures plus approximately 1,000 rights of way footbridges;
- Approximately 900km of highway retaining walls;
- Approximately 85,000 road lighting columns;
- the length of the road network covered by precautionary salting/gritting during winter amounts to 2,505km;
- signs, road markings, safety fencing, trees, horticulture and drainage.
- 22 km of canals with 6 working locks

The TAMP describes the Council's approach to managing this asset portfolio, but does not cover trunk roads or motorways, which are the responsibility of the Highways Agency or local roads within the City of Derby, which are the responsibility of Derby City Council.

1.5 Stakeholders

Key stakeholders who will be affected by this TAMP include, but are not limited to:

- The community – tax payers, residents, business, industry, educational institutions, health;
- Emergency services;
- Utilities – water, sewerage, drainage, gas, electricity, telecommunications, pipeline and other like services under the authority of government legislation;
- Land and property developers and their respective consultants and contractors;
- Adjacent municipalities;
- Special interest groups – Ratepayer Associations, Chambers of Commerce and like community groups;
- Council elected representatives;
- Council staff, consultants and contractors.

There is a need to consult with stakeholders to understand their expectations of the service provided by the transport network. This is currently undertaken through "Ispos MORI", the LTP process and various other consultations. Derbyshire has also been involved with the 2006/07 DfT research project relating to Customer Expectations and Levels of Service.

Duty of Stakeholders

Whilst Derbyshire County Council as Highway Authority has certain duties and responsibilities, this TAMP and supporting documents are predicated on the basis that the stakeholder also has certain obligations and responsibilities to behave and act safely according to the prevailing conditions; to have regard to the rights of other users, the community and infrastructure managers; and to avoid damaging infrastructure.

The TAMP will be used by staff undertaking network maintenance and new works to support day-to-day activities, e.g. good management practices, maintenance intervention levels, improvement activities and timeframes. Senior management will use the TAMP to understand long term funding requirements and the quality of service to be delivered and also as a systematic approach to monitoring and reviewing the service.

1.6 Asset Management

There is a wide range of recognised definitions for Asset Management, all of which align with a core set of principles. The definition from the County Surveyors' Society (CSS) Framework for Highway Asset Management¹ is:

“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 Framework for Highway Asset Management identifies the key themes encompassed in the above definition as:



- **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** – maximising benefits by balancing competing demands;
- **Resource Allocation** – allocation of resources based on assessed needs;
- **Customer focused** – explicit consideration of customer expectations.

It is important to remember that Asset Management does not replace existing good practice; instead it provides the framework within which this practice may be more effectively implemented, managed and complemented by other processes.

Consideration has also been given to the guidance produced by the British Standards Institute, PAS 55-1 – Asset Management².

1.7 The Drivers for Asset Management

Authorities are required to develop Asset Management in response to the following requirements:

- **Local Transport Plan (LTP2)³** – In order to address the Government requirement for Local Authorities to demonstrate that they are making the best use of their assets, the DfT has realised that savings can be made by seeking efficiencies in maintenance programs and have been promoting the development of Transport Asset Management Plans (TAMP). As part of the LTP2 requirement Local Authorities are required to report to the Government on the progress made in developing an effective TAMP which is to be informed by LTPs and other corporate plans.
- **DfT** – The DfT has recognised the need for efficient use of local authority resources on highway maintenance, as well as the need for transparency and accountability. The efficiencies agenda and the introduction of the Single Capital Pot, further highlighted the urgency for defensible decisions on spending. The DfT strongly promotes Asset Management as the suitable approach to meet these requirements. Hence, the DfT has strongly encouraged local authorities to develop TAMPs. In the autumn of 2006, the DfT commissioned a research project to review progress with the development of TAMPs and establish what future support would local authorities need to implement their TAMPs. Recognising the need for appropriate data to develop robust TAMPs, the Central Government, through the DfT, is planning to provide funds to support local authorities in collecting inventory data. This further demonstrates the DfT commitment to this approach.



- **HM Treasury** – HM Treasury recognises that the highway asset is the most valuable asset that local authorities own and manage. So far, the

value of the asset has been estimated by accountants based on historic information. It is now realised that this estimated value does not reflect the real value of the highway asset and does not facilitate a comprehensive understanding of investment needs on the network.

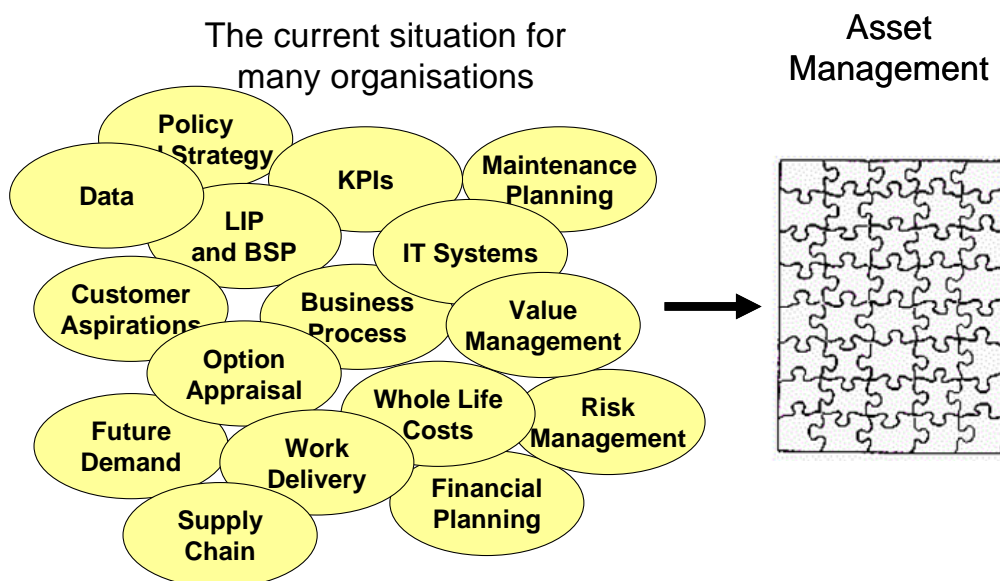
- **Whole of Government Accounts (WGA)** – A central Government initiative to produce a comprehensive set of accounts in line with the Generally Accepted Accounting Practice (GAAP). This initiative is in place to bring the public sector accounting in line with that of the private sector. The objectives of the WGA are to promote greater accountability, transparency and improved stewardship of public finances. WGA objectives and procedures align closely with those of Asset Management.
- **Asset Valuation** – robust Asset Management processes and a TAMP are required to support the asset valuation process described in the Guidance Document for Highway Infrastructure Asset Valuation⁴.
- **The Prudential Code** – requires Local Authorities to give due consideration to option appraisal and Asset Management planning in order to demonstrate that their plans are affordable, prudent and sustainable.
- **Best Value Legislation** – Asset Management plays a key role in demonstrating that Authorities are providing best value and supporting performance management.
- **Gershon Report**⁵ – the Gershon efficiency review identified the potential for obtaining better value for money through collective purchasing. The emerging output from this work and general developments in procurement are reflected in the Code of Practice for Highways Maintenance⁶.
- **Efficiency and Budget Savings – the new Gershon, Comprehensive Review of Spending 2007.**
- **CIPFA** – CIPFA recently undertook a study on the behalf of H M Treasury and the Department for Transport, to review the accounting, management and finance of local authority transport infrastructure. In particular, they considered the case for changing the accounting treatment of transport infrastructure to an Asset Management plan based approach. The report produced (Local Authority Transport Infrastructure Assets, Review of Accounting, Management and Finance Mechanisms¹⁶), which was open to public consultation, has recommended that Asset Management has the potential to deliver significant efficiency gains and improvements in the services delivered to users. The report concludes that if the benefits of a TAMP-based approach are to be realised quickly and in full, an early change is necessary to the relevant accounting guidance contained in the Local Authority Statement of Recommended Practice (the SORP).

The Government has initiated a process of service accountability across schools, hospitals and other public sector departments. Highways are the last component to integrate service accountability into their policies and this TAMP is intended to be a part of this process and will meet these objectives.

1.8 The Benefits of Asset Management

The main benefits of Asset Management are to make more efficient use of available resources, to deliver value for money and to provide a service that is aligned to its stakeholders. This can be demonstrated by:

- Alignment of the Council's objectives with delivery of the service;
- A comprehensive understanding of the asset and the associated liability;
- A programme of inspections and surveys to record current asset condition;
- Defined Levels of Service;
- Adoption of a lifecycle approach to the management of the asset;
- Explicit identification and management of risks;
- Decision making that is based on the relationship between the asset and the Council's Goals and Objectives through Levels of Service;
- Demonstrating the consequences of funding decisions;
- Considering the current condition and priorities required to maintain the asset and the network.



1.9 Asset Management Regime

Asset Management is a rational process that links stakeholder expectations, Government policy, transport policy and the Council's Corporate Business Plan. Asset Management planning links operational and tactical management through organisational and business processes and systems which manage the flow of information.

The link between these processes and performance monitoring, review and feedback is shown in Figure 1.1. This will be the basis of the process implemented in this TAMP.

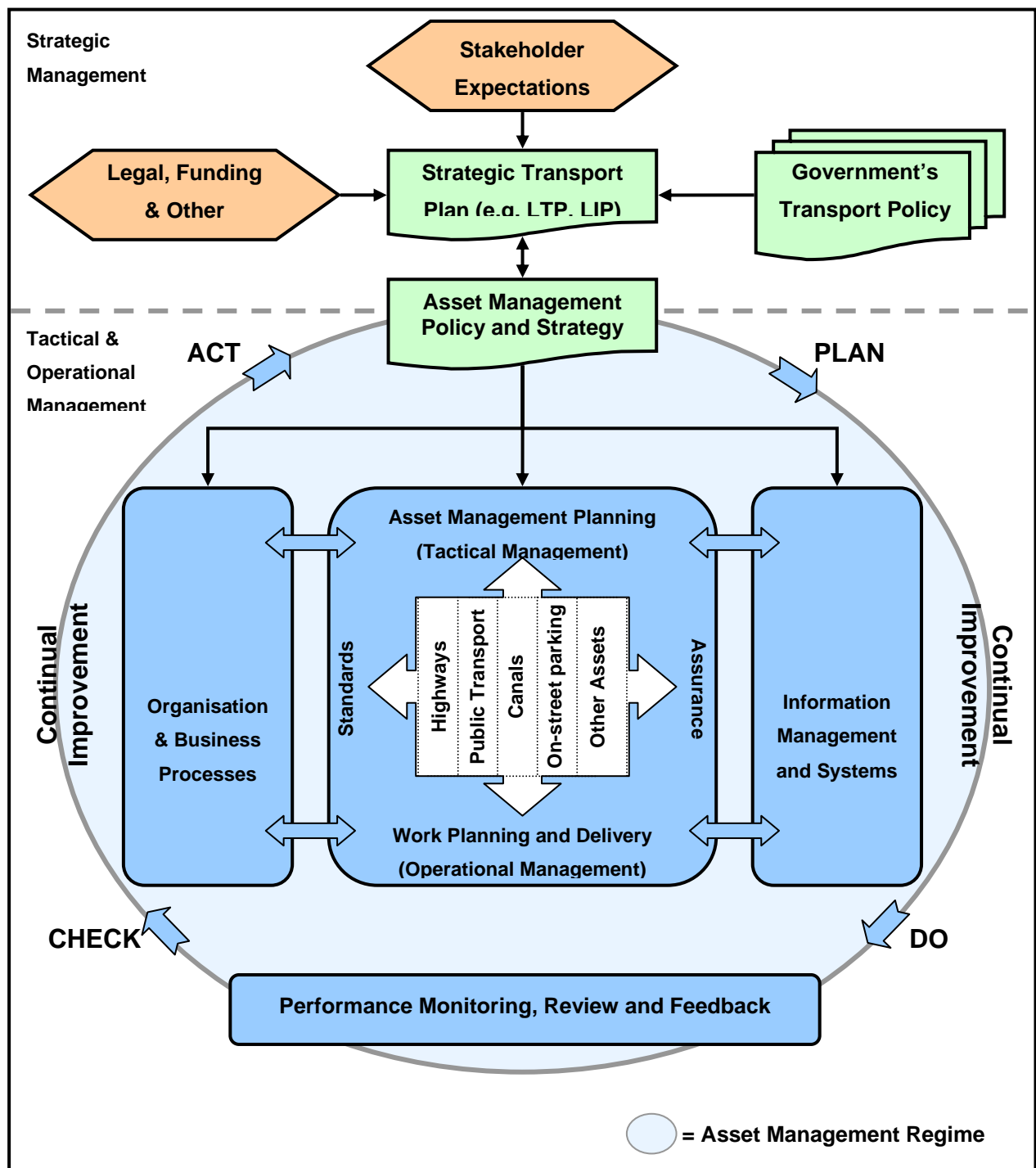


Figure 1.1. – Asset Management Regime

1.9.1 Relationship of TAMP to Key Documentation

Derbyshire's aims and strategic objectives are contained in various documents, including the Council Plan⁷, the Local Transport Plan³, Departmental Objectives⁸, the Service Plan⁹, Best Value Performance Plan¹⁰ and Best Value Inspection Manual¹¹. Figure 1.2 illustrates how these documents relate to the TAMP and how the TAMP will be informed by the LTP and other policy in respect of programmes, prioritisations and funding requirements.

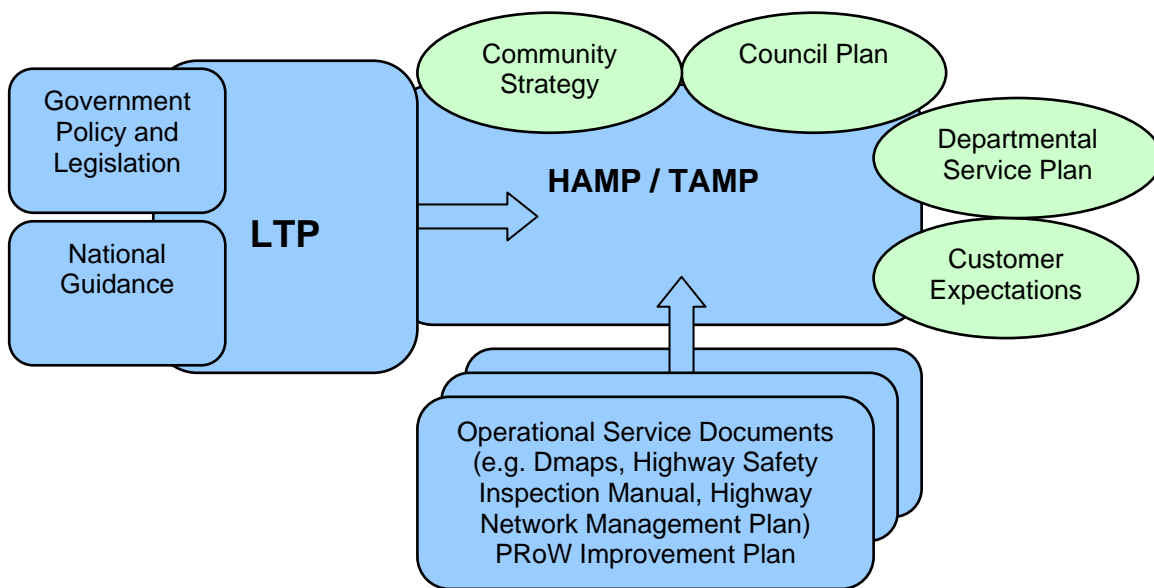


Figure 1.2 – Relationship between strategic documents

1.9.2 Process for Developing a TAMP for Derbyshire

Derbyshire have, in working with Atkins, taken a staged approach to the delivery of this TAMP by producing four phases of deliverables some of which have been amended during the course of the TAMP's development. These phases are listed in Appendix C. Each phase has been aligned with the TAMP development process and in addition to these phases, further reference information has been used to establish a framework for implementing this TAMP. The first three phases of the process were focussed on developing the asset management process for the highway asset, with the final phase centred on rolling the developed process to the wider transport asset. The first TAMP is considered to be a starting point for implementing Transport Asset Management. The gaps identified in Section 10 should be addressed in future versions of the document, aiming to provide a fully integrated approach to managing the transport asset and delivering the LTP objectives.

The Asset Management planning approach is presented in Figure 1.3.

