

Joint Transport Asset Management Plan



December 2008

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1 INTRODUCTION

1.1 Setting the Scene

1.1.1 The four Councils of Bath and North East Somerset, Bristol City, North Somerset and South Gloucestershire have joined forces to produce a Joint Transport Asset Management Plan (JTAMP) for the West of England sub-region. The JTAMP is a long-term plan that describes how they jointly intend to manage our transport infrastructure assets in order to deliver the agreed Levels of Service and Performance Targets in the most cost-effective way. These assets include:

- carriageways, footways and cycleways
- bridges and retaining walls
- public transport infrastructure
- road markings and traffic signs
- public lighting
- street furniture
- fences and barriers
- drainage
- verges and landscaped areas
- car parks and park & ride sites

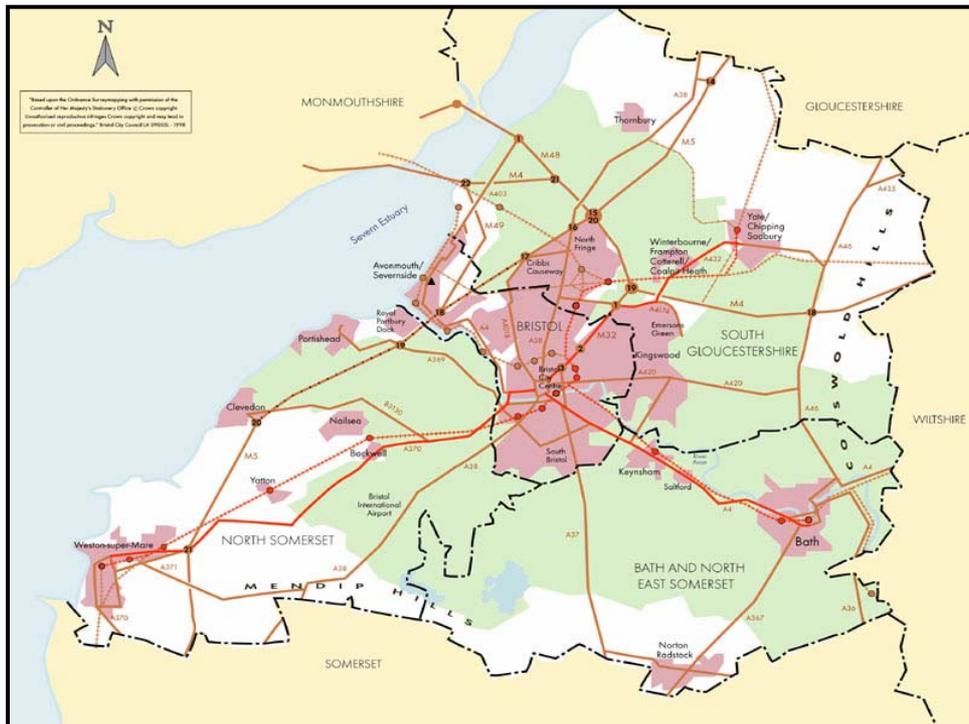


Figure 1.1 – West of England sub-region

1.1.2 The transport infrastructure in the West of England sub-region is of local, regional and national importance:

- One million residents use the network on a daily basis mostly in and between the three main urban areas and seven towns’.
- Greater Bristol is the main focus for shopping, cultural activities and education in the South West of England.
- Bath is a significant sub-regional centre and is designated as a World Heritage Site, reflecting its international importance for its architecture, town planning, landscape, archaeological remains and social history.
- The area is vital to the economy of the South West of England and the United Kingdom with Bristol International Airport, the Port of Bristol and the M4/M5 motorways acting as gateways for the region.

1.1.3 The West of England Joint Local Transport Plan (JLTP) sets out how the four councils will together tackle asset management and the progress being made towards the development of this JTAMP. Overall the JLTP was assessed by the DfT as ‘good’. The relationship between asset management and the JLTP was seen as ‘excellent’. JTAMP describes the framework by which each Authority will develop its individual service levels and action plans.

1.2. The Challenges Ahead

1.2.1 The management of the transport infrastructure has an important role to play in meeting the sub-region’s challenges. Challenges specific to the transport infrastructure include:

- Increasing demands from users (vehicular and non-vehicular) for safe and reliable journeys with growth in traffic and car ownership, decreases in average traffic speeds and increasing congestion.
- The draft Regional Spatial Strategy foresees the sub-region accommodating 92,500 new homes and major economic development by 2026.
- Financial and logistical constraints on maintenance activities.
- A need to derive more life out of existing assets.
- Increasing role of partnerships in the delivery of services.
- A need for greater accountability and transparency, e.g. Whole of Government Accounts and Asset Valuation.
- Increasing awareness of the link between “maintenance” and “business performance”.

1.2.2 These challenges demonstrate the need for a formalised and rational approach to the management of transport infrastructure assets. Asset

management is widely recognised as the formalised and rational approach that should be adopted.

1.3. Joint Vision, Aims and Objectives

1.3.1 The West of England Partnership, has agreed the following vision for the sub-region:

- A buoyant economy;
- A rising quality of life for all;
- Easier local, national and international travel;
- Cultural attractions that make the West of England sub-region a place of choice;
- Approach to delivery that is energy efficient, protects air quality, minimises waste and protects and enhances the natural and the built environment;
- Makes positive use of the mix of urban and rural areas.

1.4. LTP Progress

1.4.1 Maintenance of transport assets featured prominently in the councils' first round Local Transport Plans (2000–2006). Significant improvements were made, for example, in the condition of carriageways, with significant reductions in the length of roads in need of structural repair (52% decrease for principal roads, 64% for non-principal roads and 62% for unclassified roads). Looking forward to 2010/11 an Asset Management Action Plan for the sub-region is outlined in Chapter 9 of the JLTP.

1.5. Traffic Management Act 2004

1.5.1 The Transport Management Act places a duty on local authorities to manage their network to secure the expeditious movement of traffic, including pedestrians, cyclists and powered two wheelers. Each council has appointed a Traffic Manager to oversee implementation of the Act which covers a range of measures that have a bearing on this JTAMP including network management and road and utility works. The four authorities are committed to attend regular cross-boundary Traffic Management Act liaison meetings with representatives of the Highways Agency, Avon and Somerset Constabulary and the main bus operators to discuss network events and incident management; implementation of highway maintenance and utilities; information / publicity; and on-street initiatives to improve bus reliability and journey times.

1.6. Asset Management

1.6.1. What is Asset Management?

Asset management is a modern but well developed discipline that is practised in many countries and across a wide range of industries; including highway, railway, oil and gas, water and wastewater, and aerospace. Asset management is applied to the whole life of assets and determines the optimum way of managing assets to achieve the desired outcomes. The stages of an asset's life covered by asset management are illustrated below. The 'operate, maintain & improve' phase is the core area for whole life transport infrastructure assets.

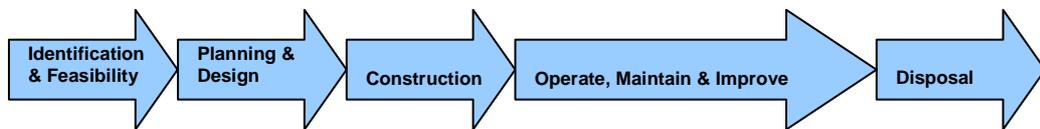
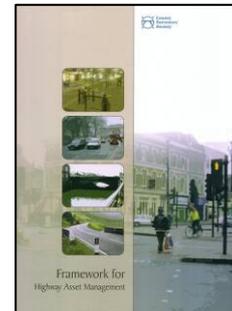


Figure 1.2 Asset Management for the Whole Life of Assets

There are a wide range of recognised definitions for asset management, all of which align with a core set of principles. County Surveyors' Society Framework for Highway Asset Management's definition is as follows:

'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'.

County Surveyors' Society Framework for Highway Asset Management (2004)



1.6.2 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 Life** – the whole lifecycle 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.

1.6.3 Although asset management introduces new practices it does not replace existing good practice. Instead it provides the overall framework within which existing good practice may be more effectively applied and complemented by other practices.

Asset Management and the Management Hierarchy

1.6.4 An important starting point for asset management is to look at the organisational management levels. The management processes in large organisations can be broadly categorised into three levels: Strategic, Tactical and Operational. An idealised hierarchy of these management levels is shown in Figure 1.3.

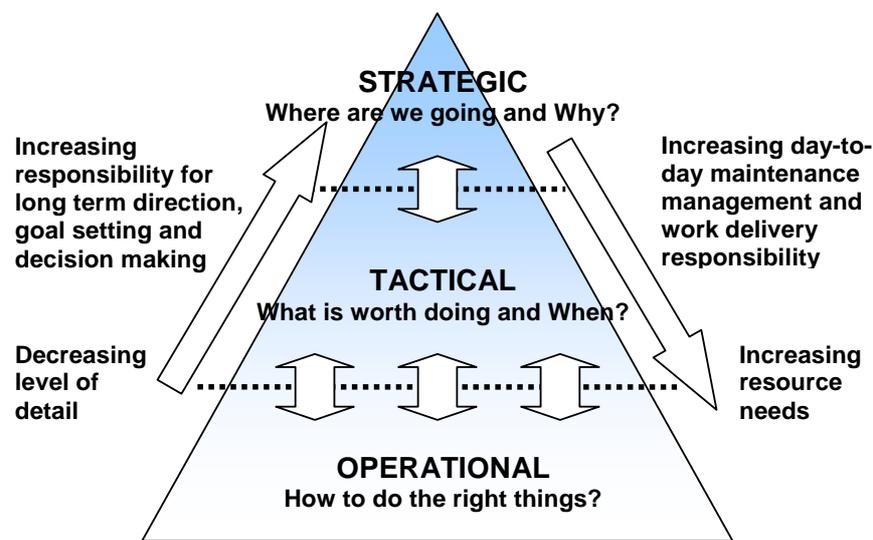


Figure 1.3 Idealised Asset Management Hierarchy

1.6.5 Asset management should align with integrated planning and decision-making at the Strategic, Tactical and Operational levels. The broad scope of asset management functions in the three levels are summarised below:

- **Strategic - Where are we going and why?** At the strategic level an organisation establishes its overall long-term direction for transport, e.g. policy, goals and objectives, vision, mission statement and targets. These should be agreed in consultation with stakeholders and take into account any necessary internal/external requirements and/or constraints. The JLTP provides a strategic framework for the West of England sub-region.
- **Tactical - What is worth doing and when?** At the tactical level the asset managers translate the strategic goals and objectives into specific plans and performance targets for individual asset types, e.g. roads, structures and lighting. The tactical level involves a performance gap analysis and a formal planning process to identify the required, most beneficial and cost-effective

activities and when they should be carried out. The development of the JTAMP is a tactical activity.

