

Job No. 551321

**Herefordshire Council
Environment Directorate**

**Herefordshire Local Transport
Plan 2 (2006/7 - 2010/11)**

**Strategic Environmental
Assessment**

Environmental Report

Version No. 1
Date of Issue: March 2006



Owen Williams consultants
Thorpe House
25 Kings Street
Hereford
HR4 9BX

Herefordshire Council
Environment Directorate
'Brockington'
35 Hafod Road
Hereford
HR1 1SH

	Contents	Page
	Non-Technical Summary	iii
1	Introduction	1
1.1	Strategic Environmental Assessment of the Herefordshire Local Transport Plan 2	1
1.2	The SEA Process	1
1.3	The Environmental Report and Consultations	2
1.4	Spatial and Temporal Scope of the SEA	3
1.5	Technical Scope of the SEA	4
1.6	SEA Objectives	5
1.7	Structure of the Environmental Report	6
2	The Local Transport Plan 2	7
2.1	Outline of LTP2	7
2.2	The Shared Priorities and LTP2 Objectives	8
2.3	Relationship of the LTP2 to other Plans and Programmes	9
2.3.1	Local Transport Plan 2001/2 – 2005/6	9
2.3.2	Regional Spatial Strategy	9
2.3.3	Regional Transport Strategy	10
2.3.4	Unitary Development Plan	11
2.3.5	Local Development Framework	11
2.3.6	The Herefordshire Plan	11
2.3.7	Hereford Air Quality Action Plan	12
2.3.8	The Traffic Management Act 2004	12
2.3.9	Herefordshire Biodiversity Action Plan	12
2.3.10	Current National Policies	12
2.3.11	Other Objectives, Policies, Plans and Legislation	12
3	State of the Environment	15
3.1	Background to the Study Area	15
3.2	Baseline Environmental Conditions	15
3.2.1	Biodiversity, Flora & Fauna	15
3.2.2	Population & Human Health – Road Safety	17
3.2.3	Population & Human Health – Security	18
3.2.4	Population & Human Health – Health	19
3.2.5	Population & Human Health – Accessibility, Mobility and Severance	19
3.2.6	Soil	20
3.2.7	Water	20
3.2.8	Air Quality	22
3.2.9	Climate	26
3.2.10	Material Assets	26
3.2.11	Cultural, Architectural & Archaeological Heritage	27
3.2.12	Landscape and Townscape	28
3.2.13	Noise	28
3.3	Environmental Problems, Constraints and Opportunities in the LTP2	28

	Contents	Page
4	Alternative LTP2 Options and Assessment of Significant Effects	30
4.1	Need for Alternative LTP2 Options	30
4.2	Alternative Option Packages	30
4.3	Comparison of Option Packages	39
4.3.1	Option Package 1	39
4.3.2	Option Package 2	39
4.3.3	Option Package 3	39
4.3.4	Option Package 4	39
4.3.5	Option Package 5	39
4.3.6	Option Package 6	40
4.4	Refinement of Options – The Blended Package	40
5	Mitigation	44
5.1	Introduction	44
5.2	Proposed Mitigation for Significant Adverse Environmental Effects	45
5.2.1	Biodiversity	45
5.2.2	Soil and Water	45
5.2.3	Cultural Heritage	46
5.2.4	Landscape	46
6	Monitoring	47
6.1	Introduction	47
6.2	Proposed Monitoring for Significant Adverse Environmental Effects	47
6.2.1	Biodiversity	47
6.2.2	Soil and Water	48
6.2.3	Air Quality	48
6.2.4	Cultural Heritage	50
6.2.5	Landscape	51
	References	52
	Appendix A - SEA Statement	
	Appendix B - Organisations consulted as part of the Hereford Local Multi-Modal Study	
	Appendix C - List of additional relevant plans and policies with environmental issues considered in the LTP2 process	
	Appendix D - Full Hereford Local Multi-Modal Study Appraisal Summary Tables	
	Appendix E - Initial Option Packages: Distillation Against Local Transport Objectives	

Non-Technical Summary

Herefordshire Council was required to undertake a Strategic Environmental Assessment (SEA) of their second Local Transport Plan, LTP2 (for the period 2006/7 – 2010/11), in accordance with European Directive 2001/42/EC; known as the SEA Directive. The objective of the SEA Directive is “to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans...with a view to promoting sustainable development” (Article 1).