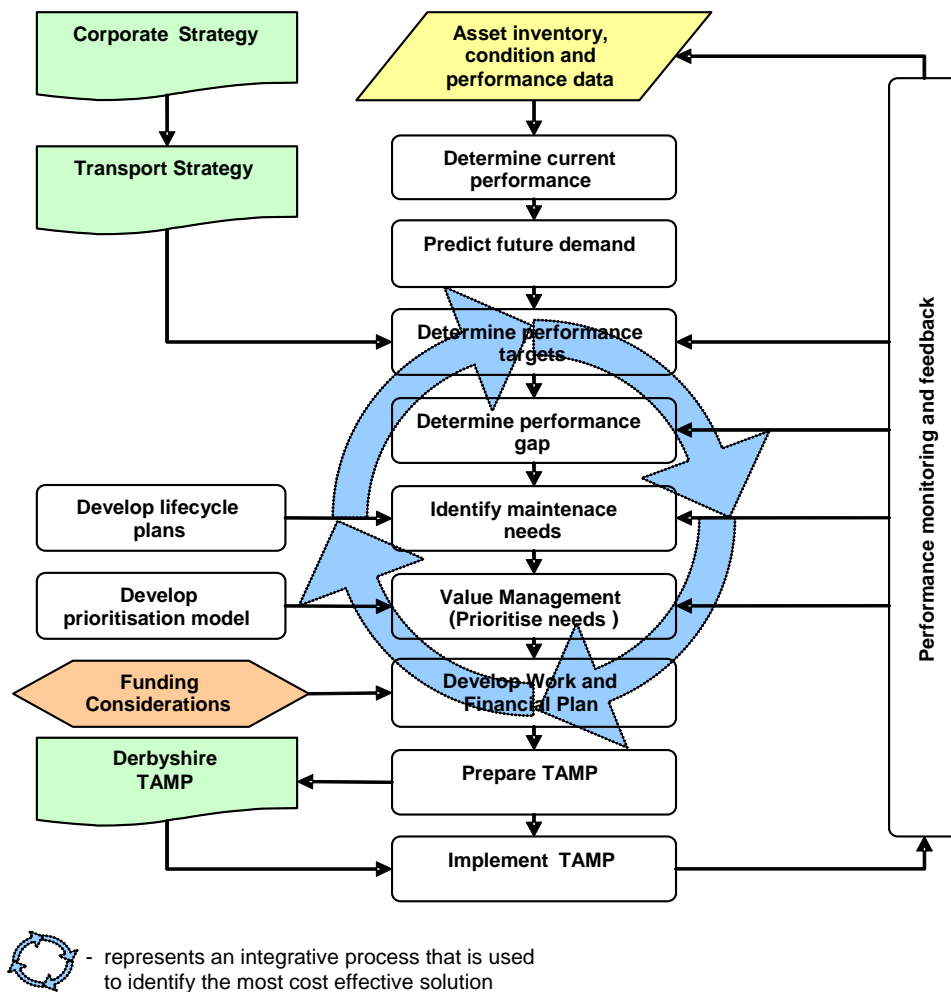


Figure 1.3 – Asset Management Planning

1.9 Highway Network Management

The Asset Management regime should take into account the Council's role in the management of the network. The objective of highway maintenance management is to fulfil the Council's statutory obligations. The aim of maintenance is to undertake repairs and protective measures that are designed with due consideration for safety, serviceability and sustainability, within the resources available, to limit the effects of any deterioration and so extend the life of network assets. It should also consider stakeholder expectations and the budgets available to achieve the goals of highway maintenance.

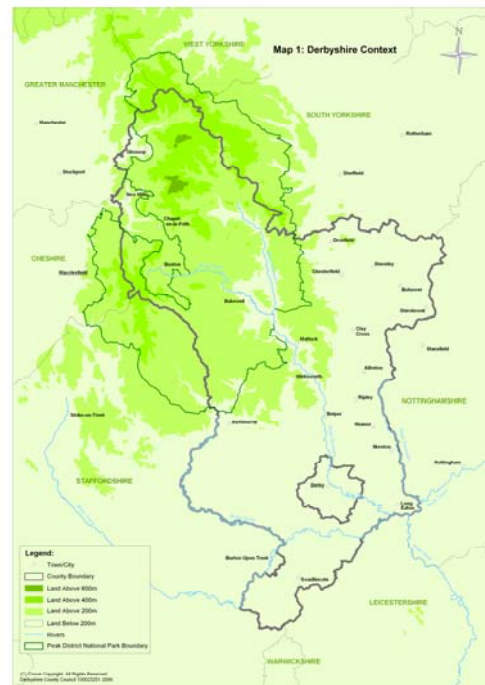
The Highway Network Management Plan¹² describes the Council's aims to meet these objectives by managing the network in a manner which

increases safety, meets the needs of all network stakeholders and maintains its condition and asset value. This Plan describes methods for:

- Setting the maintenance policy and standards for the highway network within Derbyshire;
- Ensuring the network is safe for all stakeholders;
- Complying with and enforcing statutory obligations;
- Promoting the Council Plan objectives as set out in this plan;
- Establishing the principles by which an effective use of maintenance expenditure can be achieved;
- Identifying the standards that reflect the wishes of the stakeholders;
- Highlighting the key issues affecting the maintenance of the Council's highway network.

1.9.1. Highway Operations and Maintenance

Derbyshire's network is maintained and operated from various offices around the County, with maintenance and minor works extensively undertaken by ALLRoads, the "in-house contractor" / Direct Service Organisation (DSO), which is spread over five sub areas. Works are delivered by three units for highway maintenance purposes located across the County in regions known as South East(SE), North West(NW) and North East(NE). The maintenance practices that are currently used have evolved over many years of good practice and experience and will be continually reviewed as a part of the ongoing TAMP development.



1.10 Transport Operations

The Asset Management regime also needs to take into account the Council's role in the wider transport operations. As with highway maintenance, the objective of wider transport asset management is to fulfil the Council's statutory obligations. However, unlike highway maintenance the management of the wider transport asset involves a much broader range of people, authorities and agencies. Indeed, for some of the key wider transport assets, the County Council's role in their management is very limited. Nevertheless, we aim to undertake our role to maximise the life of

network assets in the most efficient manner taking due account of stakeholder expectations and the budgets available.

Section 10 of this document sets out in some detail the wider transport assets, looking particularly at the current operating and maintenance practices, whole life costings and options for change. The wider transport assets considered here are comprise; canals, cycleways and cycle routes, on street, public rights of way, public transport (including bus services, bus stations, shelters and stops), school buses, the “soft” estate and the vehicle fleet. The TAMP describes methods for:

When complete, this TAMP will provide a comprehensive review of the extent and condition of transport assets, and a realistic, co-ordinated programme of future investment, maintenance work, actions and improvements covering all transport assets, including many services which are not wholly within the County Council’s control or influence and funded through the LTP or other County Council source. A TAMP applies the principles of Asset Management to the wider transport asset base and provides the tactical link between the LTP and operations.

2 GOALS, OBJECTIVES, LEVELS OF SERVICE AND PERFORMANCE TARGETS

2.1 Overview

The translation of goals to Performance Targets is a fundamental requirement for effective Asset Management planning. Establishing a relationship between the Council's goals and Performance Targets enables the Manager of each group to understand the performance (in an engineering context) that is required in order to deliver the County's long term strategy.

A review of Derbyshire's documents has highlighted the general relationship between the Council's Goals, Objectives, Levels of Service and Performance Targets. These are shown in Figure 2.1.

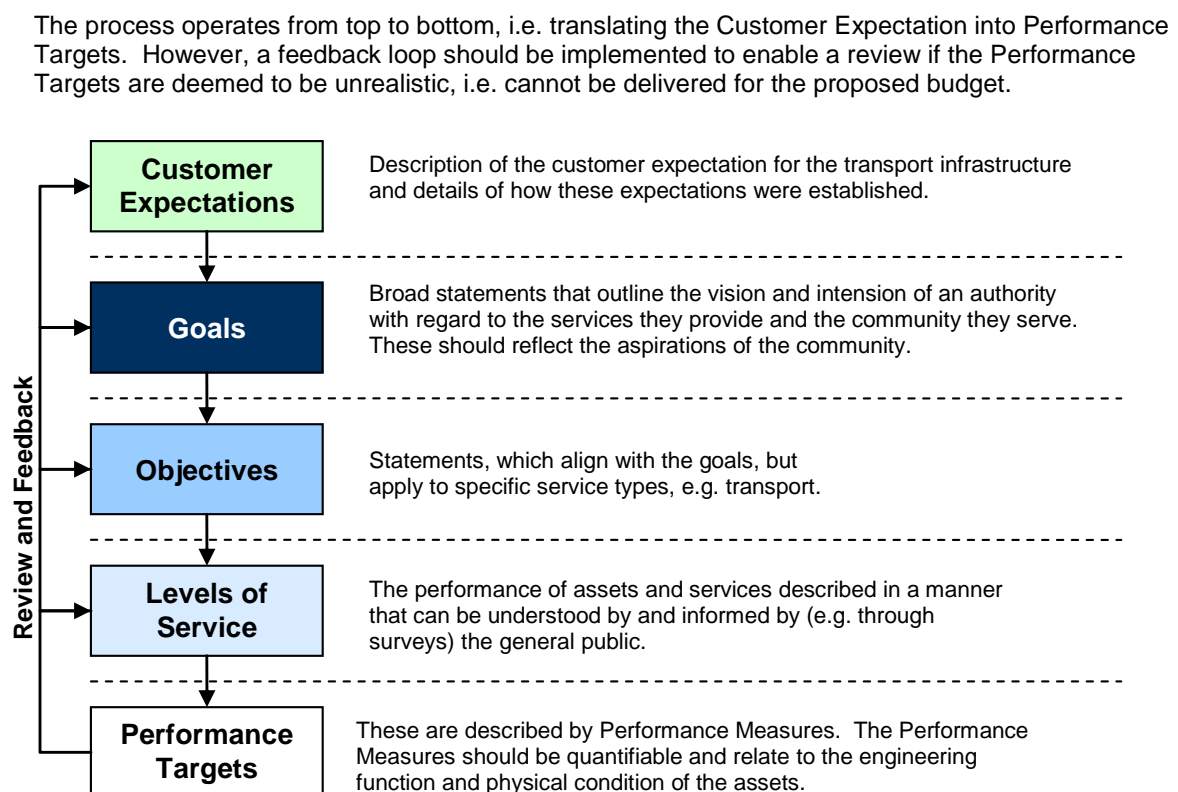


Figure 2.1 – Goals, Objectives, Levels of Service and Performance Targets

The Council Plan, the Department Service Plan and Local Transport Plan³ provide Corporate Goals and Objectives. This Chapter set outs the methodology by which these can be translated into Levels of Service and Performance Targets. It describes the Goals and Objectives of the Council and gives a set of suggested Levels of Service that are to be supported by monitoring measures.

2.2 Goals

Goals are broad statements defining what the Council aspires to deliver, that encompass the long term strategy, intentions and vision of an organisation.

Derbyshire's Council Plan includes a set of nine goals which reflect issues of importance to people in Derbyshire and which are linked to Cabinet portfolio responsibilities, aiming to:



- Provide direction and leadership, and manage and improve the Council's resources, in order to ensure high quality and value for money services;
- Create an environment where all children can be healthy, stay safe, enjoy, achieve, make a positive contribution and achieve economic wellbeing;
- Improve the health, well-being and choices of older people and support them to live independently;
- Create well-connected communities with transport services;
- Make places where people want to live and work, now and in the future;
- Strengthen the local economy and tackle deprivation within the community
- Promote safer communities and protect local people;
- Improve access and encourage participation in leisure, recreation, information, lifelong learning and culture;
- Promote Derbyshire in order to increase confidence, investment and resources.

2.3 Objectives

Objectives are statements, which align with and provide detail and meaning to the goals but apply to specific service types, in this case, transport.

The LTP2³ lists key objectives for transportation during the Plan period, these will need to be considered at all times during the TAMP development and implementation.

1. **Efficient Maintenance and Management** of the whole of the highway network, from dual carriageway roads to rural footpaths. Without this network in satisfactory condition, other improvements to make roads safer, to create better access to services or to tackle congestion, will be far more difficult to achieve.
2. **Safer Roads and Communities** to reduce the numbers of casualties on the roads, with emphasis on those most vulnerable, e.g. children, pedestrians and cyclists.

-
3. **Accessibility and Healthy Travel** to improve access to workplaces, essential services such as hospitals and doctors' surgeries, schools and training centres, shops and leisure activities. In addition, we want to encourage more use of healthier forms of travel, particularly walking, cycling and public transport.
 4. **Reduced Congestion and a Strong Economy** to tackle the effects of growing car use and the resulting congestion-related impacts on the local economy, especially longer journey times, poor access and tourist pressures and to reflect the objectives placed upon the Council by The Traffic Management Act 2004.
 5. **Better Air Quality and Environment** to reduce the wider impacts of transport, especially on air quality, climate change and on sensitive local environments such as the Peak District National Park.

2.4 Linkages

Linkages shows how the LTP objectives play a significant role in delivering the goals of the Council Plan. Table 2.1 illustrates just how significant the link is and describes it as major, moderate or minor.

Table 2.1 – Comparison of Goals against Objectives

		Corporate Goals - Derbyshire County Council								
		Provide Direction Leadership and Value for Money Services	Healthy and Safe Environment for Children	Improve Health and Choices for Older People	Create Well Connected Communities with Transport Services	Make Better places to Live	Strengthen Local Economy	Promote Safer Communities	Improve Access and Encourage Participation	Promote Derbyshire
Transportation Objectives: Local Transport Plan	Efficient Maintenance and Management	Major	Moderate	Moderate	Major	Major	Major	Moderate	Moderate	Moderate
	Safer Roads	Major	Major	Major	Major	Major	Moderate	Major	Moderate	Moderate
	Accessibility and Healthy Travel	Major	Major	Major	Major	Moderate	Moderate	Moderate	Major	Moderate
	Reduced Congestion	Major	Moderate	Moderate	Major	Moderate	Major	Moderate	Moderate	Moderate
	Better Air Quality and Environment	Moderate	Major	Major	Minor	Moderate	Moderate	Minor	Moderate	Moderate

The linkages demonstrated in Table 2.1 provide a sound basis for developing Levels of Service that link to the LTP objectives and play a role in delivering the Council Plan.

Table 2.2 – Comparison of Objectives against Levels of Service

		Transportation Objectives: Local Transport Plan				
		Efficient Maintenance and Management	Safer Roads	Accessibility and Healthy Travel	Reduced Congestion	Better Air Quality and Environment
Levels of Service	Safety	Major	Major	Major	Moderate	Moderate
	Availability	Major	Moderate	Moderate	Moderate	Minor
	Accessibility	Major	Moderate	Major	Minor	Moderate
	Reliability	Major	Moderate	Moderate	Minor	Minor
	Condition	Major	Major	Moderate	Moderate	Minor
	Sustainability	Major	Moderate	Moderate	Moderate	Minor
	Social Contribution	Major	Major	Major	Minor	Minor
	Environmental Contribution	Moderate	Minor	Moderate	Major	Major
	Customer Perspective	Major	Major	Moderate	Major	Minor
	Financial Perspective	Major	Minor	Moderate	Moderate	Minor

Table 2.2 demonstrates how Levels of Service can be developed by comparing the significance of their role in meeting the objectives of the LTP2 and has been graded major, moderate or minor to reflect this.

2.5 Levels of Service

The Maintenance of Highway Structures - A Code of Practice¹³ defines Levels of Service as:

“A statement of the performance of the asset in terms that the stakeholders can understand. They cover the condition of the asset and non-condition related demand aspirations, i.e. a representation of how the asset is performing in terms of both delivering the service to stakeholders and maintaining its physical integrity at an appropriate level. Levels of Service typically cover condition, availability, accessibility, capacity, amenity, safety, environmental impact and social equity”.

In other words, Levels of Service are a simple and effective way of describing the service delivered by the Highway Authority, described in a way that allows the transport planners and engineers to measure what they offer and the customers to understand what they should expect. For example, in the case of condition, by defining the Level of Service that should be achieved and linking this to appropriate Performance Indicators, as described below, the Council can develop an appropriate maintenance regime to meet the required Levels of Service, aiming to achieve the determined Performance Targets. Levels of Service must apply to the whole of the asset and focus on the requirements of the customer. For example, recent work carried out by TRL (Developing appropriate Levels of Service, User Perceptions and Engineering Measurements¹⁷) provides a starting point for understanding customer perception with regards to condition of highways and footways.