- **Operational - How to do the right things?** At the operational level the asset managers, engineers, technicians and operatives develop and implement detailed work plans and schedules that have a short-term outlook but take account of the work volumes and phasing arising from the JTAMP. Engineering processes include inspection, routine maintenance, scheme design, work scheduling and implementation. The focus is on choosing the right techniques, Value Engineering of schemes and carrying out the work in the most efficient way.

1.6.6 In many organisations Tactical Management is not well defined, resulting in poor communication between Strategic and Operational Management. Adopting asset management enables staff involved in Tactical Management to translate the overall strategic goals and objectives into specific plans and performance targets which focus and direct operational activities.

The Drivers for Asset Management

1.6.7 A number of important benefits to the West of England sub-region have been identified that will be realised from the move towards Asset Management including:

- **Whole of Government Accounts (WGA)** – a central government initiative to produce a comprehensive set of accounts in line with Generally Accepted Accounting Practice in order to bring the public sector accounting in line with that of the private sector. The objectives of WGA are to promote greater accountability, transparency and improved stewardship of public finances. WGA objectives and procedures align closely with those of asset management.
- **The Traffic Management Act** – this imposes a Network Management Duty on local authorities to manage their network to secure the expeditious movement of traffic.
- **Asset Valuation** – robust asset management processes and a JTAMP are required to support the asset valuation process described in the County Surveyors Society's *Guidance Document for Highway Infrastructure Asset Valuation*.
- **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** – asset management plays a key role in demonstrating that authorities are providing value for money and supporting performance management.

1.6.8 In addition to the above, the Department for Transport (DfT) publication *'Maintaining a Vital Asset'* clearly identifies asset management as good practice and emphasises the need for all local authorities to adopt an asset management approach.

The Benefits of Asset Management

1.6.9 Asset management supplements engineering judgement with financial, economic and engineering analysis, enabling authorities to understand and manage the relationship between cost and performance and thereby bringing about improved decision-making. There are a number of specific benefits associated with the asset management approach:

- **Informed Decision Making** – The provision of better information, and a clear understanding of the link between the performance of individual assets and the delivery of service. It will enable decisions to be made in an informed way that will result in a better level of service.
- **Reduced Whole Life Costs** - The move towards lifecycle management and long-term investment planning will enable a 'right place, right time' approach to investment that will reduce costs over the life of the asset, and promote the long-term preservation of the asset.
- **Customer Focussed Delivery** - The continued development of effective customer consultation and the development of Service Levels that support both the corporate objectives and customer priorities will encourage more customer focussed decision making, and will help to ensure that services provided by the street network reflect stakeholder and user needs and expectations.
- **Transparency & Ownership of Decision Making** - Asset management will introduce transparency and objectivity into decision making that traditionally has often been subjective. This will help justification of investment decisions and will also enable decision-makers to take informed ownership of decisions that they make.

1.6.10 The full benefits of asset management will only be realised when it is fully embedded as the recognised and accepted way for working. A long-term plan of asset management learning, development, implementation and continuous improvement is being implemented through the JTAMP. An Implementation Plan is included in Chapter 8.

1.7 JTAMP

What is a JTAMP?

- 1.7.1 The JTAMP is a long-term plan for the delivery of sustainable maintenance for the West of England sub-region. It is the framework for the management of the transport infrastructure asset base in order to deliver the agreed Levels of Service and Performance Management targets in the most cost-effective way.

West of England JTAMP

- 1.7.2 The West of England JTAMP is a living document running initially up to 2010/11, with subsequent updates to align with the Local Area Agreement timetable for West of England sub-region.

Scope of JTAMP

- 1.7.3 To derive the full benefits of asset management it is important to consider all asset types and their interactions. Since this is the first West of England JTAMP, the range of assets has been limited to the following asset types:

- carriageways
- footways and cycleways
- bridges and structures
- public lighting

- 1.7.4 Other asset types, e.g. traffic signals and signage, street furniture, highway drainage, car parks, park & ride sites etc., will be added as the JTAMP is further developed. It is envisaged that important lessons will be learned from the above asset types and these can be used to streamline the improvement of asset management practices for the other asset types.

1.8 Roles and Responsibilities

- 1.8.1 The key roles and responsibilities associated with transport asset management and how they link into the hierarchy levels of each of the authorities is shown in Figure 1.3 and 1.4.

- 1.8.2 The West of England Partnership was set up to address jointly matters, including (transport infrastructure), that are considered best dealt with by the sub-region as a whole in the best interests of its communities. They will provide a facilitating role in ensuring that the JTAMP is set within the framework of the sub-region's long term transport strategies.

- 1.8.3 The JTAMP provides Council Members with a structured view of service delivery in the area of transport infrastructure management. It will provide a better understanding of how infrastructure works are prioritised, programmed and designed to meet national, regional and local objectives as this will, ultimately, make the case for continual, long-term and improved funding over the life-cycle of the assets needing to be maintained.
- 1.8.4 The Service Directors for Transport in each authority will be responsible for ensuring that all the aspects of JTAMP can be followed within their own authority. They will need to provide information on individual systems and processes which will form part of an approved JTAMP.
- 1.8.5 Highways and Maintenance Managers will use the JTAMP for the purposes of planning infrastructure improvements, maintenance regimes and life-cycle plans for all of the highway assets in line with individual authority JTAMP annexes.
- 1.8.6 Professional support and suppliers provide the operational phases of the JTAMP with regard to the design, management, operation, improvement and maintenance of all the transport assets.

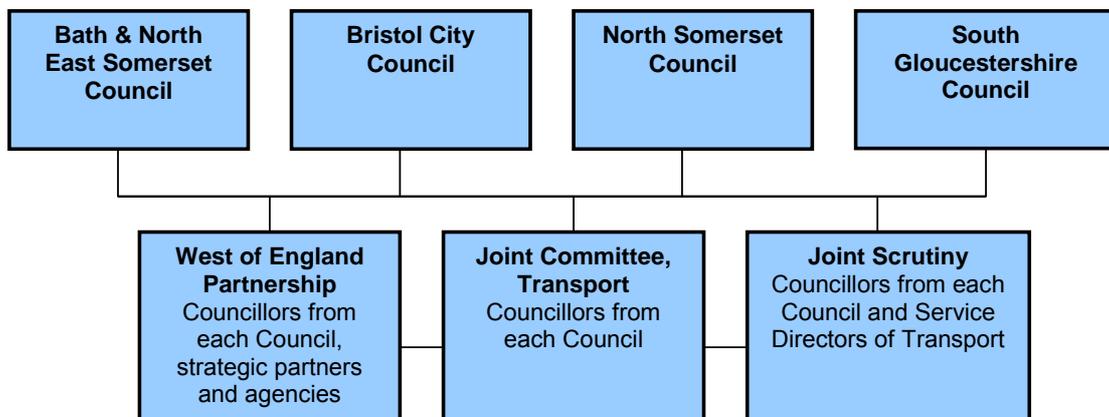


Figure 1.4 West of England Governance Arrangements

1.9 Contents of the JTAMP

1.9.1 Table 1.1 provides a summary of the content of each chapter of the JTAMP.

Chapter	Description
1. Introduction	Background of transport asset management across the West of England sub region.
2. Transport Asset Management	The holistic and integrated approach that has been developed and adopted in the Joint Transport Asset Management. This includes an overview of the Transport Asset Management Framework, the long-term planning process, asset management systems and service contracts.
3. Aims, Goals and Objectives	Summarises the mission, strategic goals and transport objectives that are relevant to the JTAMP. The impacts of key documents including the JLTP, statutory regulation and codes of practice are identified.
4. Asset Base and Characteristics	Sets out the detail of the councils' transportation asset infrastructure and the process for asset classification.
5. Service Levels	Explains how Levels of Service, and in turn Performance Measures, are derived and support asset management objectives. The proposed Levels of Service and Performance Measures are summarised and their medium/long-term targets defined.
6. Asset Management Planning	Provides a comprehensive approach to managing an asset once a full inventory has been achieved and Levels of Service developed. This includes detailed work options, selection criteria, and prioritisation processes when a full programme cannot be implemented. Forward programmes represent long term planning. Risk management identifies and resolves factors that may affect successful asset management.
7. Lifecycle Management Plans	Describes the procedures to develop lifecycle plans for the transport assets, and explains how asset deterioration and maintenance needs are taken into account.
8. Implementation Plan	Future improvements that are required to successfully implement a full Joint Transport Asset Management Plan.

Table 1.1: Contents of the JTAMP

2 TRANSPORT ASSET MANAGEMENT

This chapter describes the holistic and integrated approach which is being developed and adopted for transport asset management. This includes an overview of the Transport Asset Management Framework, the long-term Asset Management Planning process, asset management systems and service delivery contracts.

2.1 Transport Asset Management Framework

2.1.1 Transport asset management impacts on a wide range of existing working practices and will include the introduction of a number of new working practices. It is therefore important to have a clear understanding of how asset management should be used to complement and enhance existing management practices.

2.1.2 A review of best national and international practice in asset management was carried out; findings from this review were used to develop a suitable Transport Asset Management Approach, this is shown in Figure 2.1. Core components of the Approach include:

- Codes and Standards
- Asset Management Planning
- Asset Management System
- Work Planning and Service Delivery
- Operational Plans
- Performance Monitoring, Review and Feedback

2.2 Codes and Standards

2.2.1 A wide range of codes and standards for highway design and management, including Statutory Instruments, British and European Standards, Highways Agency Standards, County Surveyors' Society (CSS) Codes, DfT Codes and Institution Guidance (e.g. Institution of Civil Engineers and Institution of Lighting Engineers) are recognised in the West of England sub-region.

2.2.2 In addition to the nationwide policy documents outlined in 2.2.1 there are three important local documents: the Maintenance Management Plans for highways, structures and street lighting. These are based on the Codes of Practice, published by the DfT through the Roads Liaison Group. These Maintenance Management Plans set down the objectives, policies, procedures and standards of the service for each of highways, structures and street lighting. As such, they closely relate to and support the JTAMP and provide direction for operational activities.