The SEA is a staged process which is designed to ensure that environmental impacts are taken into account at the earliest stages of plan development. This Environmental Report (ER) identifies, describes and evaluates the likely significant environmental impacts of implementing the schemes contained within the LTP2. It documents baseline environmental conditions, explains the alternative schemes considered and sets out mitigation and monitoring measures proposed to reduce the significant adverse (negative) environmental impacts identified. This report should be read in conjunction with the LTP2.

A draft ER was prepared in parallel with the preparation of the provisional LTP2. The draft ER underwent consultation with statutory consultees and the public prior to the submission of the final LTP2. This allowed any comments received to be considered and incorporated into the final LTP2 where appropriate. The SEA Statement in Appendix A of this report summarises the comments received and their influence on the final ER and LTP2.

Chapter 1 of this report provides an introduction to and overview of the SEA process, including the spatial and technical scope of the SEA (the geographical area covered and the information and assessment required by the SEA Directive). It also provides an overview of the consultation process and documents the SEA objectives set for the LTP2. Although objectives are not required by the SEA Directive, these have been included as they allow the description, analysis and comparison of environmental effects throughout the SEA process.

Chapter 2 provides an overview of the LTP2, including the LTP2 objectives and information contained within each chapter of the Plan. It examines the relationship of the LTP2 with other plans and programmes at international, national, regional and local levels. These include plans such as the West Midlands Regional Transport Strategy and Regional Spatial Strategy, the Herefordshire Unitary Development Plan and The Herefordshire Plan. The LTP2 operates within an existing planning system and will be influenced and constrained by objectives contained within other plans and programmes. The LTP2 in turn complements other plans.

Chapter 3 provides background information on Herefordshire and documents baseline environmental conditions within the County. These are divided into environmental areas as required by the SEA Directive and covers biodiversity, flora and fauna; population and human health; soil; water; air quality; climate; material assets; cultural, architectural and archaeological heritage; landscape and townscape; and noise. In order to understand the impact the LTP2 will have on the environment, it is important that the current state of the environment is appreciated for each environmental area. This chapter also states the likely evolution of the environmental areas without implementation of the LTP2 schemes, for example, decreased air quality and increased noise from traffic. A summary table is also provided on current environmental problems and opportunities within the LTP2 to improve them.

Chapter 4 assesses the environmental effects of possible alternative schemes considered for inclusion in the LTP2. This assessment is based on the Hereford Local Multi-Modal Study (HLMMS) which was undertaken in 2002 / 2003 and which developed six different option packages based on the identification of a possible range of transport schemes, initiatives and measures for Hereford over the next thirty years. The effects of each scheme on each environmental area were considered and overall effects summarised for each option package.

A blended package option was then developed which includes the schemes considered to achieve Herefordshire's local transport objectives whilst providing value for money and having the least likely adverse environmental effects. An option for an Outer Distributor road around Hereford, despite having likely significant environmental effects, is however included in the LTP2 as it was agreed during consultation that some form of new road building was required to solve the problem of increased road congestion in Hereford City Centre. This chapter concludes that the likely significant adverse environmental effects arising from the implementation of the LTP2 are on biodiversity, soil and water, cultural heritage and landscape.

Chapter 5 provides details of how the likely significant adverse environmental effects identified will be mitigated during implementation of the LTP2. These mitigation measures involve avoiding, minimising or compensating for the adverse environmental effects caused by the scheme. Proposed mitigation measures are provided for biodiversity, soil and water, cultural heritage and landscape. Where a scheme is likely to have an adverse environmental effect, measures will be put in place to minimise the effect to an acceptable level or otherwise compensate for the effect, for example, improving land adjacent to the site.

Chapter 6 provides details of monitoring measures for the likely significant adverse environmental effects; biodiversity, soil and water, cultural heritage and landscape. This allows any unforeseen adverse environmental effects to be identified at an early stage so that appropriate remedial action can be undertaken and also ensures that any remedial action at least compensates for that lost or damaged during scheme implementation. Monitoring measures for air quality are also provided due to the objective for better air quality in the LTP2 which requires monitoring to measure performance. Proposed monitoring measures include initial surveys on site, surveys during construction and follow-up surveys after construction. These include ecological surveys, contaminated land assessments and flood risk assessments.