Each Level of Service will need to reflect the Statutory Duties of the Council and will imply a level of financial investment. Customers' requirements are to be addressed so as to understand their expectations, with feedback from this being incorporated into the TAMP. Levels of Service also need to be delivered based on a scale of affordability and are likely to each be split into four distinct bandings, which may be applied individually to strategic levels of highway or globally across the entire network. These are:

- **Promised Land** – all transport assets maintained in near new condition;
- **The Customer Solution** – what the customer expects / needs and is happy to pay for;
- **The Safe Solution** – all codes of practice and standards met at the minimum levels of safety or better;
- **The Affordable Solution** – what the Council can afford within the budget with safety as a priority.

2.6 Identification of Levels of Service

For the development of the Levels of Service, there is a need to understand the requirements that govern the delivery of the transport service. Once the requirements are identified, Levels of Service can be developed and quantified using performance measures so that the performance of all aspects of the service can be identified within a Performance Framework

The Level of Service provided by assets and activities in the Asset Management Plan are to standards set by the Council with due regard to one or more of the following:

- Stakeholder needs and expectations based on data obtained from market research;
- Widely accepted and documented engineering minimum standards;
- Politically endorsed outcomes based on community consultation;
- Safety standards mandated by local or central government;
- Environmental standards mandated by local or central government;
- Existing Levels of Service, where these are recognised by all concerned parties to be adequate but have no formal ratification;
- Strategic organisational objectives (including LTP);
- Efficiency considerations, where service standards must take account of engineering and economic efficiency requirements which require a long-term approach to optimality.

Table 2.3 – Definition of Levels of Service

Level of Service	Purpose	Application within TAMP
Safety	Management of exposure to risk associated with the assets and the services provided.	Safety will be a key priority throughout the TAMP
Condition	Visual and engineering condition of assets.	Effective assessments and intervention treatments to maintain condition
Availability	Minimise barriers to the effective use of the assets or the services provided.	Effective lifecycle modelling will ensure assets are maintained with appropriate and timely works and sufficient highways remain open for use to counter congestion
Social Contribution	Provide reliable access to work leisure and emergency and health services	Maintain asset base to fulfil stakeholder requirements and expectations
Customer Perspective	Level of provision of assets or services.	Acceptable maintenance of assets to satisfy stakeholders
Financial Perspective	Cost of provision of assets or services.	Cost effective use of budget and resources across the network
Sustainability	Choice of materials and transport	Promote recycling strategies in both maintenance and transport environments
Environmental Contribution	Preservation of environment, resources, noise disturbance and air quality	Effective recycling and minimise use of natural and new resources

Table 2.3 details the categories and definitions of major areas of Levels of Service delivery which have been derived from the integrated goals of the Council Plan (Corporate) and the LTP (Environment and Transport).

It is recognised that the above list may be considered to be demanding at these early stages of implementing asset management to the transport

network and it may be difficult to address all issues immediately. Therefore, the Council will review the list of Levels of Service in future versions of the TAMP, incorporate those as practical and aim to adopt the revised list as part of embedding the TAMP in the organisation and as the asset management practices mature.

2.7 Performance Framework

The Performance Framework is used as a tool to inform, measure, review and drive the management and decision-making processes associated with implementing corporate changes and day-to-day decisions relating to the delivery of services, linked to road hierarchy across the network.

It is not intended that the Council creates a host of measurements that serve little purpose other to demonstrate the presence of a framework. At any level, external-facing performance measures should show how well services are being delivered and whether objectives are being achieved.

Internally, a range of input and output measures may be used for monitoring purposes but the key indicators should reflect performance in key service areas to inform senior managers as well as corporate and stakeholders of the service as a whole.

A typical example of a Performance Framework structure relating to the Levels of Service for Safety is illustrated in Table 2.4.

Table 2.4 – Performance Framework Structure

Indicator (PI)	Level	Frequency	Department	Owner	Priority	Comments
PI ?? – % decrease in road fatalities on network.	Strategic	Annual				
PI ?? – % Principal roads SCRIM surveyed in current year at or below investigatory level.	Tactical	Annual				
PI ?? – % Availability of footpaths.	Operational	Quarterly				

A full list of all Performance Indicators used by Derbyshire County Council is documented in the Performance Framework.

2.8 Performance Targets

Levels of Service for networks are commonly grouped under headings (see Table 2.3) so that they can be readily understood by all stakeholders. Suitable performance measures will support the Levels of Service which are to be delivered and measured by reference to Performance Indicators.

Performance Indicator (PI)

Is a relative measure of performance against a preset standard and is used to show broad trends and indicative performance, and highlight areas for investigation and improvement. PIs can measure performance over a period of time or provide a snapshot at a particular date. Performance Indicators are numerical measures of achievement that are easy to collect and use.

A typical definition for Performance Indicator is:

“A Performance Indicator defines the measurement of a piece of important and useful information about the performance of a program or service expressed as a percentage, index, rate or other comparison which is monitored at regular intervals and is compared to one or more criterion.”

In order to develop appropriate Performance Indicators that are going to be of any value it is essential to:

- Clearly identify Council's values, philosophy and objectives;
- Clearly identify the stakeholders, their needs and their expectations;
- Have aims and objectives which specifically state what is to be achieved in relation to these needs;
- Identify each step in the service delivery process and what is to be achieved at each step in the process as well as how it is to be achieved;
- Be able to accurately define and measure it.

Table 2.5 – Example of Performance Indicators

Service Level	Typical Measures
Safety	% Safety inspections completed on time.
	% Category 1 defects completed on time.
	% Principal roads SCIM surveyed in current year at or below investigatory level.
	% third party claims repudiation rate over three years.
	% decrease in road fatalities on network.

Effective Use of Performance Indicators

The network is currently measured against BVPI's and Local Departmental Objectives – these are summarised in Appendix D.

The TAMP will change the way in which issues are measured and compared to targets as they will ultimately become driven by the TAMP, the purpose of which is to provide the most cost-effective and economic solution based on customer expectations and the level of the hierarchy on which the asset is located.

Hence, the current practice of maintaining the Principal Road Network to meet BVPI's is likely at times to conflict with the recommendations of the TAMP targets, which may identify that maintaining a more strategic B or C class road would represent a more economic solution and therefore a more effective use of the available funding. Similar issues may arise with regard to the use and need for subsidised bus services.

2.9 Stakeholder Expectation

Stakeholder surveys will need to be completed to identify the expectation of the highway service that Derbyshire are to provide. The Council provides the transport service to stakeholders, therefore it is imperative to consider what is important to the stakeholder and reflect their expectations in the development of performance targets. Gaining an understanding of the customer requirements will assist in the improvement of overall asset performance and will also ensure that a suitable degree of customer satisfaction is met. National Transport Policy and Best Practice also promote consultation with the customer in the development of strategy and Best Value Reviews are used to monitor stakeholder consultation.



Ideally Derbyshire should use stakeholder surveys, augmented by other investigation and research to establish the aspects of the service that are most important to the broad spectrum of stakeholders and to identify the degree of satisfaction with particular aspects of the service; these can then be used to provide focus to address the greatest stakeholder need.

2.10 Translation of Council Objectives into Quantified Targets

Development of the performance targets for the Levels of Service brings together several of the steps that have already been completed in the Asset Management planning process. The Levels of Service and the performance targets reflect future demand and the customer expectation.

There are two important phases in the development of targets:

- Translate the Council priorities into broad statements that relate to each asset group (where applicable) ;
- Quantify the broad statements based on the customer expectations of the service and the future performance demand that will be required of the assets.

Completion of this process will establish performance targets to strive to deliver a highway service that can be used in the Asset Management planning process to ensure that the Council priorities are best delivered.

2.11 Level of Service Performance Scale

The definition of the performance scale provides a consistent and reproducible means for reporting the delivery of the highway service, in terms that the customer can understand. However, it will not be possible to make use of this performance scale until Derbyshire have sufficient information to support the calculation of the Levels of Service by Performance Indicators and Targets for each Level of Service defined in Table 2.3.

There are four levels used at this stage of development:

- Excellent – Exceeds recognised good practice, innovates and sets challenging targets;
- Good – Meets recognised current good practice;
- Fair – Meets the minimum national and local requirements and/or basic information;
- Poor – does not meet the minimum national and/or local requirements and/or poor/no information.

A scale for reporting the Levels of Service to the customer is shown in Table 2.6 overleaf.

In order to rank the current performance in delivery of the service for reporting to the customer, the actual Level of Service value requires to be known; when this is available it can be assessed against the possible range of values in the scoring system proposed in Table 2.7. These will be developed at a later stage in the TAMP development.

It must be noted that the forthcoming introduction of the new National Indicators (NI) will have an impact on the contents of Table 2.7 and these will need to be reviewed.

Table 2.6 – Performance Measurement Scale

Level of Service	OBJECTIVE	POOR	FAIR	GOOD	EXCELLENT
Safety	Ensure that all transport assets are safe whilst reducing the incidence and severity of transport related accidents	Does not meet statutory safety requirements, e.g. do not meet response time targets to safety related defects, high number of casualties and generally poor information on safety.	Meets minimum national and local safety requirements, e.g. meet basic response time to safety related defects, number of casualties stable and have basic information on current safety related criteria.	Meets current good practice in safety, including reduced number of casualties, improved response time to safety related defects and good information on safety related criteria.	Meets or exceeds current good practice in safety, including reduced number of casualties, improved response time to safety related defects and good information on safety related criteria.
Availability	Ensure that a suitable level of transport and infrastructure availability exists to accommodate the needs of all user types.	Does not meet minimum national and local availability requirements, e.g. footpath not easy to use, maintenance activities during traffic sensitive times, loading restrictions, failure to salt before formation of ice.	Partially meets minimum national and local availability requirements, e.g. some footpaths not easy to use, some maintenance during traffic sensitive times, some formation of ice as result of no salting.	Meets current good practice, e.g. footpath usable, no maintenance during traffic sensitive times, no structure loading restrictions, route salted before ice formation.	Meets or exceeds current good practice, e.g. footpath usable, no maintenance during traffic sensitive times, no structure loading restrictions, route salted before ice formation.
Condition	Ensure that the condition of assets is maintained in a manner that will satisfy local and national requirements.	Condition of assets does not meet national or local requirements and/or limited information on asset condition	Condition of assets meet minimum national and local requirements	Some of the asset condition exceeds national and or local requirements.	Most or all of the asset condition exceeds national and or local requirements.
Social Contribution	Provide reliable access to the network assets for work, leisure and emergency services. Maintain asset base to fulfil stakeholder requirements & expectations	Network is not available and does not meet the needs or expectations of the stakeholders.	The majority of the network is available and meets the needs and expectations of the stakeholders.	All of the network is available and meets the needs and expectations of the stakeholders.	All of the network is available and meets or exceeds the needs and expectations of the stakeholders.
Environmental Contribution	Reduce the adverse impacts of transport on our environment, especially with regard to air quality, noise and its contribution to climate change and resource consumption	Does not meet minimum national and local environmental requirements, e.g. air quality target not satisfied, no aggregate recycling, no sustainability or maintainability audit completed on schemes.	Meets minimum national and local safety requirements, e.g. air target met, some recycling of aggregates, some schemes subject to maintainability and sustainability audit.	Meets current good practice, e.g. air targets surpassed, schemes designed based on maintenance and sustainability, increase in recycling of second hand materials.	Meets or exceeds current good practice, e.g. air targets surpassed, schemes designed based on maintenance and sustainability, increase in recycling of second hand materials
Stakeholder Perspective	Ensure that the needs of the users and the community are being considered and addressed from a transport perspective.	Customers not consulted and no/poor mechanisms for enquiries, complaints and feedback.	Customers consulted on large schemes with some customer surveys and robust customer enquiry/complaints system in place with monitoring.	Customers often engaged and informed, e.g. regular customer surveys, customer enquiries fully dealt with and monitored, consultation on schemes etc.	Customers generally fully engaged and informed, e.g. regular customer surveys, customer enquiries fully dealt with and monitored, consultation on schemes etc.
Financial Perspective	Realise the financial implications associated with delivery of the highway asset.	Limited information on the economy and efficiency of the service and/or evidence that poor Value for Money are being delivered.	Basic information on economy and efficiency of the service, and basic techniques in place to ensure money and resources are not unnecessarily wasted.	Meet local and national efficiency savings. Value for Money techniques established and being used and monitored.	Meet or exceed local and national efficiency savings. Value for Money techniques established and being used and monitored
Sustainability	Ensure that the transport and infrastructure is sustainable and accommodates the needs of all stakeholders.	Network is not sustainable and does not meet the needs or expectations of the stakeholders.	The majority of the network is sustainable and meets the needs and expectations of the stakeholders.	Most of the network is sustainable and meets or the needs and expectations of the stakeholders.	All of the network is sustainable and meets or exceeds the needs and expectations of the stakeholders.

Table 2.7 – Link of Performance Indicators to Level of Service Performance Measurement

Level of Service	Performance Indicators	Intervention Levels			
		POOR	FAIR	GOOD	EXCELLENT
Safety	BV99a(i), BV99a(ii), BV99a(iii), BV99b(i), BV99b(ii), BV99b(iii), BV99c(i), BV99c(ii), BV99c(iii), CPT42, CPT43, CPT45, local indicators.				
Availability	BV100, CPT48, local indicators.				
Condition	BV96, BV97a, BV97b, BV186(a), BV186(b), BV187, BV223BV224(a), BV224(b), LPI18LPI16, LPI27b, LPI21,LPI27.				
Social Contribution	BV102, BV165, BV178.				
Environmental Contribution					
Stakeholder Perspective	CPT46, CPT47, LPI28, LPI29, LPI30, other				
Financial Perspective	Other				
Sustainability	CPT44, BV180(b), LPI23, LPI26.				

3 ASSET BASE AND CHARACTERISTICS

3.1 Overview

This Section focuses on the highway network, setting the framework that is to be adopted for the wider transport asset. As discussed above, the TAMP is a live document under continuous review. Later versions of the document will focus on developing the approach described in the following sections for all transport assets, as those listed in section 1. At this stage, the asset base of the wider transport assets is included in Section 10. In the longer term, and when the information is available and the processes in place, all elements of the transport asset will need to be integrated in the way they are presented in the TAMP.

Derbyshire is a large, mixed County with rural predominance that contains a large and diverse number of assets, as described in section 1, that need to be monitored and maintained.

In order to do this, there is a need to categorise, store and maintain asset data in a cost-effective fashion. Whilst it is possible to collect and maintain data for every single attribute of every asset in the County, the condition levels of some very minor roads can be assessed at a very high level of detail, but the traffic levels along this route may be so low as to make this exercise poor value for money.

It is therefore important to collect and maintain data that has a significant effect on the objectives of the Council, the performance of the asset and the statutory duties of the Council.



Derbyshire's assets are discussed as three separate components; assets, asset sub-groups and asset attributes as follows:

- The asset comprises all; highways, footways, structures signs, canals, PROWs, etc. in the County;
- Asset sub-groups are groups that assets are divided into based on design features or characteristics, such as hierarchy;
- Asset attributes are defined as criteria by which the asset can be described, such as material type or age.

A list of assets and sub-groups is given in Appendix E.

As part of the TAMP development it is essential to understand the completeness and currency of data regarding the asset types, sub-groups and attributes. This chapter reviews data currently available to the Council and considers the way forward with regards to data collection, management and the role of data within the development of the TAMP.

3.2 Existing Data

As with many organisations responsible for managing a large and diverse asset base, some of the existing data remains dispersed and of an inconsistent or undefined quality. In the year 2000, data on 45 asset items associated with the Principal Road Network were fully collected and entered into UKPMS. The majority of this data has not been updated since and consequently may not be considered current enough to be of significant value.

At the other extreme the street lighting database has been carefully developed and well maintained and is considered to have a full inventory, although there are currently a number of problems with spatial coordinates which are being corrected as a part of a current GIS project.

Currently data for a number of other assets is held in a variety of electronic and "hard copy" systems. Each asset is supported with its own number of attributes. For example, the attribute "bulb type" belongs to the asset street lighting.