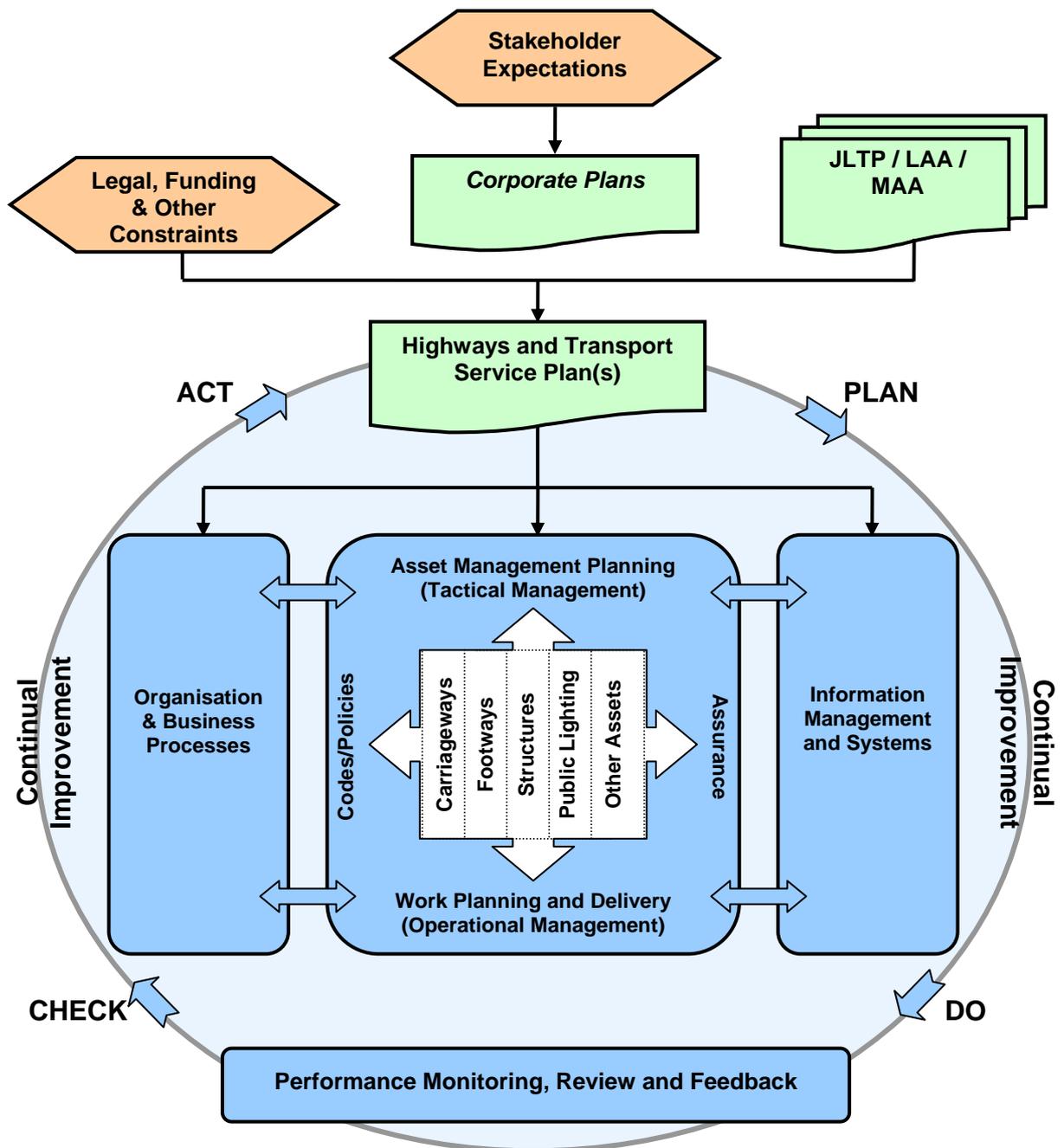


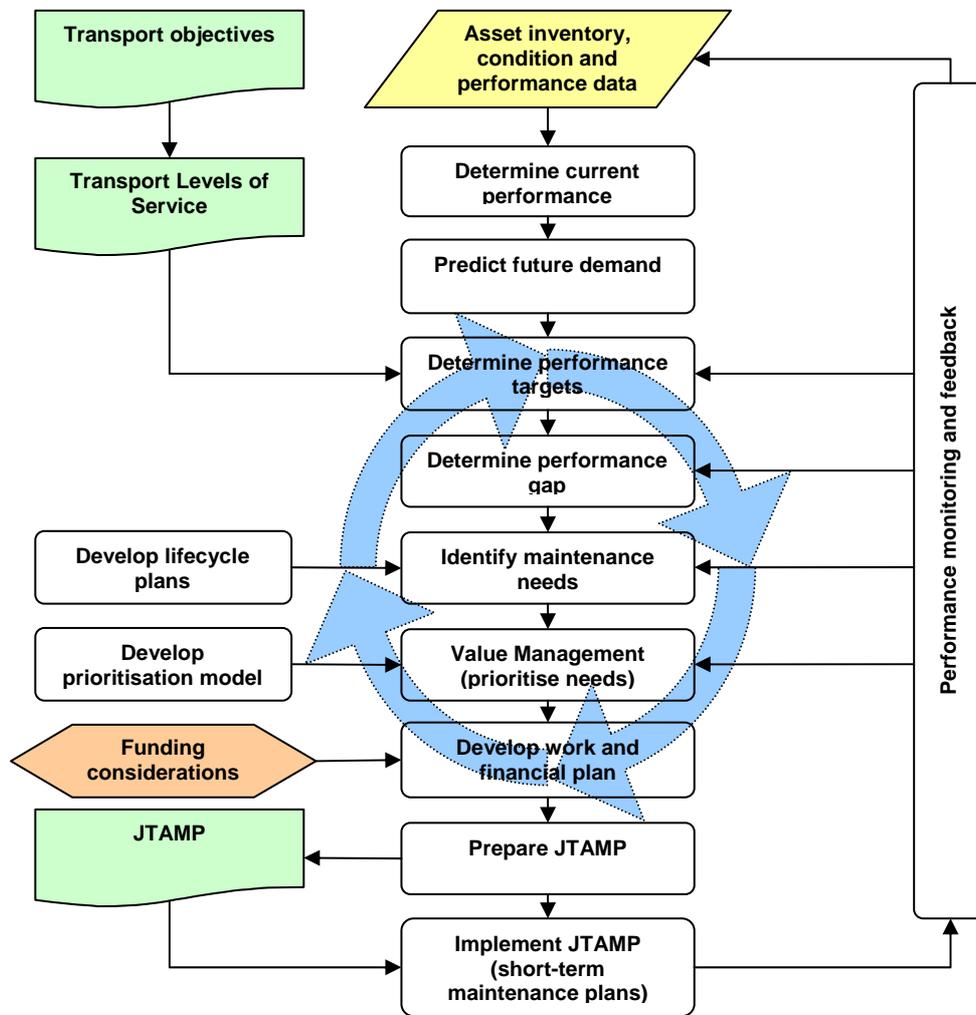
Figure 2.1: Transport Asset Management Approach

2.3 Asset Management Planning

2.3.1 The *Framework for Highway Asset Management*, produced by CSS, provides a generic framework for developing asset management. This generic framework, along with other key guidance, has been used to develop a process for producing this JTAMP, termed the Asset Management Planning process. This is shown in Figure 2.2.

Key characteristics of the Asset Management Planning process are:

- Translation of defined strategic goals and objectives into quantifiable levels of service measured by performance targets.
- Collection of asset inventory, condition and performance data which provides the main inputs for the asset management planning process.
- Determination of current performance and prediction of future demand of assets which accounts for changes in vehicle dimensions and traffic volume.
- Determination of performance targets provide a focus for the asset management planning process and allow better targeting of investment on highway assets to contribute to the delivery of sub-regional long term goals. Ideally, the performance targets, should deliver the required performance (in line with strategic goals, objectives and levels of service) and give due consideration to minimising whole life costs. It is preferable to use recognised performance measures or standards to define targets because they are based on documented procedures that are repeatable and auditable.
- Completion of the performance gap analysis identifies the difference between the current performance and the target performance. Once the gap is quantified, this information can be used to develop maintenance needs that identify the work required to close the gap and to sustain the target performance level in the future.
- Evaluation of the priority for each project using a formalised value management process which assesses the benefits of undertaking maintenance and the associated risks of not undertaking maintenance. Value Management enables the available/expected funding to be appropriately targeted to areas which contribute most to the achievement of the long term objectives.
- Compilation of the work and financial plan which are inputs to the JTAMP.



 - represents an iterative process that is used to identify the most cost-effective solution

Figure 2.2: Asset Management Planning Process

2.4 Asset Management Systems

- 2.4.1 There are a range of computerised systems that support the management of the transport infrastructure within the West of England sub-region as illustrated in Table 2.1.
- 2.4.2 All authorities use a common street naming index known as the National Street Gazetteer unique street reference number (USRN) and the Ordnance Survey Grid Reference for spatial referencing.
- 2.4.3 Table of Asset Management Systems currently in use by the Authorities. Opportunities will be reviewed to introduce common systems across the West of England sub-region.

	Bath & North East Somerset Council	Bristol City Council	North Somerset Council	South Gloucestershire Council
Public Reporting	SAP CRM / Confirm	LAGAN	EXOR PEM	Mayrise
Street Works Register	Confirm (MapInfo)	Mayrise	Exor	Mayrise
Spatial Inventory Database	Oracle Spatial DB, Confirm & Mayrise		Confirm (MapInfo) Mayrise	Mayrise (MapInfo)
Financial Management	Agresso	CFS	FMS	Civica
Works Ordering	Confirm (MapInfo)	Mayrise	FMS	Civica
Safety Inspections	Confirm (MapInfo)	Mayrise	Exor	Mayrise
Condition Inspections (UKPMS)	WDM / Confirm (MapInfo)	WDM	WDM	WDM/Mayrise
Bridge Maintenance	WDM SMS	WDM	BMX	Access Database
Public Lighting	Mayrise	Mayrise	Mayrise	Mayrise

Table 2.1: Existing Asset Management Systems

2.5 Asset Information Management

2.5.1 An information strategy has been developed to improve the management of the assets. The formal approach to information management has been completed to ensure that accurate, reliable, trustworthy and useful information will fully support asset

management and reduce the whole life costs of information collection and maintenance.

The following factors form our strategy:

- **Inventory requirements** – for each asset the information that supports each of its management and decision making processes is identified.
- **Data collection** – for each item of information the required quality standards for collection will be established. Specific information requirements including asset descriptions, terminology and measurement tolerances will be documented to ensure consistency in data collection. The transfer of the information will need to be considered in this exercise to ensure that field collection information can efficiently be transferred in an electronic format. Where appropriate, collection of any missing information will be completed on a joint procurement basis.
- **Information storage** – the majority of asset information is stored in computerised management systems. These systems will be reviewed to identify whether they are the most cost-effective storage arrangements that meet requirements, e.g. security (including future-proofing), speed of access and information integrity. We will also review the components of the systems that are not fully utilised to see if additional benefits can be gained.
- **Information Usage** – analysis of how best to make use of the information collected. All stakeholders need to be considered. Efficiency can be gained by producing common reports which meet the needs of more than one stakeholder. We need to ensure the information can be used in a range of applications including complex systems and spatial products.
- **Information Management** – for each item of information a suitable regime for maintenance needs to be identified, i.e. frequency of review or update. For some items a review may be sufficient, e.g. check dimensions during inspection, while for others the information may need to be completely updated, e.g. update condition at each inspection. Where appropriate, the regime for maintaining information will be streamlined by aligning / combining it with other activities, i.e. condition inspections.