The **Appendices** provide supporting information to the ER and include: the SEA Statement; details of organisations consulted as part of the HLMMS; further plans and policies with environmental objectives considered in the LTP2 process; and further information from the HLMMS, including the full appraisal summary tables for the alternative option packages considered.

1 Introduction

1.1 Strategic Environmental Assessment of the Herefordshire Local Transport Plan 2

The Council is required to undertake a Strategic Environmental Assessment (SEA) of the Local Transport Plan 2 (2006/7 – 2010/11) (LTP2) under European Directive 2001/42/EC *on the assessment of the effects of certain plans and programmes on the environment*; known as the SEA Directive. The Directive applies to all plans and programmes, and modifications to them, whose formal preparation began after 21st July 2004, and also whose formal preparation began before that date, if they have not been adopted (or submitted to a legislative procedure leading to adoption) by 21st July 2006.

The Directive was implemented in England by The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633). It integrates the Directive's requirements with the existing Department for Transport's (DfT's) transport appraisal approach, the New Approach to Appraisal (NATA).

The requirement to undertake an SEA is reinforced in the Full Guidance on Local Transport Plans: Second Edition (December 2004) published by the DfT for English and Welsh Authorities. This document required a provisional LTP2 to be submitted to the DfT in July 2005 with a final LTP2 in March 2006, indicating that an SEA should be submitted alongside the final LTP2. Herefordshire Council considered it appropriate to undertake an SEA in parallel with the preparation of the provisional LTP2. The draft Environmental Report (ER) falling out of the SEA process underwent consultation prior to the submission of the final ER and LTP2 in March 2006. The DfT's guidance, Strategic Environmental Assessment for Transport Plans and Programmes (TAG Unit 2.11, December 2004), has been followed for the SEA of Herefordshire's LTP2 and the preparation of this ER.

The objective of the SEA Directive is "to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans...with a view to promoting sustainable development" (Article 1). This ensures that the environment is given a high level of consideration when developing the LTP2 by identifying, assessing and mitigating any significant environmental effects arising from the plans and programmes.

1.2 The SEA Process

The SEA is an iterative process developed in tandem with the LTP2 and designed to ensure that the environmental impacts are taken into account at the earliest stages of plan development. The SEA process is conducted in five discrete stages as shown in Table 1.1.

Table 1.1 Summary of SEA Stages

SEA Stage	What is involved
Stage A	Setting the context of the SEA, identifying the environmental objectives and problems and establishing the baseline from existing information.
Stage B	Examination of the relationship with environmental objectives in other plans and policies, identification of relevant alternatives at the strategic level, scoping the likely significant environmental effects of the plans and programmes and consulting on the scope and detail of the information to be contained in the Environmental Report (ER).
Stage C	Assessment of the effects of the LTP2 on the environment and identification of and assessment of the potential mitigation options.
Stage D	Production of the ER and consultation on the draft LTP2 and ER.
Stage E	Indicator selection and monitoring of significant impacts of implementing the plan on the environment.

This report covers stages A – C and the first element of Stage D, i.e. the production of the ER.

1.3 The Environmental Report and Consultations

The main output of the SEA process is an ER, which identifies, describes and evaluates the likely significant environmental impacts of implementing the LTP2. The ER documents baseline environmental conditions, explains the alternatives considered and sets out mitigation and monitoring measures proposed to reduce the adverse environmental impacts identified. It should be read in conjunction with the LTP2.

A draft ER was prepared in parallel with the preparation of the provisional LTP2. This underwent consultation prior to the submission of the final LTP2. The draft ER was distributed to the four statutory stakeholders:

- The Environment Agency
- English Nature
- The Countryside Agency
- English Heritage

It was also placed on Herefordshire Council's website for open consultation with the public and other interested parties. Each comment received during the consultation period was considered in line with the SEA Directive, associated guidance and in relation to the provisional LTP2. Where appropriate the ER and LTP2 were changed to take account of the issues raised. The SEA Statement in Appendix A summaries the consultation comments and how environmental considerations have been integrated into the final LTP2. It also documents changes to the ER as a result of the consultation.