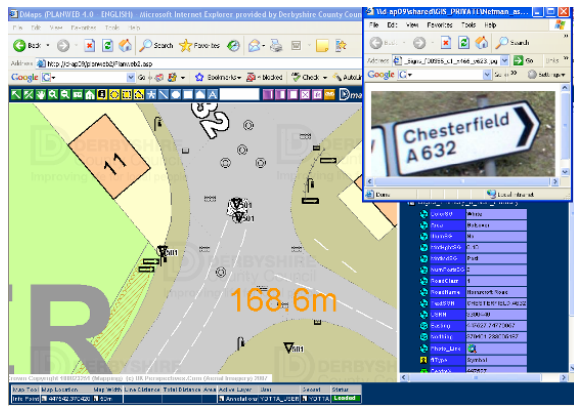
These electronic systems tend to be "standalone" and not fully integrated into the central system. This central system, known as Geostore, represents the assets as GIS datasets appearing on Derbyshire's basic GIS browser (DMaps) that is available on every staff member's desktop as location and some limited attribute information. As with the electronic systems, the collections of "hard copy" material are stored in various locations and not easily interrogated. Different asset types have different inspection and reporting policies and frequencies. Data currency therefore varies depending on the type of asset attribute and its inspection regime.

3.3 Existing Asset Storage and Management

During the development of the TAMP it has become clear that data is stored in three independent locations; the Geostore, Confirm and individual electronic and paper databases / filing systems. These are described as follows:

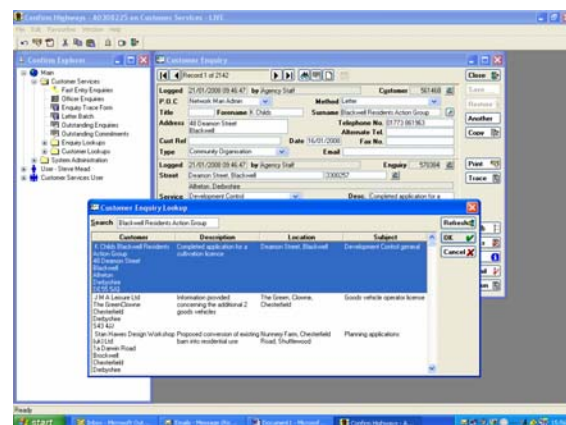
Geostore

- Many asset classes with OS grid references are stored in the Geostore system (see Appendix F);
- This data size is approximately 60Gb held and maintained locally in an ORACLE spatial database;
- Approximately 1500 separate PC's utilise the Dmaps Geostore browser function per month;
- Assets associated with the GIS system have asset identifiers, asset type, location, and have the capability to be linked to external databases;
- All users of the Geostore system can utilise the Dmaps, and therefore cross-reference the location of the known assets though some information is restricted.



Confirm

- Data is also stored in the Confirm Road Management Maintenance System (RMMS) database;
- Asset data stored in this system was captured for the entire primary road network in the year 2000;
- Although Confirm can output to GIS using Mapping Software to display asset information, it cannot currently complete this process for every asset type as the data does not flow as part of a two way process and individual reports have to be generated (this process is being developed);
- Due to the nature of the software, a lot of data relating to assets is not



transferable between Confirm and other systems. For example, a list of sign types on the principal road network is available on Confirm but cannot be readily accessed through Dmaps;

- Confirm also has a customer complaints module, which is used by Derbyshire as a mode of reference for inspecting assets and benchmarking performance. This is also used as a customer interface, recording incoming mail and telephone calls/complaints. These are directly linked to the highways reactive maintenance teams.

Individual databases

- Most assets are also stored in individual databases. The sophistication of these databases range from analytical software, such as the Confirm UKPMS system which is capable of storing road inventory details and programming works, to Microsoft Office files containing a list of assets and locations.
- There are some gaps in the data, e.g. unlit traffic signs, and sign types.

Paper Records

- Large amounts of data are kept on paper records. These are not easily accessible, nor consistently recorded or stored.

A list of asset types on Confirm and Geostore is presented in Appendix F – Geostore and Confirm Systems.

3.4 Data Management Related to the TAMP

The structure of the data management will need to be considered carefully throughout the development of the TAMP. An action plan has been developed as part of the TAMP initiative and considers:

- The availability of sufficient current and historical data on asset performance and operational characteristics, to allow asset condition based decisions to be made;
- The integration of asset information across the organisation to establish a single, coherent and consistent view of assets, and their roles within the network;
- The adoption of a consistent approach to data management processes.

A key objective is to ensure that all staff have access to asset information that enables them to meet their responsibilities for management of the assets in an effective and efficient manner.

An assessment has been undertaken to see how these requirements are currently being satisfied, including:

- Identifying what data is currently held, where it resides and its fitness for purpose;
- Assessing the gap between required and currently held data.

Based upon this gap analysis, long term and short term plans have been developed to ensure that the required data is made available (through data collection), effectively managed, and updated. The data collected will also need to satisfy all quality standards.

It is important to remember that the quality of some of the asset data is transitory in nature and can rapidly degrade. To ensure that the data quality is maintained at a high confidence, the following considerations will be made:

- Adequate data management processes and procedures must be in place, for the installation of new and the replacement of existing assets;
- Asset removal and loss must be consistently updated on the systems;
- Asset condition monitoring and subsequent documentation;
- An assurance regime must be in place to ensure that these processes and procedures are being adhered to.

3.5 Asset Register

Currently the Geostore system is the central asset register for environment related data within the Council. An asset register is key to ensuring that asset information requirements are met. It is essential for the asset register to have suitable functionality and accessibility to satisfy all needs. In maintaining the register the following checklist will be applied:

- Review the business requirements for asset information;
- The identification of technical architecture to support these requirements;
- Make use of national and international standards;
- Set up unique identifier for each of the asset items;
- Carry out any necessary data cleansing and collection;
- Ensure the adequate provision of data to users;
- The introduction of effective data management procedures;
- A robust information assurance regime;
- Develop a database that is accessible.

It is necessary to have a management structure that is able to facilitate these considerations. The plans to deliver these tasks will not be static; as with any major change programme, the Plan will evolve as the programme progresses.

The protocols for inspecting assets vary across the Department and asset type. Where protocols exist, they are usually reactive as opposed to pro-active, with no discernable framework in place for the systematic

organisation of asset inspection. However, there are some exceptions, for example signals and street lights, where proactive approach has been adopted.

3.6 Future Data Collection and Verification of all Records

There is a need to improve and maintain the quality of the existing data, and/or collect data that is not currently held, but is required to satisfy the TAMP. The completion of the asset data requirements exercise has identified a programme of work, for each asset data item and highlights where further collection is required:

As part of the development of the TAMP, the following aspects will be confirmed:

- The available asset data meets the quality requirements;
- The data quality and confidence for each asset group is satisfactory.

It is expected that some data will be more efficiently collected as part of the routine inspection or ongoing maintenance regimes of other projects, rather than as a one-off data collection exercise.

For example; consideration should be given to the use of inspectors to collect data on a variety of assets each time they visit an area as part of their normal business. Independent reviews take place of lighting electrical supplies, lighting columns, signals electrical reviews, structures acceptability etc; input from these can be used to update the asset register.



3.7 Data Collection – The Way Forward for Highway Asset Inventory

Currently, inventory, condition and maintenance history information varies across the highway asset. The inventory data on street lighting, lit signs and traffic signals is reliable, digitised and kept up to date. Condition information is also available for the same assets. Coverage of carriageways is not consistent, with data available for A-class roads and the quality of data deteriorating when looking at lower road classifications. The age of data is also causing some concerns. Various levels of condition data is available through Scanner, deflectograph and CVI/DVI surveys. Information on footways is limited. Structures are considered in detail with regards to bridges, whereas culverts are not very well covered. The location of

retaining walls is not known. Some data is available on verges. There is no systematic and usable information on safety fences, barriers, road markings and drainage, although initiatives are underway to resolve this.

To facilitate the implementation of this TAMP, it is essential that existing asset inventory and condition data is collated into a usable data set; gaps have been highlighted and a process set in place to replace missing data and delete inappropriate data. An initial review of the extent of data which may need to be collected has already been undertaken.

As part of the development of the HAMP, a review of possible data collection strategies was carried out, which considered the following three options as a means of addressing the issue of data collection:

- Do Nothing;
- Half Way Approach that will target key asset routes along the highways network;
- Collect all data in Derbyshire.

These options are considered to identify the most appropriate approach to meet Derbyshire's needs.

However, another option that may be pursued along side the above options is a more efficient use of Inspectors. An initial finding of the data requirement phase of the TAMP has highlighted the requirement for a system that will allow Inspectors' visits and findings to be recorded and introduced into the Inventory and Condition databases. As Inspectors visit a variety of assets during their normal course of work this process can be effectively managed by equipping them with the following:

- GPS devices and mobile communications to record data on the ground and report directly back to the central computer systems. An additional benefit of this approach is being able to record the actual routes taken by the inspectors via GIS to support a defence under Section 58 of the Highways Act or other legislation.
- Hand held mobile devices to record observations and defects; these devices will be enabled so that data updates into the Inventory and Condition databases will be possible.

The option of employing video data collection has also been investigated. This technique utilises high-resolution video cameras to record a comprehensive survey of the network. There are various systems available, offered by a variety of suppliers. Most systems incorporate a highly accurate GPS and/or Chainage based system to give (sub) 1 metre accuracy. Video collection survey speeds can be variable, up to 100km/hr, using an array of between 3 and 7 forward, angled (side / rear) or downward facing cameras.

Some of the latest systems allow the user to determine the angle of the cameras, depending on the nature of the network surveyed, to ensure that all items of interest are recorded. No traffic management or disruption of the network is required. The collected data can be post-processed, in an office environment, to extract a fully compliant



Routine Maintenance Management System (RMMS) inventory, or post-processed using advanced computer techniques based on pixel recognition software which records the asset and triangulates the location for improved accuracy providing consistent asset attribute collection without inducing errors through operator distraction. For some of the systems, the video is supplied with software that facilitates asset / map based synchronisation and screen measurement allowing the dimensions of inventory items (e.g. sign sizes and lamp column heights) to be collected to within a 10% or better accuracy.

It must be noted that in many cases, it may be appropriate to combine walked and video surveys to ensure that all required items (as identified in Chapter 3 above) are collected in the way most appropriate for Derbyshire County Council although this process can be targeted by recording parked vehicles during the post processing to minimise the extents of foot surveys.

As a result of the work undertaken during the development of this HAMP, including the Data Collection Report, the gap analysis, the action plan and the Steering Group workshops, the Council has decided to carry out inventory data collection to address the gaps identified in data for the highway network.

To achieve this, expressions of interest were invited to collect highway inventory data, resulting in tenders being submitted, which are currently under evaluation. The tender applicants were invited to respond to a comprehensive specification for asset groups and their attributes. This specification was developed to meet the requirements for implementing this HAMP and later the TAMP.

It is anticipated that the collected data will support all aspects of implementing this HAMP, including the development of lifecycle plans,

forward works programmes and asset valuation, as described in the following sections.

3.8 Sharing Data

It is important that those who identified a need for asset information have adequate access to this information. Where the data is to be held in an existing repository, access procedures already exist and these procedures will be refined where this will improve ease of access. The absence of accurate and relevant data will reduce the ability to develop a high confidence in the outputs of the TAMP and the associated forward planning and budget requirements.

Most data is held on separate databases, and referenced to Dmaps within the Geostore software; this can be accessed as a layer by all departments. Considerations are currently being given to the provision of additional data to be linked to the information on the Geostore software to allow for read-only access of external database information.

3.9 Data Management Procedures

The maintenance of asset data to the required quality standard necessitates effective data management and assurance procedures; associated with this will be the need for control through a defined management structure. The TAMP will ensure that system requirements and data needs are identified before collection. This will reflect the prioritised data needs.

3.10 Support System Development

The different systems and attributes need to be established before data collection commences. This will be based on necessity rather than desire.

Where deficiencies in existing database usage are identified and improvements, including new systems, are required there is a need to consider whether these are to remain standalone or be part of a central integrated system that is connected to each department.

Where data is considered to be deficient, a programme for data collection has been developed. This takes into account budget levels and prioritises data collection and considers:

- The asset information required to include location, date installed, type, condition measure, etc;
- Details of which key business decisions this information supports and how it will be used;
- Data quality measures, including the required level of accuracy and currency.

-
- An assessment of existing data systems' ability to meet to hold data or meet the TAMPs objectives.

4 FUTURE DEMAND

Future demand may be defined as traffic demand placed on the network, e.g. traffic flow, weight and size. Traffic can be vehicular, cyclist or pedestrian.

The TAMP considers increased (or reduced) traffic requirements where known and this will include consideration of:

- Increasing population;
- Increasing economic activity;
- Division of households into smaller and more numerous units;
- Increasing personal wealth and longevity of life;
- Increasing numbers of driving licence holders;
- Demographic changes (urban/rural balance).

Required forecasts are based on current transport and economic policies, together with the best available traffic behaviour information. Forecasts for HGVs are also to be considered. Levels of Service and performance measurement take due consideration of increasing or decreasing traffic volumes and changes in known transport policies.



Derbyshire County Council have considered future demand within LTP2. The TAMP, reflecting current transport objectives, considers future demands in the development of lifecycle plans and budgets.

Derbyshire's current car ownership average indicates around one quarter of households have no car, which is just below the national average, however in some areas this can be as high as 49%. This creates major inequalities, with difficulties with access to hospitals being highest on people's concerns.

It has been calculated that between 2001 and 2011, a 20% increase in car numbers is expected in Derbyshire. Clearly, the impact of transport, or the lack of it, will have serious consequences for the Council today and in the future.

One of the key priorities in the Derbyshire LTP2 is sustainable development, defined in the LTP2 as the "development which meets the needs of the

present without compromising the ability of the future generations to meet their own needs". To this end, one of the LTP2 targets is to limit traffic growth to 2% per year, by the year 2010. At the same time, use of public transport and cycling is to be increased, with access to services for all communities being a key priority.

This and future developments of the TAMP need to provide the basis for managing the transport asset in an efficient manner to support the delivery of the LTP2 targets.

Future versions of the TAMP will need to continue to accommodate future demands, as policy evolves and adapts to changing requirements.

5 LIFECYCLE PLANS

5.1 Overview

The objective for lifecycle planning is to achieve the minimum whole life cost when considering a long-term view (20 to 30 years) of the asset and the service provided, so as to ensure that expenditure is invested in a manner that will deliver long-term value for money while meeting Levels of Service and the Performance Targets identified in this TAMP.

Lifecycle planning requires the development of an optimised cycle of the management and maintenance activities that each asset, contract or services will require while providing the intended Level of Service for the duration of the service, including (where appropriate) planning, design, construction, operation, maintenance, rehabilitation/reconstruction and disposal. It can be used as general guidance to assist in the identification of specific maintenance needs over the various stages of the service delivery and provide a link to the short term planning process.

Lifecycle Plans have been developed for managing Derbyshire's assets with the aim of providing the desired performance as measured by the Levels of Service and performance targets, at the whole life costs. The asset lifecycle process is shown diagrammatically in **Figure 5.1** as it applies to physical assets, but could be adapted for use for contracts or services.

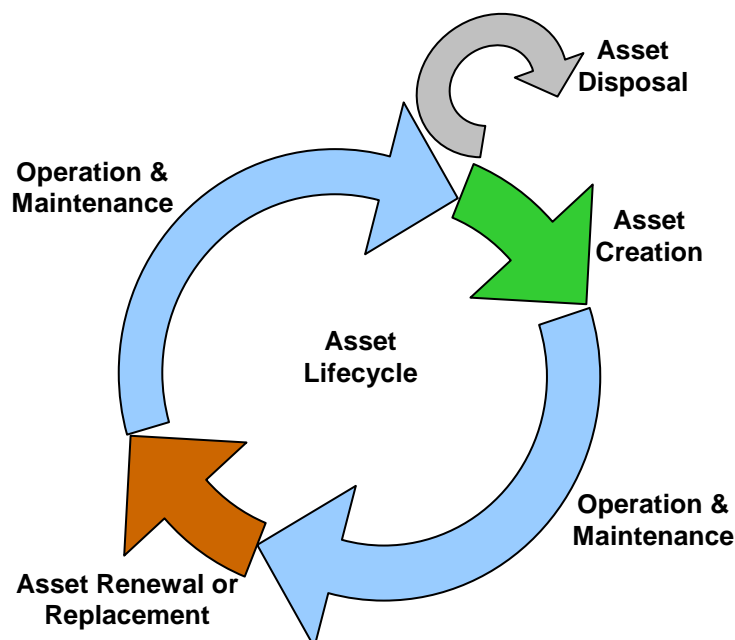


Figure 5.1 – Lifecycle Plan

For this TAMP, the lifecycle plans will be used to identify the cost to meet the maintenance needs over the life of the service provided by current assets (individual and/or grouped) existing on the network, and provide an indication of the existing 'backlog'. The lifecycle plans will consider:

- **Maintenance option selection** – Identification of optimal maintenance treatments;
- **Long-term Planning** – To produce a budget estimate for a target condition or performance (or for a given budget produce the resulting condition estimate).