2.6 Work Planning and Service Delivery

2.6.1 Asset management requires developing work programmes for both the short term and the long term. Figure 2.3 shows the three main types of programmes that are developed for each asset. The diagram reflects the results of implemented value management processes which enable proposed schemes to be allocated to each programme.

- 2.6.2 The Current Approved Programme comprises the schemes which have been allocated funding in the coming year. The condition of the assets in which these schemes are proposed are below the accepted level of service.
- 2.6.3 The Forward Work Programmes prioritise schemes which have been identified through condition surveys and safety inspections where some form of significant deterioration has occurred. These schemes involve assets that currently provide an accepted level of service will need to be identified to be in line for funding in the coming years.
- 2.6.4 The Strategic Proposals developed through the JTAMP include all groups of assets which are currently performing above the service levels. These are allocated an approximate life based on predictive deterioration modelling.

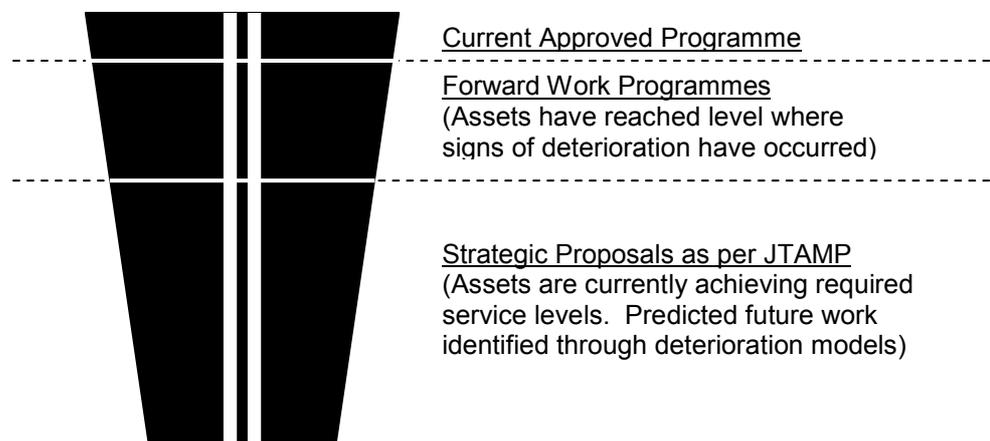


Figure 2.3: Work Plan Hierarchy

2.7 Operational Plans

2.7.1 The individual authorities are responsible for completing the operational phase of the asset management process. Individual *Maintenance Management Plans* which include specifications and standard method of work where necessary. A brief summary for each asset is included below.

2.7.2 Carriageways, Footways and Cycleways

- Reactive, routine (cyclical), and programmed capital works.
- Carriageway resurfacing and footway reconstruction - detailed design and planning of capital maintenance schemes.
- Network management duties such as the coordination of street works, abnormal load routing, and the processing of permanent and temporary traffic orders.
- Managing the Highway Maintenance Management System, a computer database that is used for enquiry logging, works

ordering, finance monitoring, streetworks notices, inventory and UKPMS.

2.7.3 Highway Structures (includes bridges, pedestrian underpasses, retaining walls, road underpasses, culverts and gantries):

- Routine maintenance and reactive works.
- Technical advisory services in relation to structural advice, abnormal load applications and technical approval applications for works by third parties.
- Three types of periodic inspections (principal inspections (PI), general inspections (GI) and special inspections (SI)) are carried out on each structure giving rise to planned preventative maintenance items or, if required, emergency works.

2.7.4 Public Lighting

- Reactive defect rectification, routine (cyclic), and programmed capital improvement schemes.
- Lighting design services.
- Testing and inspection regime.

2.8 Performance Monitoring, Review and Feedback

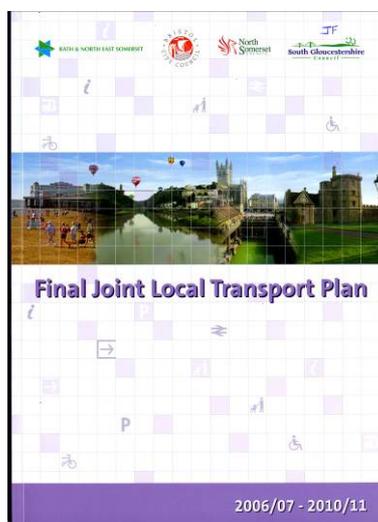
2.8.1 Wide public consultation on the concept of the JTAMP was undertaken in the preparation of the JLTP and at sub regional transport forums. The Government Office for the South West actively contributed to the production of this document. The Councils consult regularly on maintenance performance. Assessment of the effectiveness of our performance will continue to be informed by feedback from all stakeholders. This emphasises that the JTAMP is a living document.

3 AIMS, GOALS AND OBJECTIVES

The JTAMP provides us with the basis for effective management of our transport assets. It is important to ensure that the JTAMP is closely aligned with our corporate and service direction. This chapter shows how the JTAMP will link with other aims and objectives. Figure 3.1 shows the relationship between the JTAMP and other plans and strategies.

3.1 Policy Documents

- 3.1.1 The Regional Spatial Strategy puts forward a spatial strategy for the West of England sub-region and guides future development in our area. This strategy will be carried forward in the Councils' local development frameworks.
- 3.1.2 The overall transport aims and objectives for the West of England sub-region are set out in the JLTP. The Asset Management Action Plan put forward in the JLTP lays emphasis on demonstrating the clear link between asset management and wider JLTP objectives and targets. These links are shown in Figure 3.1.



JLTP Aims	JLTP Objectives	JTAMP Objectives
Congestion	Promote use of alternatives to the private car.	Effective management of transport assets to benefit all users including buses, cycling and walking.
	Encourage more sustainable patterns of travel behaviour.	To actively promote Smarter Choices.
	Manage the demand for travel by the private car.	To assist Traffic Managers in carrying out the network management duties. Manage assets in line with the agreed hierarchies and priorities.
Road Safety	Ensure significant reductions in the number of the most serious road casualties.	Manage assets to improve safety for all users, identifying vulnerable and high risk groups.
	Achieve improvements for road safety for the most vulnerable sections of the community.	
Air Quality	Improve air quality in the Air Quality Management Areas.	Effective management of transport asset to benefit all users including buses, cycling and walking.
	Ensure air quality in all other areas remains better than the national standards.	
Accessibility	Improve accessibility for all residents to educational services.	Manage assets to enable access by bus, on foot or cycle.
	Improve accessibility for all residents to health services.	
	Improve accessibility for all residents to employment.	
Quality of Life	Ensure quality of life through other objectives.	Manage assets to support wider corporate objectives.
	Achieve balanced and sustainable communities.	

Table 3.1 JLTP Objectives and Asset Management

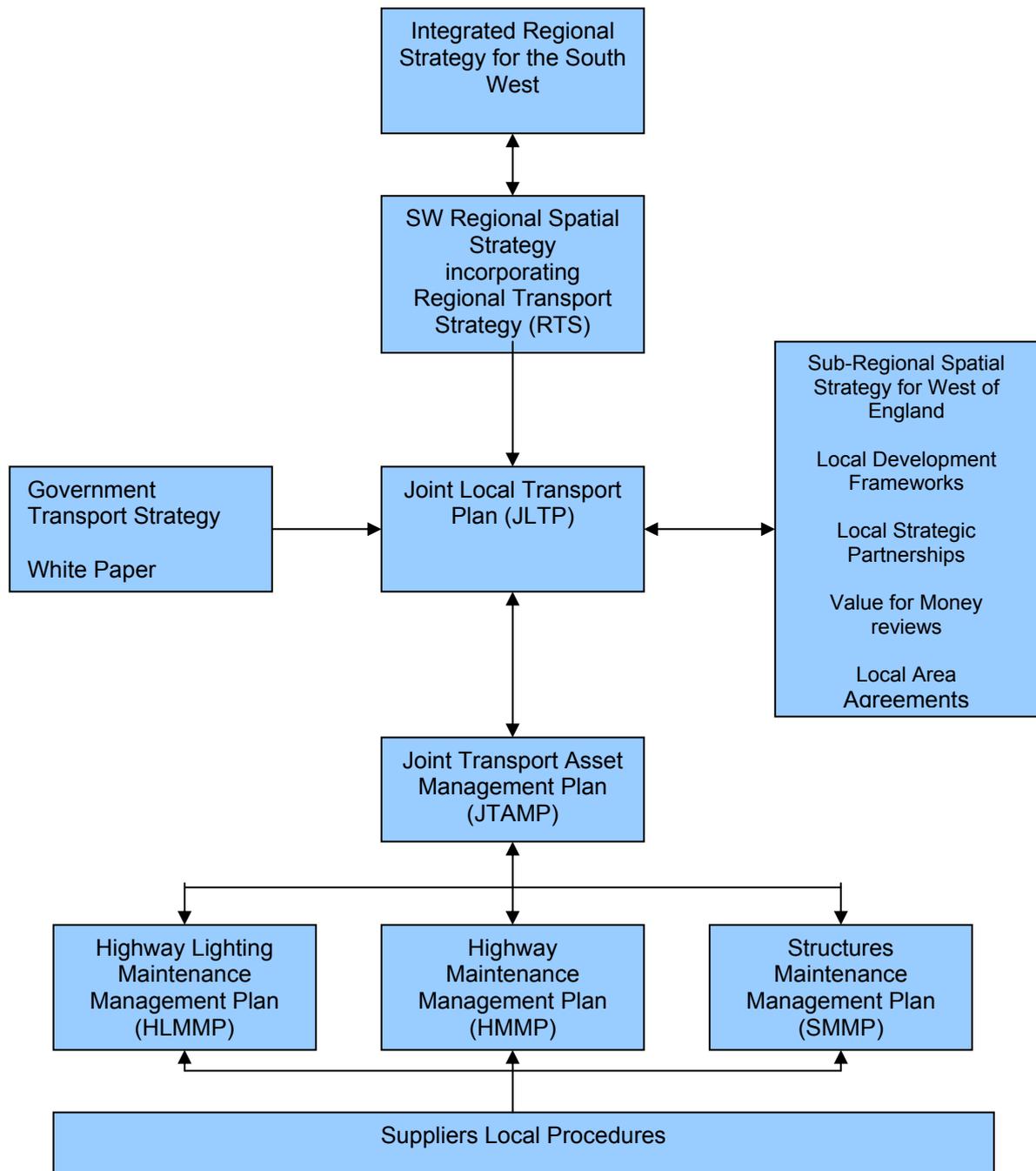


Figure 3.1: Relationship between other Policy Documents and JTAMP

3.2 Corporate Plans

- 3.2.1. All four of the Local Strategic Partnerships in the West of England Partnership have produced Community Strategies and these are reflected in the Corporate Plans of the councils in the sub-region.