The Hereford Transport Review Local Multi-Modal Study (HLMMS) was undertaken by independent consultants during 2002/03. The strategies appraised within this study form the basis of the LTP2 and follow the NATA approach. The progress of the study was monitored and guided by a multi-agency Steering Group including representatives from:

- Herefordshire Council
- Government Office West Midlands
- Advantage West Midlands
- Highways Agency
- Chamber of Commerce
- West Midlands Sustainability Forum

Extensive consultations were also undertaken through a Wider Reference Group which included the statutory stakeholders for the SEA consultation process as well as other interested parties and the public. A full list of consultees is included in Appendix B.

The Wider Reference Group met at key stages in the study to consider:

- The development of initial options.
- Appraisal of initial options.
- The development of a blended transport package.

The overall purpose of the Wider Reference Group meetings was to:

- Identify the problems and issues that the HLMMS would address.
- Identify local preferences which would influence the choice of solution.
- Identify the acceptability of alternative solutions.
- Assess whether the recommended solutions were locally acceptable.
- Ensure the involvement of a wide range of stakeholders in the development of the future transport strategy.
- Contribute to building a consensus around the eventual outcome.

Briefing meetings were also held for Parish Council representatives and Members of Herefordshire Council. A Herefordshire Council Member Board was kept informed of progress during the course of the study.

1.4 Spatial and Temporal Scope of the SEA

The policies and programmes outlined in the LTP2 cover the entire area of Herefordshire; approximately 2182 square kilometres. The spatial scope of the SEA therefore covers the geographical area of Herefordshire as shown in Figure 1.1. It is recognised that the transport network provides access to developments within Wales and other neighbouring authorities, which the Council has no control over, but which have to be taken into consideration when developing the LTP2 and subsequently the transport network within the County.



Figure 1.1 Location of Herefordshire
(Crown Copyright Herefordshire Council 2005 Licence 100024168).

The LTP2 sets out the policies and programmes in Herefordshire for the period 2006/7-2010/11 and therefore the SEA covers the same period, however some environmental effects are considered to have impacts beyond the LTP2 spatial and temporal period.

1.5 Technical Scope of the SEA

The SEA provides for a wide range of environmental areas to be considered in the development of the LTP2. The environmental areas which are required to be assessed and their relationship with NATA sub-objectives, are shown in Table 1.2.

Table 1.2 NATA sub-objectives and other topics to be addressed within the SEA Process

NATA Objective	NATA sub-objective	SEA topic (SEA Directive, Annex If)
Environment	Noise	Human health, population, inter-relationships
	Local air quality	Air, human health, population
	Greenhouse gases	Climatic factors
	Landscape	Landscape
	Townscape	
	Heritage	Cultural heritage including architectural and archaeological heritage
	Biodiversity	Biodiversity, fauna, flora, soil
	Water environment	Water
	Physical fitness	Human health, population
Safety	Accidents	Human health, population
	Security	
Accessibility	Community severance	Population
	Access to the transport system	
Economy	Public accounts	Material assets
	Business users and providers	
	Consumer users	

Source: Strategic Environmental Assessment for Transport Plans and Programmes, Transport Analysis Guidance Unit 2.11, DfT 2004.

Enhancing the NATA to fulfil the requirements of the SEA Directive requires additional work on:

- Collecting baseline environmental information and identifying environmental problems;
- Predicting the significant environmental effects of the plan;
- Identifying mitigation;
- Identifying alternatives and their effects;
- Consulting the public and authorities with environmental responsibilities;
- Reporting how the results of the SEA and consultation responses have been taken into account;
- Providing a non-technical summary of the SEA; and
- Monitoring the actual environmental effects of the plan during its implementation.

(TAG Unit 2.11, December 2004).

Noise does not require specific assessment under the SEA Directive but has been included due to the potential effects on population and human health, with respect to quality of life and rural tranquillity, and assessment was made of the impacts on noise in the HLMMS.

The purpose of the SEA is to ensure that effort is focused on the significant environmental impacts of the LTP2. This report therefore considers each environmental effect of the LTP2 in turn and sets the scope of the SEA to focus **only on those that are significant**.

The SEA Directive requires a reasonable approach to assessment, taking into account limits to the resources and information available and does not expect duplication of information gathering to be undertaken. The SEA process therefore cannot cover all impacts and is not a replacement for Council reports, which publish data, targets and monitoring information relevant to the state of the environment.

1.6 SEA Objectives

Although the SEA Directive does not require the specific use of SEA objectives, the SEA guidance (TAG Unit 2.11, December 2004), suggests these are set to allow the description, analysis and comparison of environmental effects throughout the SEA process.