The initial plans will use the most readily available data. These plans are to be continually reviewed and/or revised as data with higher confidence is made available.

5.2 Current State of Lifecycle Planning

At present, lifecycle planning is generally not considered by Derbyshire for most of its assets. However, Street Lighting and Structures do consider some limited lifecycle planning (bulb replacement, cleaning) on a short term basis (one to two years), which allows them to prioritise works based on component age data.



Prioritisation of maintenance works is currently based on cost (available funding), condition and hierarchy. Forward budgets are generally based on previous years expenditure, although some capital schemes do have specific budgets.

5.3 Process Map

The process map shown in Figure 5.2 presents the approach adopted in this TAMP to the development of lifecycle plans. This figure refers principally to highway assets. The process for other transport assets is similar, although it is anticipated that the process map will have to be further developed in future versions of the TAMP to demonstrate that the particular requirements of other transport assets are included.

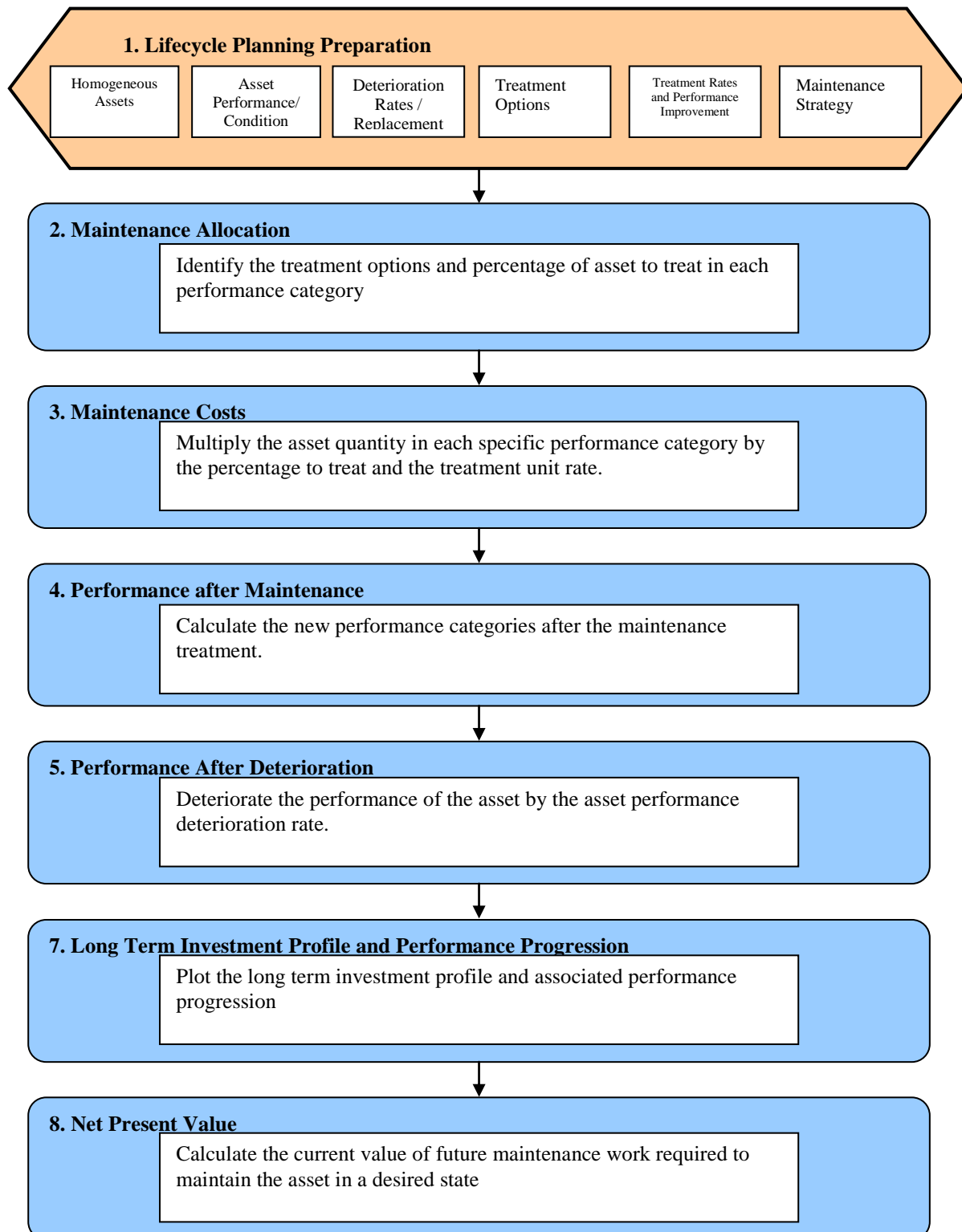


Figure 5.2 – Lifecycle Plan Development

5.4 Development of Lifecycle Approach

Lifecycle Plans have been prepared for each asset, using basic condition/performance data from the network, for each asset type within each asset group. The plan describes, in general, how these assets are to be maintained so that the minimum whole life cost can be achieved whilst also achieving the required Level of Service. The Lifecycle Plans take account of:

- The data collection regime required to provide the condition data to create the plan;
- Routine and cyclic maintenance activities and how these activities may be optimised in conjunction with capital works;
- Renewal or enhancement work as part of the capital programme.

The Lifecycle Plans for each asset type take account of current condition, predicted deterioration based on component service lives. This approach provides the basis to model effects of different maintenance strategies.



6 LIFE CYCLE COST MODELS

A lifecycle model has been developed to analyse maintenance strategies including the spend profile for the various components of the highway assets.

A simple model has been developed (in the Microsoft Excel application) to calculate cash flow over a long term period. For ease of use, the model has fields that require manual input as well as dependent cells that are automatically calculated upon manual input elsewhere.

The model analyses planned maintenance scenarios. This includes asset renewal/replacement and excludes routine maintenance and emergency activities. As experience in Lifecycle and Asset Management is gained in the future and new software becomes available, the model complexity can be increased.

During development of this TAMP, models have been developed for:

- Pavements;
- Street Lighting;
- Signals;
- Safety Fencing;
- White and Yellow Lining;
- Early thoughts have been given to a Structures model;
- Models need to be developed for other transport assets.

These models produce Net Present Values (NPVs) for the elements of the Network they model.

The following paragraphs describe how the process has been implemented for the example of highways. Similar process needs to be developed, tested and implemented for the other physical transport assets. With regards to the services to be included in future developments of the TAMP, for example subsidised bus services, the same process needs to be modified to accommodate the requirements of such services.

6.1 Lifecycle Cost Plans

Typical outputs of the lifecycle cost plan for the homogeneous asset groups include:

- Identification of maintenance backlog in order to meet performance targets and Levels of Service;
- Costs associated with meeting backlog;
- Anticipated annual costs and ongoing spend profile;

- Annual costs per treatment;
- Annual condition performance and ongoing progression.

It must be noted that costs should be discounted back to current year.

6.1.1 Input

The model makes use of user inputs of the asset type, quantity, condition, service life, deterioration, growth and weighted average unit rates for various maintenance scenarios.

Tables documenting the inputs used are provided. The information contained in each of these tables will need to be revised as better knowledge of the network is made available.

The following tables provide examples of the inputs and processes involved in achieving consistency and accuracy in order to develop comparable lifecycle models for all assets.

Assets Quantities

The different asset types modelled have been grouped into the categories listed in Table 6.1.

Table 6.1 – Asset Types Included in Asset Registers

Asset Types	Quantity		Accuracy %	Comments	
				Flexible (%)	Evolved (%)
A Class Road Surfacing	672	km	100	20	80
B Class Road Surfacing	474	km	100	10	90
C Class Road Surfacing	1303	km	99	5	95
U Class Road Surfacing	2656	km	97	40	60
A Class Road Pavement	672	km	100	20	80
B Class Road Pavement	474	km	100	10	90
C Class Road Pavement	1303	km	99	5	95
U Class Road Pavement	2656	km	97	40	60
Signals – Poles	5000	Item	100		
Signals – Heads	5500	Item	100		
Signals – Loops	3592	Item	100		
Signals – Cabinets	377	Item	100		
Electronic Sign Basic	44	Item	100		
Electronic Sign Complex	4	Item	100		

Asset Condition

The quantities of each of the asset types on the network have been split into three homogenous condition bands with the adopted percentages used for

modelling purposes provided in Table 6.1. Asset types that experience straight line deterioration such as line marking and lighting have been split into two homogenous condition bands.

Surface and pavement condition percentages have been based on the results of TTS and Scanner surveys.

Table 6.2 – Asset Condition Profile

Asset Type	Current Condition (%)		
	Good	Fair	Poor
A Class Road Surfacing	34.3	31.2	34.5
B Class Road Surfacing	11.9	23.3	64.8
C Class Road Surfacing	17.7	32.2	50.1
U Class Road Surfacing	15	35	50
A Class Road Pavement	92.9	6.7	0.4
B Class Road Pavement	73.6	23.5	2.9
C Class Road Pavement	71.8	25.1	3.1
U Class Road Pavement	65	30	5
Asset Type	Useful Life of Assets with Straight Line Deterioration		
	Good	Poor	
Signals – Poles	91	9	
Signals – Heads	91	9	
Signals – Loops	91	9	
Signals – Cabinets	91	9	
Electronic Sign Basic	100	0	
Electronic Sign Complex	87	13	

Maintenance Costs and Running Costs

The maintenance scenarios or options of each for the surfacing and pavement asset types on the network have been split into four options. Other asset types have the maintenance options or scenarios split into three options with the adopted unit rates used for modelling purposes provided in Table 6.3.

The unit rates used are based on a weighted yearly average spend for all maintenance options that fall into each of the categories used in the model. These have been included for illustrative purposes.

Table 6.3 – Weighted Average Maintenance Costs

Asset Type	Unit Rates (£/m ²)			
	Strengthen	Intermediate	Superficial	Holding
A Class Road Surfacing			10.29	4.02
B Class Road Surfacing			10.29	4.02
C Class Road Surfacing			8.16	1.89
U Class Road Surfacing			7.93	1.66
A Class Road Pavement	28.37	16.5		
B Class Road Pavement	28.37	16.5		
C Class Road Pavement	24.24	14.37		
U Class Road Pavement	17.13	12.26		
Asset Type	Unit Rates (£)			
	Replace	Repair	Holding	
Signals – Poles	100.00			
Signals – Heads	900.00			
Signals – Loops	410.00			
Signals – Cabinets	3500.00			
Electronic Sign Basic	6000.00			
Electronic Sign Complex	27000.00			

In order to simplify the development of the Lifecycle Plans, the Council have not given consideration to the effects of routine maintenance (e.g. painting, sweeping, etc) for the assets. This does not necessarily prolong the life of the asset but may well maintain the original planned life. However, it is to be included as a separate budget item within the financial plan.

It is assumed that generally, routine maintenance is cost-effective in whole life terms, although as the TAMP and Asset Management processes develop, routine maintenance will be revisited to ensure that the maximum life of the asset is being achieved.

Service Lives and Deterioration (Contract Life)

In the Lifecycle model the service lives and expected deterioration for each of the asset types on the network are based on the expected statistical movement of asset quantities from one condition state to the next. The percentages used are based on the results of the Council's Scanner survey results. The adopted percentage movement used for modelling purposes is provided in Table 6.4.

Asset types that are classed as having a straight line deterioration, such as line marking and lighting, have been given a predetermined useful life.

Table 6.4 – Asset Deterioration

Asset Type	Yearly Percentage Movement (%)	
	Good to Fair	Fair to Poor
A Class Road Surfacing	20	1
B Class Road Surfacing	20	1
C Class Road Surfacing	20	1
U Class Road Surfacing	20	1
A Class Road Pavement	1	1
B Class Road Pavement	1	1
C Class Road Pavement	1	1
U Class Road Pavement	1	1
Asset Type	Useful Life of Assets with Straight Line Deterioration	
Signals – Poles	15	
Signals – Heads	15	
Signals – Loops	5	
Signals – Cabinets	15	
Electronic Sign Basic	15	
Electronic Sign Complex	15	

6.1.2 Output

Strategy or Budget Options

The initial aim is to reinstate the asset stock to a fair or better condition between Year 1 (2007) to Year 5 and manage the network in a steady-state condition from Year 6 to Year 20.

Different budgets have been applied to each of the asset types defined in the asset registers. The strategies are viewed as a distribution of total expenditure on the asset type in each year.

In determining the appropriate spend profile, a minimum of three budget profiles have been investigated:

- Current budgets with estimated annual increase based on National CPI figures (sustain the current performance over the period of the TAMP);
- Unconstrained budget to deliver ideal condition outcomes. (close the performance gap and sustain the target performance over the period of the TAMP (where applicable));
- An optimal budget based on funding constraints and the need to deliver and maintain assets at level of minimal risk (begin to close the performance gap over the period of the TAMP (where applicable)).

These plans have been developed in Microsoft Excel and all assumptions that have been made during the development process are included within this document. The Excel model produces graphical representations of the expected condition profile that would be delivered using the various spend profiles. Figure 6.1 and Figure 6.2 show diagrammatically how the

maintenance backlog and expenditure profiles can be reviewed. Similar graphs can also be produced to demonstrate long term and short term performance of contracts and services.