3.2.2 There are seven corporate themes:

- **Theme 1 –Managing Future Development and Communities**
Address challenges faced by new and growing communities in a sustainable and integrated way providing high quality homes, associated employment, local community facilities and a convenient and safe transport network, which meet the community needs and aspirations.
- **Theme 2 – Health and Wellbeing**
Improve the health of people and reduce the inequalities in health.
- **Theme 3 – Valuing the Environment**
Respect for the natural environment and historic and cultural environment, take action to protect, enhance and enjoy the environment and live low carbon, sustainable and healthy lifestyles.
- **Theme 4 – Promoting Safer and Stronger Communities**
Ensure communities are strong and safe, people are encouraged to participate in the life of communities to which they belong and differences are respected.
- **Theme 5 – Investing in Children and Young People**
Improve life chances and ensure all children and young people are given encouragements and opportunities to learn.
- **Theme 6 – Economic Prosperity and Regeneration**
Improve the local economy in a sustainable and balanced way ensuring that prosperity is shared by all.
- **Theme 7 – Continuous Improvement Programme**
Continue to build capacity to deliver first class services to our residents through the best use of resources and fostering a culture of continuous improvement.

4 ASSET BASE AND CHARACTERISTICS

4.1 Overview

4.1.1 Key transport asset groups have been identified in the preparation of the JTAMP. It is these groups, rather than individual assets, that are used by asset management to identify long-term work programming and funding needs. Determining these groups and their associated characteristics rationalizes the Asset Management Planning process, enabling detailed data analysis and the effective presentation of technical information.

4.1.2 Transport assets are classified in a number of ways, using an appropriate network hierarchy, i.e. importance of function for road, footway or cycleway. While network hierarchy is an essential consideration providing a convenient way of classifying assets, it is also recognised that asset management requires a full assessment of asset performance. Asset management needs an understanding of how different assets deteriorate, what deterioration mechanisms influence them, what are appropriate performance requirements, and in particular the appropriate management and maintenance techniques.

4.1.3 The following sections are described in detail:

- **Network Hierarchy** (Section 4.2) –used to classify the transport network performance and future work planning.
- **Asset Classification** (Section 4.3) – the asset types, groups and sub-groups that will be used for Asset Management Planning.
- **Asset Types and Groups** (Sections 4.4 to 4.11) – describe the characteristic details of the specific asset types and groups.

4.1.4 An overview of the network and associated transport infrastructure assets as specified in 1.7.3 for the West of England sub-region are provided in Table 4.1.

Asset Type	Units	Bath & North East Somerset	Bristol City	North Somerset	South Gloucesters hire	West of England
Carriageway	km	1,029	1,117	1,081	1,435	4,662
	square metres	7,779,759	21,460,600	6,310,560	18,036,032	53,586,951
Footway / cycleway	km	1,200	2,000	1,330	1,470	6,000
Structures	units	1,497	1,009	854	1,333	4,693
Public Lighting	units	17,243	37,646	22,680	32,702	110,271

Table 4.1 Summary of West of England sub-region Transport Assets

4.2 Network Hierarchy

4.2.1 The Joint Local Transport Plan has identified the following Transport User Priorities:

- **Pedestrian**, including disabled people and public transport passengers.
- **Cyclist**, providing the easiest, shortest, most secure routes wherever possible.
- **Public transport**, recognising the needs of the passenger and benefits of a quality transport system.
- **Disabled people**, recognising that some disabled people are dependant on the private car.
- **Commercial vehicles**, recognising the importance of accessibility for the retail and commercial vitality of city and town centres.
- **Short stay visitors by car**, providing access to shops or businesses.
- **Private car**, recognising that there must be adequate access for residents.

4.2.2 Other users are also considered, including powered two wheeler riders and equestrians.

4.2.3 The development of the network hierarchy has given full consideration to the following documents:

- **Joint Local Transport Plan 2006-11**, The JLTP sets out agreed transport hierarchies under Chapter 5, Tackling Congestion.
- **Well-Maintained Highways**, The Code of Practice for Highway Maintenance Management published in July 2005.

4.2.4 A co-ordinated hierarchy review is being carried out throughout the JTAMP area as part of the JLTP (2006-11), to reflect transport function.



A4174 Ring Road Abnormal Load Route (South Gloucestershire Council)

Category	Carriageway Hierarchy Description	Type of Road General Description	Typical Description
1	Motorway/Trunk Roads	Highways Agency strategic highway network.	Not applicable (outside control of Local Authorities).
2a	National Primary Routes (A Class)	Principal roads which are the main signed traffic routes for through traffic.	Signed primary transport and bus network which carry large volumes of traffic.
2b	Local Primary Routes (A Class)	Major urban network and inter - primary links. Short – medium distance traffic.	Signed primary or local routes, bus routes or routes which carry significant volumes of traffic.
3a	Main Distributor Roads (B Class)	Classified urban and rural bus routes carrying local traffic with frontage access and frequent junctions.	Signed local routes, bus routes or routes which carry relatively large volumes of traffic.
3b	Local Distributor Roads (C Class)	Roads serving urban/rural areas that warrant a lower priority than Main Distributor Roads from a highways maintenance perspective.	Routes which distribute local traffic and provide access to residential and local centres.
4a	Unclassified (U Class)	Roads serving other urban/rural areas.	Routes which provide local access.
4b	Local Access	Roads serving other urban/rural areas.	Routes which provide local access.

Table 4.2 Carriageway Hierarchy



A38 Gloucester Road / Gipsy Patch Lane, (South Gloucestershire Council)

Category	Footway Hierarchy Description	Typical Description
1a	Prestige Walking Zones	Very busy areas of towns and cities with high public space and streetscene contribution.
1	Primary Walking Routes	Main shopping and business areas, main pedestrian routes to rail, bus and coach stations.
2	Secondary Walking Route	Medium and heavy usage routes feeding into primary routes or serving local shopping centres, schools, bus stops etc.
3	Link Access Footway	Most footways serving residential areas and routes linking Local Access Footways.
4	Local Access Footway	Low usage footways such as short cul-de-sac and routes linking low usage footways.
5	Shared Streets	Streets or pedestrianised areas which permit both vehicular traffic and pedestrians.

Table 4.3 Footway Hierarchy

Category	Cycleway Hierarchy Description
A	Cycle lanes forming part of the carriageway, commonly 1.5m strip adjacent to the nearside kerb; cycle gaps at road closure points (exemptions for cycle access).
B1	Shared cycle/footway, segregated by a white line or other physical segregation, and shared with pedestrians.
B2	Shared cycle/footway, un-segregated and shared with pedestrians.
C	Cycle tracks through open spaces and away from traffic; only applicable to routes maintained by other parties and those not maintained by the Council.

Table 4.4 Cycleway Hierarchy

4.3 Asset Classification

4.3.1 Appropriate asset types have been identified for highways and transportation as set out in Table 4.5.

4.3.2 Asset types have been divided into groups based on general construction form, while the asset sub-groups have been based on design features or characteristics that have a significant influence on the management and maintenance requirements.

Asset Type	Asset Group	Asset Sub-Group
Carriageway	<ul style="list-style-type: none"> Flexible pavements Rigid composite pavements 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Carriageway hierarchy Urban/Rural location Dual/Single lane
Footway, Footpaths & Cycleways	<ul style="list-style-type: none"> Rigid Heritage Rigid Standard Flexible 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Footway hierarchy Cycling hierarchy Urban/Rural location
Highway Structures	<ul style="list-style-type: none"> Bridges Footbridges Culverts Subways Retaining walls 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Carriageway hierarchy Urban/Rural location
Public Lighting	<ul style="list-style-type: none"> Columns Bollards and Beacons Illuminated signs Zebra crossings 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> Carriageway hierarchy Column height Lantern type Illumination levels

Table 4.5 Asset Classification

Asset Type	Asset Group	Asset Sub-Group
Highway Drainage	<ul style="list-style-type: none"> • Gullies • Pipes • Inspection Chambers • Sustainable Urban Drainage Systems (SUD's) • Ditches • Grips • Soakaways • Pumping stations 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • Carriageway hierarchy • Flood risk drainage • Urban/Rural location • Highway/Off Highway • Design and construction characteristics • Associated features
Highway Verges	<ul style="list-style-type: none"> • Material • Shrubs 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • Carriageway hierarchy • Urban/Rural location
Non-illuminated signs	<ul style="list-style-type: none"> • Regulatory signs • Warning signs • Direction signs • Information signs • Boundary signs • Parking signs • Cycle signs 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • Carriageway hierarchy • Urban/Rural location • Regulatory/advisory
Public Transport Infrastructure	<ul style="list-style-type: none"> • Bus Stops • Bus Shelters • Passenger information • Real Time Passenger information 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • Carriageway hierarchy • Urban/Rural location
Segregated Cycleways and Cycle Tracks	<ul style="list-style-type: none"> • Flexible • Unbound 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • Cycleway hierarchy • Urban/Rural location • Design and construction characteristics
Public Rights of Way	<ul style="list-style-type: none"> • Public Footpaths • Public Bridleways • Restricted Byways • Byways Open to All Traffic • PROW Structures 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • PROW hierarchy • Urban/Rural location • Design and construction characteristics
Traffic and Road Safety Management	<ul style="list-style-type: none"> • Traffic control • Automatic Traffic Count sites • Enforcement camera 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • UTMC • Traffic signal junctions • Traffic signal pedestrian facilities • Automatic Traffic Count sites • Vehicle activated signs • School wig-wags
Road Markings & Road Studs	<ul style="list-style-type: none"> • Road Markings • Road Studs 	<p>Criteria for identifying sub-groups include:</p> <ul style="list-style-type: none"> • Carriageway hierarchy • Urban/Rural location • Regulatory/advisory

Table 4.5 Asset Classification (continued)

Asset Type	Asset Group	Asset Sub-Group
Safety Fences and Barriers	<ul style="list-style-type: none"> • Safety Fences • Safety Barriers 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> • Carriageway hierarchy • Urban/Rural location
Parking Infrastructure	<ul style="list-style-type: none"> • Car parks • Bus/Coach/HGV parking • Park & Ride • On street parking infrastructure 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> • Regulated car parks • Unregulated car parks
Street furniture & cycle parking	<ul style="list-style-type: none"> • Street furniture • Cycle parking 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> • Carriageway hierarchy • Footway hierarchy • Cycle hierarchy • Urban/Rural location
Highway Trees & Landscaped areas	<ul style="list-style-type: none"> • Material • Trees • Shrubs 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> • Carriageway hierarchy • Urban/Rural location
Other major assets	<ul style="list-style-type: none"> • Stocks/supplies • Depots • Vehicle Fleets • Salt bins 	Criteria for identifying sub-groups include: <ul style="list-style-type: none"> • Transport equipment and winter stores • Transport Depots • Community Transport

Table 4.5 Asset Classification (continued)

4.3.3 The JTAMP will progressively consider all transport asset types in accordance with the Implementation Plan. For the purpose of the first JTAMP initial asset types considered are Carriageway, Footways and Cycleways, Structures and Public Lighting. For each type an associated maintenance management plan will be developed for each authority. Future work will be carried out by the JTAMP to add additional asset types.