For the Herefordshire LTP2 SEA, objectives have been developed to take into account relevant environmental protection objectives from:

- Legislation.
- Environmental objectives from other plans and programmes.
- The West Midlands Regional Sustainability Framework.
- NATA objectives/sub-objectives.
- Environmental problems identified from the analysis of baseline data.

The plans and programmes used as sources of environmental objectives are discussed in the following chapter. The objectives also integrate environmental, economic and social considerations.

The SEA objectives set for the Herefordshire LTP2 are as follows:

1. To improve the health of the population.
2. To improve air quality in urban areas and achieve the National Air Quality Standards and Objectives for nitrogen dioxide in designated Air Quality Management Areas (as included as an objective in the LTP2).
3. To conserve and enhance biodiversity and protected areas.
4. To protect Herefordshire's distinctive rural environment.
5. To protect and enhance the urban environment.
6. To minimise water and soil pollution.
7. To preserve and enhance cultural heritage, including sites, areas and features of historic, architectural or archaeological importance.
8. To reduce road traffic and congestion in Hereford through improving, expanding and promoting sustainable modes of travel, including public transport, cycling and walking.
9. To reduce the number of road accident casualties.
10. To improve accessibility to the transport system for rural communities and the disabled.
11. To maintain and enhance access and infrastructure for recreational use of the countryside and open spaces.
12. To minimise resource use and waste generation and increase the use of recycled materials.
13. To promote sustainable development.

1.7 Structure of the Environmental Report

Following this chapter there are further chapters in the ER as follows:

- **Chapter 2** provides an outline of the LTP2, policy objectives and links to other plans.
- **Chapter 3** describes the study area, the baseline environmental conditions and existing environmental problems.
- **Chapter 4** considers the alternative LTP2 options and identifies the environmental issues likely to be affected and the significant environmental impacts of each.
- **Chapter 5** discusses the mitigation measures proposed to ensure any significant environmental effects arising from the LTP2 are minimised.
- **Chapter 6** outlines the monitoring measures proposed to assess any significant environmental effects arising from the LTP2.

2 The Local Transport Plan 2

2.1 Outline of LTP2

The LTP2 demonstrates how the Council will implement the policies, plans and programmes necessary to deliver the Government's Transport Strategy as set out in the Transport White Paper 'The Future of Transport', July 2004. In this, key strategies for local government are identified and include:

- Freer flowing local roads.
- More, and more reliable buses, enjoying more road space.
- Demand responsive transport services.
- More accessible services to allow people to have real choice about when and how to travel.
- Joined-up transport and land use planning to limit the impact of congestion from new developments.
- Promotion of travel plans: school, workplace and personalised.
- Creation of a culture and improved local environment that enables walking and cycling to be seen as attractive alternatives to car travel in rural and urban areas.

The Herefordshire LTP2 consists of nine chapters, summarised in Table 2.1. It is consistent with the LTP2 guidance and the Government's Transport Strategy as shown in Table 2.2.