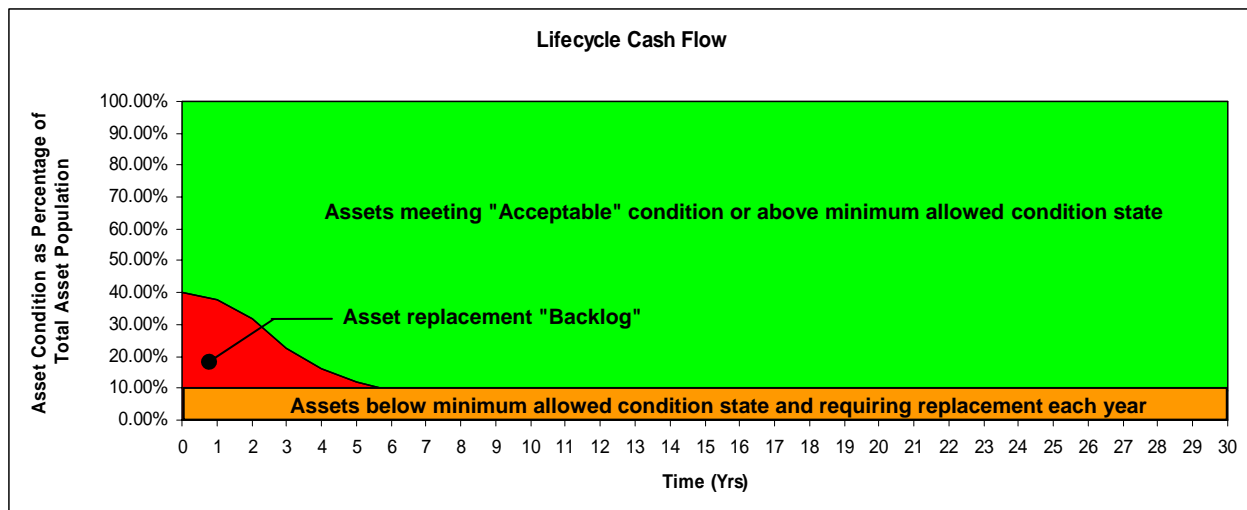


Figure 6.1 – Maintenance Backlog

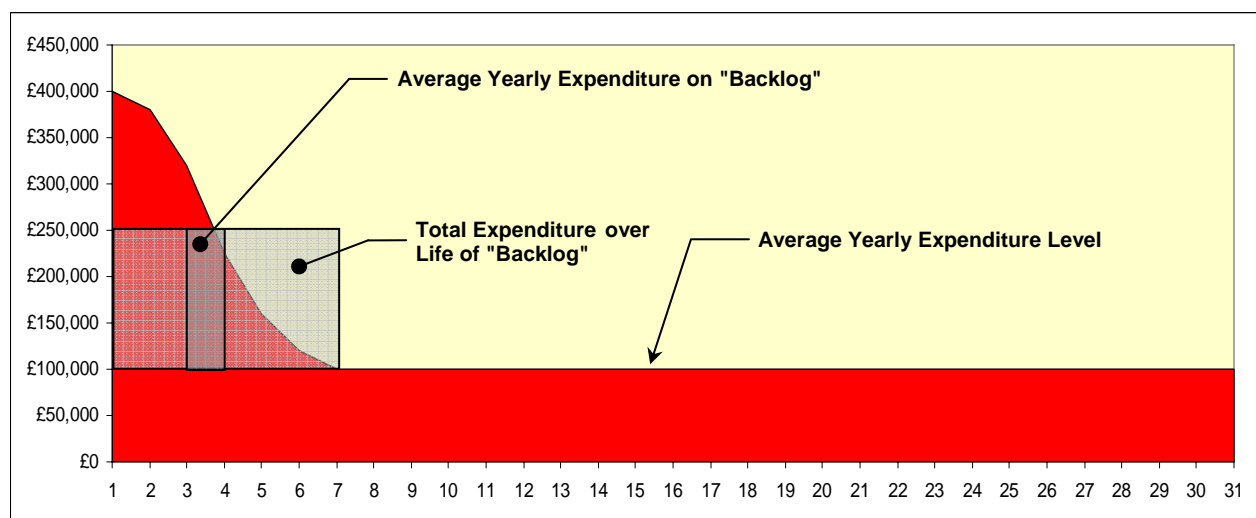


Figure 6.2 – Predicted Expenditure

6.2 Work Plans and Financial Plans

6.2.1 Overview

The Work Plan is a short term plan of 3 to 5 years for the entire network which is regularly reviewed to take account of changing budgets, expectations and conditions. Its purpose is to identify future works and ensure that those works deliver the required Levels of Service in the context of delivering value for money.

6.2.2 Current State

At present forward works programmes are based on current condition of the network assets which are prioritised based on a risk and/or 'worst first' approach.

This approach has been adopted to meet BVPI reporting requirements. Future changes to Local Authority Management and the introduction of National Indicators will remove the need to focus on the "worst first" approach.

6.2.3 Development of the Works Programme and the Financial Plan

The first step in the development of the works programme is to develop rules for the prioritisation of schemes, not solely based on BVPIs but on value for money and Levels of Service.

The Council's approach in this TAMP has been to adopt the Value Management Process alongside the current BVPIs.

This process is described in "Well Maintained Highways" the national Code of Practice for Highway Maintenance⁶. The output from this process will be a list of schemes that align with the Levels of Service developed in this plan and are therefore not wholly based on maintenance considerations.

6.2.4 Works Programme

Area Staff have been charged with the task of developing the Works Programmes based on the adopted approach and within the budgetary constraints determined by the Lifecycle Cash Flow analyses produced for each of the asset types.

The outcomes of the selected Works Programmes are then used to build the Financial Plan and to provide details of the required funding.

7 RISK MANAGEMENT

7.1 Overview

Risk is considered at various levels in the Council and these include strategic, tactical and operational. As such, risk management is fundamental to the development of the TAMP and should be considered as part of the decision making process throughout its development.

There are various definitions for risk; the Audit Commission's definition of risk and risk management as contained in its Paper, "Worth the Risk: Improving Risk Management in Local Government"¹⁴ is accepted by Derbyshire.

"Risk is the threat that an event or action will adversely affect an organisation's ability to achieve its objectives and to successfully execute its strategies."

Risk Management must be consistent and comprehensive with processes that are embedded in the everyday management of the asset and reflected in the Lifecycle Plans.

7.2 Current State

Derbyshire has an existing Risk Policy¹⁵ (Report of the Director of Corporate Resources, dated 6 April 2004). The following extracts are taken from this document:

"Risk Management is the practice of identifying, analysing and controlling in the most effective manner all threats to the achievement of the strategies, objectives and operational activities of an organisation."

It is recognised that a certain level of risk is necessary if the Council is to move forward. A structured and systematic approach to risk will enable it to be accepted within the context of sound financial management and allow innovation to flourish."



Derbyshire is committed to the effective management of risk in order to:

- Safeguard employees, service users, members, pupils, tenants and all other persons to whom the Council has a duty of care;
- Ensure compliance with statutory obligations;
- Preserve and enhance service delivery;
- Protect its physical assets and resources;
- Maintain effective control of public funds;
- Promote the image and reputation of the Council;
- Support the quality of the environment.

7.3 Risks Associated with the TAMP

Initially, it is expected that there will be risks associated with many of the activities required to deliver a successful and useful TAMP. The primary areas where risks to the TAMP development need to be addressed and managed include but are not necessarily limited to:

- **Data Acquisition** – There is a risk associated with data collected as part of the TAMP. This can include data collected for inventory, safety, serviceability and condition. The TAMP will be developed by identifying these risks and suggesting and employing measures to mitigate any consequences. Typical risks include frequency and coverage of surveys against the cost of the surveys, as well as currency and accuracy of data.
- **Strategic Level** – Strategic risks are associated with political, legal, commercial and environmental decisions and activities. These may have major impacts on long term plans and would necessitate a review of the TAMP when they become apparent.
- **Levels of Service** – These are risks associated with the delivery of agreed levels due to financial reasons.
- **Lifecycle** – Risks at lifecycle level include correct interpretation of the existing condition of the network and the adoption of the correct deterioration and cost models.
- **Financial** – These are risks associated with the ongoing financial ability to provide and maintain all aspects of the service delivery.
- **Works** – The majority of major risks may be mitigated, designed out or accepted as possibilities. Major risks include certainty of works cost and delivery of the Levels of Service over the Lifecycle.

7.4 Risk Management Strategy

The Risk Management Strategy defines how risks will be managed during the lifecycle of the services provided by the Council and is used to plan the way risks are handled within Derbyshire.

The existing corporate risk policy has been applied within the TAMP process in the development of an “Asset Management” risk register with the outcomes linking back into the Corporate Risk Register by way of a companion register.

The “Asset Management” risk register should be subject to regular reviews as part of Derbyshire’s ongoing “Code of Practice” meetings, workshops and review processes.

Risk Management, through the development and use of a Risk Register, is used to determine the most cost-effective means of risk avoidance, mitigation and/or transfer by considering:

- **The likelihood of each risk** – a value will be allocated to measure the likelihood of the risk. A low value will represent a small probability and a high value a large probability.
- **The impact of each risk** – this is the consequence of the risk occurring. Low impact risks will be allocated a low value, high impact risks a high value.
- **Risk Ranking** – the risk ranking will be the product of the likelihood and impact of the risk.
- **Action** – an action will be identified to mitigate risk.
- **Residual consequence** – this will rank the residual risk that could occur once the action has been completed.
- **Risk Owner** – Person or organisation nominated to manage the risk.
- **Cost** – Identified cost of risk.

Within the Risk Register, each risk is given a description and categorised in the area of activity. A method for scoring the risks has also been identified by using a Risk Matrix.

Most risks may be identified including the likelihood and the severity of how these risks will impact on the provided services. Examples of identified risks include:

- Safety (safety of road user and road worker, etc.)
- Natural Events (weather, flooding, landslide, etc.)
- Physical Risk (structural failure, traffic accidents, etc.)
- Economic (congestion, inflation, energy cost increase, etc.)
- Finance (availability, investment, etc.)
- Legislative (changes to legislation, policy, etc.)
- Resources (availability of personnel, skills, plant, materials, etc.)
- Public Liability (claims against DCC from public/contractors, etc.)
- Reliance (key personnel/contractors/systems, etc.)
- Systems (system availability/suitability, etc.)



- Politics (policies and objectives change following political change, etc.)

Each of these above risks will be assessed individually using the process within a Risk Management Framework.

7.5 Risk Management Framework

The Risk Management Framework defines how the management of risk has been handled within the Council over the lifecycle of each of the services provided.

The Risk Management Framework has been put into place to provide information on:

- Roles;
- Responsibilities;
- Processes and procedures;
- Standards;
- Tools;
- Facilities;
- Documentation to be produced.

The Risk Management Framework sets the context in which risks are managed, in terms of how they will be:

- Identified;
- Analysed;
- Controlled;
- Monitored;
- Reviewed.

Derbyshire has an existing Risk Management Framework published as part of Report of the Director of Corporate Resources, dated 6 April 2004. The existing Risk Management Framework has been applied within the TAMP process with the outcomes feeding back into the Corporate Risk Register.



7.6 Risk Matrix

An essential step in the process of risk assessment is the development of a suitable and applicable scoring matrix to identify, document and rank the risks associated with the delivery of the required services. Typically, the

scoring matrix is based on minimum and maximum values/definitions for likelihood and impact.

The Council has set criteria for the levels of probability and impact, shown in Tables 7.1 and 7.2 below. The definitions for probability of occurrence are quite short. However, because the impact of the risk, should it occur, can be much wider, a more comprehensive set of definitions is required.

Table 7.1: Description and definitions of Impact of the risk should it occur

Description	Descriptor	Level / Scale
<ul style="list-style-type: none"> Insignificant disruption on internal business – no loss of customer service No injuries No reputation damage No or insignificant environmental damage Low financial loss 	8 Insignificant	1
<ul style="list-style-type: none"> Some disruption on internal business only - no loss of customer service Minor injury (first aid treatment) Requires disciplinary action against the staff responsible Minimal reputation damage (minimal coverage in local press) Minor damage to local environmental damage Medium financial loss 	9 Minor	2
<ul style="list-style-type: none"> Noticeable disruption to DCC – would affect customers (loss of service no more than 48 hours) Violence or threat or serious injury (medical treatment required) Coverage in national tabloid press and/or extensive front page coverage in local press and/or TV Moderate damage to local environmental damage High financial loss 	10 Moderate	3
<ul style="list-style-type: none"> Major disruption to DCC – serious damage to organisation's ability to service customers (loss of service for more 48 hours but less than seven days) Coverage in national (broadsheet) press and/or low national TV reporting Extensive / multiple injuries Major damage to local environment Major financial loss 	11 Major	4
<ul style="list-style-type: none"> DCC unlikely to survive, or loss of service delivery for more than seven days Extensive coverage in national press and broadsheet editorial and/or national TV item Significant local, national and/or international environmental damage Huge financial loss 	12 Catastrophic	5

Table 7.2: Description and definitions of Probability of the risk occurring

Description	Descriptor	Scale / Level
May occur only in exceptional circumstances	Rare	1
Is unlikely to, but could, occur at some time	Unlikely	2
Fairly likely to occur at some time, or in some circumstances	Moderate	3
Will probably occur at some time, or in most circumstances	Likely	4
Is expected to occur in most circumstances	Almost certain	5

The next step is to multiply the probability score by the impact score in order to calculate the overall risk score, as shown in the probability matrix in Table 7.3.

Table 7.3 – Probability Matrix

I M P A C T		Rare	Unlikely	Possible	Likely	Almost Certain
	Catastrophic	5	10	15	20	25
	Major	4	8	12	16	20
	Moderate	3	6	9	12	15
	Minor	2	4	6	8	10
	Insignificant	1	2	3	4	5
Probability Rating		1-4	Minor risk			
		5-9	Significant Risk			
		10-16	Serious Risk			
		17-25	Critical Risk			

Table 7.4 shows response times for the different probability ratings.

Table 7.4 – Managing Risk

Level of Risk / (Inherent Risk Score)	Indicated by	How the risk should be managed
Critical(17-25)	Red	Requires active management High impact / High probability: risk requires active management to manage down and maintain exposure at an acceptable level
Serious(10-16)	Amber	Contingency Plans A robust contingency plan may suffice together with early warning mechanisms to detect any deviation from profile)
Significant(5-9)	Yellow	Good Housekeeping May require some risk mitigation to reduce likelihood if this can be done cost effectively, but good housekeeping to ensure the impact remains low should be adequate. Reassess frequently to ensure conditions remain same.
Minimal (1-4)	Green	Review periodically Risks are unlikely to require mitigating actions but status should be reviewed frequently to ensure conditions have not changed

Appendix H includes a worked example, demonstrating how the process described in this chapter may be applied.

7.7 Risk Register

The Risk Register lists all the identified risks associated with the delivery of the required services within the Council and the results of their analysis, evaluation and status. These details are then to be used to track and monitor management as part of the activity to deliver the required services.

The typical fields of information to be included in the risk register are described in Table 7.5.

Table 7.5 – Risk Register Definitions

	Field	Definition
Risk Definition/Description	Risk Number	Unique identifier for each risk.
	Risk Categories	Identifier used to enable consistency in the recording of risk.
	Risk Area	Service area.
	Risk Description	The "trigger" that will show that the risk has happened and "result" the impact of the risk happening.
Current Risk Score	Risk Likelihood 1 – 6	The probability of risk occurrence.
	Risk Impact 1 – 4	The consequence (or impact) as a result of the risk occurring.
	Risk Score	The priority of action.
	Risk Tolerance	Level at which risk is not acceptable.
Risk Action Plan	Owner	The person who has overall responsibility for the risk.
	New Control	Mitigation strategies that can be implemented to control the risk. (e.g. prevent, reduce, accept, transfer, contingency.)
	Action Member	Member of service team responsible for carrying out the control measures.
	Action Implementation	Date by which the risk action plan (control measure) is to be implemented.
Target Score	Risk Likelihood 1 – 6	Revised likelihood score taking into account the mitigations introduced as part of the risk action plan.
	Risk Impact 1 – 4	Revised impact score taking into account the mitigations introduced as part of the risk action plan.
	Risk Score	Revised risk score taking into account the mitigations introduced as part of the risk action plan.
Risk Status	Comments	General field for the inclusion of comments.
	Date Reviewed	Date the risk was reviewed.
	Projected Reviewed Date	Date that the risk is to be reviewed.
	Status	Status of the risk whether the risk is new or obsolete, or whether the risk rating as increased or decreased.

Derbyshire has an existing Risk Register detailing identified risks, their score and proposed mitigation procedures. The layout of this register is shown in Table 7.6.

Table 7.6 – Sample of Derbyshire County Council’s Risk Register

Environmental Services Department - Operational Risks 2005/2006											
Identification		Existing Score			Risk Mitigation				Target Score		
Risk No.	Risk Description	Consequence Financial (1-3) + Other (1-3)	Probability (1-3)	Score (1-18)	Existing Risk Mitigation Procedures/Controls In Place	Planned Risk Mitigation Procedures/Controls	Action Manager	Action Date	Consequence Financial (1-3) + Other (1-3)	Probability (1-3)	Score (1-18)
Health & Safety											
1	Employee workplace injuries a) Construction Sites, Workshops & Depots b) Countryside Sites c) Offices	3+3 3+2 3+1	2 1 1	10 5 4	Health & Safety Risk Assessments H & S Manual & Codes of Practice Employee H & S Training H & S Workplace Inspections Professional Health & Safety Officers Departmental H&S Sub - Committee of DJC H&S Management Group Reviews DMT H & S "Champion"	Continue with planned H & S Audits of Sites, Depots, Offices and processes (3yr plan)	RSI	Ongoing	3+3 3+2 3+1	1.7 1 1	10 5 4
2	Construction Design & Management failure - injury to employee, public and/or damage or failure of property or assets	3+1	2	8	Monitoring compliance with the Construction Design and Management Regulations (CDM) Training on COP	Continuing audits/monitoring	MWA RSI	Ongoing	3+1	2	8
Environmental											
3	Pollution arising from depots, workshops and construction sites including salt, fuel/oil etc.	2+3	3	15	Risks identified through site surveys as part of recently approved ISO 14000 Environmental Management System EM system - Audits and actions part of 3 yr plan, with external auditor.	3yr plan of improvements to continue as part of capital plan, working in consultation with the Environment Agency Bid for salt barn improvements	RSI	2005/6	2+3	2	6
4	Security of Depots, Premises and Sites	2+2	3	12	Control of locks, keys etc. Alarm systems in place in some premises Security Fencing Security Guarding CCTV £150k approved for measures	Security Improvements in depots to be implemented	RSI	Oct-05	2+2	2	10

8 MONITOR, REVIEW AND CONTINUAL IMPROVEMENT

8.1 Overview

The TAMP is a 'live' document and as such will require periodic review to update and appraise work programmes and financial plan against current data and conditions, financial provisions, costs of works and customer expectations.