4.3.4 A full JTAMP document with all assets included will be achieved within the next three years. A programme has been developed to introduce all asset groups as shown in the Implementation Plan.

4.4 Carriageway Assets

4.4.1 Roads across the West of England sub-region are predominantly surfaced with bituminous materials with a small number being concrete and others with a bituminous surface. High friction surfacing is used as a Casualty Reduction measure on approaches to high risk sites such as pedestrian crossings, traffic signals and roundabouts. Road lengths are summarised in Table 4.7 using the appropriate carriageway hierarchy.

		Road Lengths reported to DfT (km)				
		Bath & North East Somerset	Bristol	North Somerset	South Gloucestershire	West of England
Principal	Rural single c/way	75.9	0.9	73.2	60.8	210.8
	Rural dual c/way	5.7	0.5	5.3	10.1	21.6
	Urban single c/way	32.4	62.8	9.7	30	134.9
	Urban dual c/way	2.1	25.3	5.0	19.9	52.3
	All	116.1	89.5	93.2	120.8	419.6
B Class	Rural	35.2	0.0	55.4	86.8	177.4
	Urban	13.6	54.8	26.9	33.1	128.4
	All	48.8	54.8	82.3	119.9	305.8
C Class	Rural	261.6	0.8	191.4	220.0	673.8
	Urban	52.2	69.2	57.0	60.6	239.0
	All	313.8	70.0	248.4	280.6	912.8
All B + C Class		362.6	124.8	330.7	400.5	1218.6
Unclassified	Rural	244.2	16.4	267.5	324.7	852.8
	Urban	353.2	895.9	442.2	617.7	2309
	All	597.4	912.3	709.7	942.4	3161.8
All Types	Rural	622.6	18.6	592.8	702.4	1936.4
	Urban	453.5	1108	540.8	761.3	2863.6
	All	1076.1	1126.6	1133.6	1463.7	4800.0

Total All Roads (2006)	All	1046.3	1131.7	1110.7	1511.8	4800.5
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Table 4.7 JTAMP Carriageway Lengths 2006

4.4.2. Construction types and depths vary. At present there is insufficient information to accurately classify construction across the sub-region. Further data collection is obtained from the design process for schemes included in the annual maintenance programmes.

4.4.3 Typical carriageway construction types are shown in Table 4.8.

Flexible pavement	A pavement in which all courses are either unbound or bound with a bituminous binder.
Rigid composite pavement	A pavement substantially constructed of reinforced concrete which has no construction or expansion joints, overlaid with a bituminous surfacing.
Rigid pavement	A pavement constructed of concrete.

Table 4.8 Carriageway Construction Types

4.4.4 Condition data for West of England sub-region in Table 4.9 shows the amount of road in need of structural repair.

Indicator	Performance Indicator	Current Value (07/08)
Principal road condition	BVPI 223	9%
Non-principal classified road condition	BVPI 224a	12%
Unclassified road condition	BVPI 224b	7%

Table 4.9 Carriageway Condition Data - West of England (2007/08)

4.4.5 Monitoring of the carriageway condition indicators will be updated to reflect new national indicators being developed by DfT.

4.5 Footway and Cycleway Assets

4.5.1 The West of England sub-region footways and cycleways vary significantly according to location and function. Programmes have been developed to ensure the continued expansion of footway and cycleway networks. Footway and cycleway lengths are summarised in Table 4.10.

	Footway and Off Carriageway Cycleway Lengths (km)				
	Bath & North East Somerset	Bristol	North Somerset	South Gloucestershire	West of England
Footways	1200	2000	1330	1470	6000
Cycleway (Off Carriageway)	10.4	92	56.0	254.4	412.8

Table 4.10 JTAMP Footway and Cycleways lengths (2007/08)

4.5.2 Construction types and depths vary. At present there is insufficient information to accurately classify construction. Further data collection is obtained from the design process for carriageway schemes included in the annual maintenance programmes.

4.5.3 The asset groups have been classified according to construction types, Rigid Heritage, Rigid Standard and Flexible as described in Table 4.11. Footway condition information is summarised in Table 4.12.

Rigid Heritage	A footway in which the wearing course is formed from natural stone flags.
Rigid Standard	A footway in which the wearing course is formed from in-situ concrete or modular concrete paving slabs.
Flexible footway	A footway with an asphalt wearing course.
Cycleway	A cycleway with an asphalt wearing course.

Table 4. 11 Footway and Cycleway construction types

4.5.4 The current footway condition data for the West of England sub-region is summarised in Table 4.12. There are targets to improve the condition of footways (30% reduction, Local 187). The target for footways is to ensure continual improvement in footway condition throughout the JLTP period.

Indicator	Performance Indicator	Value	Target Value (2010/11)
Categories 1, 1a & 2 footway condition	Local 187	26%	19%

Table 4.12 Footway condition data - West of England (2007/08)

4.6. Highway Structures

4.6.1 Structures provide an essential transportation function. The majority of structures in the West of England sub-region were built many years ago and new bridges are rarely built. Structures across the West of England sub-region are classified by structure asset type, in accordance with the *Highway Structures Code of Practice*:

- Bridge
- Footbridge
- Culvert
- Subway
- Highway retaining wall



A4174 Ring Road Bridge Inspection (South Gloucestershire Council)

4.6.2 A summary of highway structures are shown in Table 4.13.

	Highways Structures (Number)				
	Bath & North East Somerset	Bristol	North Somerset	South Gloucestershire	West of England
Bridges	309 (111)	320 (97)	162 (30)	574 (182)	1365 (420)
Footbridges	263 (46)	61 (13)	227	72 (23)	623 (82)
Culverts	114 (7)	82 (11)	168	405 (35)	769 (53)
Subways	14 (7)	46 (7)	16 (3)	43 (1)	119 (18)
Retaining Walls	797 (324)	500 (420)	281	239 (69)	1817 (813)
Total	1497 (495)	1009 (548)	854 (33)	1333 (310)	4693 (1386)

*Note: Values in brackets are in private ownership, including Network Rail.

Table 4.13 Summary of Highway Structures (2007/08)

4.6.3 Some structures within the West of England sub-region are owned by other parties including Network Rail. In these cases the authorities are responsible for monitoring the condition of these structures while the owner is responsible for any repairs required.

4.7 Public Lighting

4.7.1 Public Lighting is a generic term for all illuminated street furniture.

4.7.2 Lighting columns have been classified in accordance with DfT criteria Appendix A and TR22 which report unit type, structural form, material and height:

- **Structural Form** – column, wall bracket and electricity pole mounted units.
- **Material** – steel, stainless steel, reinforced concrete, aluminium, cast iron, wood and composite.
- **Height** – less than 5 m, 5 to 10m, and greater than 10m.

4.7.3 The inventory items listed in Table 4.14 are based on street lighting inventory, Appendix A is submitted annually to DfT by each authority in the West of England. There is a high confidence level in the quality of this information.

	Public Lighting (units)				
	Bath & North East Somerset	Bristol	North Somerset	South Gloucestershire	West of England
Public Lighting	15,187	31,437	19,812	28,722	95,158
Illuminated Regulatory and Warning Signs	731	4,072	1,747	2,057	8,607
Illuminated Bollards	1,325	2,137	1,121	1,923	6,506
Total	17,243	37,646	22,680	32,702	110,271

Table 4.14 Summary of Public Lighting (2007/08)

4.7.4 Traffic Signs are illuminated in accordance with the Traffic Sign Manual and Traffic Signs Regulations and General Directions. They are traditionally fixed to either a post or to a lighting column. Non-illuminated signs are managed under the Highway Maintenance Management Plan.

Continuous Development of the Joint Transport Asset Management Plan

4.7.5 The remainder of the asset types set out in Table 4.5 are to be added to this document over the next two years. The action plan will deliver the additional asset types as shown in Table 4.15.

Asset Type	Year	Version	Status
Carriageway	2008/09	JTAMP (1)	Complete
Footway, Footpaths & Cycleways	2008/09	JTAMP (1)	Complete
Highway Structures	2008/09	JTAMP (1)	Complete
Public Lighting	2008/09	JTAMP (1)	Complete
Public Transport Infrastructure	2008/09	JTAMP (2)	In Preparation
Highway Drainage	2008/09	JTAMP (2)	In Preparation
Highway Verges	2008/09	JTAMP (2)	In Preparation
Non-illuminated Signs	2008/09	JTAMP (2)	In Preparation
Segregated Cycleway and Cycle Tracks	2009/10	JTAMP (3)	Planned
Public Rights of Way	2009/10	JTAMP (3)	Planned
Traffic and Road Safety Management	2009/10	JTAMP (3)	Planned
Road Markings and Road Studs	2009/10	JTAMP (3)	Planned
Safety Fences and Barriers	2010/11	JTAMP (4)	Planned
Parking Infrastructure	2010/11	JTAMP (4)	Planned
Street Furniture and Cycle parking	2010/11	JTAMP (4)	Planned
Highway Trees and Landscaped areas	2010/11	JTAMP (4)	Planned

Table 4.15: JTAMP Forward Plan

4.8. Inventory and condition gap analysis

4.8.1. **Inventory and condition information is the single most important input in any asset management system.** Using the *Framework for Highway Asset Management*, a base line assessment has been established for inventory and condition data across the West of England sub-region. The confidence evaluation utilises a matrix approach comparing the extent and reliability of the information currently available. As an initial stage for gap analysis this information provides an important base line. The challenge is to now consider the future improvements that are required. An action plan is being developed to deliver future improvements.

4.8.2 Extent of Data Collection The extent of data establishes the amount of information currently held by the authorities. This data is either stored in a paper format or contained in an electronic system. There is an aspiration to migrate all information to an appropriate electronic system. The extent of available data has been described using five different levels.

Extent:	Definition:
None	No data is stored in electronic or hard copy storage
Partial	10 to 30% of asset has data recorded in either electronic or hard copy format
Average	30 to 70% of asset has data recorded electronically
Above Average	70 to 95% of asset has data recorded electronically
Complete	More than 95% of asset has data recorded electronically

4.8.3 Reliability of Data Stored The reliability of data establishes the accuracy of information currently held by the authorities. This data is either stored in a paper format or contained in an electronic system. There is an aspiration to migrate all information to an appropriate electronic system. The reliability of available data has been described using five different levels.