Table 2.1 Outline of the Herefordshire LTP2

CHAPTER	SUMMARY OF CONTENTS
Chapter 1: Introduction and Overview	The introduction of the LTP2 gives an indication of the visions of Herefordshire Council. It includes the key successes of the first LTP and sets out the key challenges for the next 5 years in LTP2 that will ultimately lead to successes in the Shared Priorities; Delivering Accessibility, Tackling Congestion, Safer Roads and Better Air Quality.
Chapter 2: Transport – at the Heart of Local Policy	This chapter outlines how the LTP2 has been developed in the context of wider policy objectives at national, regional and local level and provides a background on the most relevant policies and strategies to the Plan.
Chapter 3: Summary of the Transport Strategy	This chapter provides a summary of the transport strategy set out in the following chapters and includes the LTP2 objectives and performance indicators, and the LTP2 programme summary.
Chapter 4: Accessibility Strategy	This chapter sets out the strategy for improving accessibility in Herefordshire. It sets the overall context for the LTP2 and illustrates how accessibility planning will help key services providers and improve access for customers. An action plan is included which sets out how the work of the Accessibility Partnership will be taken forward.
Chapter 5: Integrated Transport Improvements in Hereford	This chapter sets out the strategy for integrated transport improvements in Hereford City in relation to the Shared Priorities and includes the strategy context, the identification of problems and opportunities and the Hereford Transport Strategy programme summary. The chapter mainly focuses on tackling congestion in the City.
Chapter 6: Integrated Transport Improvements in Rural Herefordshire	This chapter sets out the strategy for tackling transport problems and issues in rural Herefordshire and the Market Towns. The same key issues as the previous chapter are explored, however this strategy focuses mainly on delivering accessibility to rural communities.
Chapter 7: Safer Roads	This chapter sets out the strategy for improving the safety of roads and reducing road traffic accidents. It includes an analysis of Herefordshire's road accident casualty problem, progress during the LTP1 period and performance indicators, and includes provisions for speed management and promoting safer travel.
Chapter 8: Maintaining the Network	This chapter sets out the strategy for maintaining the transport network and outlines the Transport Asset Management Plan, the Highway Maintenance Plan and bridge maintenance provisions. It also mentions compliance with the Council's Good Environmental Management (GEM) system.
Chapter 9: Key Transport Policies	This chapter outlines Transport Policy Statements in relationship to the LTP2, including the Cycling Strategy, Bus and Community Transport Strategy, Rights of Way Improvement Plan Statement, Countywide Car Parking Strategy and Freight Distribution Strategy.
Chapter 10: Delivering the Strategy	This chapter sets out the overall LTP2 programme, performance management and performance indicators used to monitor the implementation of schemes during the LTP2 period.

2.2 The Shared Priorities and LTP2 Objectives

The Government has set key priorities at national level in order to facilitate the delivery of better local transport as quickly as possible. These key Shared Priorities have been agreed between the Government and local authorities (through the Local Government Association). The Shared Priorities for transport are:

- Delivering Accessibility
- Tackling Congestion
- Safer Roads
- Better Air Quality
- Other Quality of Life Issues (which includes community safety, quality of public spaces and community health).

The relationship of the LTP2 objectives to the Shared Priorities are shown in Table 2.2 below. This demonstrates that many of the LTP2 objectives contribute to more than one Shared Priority.

Table 2.2 Herefordshire LTP2 Objectives

SHARED PRIORITIES	HEREFORDSHIRE LTP2 OBJECTIVES
Delivering Accessibility	Better access to jobs and services Increased use of sustainable modes of travel Assets maintained well
Tackling Congestion	Reduced congestion Assets maintained well Supported and enabled economic development Increased use of sustainable modes of travel
Safer Roads	Improved safety Assets maintained well Increased use of sustainable modes of travel
Better Air Quality	Safeguarded environment Reduced congestion Increased use of sustainable modes of travel

2.3 Relationship of the LTP2 to other Plans and Programmes

The SEA should examine the relationship of the LTP2 with other relevant plans and programmes set at national, regional and local level. This is because the LTP2 and the corresponding SEA will operate within an existing planning system and will be influenced and constrained by other external environmental factors and objectives, including those set by neighbouring authorities and the Government. The LTP2 will in turn compliment other plans and objectives.

There are a wide range of strategic plans and programmes which are related to the LTP2. A summary of the main plans and polices and their relevance to the LTP2 are given below.

2.3.1 Local Transport Plan 2001/2 – 2005/6

The current LTP was published in 2001 and sets out the Council’s current local transport policy framework until 2006. This statutory document was prepared under the Transport Act 2000 and is a 5-year strategy, which aims to manage, maintain monitor and develop Herefordshire’s transport system. This provides the background on which the LTP2 must build and develop the transport system for Herefordshire.

2.3.2 Regional Spatial Strategy

The West Midlands Regional Spatial Strategy (formerly Regional Planning Guidance 11) was published in June 2004. It provides the framework within which other local strategies can be developed. The document aims to ‘provide a long term land use and transport planning framework’ for the region. It is important that the LTP2 works within this framework and develops a transport system that is consistent with the strategic objectives for the region and the County. Relevant policies in the document include:

- QE1:** Conserving and Enhancing the Environment
- QE2:** Restoring Degraded Areas and Managing and Creating High Quality New Environments
- QE3:** Creating a High Quality Built Environment for All
- QE4:** Greenery, Urban Greenspace and Public Spaces
- QE5:** Protection and Enhancement of the Historic Environment
- QE6:** The Conservation, Enhancement and Restoration of the Region's Landscape
- QE7:** Protecting, Managing and Enhancing the Region's Biodiversity and Nature Conservation Resources
- QE9:** The Water Environment
- EN1:** Energy Generation
- EN2:** Energy Conservation
- M1:** Mineral Working for Non-Energy Minerals
- M2:** Minerals – Aggregates
- M3:** Minerals – The Use of Alternative Sources of Materials
- T1:** Developing Accessibility and Mobility within the Region to Support the Spatial Strategy
- T2:** Reducing the Need to Travel
- T3:** Walking and Cycling
- T4:** Promoting Travel Awareness
- T5:** Public Transport
- T6:** Car Parking Standards and Management
- T7:** Demand Management
- T9:** The Management and Development of National and Regional Transport Networks
- T10:** Freight
- T12:** Priorities for Investment

2.3.3 Regional Transport Strategy

The Regional Transport Strategy (RTS) seeks to improve access across and within the region in a way that supports the Regional Spatial Strategy by:

- Reducing the need for travel.
- Expanding travel choice.
- Tackling congestion.
- Improving safety.
- Protecting the environment.

The RTS also sets the context within which the highway network can be managed and includes policies in respect of the regional primary route network, rail network and freight. The RTS identifies the A49(T) as an important transport corridor within the region and improvement of the network is also a key priority of the Regional Spatial Strategy. The LTP2 therefore has strong links to and works within these two strategies.

2.3.4 Unitary Development Plan

The Unitary Development Plan (UDP) covers the period 1996 – 2011. The UDP takes into account national, regional and local planning policies and sets out the Council's proposals for the development and use of land in the County. It identifies areas which are suitable for development in terms of housing, retail, industry and other uses. It also identifies areas which are protected from development, such as Scheduled Ancient Monuments, Special Areas of Conservation, Sites of Special Scientific Interest, Special Wildlife Sites, Sites of Interest for Nature Conservation and other safeguarded open spaces. The land required for new road schemes or improvements to existing roads are also protected from development which is likely to prejudice their implementation. The document sets out the policies which the authority proposes to apply in deciding whether or not development will be allowed. The UDP is currently in Revised Deposit Draft.

2.3.5 Local Development Framework

Under The Planning and Compulsory Purchase Act 2004, the Council's current development plans and UDP will in future be replaced with a collection of documents known as the Local Development Framework. This will consist of the Local Development Scheme, Statement of Community Involvement, Development Plan Documents, Supplementary Planning Documents and Annual Monitoring Reports. Collectively these set the framework for delivering the spatial strategy for Herefordshire, aiming to balance land use pressures from economic, social and environmental demands.

2.3.6 The Herefordshire Plan

The Herefordshire Plan is the community strategy for the County until 2011 and encompasses a range of local environmental strategies which seek to improve the quality of life in Herefordshire. The Plan was developed by the Herefordshire Partnership (the local strategic partnership which comprises a number of organisations including the Council, West Mercia Police and the Health Authority). The current available edition is Revision 3 (2003), however this is currently being reviewed.

The Plan has a vision comprising of the following three elements:

- Creating fair and thriving communities.
- Protecting and enhancing the environment.
- Building a strong, competitive and innovative economy.

Ten 'ambitions' have been set to guide progress towards these visions:

- To improve the health and well-being of Herefordshire people.
- To reduce crime and disorder and make Herefordshire safer.
- To reduce poverty and isolation in Herefordshire.
- To encourage communities to shape the future of Herefordshire.
- To develop Herefordshire as an active, vibrant and enjoyable place to be.
- To protect and improve Herefordshire's distinctive environment.
- To develop an integrated transport system for Herefordshire.
- To meet Herefordshire's accommodation needs.
- To support business growth and create more and better paid work in Herefordshire.

- To provide excellent education, training and learning opportunities in Herefordshire for all ages.

The Herefordshire Partnership has been involved in consultations on the development of strategies and policies in the LTP2. The Partnership also produces the State of Herefordshire Report which provides a range of data on indicators which are relevant to the Ten Ambitions. This has provided a valuable resource for the preparation of the LTP2 and the baseline environmental conditions of the SEA. The review of The Herefordshire Plan will also inform the implementation of the LTP2 on a scheme by scheme basis.