The timing of any reviews will need to consider:

- Network (asset location, currency and condition) auditing – e.g. over sample lengths on a monthly basis;
- Monthly system statistics – e.g. to assist in this process;
- Quarterly Returns – e.g. activities can be reported at this frequency;
- Periodic Surveys/Audits – e.g. by regular visual or automated surveys;
- Random Surveys – e.g. possibly customer satisfaction surveys;
- Annual Statistical Returns;
- Compliance Monitoring – e.g. contractor and consultant's outputs.



The Council's various departments have determined appropriate frequencies associated with the maintenance of accurate and usable data sets required for the delivery of Asset Management outcomes. These review dates have been documented and are provided in Table 8.1.

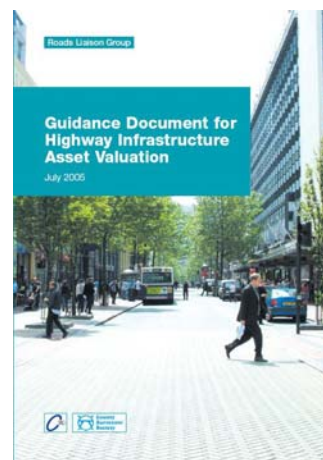
Table 8.1 – Process Review Dates

Data Set, Procedure and or Document	Responsible Officer or Department	Frequency to be Reviewed	Review Date	Reviewer
Visual Pavement Condition		Yearly		
Structural Pavement Condition				
Pavement Rutting				
Street Light Audit				
Retaining Wall Condition				
LTP		5 Yearly		
TAMP		5 Yearly		

9 ASSET VALUATION

9.1 Background

The County Surveyors' Society and the TAG Asset Management Working Group published a *Guidance Document for Highways Infrastructure Asset Valuation* in July 2005, as a companion document to the *CSS Framework for Highways Asset Management*. These publications are supported by HM Treasury, ODPM, DfT, CSS, TAG and SCOTS, and it therefore follows that its recommendations will be expected to be followed by most highway authorities.



Asset valuation is the calculation of the current monetary value of an Council's asset. The current monetary value being defined as the depreciated replacement cost (DRC), which is the gross replacement cost (GRC), less the accumulated consumption (AC) where;

- The GRC is the cost of replacing the asset with a Modern Equivalent Asset, using standardised Unit Rates.
- Accumulated consumption (AC) is the depreciation in value due to ageing, usage, deterioration, damage, reduced service levels and obsolescence.

The following table provides a simplified formula for the calculation
 $GRC - AC = DRC$:

Table 9.1 – Formula for the calculation of GRC, DRC and AC

Asset	Quantity	Life	Remaining Life	Unit Rate	GRC	DRC	AC
Asset Type	Quantity of Asset	Design Life of Asset	Remaining Life of Asset	Unit Rate to replace asset	Asset Quantity x Rate	(Remaining Life / Life) * GRC	GRC - DRC

The need for Asset Valuation is described as:

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

To support the calculation of the highway asset value for the network, a Microsoft Excel-based model has been developed.

The model has the following six key stages and follows the Guidance Document for Highway Infrastructure Asset Valuation:

- Classify Assets;
- Review Baxter Indices;
- Input Scheme Information;
- Define Asset Depreciation;
- Input Asset Information;
- View Valuation Results.

These align with the process described in the Guidance Document for Highway Infrastructure Asset Valuation. The user completes all of the key stages through the Asset Valuation menu, as shown in figure 9.1.

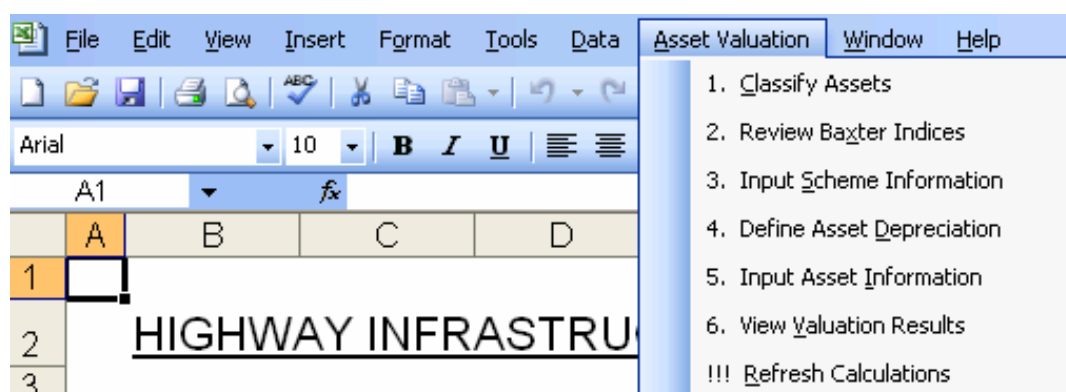


Figure 9.1 - The Asset Valuation Menu

Derbyshire County Council, recognising the importance of understanding the value the highway network is providing to customer satisfaction, and preparing for forthcoming changes to local government accounting standards and requirements, will review the highway asset value on an annual basis. This will monitor changes to the overall value, hence providing factual data for assessing the performance and suitability of maintenance policies.

Currently, the guidance document is applicable on physical assets only, and does not cover transport services. Furthermore, the available guidance focuses on the highway asset, and it gives a detailed list of asset groups and sub-groups that should be included in asset valuation. However, the same process may be applied to all physical assets related to transport. There are no plans at present for assigning an asset value to transport services.

10 THE WIDER TRANSPORT ASSET

10.1 Overview

This TAMP, which provides the essential link between the strategic LTP2 and the everyday management activities of the transport asset, was developed based on the final TAMP developed in February 2008. Figure 10.1 demonstrates how the HAMP and TAMP will eventually form an integral part of Derbyshire's Corporate Asset Management Plan.

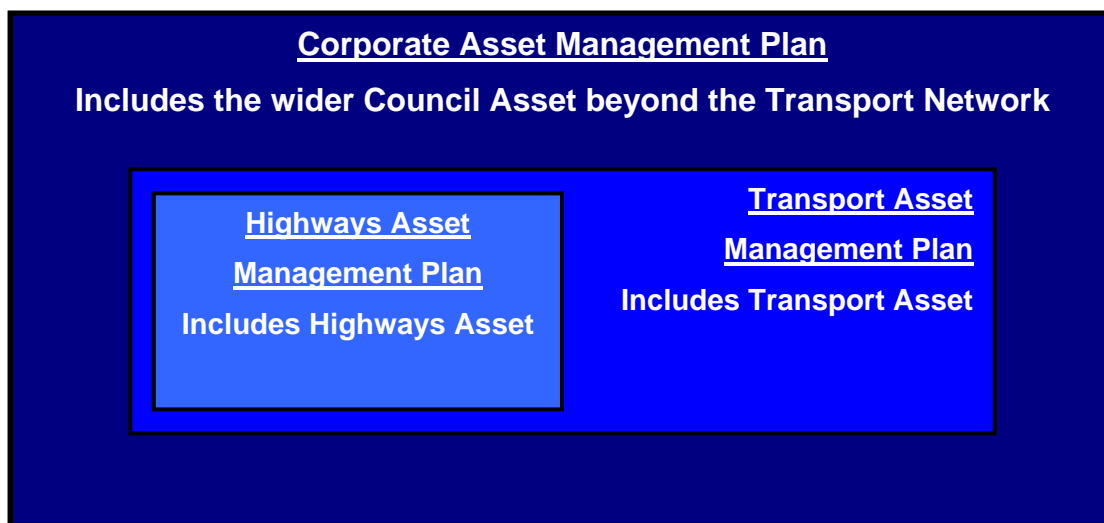


Figure 10.1 - Key Contents of HAMP, TAMP & CAMP

The TAMP is a document that provides a comprehensive statement of the extent and condition of transport assets, and a realistic, co-ordinated programme of future investment, maintenance work, actions and improvements while covering all of the transportation assets, including many services which are not funded through the LTP. A TAMP applies the principles of Asset Management on the wider transport asset base and provides the tactical link between the LTP and operations. At the same time, the TAMP provides a link with the Traffic Management Act (TMA) Delivery Plan.

The compilation of a TAMP will provide the Council with a tool to:

- Support the corporate provision of detailed information on the assets held by the whole Council - enabling better definition of longer-term corporate need and continual challenge to asset holding / use;
- Establish and communicate a clear relationship between the programme set out by the TAMP and the Council's LTP targets and objectives, and ensure existing assets are in a condition compatible with the delivery of the LTP;
- Obtain and organise information to support the forthcoming requirement for Whole Government Accounting (WGA);

- Enable the value for money of local road maintenance to be considered more effectively against other Council spending pressures, local transport spending, and eventually assist local transport strategy and plan production.

Derbyshire County Council can already demonstrate that best use of property and other assets, in the form of Asset Management Plans, which are made available to both Central Government and to their regional Government Office as required. The same principle may be applied for the entire transport asset, through the implementation of the TAMP. The TAMP is a document that considers optimising the use and service delivery of an asset portfolio by integration rather than simply managing them in an



efficient way (HAMP) in isolation. The TAMP forms a crucial link between the LTP and the implementation of asset management processes. It adds value to the HAMP process by clearly setting out corporate goals, objectives and strategies by which the assets will be managed and takes into account long term plans and future influences.

Derbyshire County Council has a commitment to developing and adopting the TAMP in order to realise all potential benefits for its stakeholders. The first benefit of building the HAMP into a TAMP is the wider involvement of stakeholders that will need to contribute to the development of the document. The production of the HAMP has already encouraged wide spread consultation with various parts of the Council, to capture current knowledge, record future needs and develop appropriate and suitable processes. The TAMP will encourage more of the stakeholders to be involved, hence allowing for a wider picture to be addressed.

The following paragraphs describe the service provided by Derbyshire County Council with regards to the transport assets covered by the scope of this TAMP.

10.2 Canals



10.3 Public Transport

Public Transport is not managed by Derbyshire County Council to ensure that the communities can be included and sustained within the County in line with the aims of the Council Plan objectives providing access for all to health, education social recreational and work and special needs support. In order to achieve this, the Council supports, creates and integrates public transport services where commercial operations do not exist, therefore meeting the Council Plan aims and objectives including managing school and community transport. Furthermore, interfaces with local and regional rail services are considered.

Due to the nature of the Public Transport service, the Council is interfacing with a number of private organisations that deliver the service. To this end, the Council has some limited control over parts of the service, as listed below:

- Commercial services – 85 % - not in control
- Contracted / subsidised services 15% - in control

In addition to the above, the Council has the responsibility for managing concessionary fares. It must be noted that currently, Derbyshire is operating Public Transport services on 5 year contracts. However, it is believed that the forthcoming Transport Bill will change the requirement to 8 year contracts.

The Public Transport asset managed by Derbyshire includes the following elements:

- Bus Station –(Managed by Corporate Services)
- Bus Stops / flags
- Timetables (Managed with share responsibility with the operators)
- Bus Shelters – (Managed mainly by Parish Councils, with Derbyshire County Council having some limited responsibility)
- Lighting of shelters



The level of service provided is prioritised based on the numbers of likely users. Currently, the service provided is described as:

- Provision of a service for
- Provision of a frequent service for
- Provision of a higher level frequency of service for

The numbers of likely users are also considered when deciding on the size of bus and the level of subsidy by the Council.

The service provided is currently measured and monitoring with appropriate KPIs covering:

- Number of users
- Mobility issues – raised access / seat belts / wheelchair fixings
- Better information.

10.4 Cycleways and Cycle Routes

10.5 Public Rights of Way (PRoW)

Public Rights of Way (PRoW) form an essential part of Derbyshire's transport network. There is an extensive network of PRoW for which the Council is responsible for maintaining their functionality in order to provide access for all to health, education social recreational and work. The responsibility for managing PRoWs in Derbyshire lies with a team whose role is to maintain, develop and enhance the network within Derbyshire including its legal protection. The same team is responsible for interfacing with the Peak District National Park.

The PRoWs asset includes the following elements:

- Footpaths
- Bridleways
- Byway Open to All Traffic (BOATs)
- Road Used as a Public Path (RUPPs)
- Off Highways Cycle Routes
- Countryside Car Parks

Within these, there are a number of fingerposts, stiles, bridges and fords that are maintained by the Council. Furthermore, some parts of the PRoWs network has been covered with what is known as enhanced surfacing, which are also maintained by the Council.

A hierarchy of the PRoWs network has been developed, based on the usage of the network. The provision of maintenance for the network is based on use, as described below:

- Low usage – maintained usable and safe low priority for enhancement works
- Medium usage – maintained to better user standards and safe medium priority for enhancement works
- High usage – maintained to best usable standards and safe high priority for enhancement works

The performance of the service is monitored though appropriate KPIs. Currently, KPIs are employed to measure both the availability and condition of the network.

In deciding maintenance priorities for the PRoWs network, a risk management approach is considered in terms of use and risk to users

10.6 Bus Services



10.7 School Buses

10.8 On –Street Parking

10.9 Vehicle Fleet

The responsibility for managing Derbyshire's vehicle fleet lies with the County's fleet manager. The principles of asset management, as described in this TAMP, are well embedded in the management of the vehicle fleet. The elements of asset management that are already in place are summarised below:

Asset Base and Characteristics: Complete records of vehicle fleet assets are held, together with their condition and value, as well as their predicted and actual operation costs. These contribute to the maintenance of an appropriate vehicle fleet that meets the statutory and developing needs of the Council.

Levels of Service and Performance Targets: The changing economic and environmental pressures regarding sustainability and modes of transport are taken into consideration when setting levels of service for the standard of vehicles to be utilised in meeting the Council's needs. Performance targets are set to economically and effectively deliver the maximum benefits to the users.

Future Demand: Continuous monitoring of the fleet and the activities of the Council allows for a reasonable prediction of future demand and budgeting

Lifecycle Plans: All fleet vehicles have a lifecycle plan which considers their purchase, running costs and eventual disposal

Risk Management: The fleet manager maintains a risk register for all vehicle operations

Asset Valuation: The asset value of all vehicles is maintained based on depreciation models

APPENDIX A - REFERENCES

1. Framework for Highway Asset Management, County Surveyors Society, April 2004
2. PAS 55-1 Asset Management: Part 1: Specification for the optimized management of physical infrastructure assets, The Institution of Asset Management and BSI, 2004
3. Provisional Local Transport Plan 2 2006-11, Environmental Services Department, Derbyshire County Council
4. Guidance Document for Highway Infrastructure Asset Valuation, CSS, July 2005
5. Gershon, P. (2004), Releasing Resources for the Frontline: Independent Review of Public Sector Efficiency (HM Treasury)
6. Well-maintained Highways: Code of Practice for Highway Maintenance Management, July 2005, TSO, ISBN 0 11552 643 9.
7. The Council Plan, Derbyshire County Council 2003 – 2005
8. Departmental Objectives 2003/04, Derbyshire County Council, Environmental Services
9. Service Plan 2005/06, Harvey D – Strategic Director of Environmental Services, Derbyshire County Council, Environmental Services Department
10. The Local Government (Best Value) Performance Plans and Reviews Amendment and Specified Dates Order 2002, Statutory Instrument: 2002 No 305 Local Government, England and Wales, HMSO
11. Best Value Inspection, Derbyshire County Council, October 2001 ,
12. Derbyshire Network Management Plan, July 2005, Environmental Services, Derbyshire County Council
13. Management of Highway Structures – A Code of Practice, TSO, September 2005
14. Worth the Risk – Improving Risk Management in Local Government, Audit Commission
15. Risk policy report (Report of the Director of Corporate Resources), 6 April 2004
16. Local Authority Transport Infrastructure Assets – Review of accounting, management and finance mechanisms, CIPFA, London, 2007 (unpublished report)
17. Developing appropriate levels of service – User perceptions and engineering measurements, TRL Crowthorne, 2007

APPENDIX B – ROLES AND RESPONSIBILITIES

Personnel	Role	Responsibility
Derbyshire County Council		
Robert Biggs	Project Director	Leading Strategy for implementation
Steve Mead	Asset Manager	Developing Strategy and day-to-day Management
Paul Millership	Network Highway Plans and Standards Officer	Technical policy
Tracey Emsley	Head of Technical Administration to Service Redesign and Highway Information Group.	Support
Atkins		
Alan Taggart	Project Director.	Project Guidance, Client Liaison
Lila Tachtsi	Project Manager	Management of Team and Project
Bill Moss	Consultant	Provide expert advice
Kevin Barry	Consultant	Provide expert advice
John Paterson	Technical assistant	Support

APPENDIX C – PHASES OF DELIVERABLES

ITEM NO.	PHASE ONE OUTPUTS
1.1	Review of current practice.
1.2	Review of existing data.
1.3	Development of an Asset Management information strategy.
1.4	Recommendations on initial data collection required for the completion of this contract.
1.5	Recommendations for longer term data collection needs.
1.6	Recommendations on data update / maintenance.
1.7	Development of Levels of Service.
1.8	Initial review of associated risk management.
1.9	Delivery of draft highways Asset Management plan.
1.10	Staff briefings – 2 way process.