Reliability:	Definition:
None	Stored data is less than 10% accurate
Poor	Stored data is more than 10% but less than 30% accurate
Average	Stored data is 30 – 70% accurate
Good	Stored data is greater than 70% but less than 95% accurate
Excellent	Stored data is greater than 95% accurate

4.8.4 Confidence Level for Data

Extent \ Reliability	Nil	Partial	Average	Above Average	Complete
None	None	Low	Low	Low	Low
Poor	None	Low	Low	Low	Low
Average	None	Low	Medium	Medium	Medium
Good	None	Low	Medium	High	High
Excellent	None	Low	Medium	High	High

4.8.5 JTAMP Position Statement March 2008

The full base line assessment is shown in Appendix 1. A summary of the Confidence Levels for each Asset Type is set in Table 4.16:

Asset Type	Confidence Level	
	Inventory	Condition
Carriageway	Low	Medium
Footways footpaths and cycleways	Medium	Low
Highway Structures	High	High
Public Lighting	High	High
Public Transport Infrastructure	Medium	Medium
Highway Drainage	Medium	Low
Highway Verges	Low	Low
Non Illuminated Signs	Low	Low
Segregated Cycleways and Cycle Tracks	Medium	Low
Public Rights of Way	Medium	Low
Traffic and Road Safety Management	High	Medium
Road Markings and Road Studs	Low	Low
Safety Fences and Barriers	Low	Low
Parking Infrastructure	Medium	Medium
Street Furniture and cycle parking	Low	Low
Highway Trees and Landscaped areas	Medium	Low
Other major assets	Medium	Medium

Table 4.16 Summary of the Confidence Levels for each Asset Type (continued)

5 LEVELS OF SERVICE

5.1 Introduction

- 5.1.1 A key challenge for the JTAMP is to demonstrate a clear balance and link between customer expectations and asset integrity. This will be achieved by applying Levels of Service.
- 5.1.2 Levels of Service are a mechanism for measuring both the service and the quality of a transport asset. It will demonstrate the way the service is provided and how that service is perceived by local authority customers.
- 5.1.3 As set out in the *Framework for Highway Asset Management*, Levels of Service provide an assessment of asset performance, asset condition, and the quality of the service delivered by that asset, and also of the highway authority. Levels of Service will:
- Document and measure the service provided.
 - Rationally evaluate the service versus any lost tradeoffs.
 - Determine if adequate focus is given to what is important to the customer.
 - Establish if operational activities support the achievement of strategic goals.

5.2 Developing Levels of Service

- 5.2.1. Levels of Service quantify the performance of a transport asset in an easy to understand, non-technical language, which reflect the demands placed on that service. The process used for producing Levels of Service is shown in Figure 5.1, based on the guidance in *Framework for Highway Asset Management* published by the County Surveyors Society. The development of performance measures allows a comprehensive assessment of asset performance and will establish the relationship between both cost and performance. Performance measures reflect a range of factors, which when analysed collectively provide a full understanding of the performance of the whole asset. This provides an 'evidence led' assessment that will support the decision making process on the allocation of resources. This ability to rationally assess between competing demands is at the core of asset management.

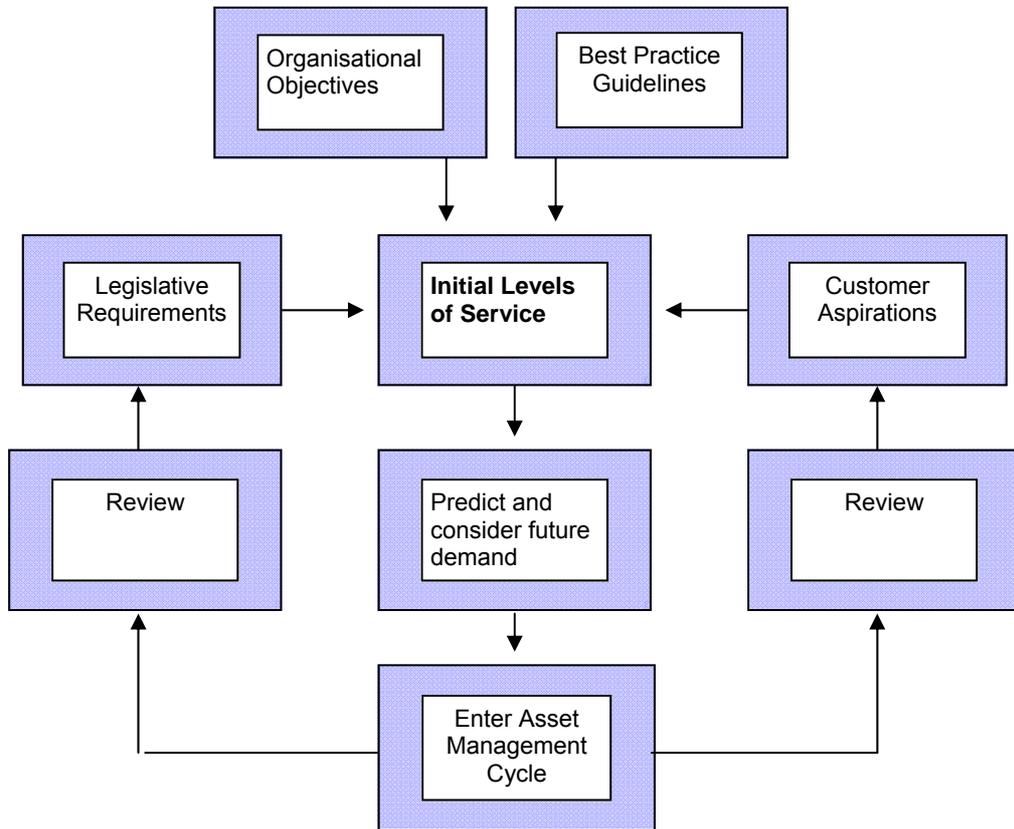


Figure 5.1 Process for developing Levels of Service

5.2.2. Levels of Service are based on the following headings, as shown in Figure 5.2:

- Legislative Requirements
- Customer Expectations
- Organisational Objectives
- Best Practice Guidelines

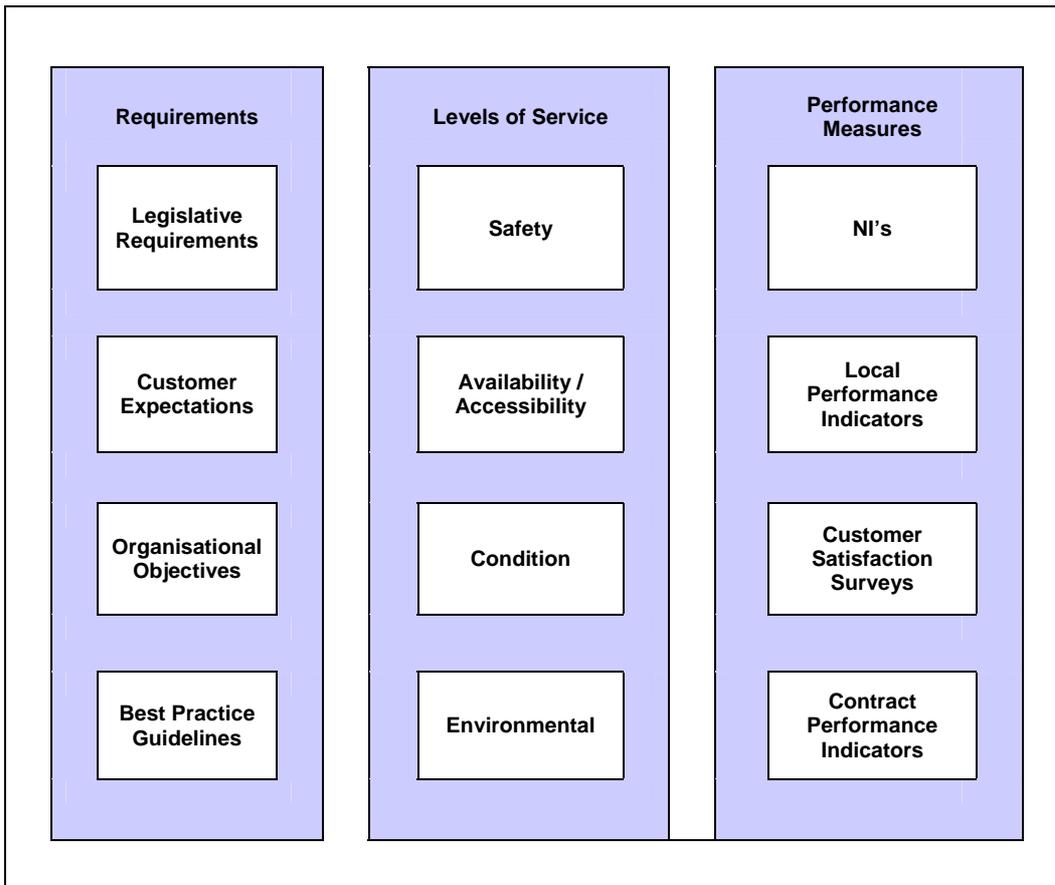


Figure 5.2: Level of Service Development

Legislative Requirements

- 5.2.3 Statutory requirements and other important legislative framework documents influence the delivery and management of transport assets. It is essential to take these fully into account when developing Levels of Service. In effect these documents and the associated powers define the minimum level of service; Table 5.1 shows the legislation relevant to the management of transport assets.

Highway Legislation	Highway Act 1980 Road Traffic Regulation Act 1984 Rights of Way Act 1990 New Roads and Street Works Act 1991 Transport Act 2000 Traffic Signs Regulations and General Directions 2002 Railways and Transport Act 2003 Countryside and Rights of Way Act 2000 Traffic Management Act 2004
Environmental Legislation	Noxious Weeds Act 1959 Environmental Protection Act 1990 Wildlife and Countryside Act 1981
Relevant General Legislation	Health and Safety at Work Act 1974 Construction (Design and Management) Regulation 2007 Human Rights Act 1988 Management of Health and Safety at Work Regulations 1992 Disability and Discrimination Act 1995 and 2005 Freedom of Information Act 2000 The Local Government Act 2003 Audit Commission Comprehensive Performance Assessment - The Harder Test 2007

Table 5.1: Transport Legislation

Customer Expectations

- 5.2.4 Asset Management is closely linked to understanding customer demand aspirations. The customers' view of the transportation service is regarded as fundamental and a highly important element of delivering value for money. It is important to demonstrate that this customer-focused performance is sought within existing budgetary and other constraints.
- 5.2.5 Consultation will be carried out in the form of focus groups and customer surveys, to understand the needs and aspirations of both users and to improve overall customer satisfaction. A regional benchmarking exercise has been carried out to assess customer satisfaction in transportation service delivery. The initial results will be available in the summer of 2008 and will be reviewed annually. Results will be published by the County Surveyors' Society. This approach, focusing on customers' needs and aspirations provides valuable feedback to the levels of service. Long term improvement plans are being developed to incorporate the resulting needs and aspirations.

Organisational Objectives

- 5.2.6 The Levels of Service are consistent with the aims and objectives outlined in our corporate and policy documents. These were set out in Chapter 3 Aims, Goals and Objectives.

Best Practice Guidelines

5.2.7 Codes of Practice for assets including highways, structures and street lighting provide a template to use in Best Value Review, and as an indicator of good practice, against which we can better our performance. It contains clear recommendations and guidance on the appropriate management and standards for our highway network. Whilst not statutory requirements, the codes are likely to be used as a point of reference in any legal proceedings, and must, therefore, be instrumental in influencing and shaping desired Levels of Service.

Other national and local documents that may influence eventual standards include:

- Design Manual for Road and Bridges
- Specification for Highway Works
- Maintaining a Vital Asset

Organisational Constraints

5.2.8 The development of Levels of Service will reflect organisational constraints. While it may be possible to influence and amend some of these, many will remain as permanent restrictions. These include:

- **Inadequate or unpredictable financial resources** – the desired Level of Service can't be funded in either the short or long term.
- **Resource constraints** – we may not be able to attract suitable skilled or experienced resources, which will prevent us from achieving our desired Levels of Service – similarly, our organisation or structure / culture will influence this.
- **Procurement constraints** – our arrangements or contractor's limitations may have a similar effect.
- **Political constraints** – our political approach may not be consistent over the longer-term, it may affect the availability of funding and, may vary certain approaches to our work programmes. Also, there will be variations across the West of England sub-region because of the difference local political influences.

CORPORATE PLANS	Theme 1 Communities and Managing Future Development	Theme 2 Improving Health and Wellbeing	Theme 3 Valuing the Environment	Theme 4 Safer and Stronger Communities	Theme 5 Investing in Children and Young People	Theme 6 Economic prosperity and regenerati on	Theme 7 Continuous Improvement
JTAMP LEVELS OF SERVICE							
Network Management	√√√		√	√	√√	√√	√√
Network Safety	√	√√			√√	√	
Sustainable Transport	√√√	√√√	√√√		√√	√√	√√
Accessibility	√√√	√√√	√		√√√	√√	√√
Condition		√√		√√			
Customer Service	√√	√√	√√	√√	√	√√	√√√
Value for Money	√√√			√√			√√√
Sustainability			√√	√√√		√√	√

Low Impact √

Medium Impact √√

High Impact √√√

Table 5.2: Transport Themes influencing JTAMP Levels of Service

5.3 JTAMP Levels of Service

5.3.1 Levels of Service have been developed to cover all aspects of the JTAMP which in turn are linked and align to the other requirements in Figure 5.1. Levels of Service describe the performance and service of the assets that can be easily understood and is meaningful to elected members, the public and to engineers. It is essential that the meaning is consistent to all stakeholders.

- **Network Management** – co-ordination and management of activities on and around the highway, including works undertaken by statutory undertakers.
- **Sustainable Transport** - promotion and encouragement of sustainable forms of transport, e.g. walking, cycling and buses, and promote developments that reduce the need to travel.
- **Condition** - quality of the transport infrastructure.
- **Network Safety** - safety of all users.
- **Sustainability** - measures and procedures that minimise waste and maximise recycling.
- **Accessibility** - accessibility to services for all users.

- **Customer service** - customer representation and satisfaction.
- **Value for Money** – economic, effective and efficient service delivery.

Level of Service Standards

5.3.2 A defined standard will be attributed to each Level of Service. These standards are clearly defined to ensure that they are understood by stakeholders. Four categories: excellent, good, adequate and inadequate have been identified against each level of service. These standards are defined as follows:

Excellent – achieves the highest possible standard and / or a level that exceeds the good practice due to improving service or condition through innovations.

Good – meets recognised good practice and / or acceptable council standard identified through customer surveys.

Adequate – meets minimum statutory national requirements and / or minimum common practice.

Inadequate – does not meet minimum statutory national requirements and / or minimum common practice and / or acceptable council standard identified through customer surveys.

5.4 Performance Measures

5.4.1 To demonstrate whether the objectives are being achieved through the Levels of Service; comparisons need to be made based on performance and quality. Performance measures define the criteria for evaluation and characterize performance in a way that is easily understood by the customers. The measures also provide a means of benchmarking against comparable authorities.

5.4.2 There are two main types of Performance Measures:

- **National (mandatory):** set by the Government and measured over a set period of time. These include National Indicators reported on an annual basis.
- **Local, West of England or regional.**

5.4.3 Performance Measures have applied the following principles:

- **Relevant** – to the local authority/sub-regional objectives.
- **Avoid perverse incentives** – to avoid waste or inappropriate practice.
- **Attributable** – can the activity being measured be influenced.
- **Well-defined** – to enable consistent data collection, calculation and use.
- **Timely** – to produce an output at an appropriate frequency.
- **Reliable** – accurate and in accordance with its intended use.

- **Comparable** – with past scores or benchmarked measures elsewhere.
- **Verifiable** – clearly documented so the process can be checked.

5.4.4 The standards include all the levels of service requirements identified earlier in this section. The development of the JTAMP identified all national, local, sub-regional and regional Performance Measures and linked them with a Level of Service. The key challenge was ensuring that the measure could be segregated into our four standards. Not all performance measures had relevant legislation, or customer views or recognised best practice. For this reason the standards are defined broadly.

5.4.5 Table 5.1 shows the performance measures and corresponding levels of service standards.

	ASSET(S)	PERFORMANCE INDICATOR	EXCELLENT	GOOD	ADEQUATE	INADEQUATE
LEVEL OF SERVICE	ASSET(S)		Achieves the highest possible standard and / or a level that exceeds the good practice due to improving service or condition through innovations.	Meets recognised good practice and / or acceptable council standard identified through customer surveys.	Meets minimum statutory national requirements and / or minimum common practice.	Does not meet minimum statutory national requirements and / or minimum common practice and / or acceptable council standard identified through customer surveys.
Network Management	Classified – Principal Carriageway (NI 168)	(NI 168)	<6% requiring maintenance.	6-8% requiring maintenance.	>8-11% requiring maintenance.	>11% requiring maintenance.
Network Management	Classified – Non Principal Carriageways (NI 169)	(NI 169)	<10% requiring maintenance.	10-13% requiring maintenance.	>13-16% requiring maintenance.	>16% requiring maintenance.
	Unclassified Carriageway	CVI	<4% requiring maintenance.	4-14% requiring maintenance.	>14-28% requiring maintenance.	>28% requiring maintenance.
	Footways, Footpaths and Cycleways	DVI	<15% requiring maintenance.	15-20% requiring maintenance.	20-30% requiring maintenance.	>30% requiring maintenance.
Network Management	Public Lighting	% of street lighting not working as planned.	>98%	95-98%	90-95%	<90%
Network Management	Public Lighting	Average days taken to repair a street light (combined figure of BVPI 215a and 215b).	<5 days	5-7	7-10	>10

Table 5.1 Performance Measures and Level of Service Bandings

			EXCELLENT	GOOD	ADEQUATE	INADEQUATE
LEVEL OF SERVICE	PERFORMANCE MEASURE		Achieves the highest possible standard and / or a level that exceeds the good practice due to improving service or condition through innovations.	Meets recognised good practice and / or acceptable council standard identified through customer surveys.	Meets minimum statutory national requirements and / or minimum common practice.	Does not meet minimum statutory national requirements and / or minimum common practice and / or acceptable council standard identified through customer surveys.
Network Management	Structures	% of bridges achieving required carrying capacity.	>95%	85-95%	75-85%	<75%
Network Management	Bridges	Bridge Condition Indicator.	90-100	75-90	50-75	<50
Network Management	Retaining Wall	Wall Condition Indicator.	90-100	75-90	50-75	<50

Table 5.1 Performance Measures and Level of Service Bandings (continued)

			EXCELLENT	GOOD	ADEQUATE	INADEQUATE
LEVEL OF SERVICE	PERFORMANCE MEASURE		Achieves the highest possible standard and / or a level that exceeds the good practice due to improving service or condition through innovations.	Meets recognised good practice and / or acceptable council standard identified through customer surveys.	Meets minimum statutory national requirements and / or minimum common practice.	Does not meet minimum statutory national requirements and / or minimum common practice and / or acceptable council standard identified through customer surveys.
Sustainable Transport	Segregated Cyclepaths	CVI	<15% requiring maintenance.	15-20% requiring maintenance.	20-30% requiring maintenance.	>30% requiring maintenance.
	Footways, Footpaths	CVI	<15% requiring maintenance.	15-20% requiring maintenance.	20-30% requiring maintenance.	>30% requiring maintenance.
Network Safety	All Assets	Safety Inspections (% of inspections completed to the correct frequency).	>98% to minimum frequency.	95-98% to minimum frequency.	90-95% to minimum frequency.	<90% to minimum frequency.
Network Safety	Carriageway	Skid testing (% inspected at or below Investigatory Level).	Operational full skid policy.	Investigate sites from survey under investigatory level.	Survey once per year.	No survey.
Sustainability*	Carriageway	% of waste material created from highway maintenance activity recycled.	>95%	80-95%	50-80%	<50%
Sustainability	Public Lighting	Policy of energy reduction.	Policy introduced -More than 30% reduction in energy being achieved.	Policy introduced - 20% - 30% reduction in energy being achieved.	Policy introduced – 10% - 20% reduction in energy being achieved.	No energy saving policy.

*Process to measure this performance indicator is currently under development

Table 5.1 Performance Measures and Level of Service Bandings (continued)

			EXCELLENT	GOOD	ADEQUATE	INADEQUATE
LEVEL OF SERVICE	PERFORMANCE MEASURE		Achieves the highest possible standard and / or a level that exceeds the good practice due to improving service or condition through innovations.	Meets recognised good practice and / or acceptable council standard identified through customer surveys.	Meets minimum statutory national requirements and / or minimum common practice.	Does not meet minimum statutory national requirements and / or minimum common practice and / or acceptable council standard identified through customer surveys.
Accessibility	Footways, Footpaths and Cycleways	Controlled Crossing Points (Local 165).	>98%	85-98%	70-85%	<70%
Customer Service	All Assets	Response to category 1 safety defects within target time.	>98%	90-98%	80-90%	<80%
Customer Service	Public Lighting	Response to urgent lighting defects within target time.	100%	98-100%	95-98%	<95%
Customer Service	All Assets	West of England Customer Survey.	More than once per year.	Once per year	2-5 years	Every 5 years
Value for Money	All Assets	Lifecycle Costing.	Lifecycle plan in operation and delivering sustainable streams of funding.	Lifecycle plan adopted but not implemented.	Lifecycle plan available but not adopted.	No lifecycle plan.

Table 5. 1 Performance Measures and Level of Service Bandings (continued)