ITEM NO.	PHASE TWO OUTPUTS
2.1	Asset Management Plan concepts finalised – practical version of HAMP produced.
2.2	Operational changes identified - training – where necessary carried out.
2.3	Lifecycle planning and whole life costing to be considered.
2.4	Risk Management matched to practical version of HAMP.
2.5	Levels of Service further developed and agreed.
2.6	Unit rates for asset valuation developed.
2.7	Progress report for APR to be produced.
2.8	First version of asset valuation models developed and tested.
2.9	Staff briefings – 2 way process.
2.10	Report on progress and outstanding issues (by 30 th April 2006).

ITEM NO.	PHASE THREE OUTPUTS
3.1	Process review.
3.2	Costing / valuation models to be brought on line.
3.3	Development of an integrated forward works programme.
3.4	Asset valuation models developed against Levels of Service.
3.5	Review HAMP to TAMP requirements.
3.6	Staff Briefings – 2 way process.
3.7	Overview report on HAMP development since August 2005. (To be submitted by 31 st December 2006).

ITEM NO.	PHASE FOUR OUTPUTS
4.1	Development of improvement action plans.
4.2	Development of business plan for a 5 year Highways Asset Management Plan.
4.3	Expansion of HAMP into TAMP – recommendations.
4.4	Complete review of contract – recommendation for future work.
4.5	Staff Briefings – 2 way process.

APPENDIX D – PERFORMANCE TARGETS MEASURED ON NETWORK

Ref	Definition
BV 96	Condition of principal roads.
BV97a	Condition of non-principal roads.
BV97b	Condition of unclassified roads.
BV99a(i)	Number of people killed or seriously injured (KSI) in road traffic collisions.
BV99a(ii)	Percentage change in the number of people killed or seriously injured (KSI) in road traffic collisions since the previous year.
BV99a(iii)	Percentage change in the number of people killed or seriously injured (KSI) in road traffic collisions since 1994-1998.
BV99b(i)	Number of children killed or seriously injured (KSI) in road traffic collisions.
BV99b(ii)	Percentage change in the number of children killed or seriously injured (KSI) in road traffic collisions.
BV99b(iii)	Percentage change in the number of children killed or seriously injured (KSI) in road traffic collisions since 1994-1998.
BV99c(i)	Number of people slightly injured in road traffic collisions.
BV99c(ii)	Percentage change in people slightly injured in road traffic collisions.
BV99c(iii)	Percentage change in people slightly injured in road traffic collisions since 1994-1998.
BV 100	Number of days of temporary traffic controls or road closure on traffic sensitive roads caused by road works per km of traffic sensitive road.
BV 102	Number of local bus journeys originating in the Council area undertaken each year.
BV 165	Percentage of pedestrian crossings with facilities for disabled people.
BV 178	The percentage of the total length of rights of way in the Council area, that are easy to use by the general public.
BV186 (a)	Roads not needing major repair (Principal).
BV186 (b)	Roads not needing major repair (Non-principal).
BV 187	Condition of footway (Categories 1, 1a and 2).

Ref	Definition
CPT42	Number of people killed or seriously injured (KSI) in road traffic collisions from 1995-1998 average.
CPT43	Number of children (aged under 16 years) killed or seriously injured (KSI) in road traffic collisions from 1995-1998 average.
CPT44	Increase number of passenger bus journeys across the County.
CPT45	Increase the number of dangerous incidents that are repaired within 24 hours.
CPT46	Derbyshire residents satisfied with maintenance service to roads.
CPT47	Derbyshire residents satisfied with maintenance service to footways.
CPT48	To increase the length of footpaths and other PROW that are easy to use.
BV 223	Percentage of the Council principal road network where structural maintenance should be considered (SCANNER). (Was BV 96)
BV 224a	Percentage of non-principal classified road network where maintenance should be considered (SCANNER). (Was BV 97a)
BV 224b	Percentage of unclassified road network where maintenance should be considered (CVI or DVI). (Was BV 97b)
BV 180(b)	Average lamp circuit wattage compared with average consumption/wattage by local authorities in the UK.
Local Indicators	
LPI 18	User satisfaction (condition of roads).
LPI 18	User satisfaction (condition of pavements).
16	Damage to roads and pavements (North West).
16	Damage to roads and pavements (North East).
16	Damage to roads and pavements (South East).
16	Damage to roads and pavements (Average for County).
LPI 21	Number of sub-standard bridges as a percentage of total bridge stock (including private bridges).
23	Maintenance expenditure on bridges.
26	Average Cost of a working street light.
27	Percentage of streetlights not working as planned.
LPI 27b	To have 99% or more streetlights not working at any given time.
28	To repair 90% of street lights within 14 calendar days when a fault is due to a component failure.
29	To restore 90% of street lights within 20 working days when the fault is a Regional Electricity Company supply failure.
30	To replace 80% of street lights within 90 calendar days following removal from service.
31	No. of Street lighting fault calls.
	Number of personal injury claims relating to maintenance.
	Reduced call on revenue maintenance.

Ref	Definition
Other	Length of cycle network.
	Number of bus quality partnerships.
	Length of pedestrian quality network completed.
	Number of wet skid and night-time accidents.
	Number of motorcyclists killed or seriously injured.
	Number of night time accidents.

APPENDIX E - ASSET CLASSIFICATION AND HIERARCHY

Asset Type	Asset Group	Asset Sub-Group
Carriageway	<ul style="list-style-type: none"> Flexible pavements Flexible composite pavements Semi - rigid composite pavement Rigid pavements 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Road hierarchy Surface material type Attached footway/cycle route or not
Footway	<ul style="list-style-type: none"> Flexible footway Flexible strengthened footway Rigid footway Rigid strengthened footway 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Road hierarchy Surface material type Strengthened edges
Street Furniture [†]	<ul style="list-style-type: none"> Signs Street Name Plates Benches Planters Non-illuminated bollards Gates & barriers Pedestrian guard rail Safety fences 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Road hierarchy Safety Mandatory/advisory
Drainage	<ul style="list-style-type: none"> Gullies Pipes channels 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Trapped/untrapped/hopper box Carriageway/footway Highway/water authority
Road markings	<ul style="list-style-type: none"> Highway Parking 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Mandatory Advisory
Structures	<ul style="list-style-type: none"> Culverts Bridges Retaining Walls 	Criteria for identifying sub-groups include: As per carriageway
Public Rights of Way	<ul style="list-style-type: none"> Footpaths Bridleways 	n/a
Canal	n/a	n/a
Public Transport	Bus stops Bus Stations Bus Services	
Vehicle Fleet	n/a	n/a

Note: The contents of this Table formed the basis for the work and recommendations described in Chapter 3. The information was accurate at the time, but will need to be revisited as part of the ongoing implementation of the TAMP.

APPENDIX F – CONFIRM AND GEOSTORE SYSTEMS

Confirm	Dmaps*
Carriageway	Adopted Highways
Anti-Skid Surfacing	Bus Stations
Hard-Shoulder	Bus Stops
Lay-by	Capital Schemes
Crossover	Casualties
Central Island	Crossings
Central Reserve	Cycle Network
Cycle Lane	Great Trees of Derbyshire (though not accessible by DMAPS)
Kerb	
Culvert	Safety Cameras
Drainage Channel	Salting routes
Gully	Road surface reinstatement
Manhole	Residual Life
Piped Grip	Salting Routes
Grip	SCRIM
Ditch	Traffic Signals
Filter Drain	Bridges
Counterfort Drain	
Communication Cabinet	
Detector Loop	
Hedge	
Tree	
Verge	
Pedestrian Guard Rail	
Fences and Barriers	
Safety Fence	
Retaining Wall	
Hatched Road Markings	
Longitudinal Lines	
Road Studs	

*List of data held under Dmaps is not exhaustive.

Note: The contents of this Table were accurate at the time of the review but will need to be revisited as part of the ongoing implementation of the TAMP.

APPENDIX G – EXISTING ASSET INVENTORY & CONDITION DATA

Existing asset inventory and condition data is to be collated into a usable data set; voids to be highlighted and a process set in place to furnish missing or inappropriate data.

The following summarises what data can be used:

Asset	Inventory	What can be used for the TAMP Development
	Condition	
Barriers & Street Furniture	Inventory	None (some hard copy – recorded at 10% of network – data used to audit data collection)
	Condition	None
Crossings	Inventory	None; generally there is a 70% electronic log of all the crossings with a small amount of additional hard copy information. The information is current.
	Condition	None
Drainage	Inventory	None; there is some hardcopy data on numbers of gullies, pumping stations and balancing ponds.
	Condition	None
Fences & Hedges	Inventory	None
	Condition	None
Cycleway	Inventory	None
	Condition	None
Footway	Inventory	Length and width data plus date of construction of the Class 1A and 2 footways – the data is in excess of 5 years old.
	Condition	100% DVI data for the Class 1A and 2 footways.
Public Right of Way	Inventory	100% digital data for the location and length; a mixture of hardcopy and digital for signs and waymarkers.
	Condition	None
Road Markings & Studs	Inventory	1% recorded in hardcopy format.
	Condition	None

Asset	Inventory	What can be used for the TAMP Development
	Condition	
Roads/Carriageway	Inventory	The whole of the network has been digitized and the length established. The principal network has other features recorded including width, kerbs traffic calming, surface features – the remainder of the network has no significant records. This data is in excess of 5 years old.
	Condition	The principal network has 100% deflectograph, 100% CVI and 5% DVI data. There is a 20% log of the maintenance history. The non-principal classified and non-principal non-classified urban roads have 100% CVI and 5% DVI data. The non-principal classified and non-principal non-classified rural roads have 100% CVI data only.
Safety Fence	Inventory	70% of locations are recorded in hardcopy format
	Condition	None
Street Lighting	Inventory	There are good data sets for the majority of street lights and features – they have limited information on manufacturers. The overall data is managed and kept up to date.
	Condition	There is a condition rating system in place.
Street Signs - Lit	Inventory	There is approaching 100% digital records on these. The overall data is managed and kept up to date.
	Condition	There is a condition rating system in place.
Street Signs - Unlit	Inventory	Only 5% of the street sign locations are recorded in hardcopy format.
	Condition	None
Structures	Inventory	The more major structures are approaching 100% digital coverage. Data is believed to be updated The major culverts are approaching 100% recorded digitally. Other assets are spasmodically digitally recorded.

Asset	Inventory	What can be used for the TAMP Development
	Condition	
	Condition	Condition inspections are undertaken on major structures. There are minimal condition assessments on other structures
Traffic Signals	Inventory	There is approaching 100% digital records on these. The overall data is managed and kept up to date.
	Condition	There is a condition rating system in place.
Trees & Horticulture	Inventory	None
	Condition	None
Verges	Inventory	There are 100% digital records on the principal roads – 5 years old. There is 50% coverage in hardcopy format on the non-principal and non-principal non-classified urban. There is no information on non-principal non-classified rural roads.
	Condition	None
Winter Service	Inventory	Routes are recorded
	Condition	None
Canals	Inventory	There is 100% hardcopy records
	Condition	none

APPENDIX H – EXAMPLE OF RISK MANAGEMENT

The following calculation is based on a hypothetical example. Its purpose is to demonstrate the approach that can be adopted for the assessment of risks. The example describes the process that should be followed to assess the risk associated with the identification of a carriageway defect that is expected to gain coverage in national tabloid press and/or extensive front page coverage in local press and/or TV, due to its location and nature.

1. Determine the impact of the risk should it occur. Using Table 1, a score of 3 is obtained.

Table 1 – Description and definitions of Impact of the risk should it occur

Description	Descriptor	Level / Scale
<ul style="list-style-type: none"> • Insignificant disruption on internal business – no loss of customer service • No injuries • No reputation damage • No or insignificant environmental damage • Low financial loss 	<p>8</p> <p>Insignificant</p>	1
<ul style="list-style-type: none"> • Some disruption on internal business only - no loss of customer service • Minor injury (first aid treatment) • Requires disciplinary action against the staff responsible • Minimal reputation damage (minimal coverage in local press) • Minor damage to local environmental damage • Medium financial loss 	<p>9</p> <p>Minor</p>	2
<ul style="list-style-type: none"> • Noticeable disruption to DCC – would affect customers (loss of service no more than 48 hours) • Violence or threat or serious injury (medical treatment required) • Coverage in national tabloid press and/or extensive front page coverage in local press and/or TV • Moderate damage to local environmental damage • High financial loss 	<p>10</p> <p>Moderate</p>	3
<ul style="list-style-type: none"> • Major disruption to DCC – serious damage to organisation's ability to service customers (loss of service for more 48 hours but less than seven days) • Coverage in national (broadsheet) press and/or low national TV reporting • Extensive / multiple injuries • Major damage to local environment • Major financial loss 	<p>11</p> <p>Major</p>	4
<ul style="list-style-type: none"> • DCC unlikely to survive, or loss of service delivery for more than seven days • Extensive coverage in national press and broadsheet editorial and/or national TV item • Significant local, national and/or international environmental damage • Huge financial loss 	<p>12</p> <p>Catastrophic</p>	5

2. Determine the probability of the risk occurring. The defect is likely to have consequences that are fairly likely to occur at some time, or in some circumstances. Using Table 2, a score of 3 is obtained.

Table 2 – Description and definitions of Probability of the risk occurring

Description	Descriptor	Scale / Level
May occur only in exceptional circumstances	Rare	1
Is unlikely to, but could, occur at some time	Unlikely	2
Fairly likely to occur at some time, or in some circumstances	Moderate	3
Will probably occur at some time, or in most circumstances	Likely	4
Is expected to occur in most circumstances	Almost certain	5

3. Using the simple equation of consequence x likelihood [3 x 3] a score of 9 is obtained.
4. Determine how significant the risk could be. Using the probability matrix in Table 3, the risk to Derbyshire CC may be classified as significant.

Table 3 – Probability Matrix

I M P A C T		Rare	Unlikely	Possible	Likely	Almost Certain
	Catastrophic	5	10	15	20	25
	Major	4	8	12	16	20
	Moderate	3	6	9	12	15
	Minor	2	4	6	8	10
	Insignificant	1	2	3	4	5
	Probability Rating	1-4	Minor risk			
		5-9	Significant Risk			
		10-16	Serious Risk			
		17-25	Critical Risk			

Finally,

5. Determine what action that should be taken. Using Table 4, the priority for this risk is medium and the Council will need to inspect as resources permit and to effect repairs within 4 weeks.

Table 4 – Action Response

Risk Rating	Priority	Control Mechanism	Response Time
4 or less	Low	Monitor	Not Applicable
5 to 9	Medium	Programmed into maintenance works Effect Repair	As resources permit Within 4 weeks
10 to 16	High	Inspect by competent person and make safe Effect Repair	Within 24 hours Within 2 working weeks
>16	Urgent	Inspect by competent person and make safe Effect Repair	Within 4 hours Within 2 working days