2.3.7 Hereford Air Quality Action Plan

Herefordshire Council is currently drafting an Air Quality Action Plan in conjunction with consultees to improve air quality along the A49 corridor in Hereford; designated as an Air Quality Management Area (AQMA). The draft plan includes a number of significant city centre transport improvements which have been considered as part of the Hereford Transport Review. The draft is still undergoing consultation, however it includes proposals for two Park and Ride sites (north and south of the City); extensive bus priority measures; improvements for cycling and walking in the City; traffic calming in many residential areas; a new distributor road linking points on the A49 north and south of the City and promotion of sustainable travel options to reduce dependence on the car for travel in Hereford. These link to measures included in the HLMMS and LTP2.

2.3.8 The Traffic Management Act 2004

The Traffic Management Act 2004 seeks to provide better conditions for all road users through the pro-active management of the road network. The Act imposes a network management duty on local traffic authorities, which requires them to do all that is reasonably practicable to manage the network efficiently to keep traffic moving. This links with the plans and measures proposed for the LTP2.

2.3.9 Herefordshire Biodiversity Action Plan

The 'Supplementary Planning Guidance – Biodiversity' document was produced in September 2002. The document places biodiversity in a local context within Herefordshire, identifying the key areas of local, national and European significance. The guidance highlights how the planning system takes account of biodiversity and the approaches for conserving biodiversity within development proposals. This is linked into other plans including the UDP, as well as considerations in the development of the LTP2.

2.3.10 Current National Policies

The policy direction and objectives of the UDP were prepared following the 1998 Government White Paper on Integrated Transport, which set national transport strategies towards reducing the need to travel and significant investment in sustainable travel choices.

The 1998 White Paper was replaced with 'The Future of Transport – A Network for 2030' in 2004. This presents a shift in policy to a more 'balanced approach' providing additional capacity 'where it makes economic sense'. This includes road widening and bypasses to tackle the worst areas of congestion, including extensive road widening projects and some new rail infrastructure. The strategy also promotes policies to improve the environment and air quality and demand restraint measures such as road user charging.

2.3.11 Other Objectives, Policies, Plans and Legislation

Given the scope of the SEA, by necessity this chapter has focussed primarily on regional and local policies, generally in relation to transport. However, it is necessary to consider the wider context of the impact on transport against other objectives, policies, plans and

legislation. Those identified at international and national level and additional plans identified at regional and local level which are deemed highly relevant to the LTP2 are listed below. These include international and EC environmental protection objectives. All other relevant plans and policies with environmental issues considered in the LTP2 process are listed in Appendix C. In terms of sustainability, these plans set good aspirational objectives for improving the quality and condition of the environment.

International

- Conservation of Natural Habitats and Wild Fauna & Flora (Directive 92/43/EC) - The Habitats Directive
- Kyoto Protocol to the UN Framework Convention on Climate Change (1992)
- Air Quality Framework Directive (Directive 96/62/EC)
- Assessment and Management of Environmental Noise (Directive 2002/49/EC)

National

- Full Guidance on Local Transport Plans: Second Edition (DfT, 2004)
- The Environment Act 1995
- A Better Quality of Life: A Strategy for Sustainable Development for the UK (1999)
- Government Rural White Paper: Our Countryside - the Future - a Fair Deal for Rural England (DETR, 2000)
- Sustainable Communities: Building for the Future (ODPM)
- UK Climate Change Programme (DETR, 2000)
- National Air Quality Strategy for England, Wales, Scotland and Northern Ireland (DEFRA, 2000)
- The Future of Transport: A Network for 2030 (DfT, 2004)
- 10 Year Transport Plan (DfT, 2000)
- Tomorrow's Roads Safer for Everyone – The Government's Road Safety Strategy and Casualty Reduction targets for 2010 (DETR)
- Planning Policy Statement 1: Delivering Sustainable Development (ODPM, 2005)
- Planning Policy Statement 7: Sustainable Development in Rural Areas (ODPM, 2004)
- Planning Policy Statement 11: Regional Spatial Strategies (ODPM, 2004)
- Planning Policy Guidance Note 13: Transport (DTLR, 2001)
- National Cycling Strategy (DfT, 1996)
- Making the Connections: Final Report on Transport and Social Exclusion (ODPM Social Exclusion Unit, 2003)

Regional

- West Midlands Regional Economic Strategy and Action Plan 2004-2010
- West Midlands Regional Sustainability Framework
- Sustainable Communities in the West Midlands (ODPM)
- West Midlands Regional Cultural Strategy (2001-2006)

Local

- Herefordshire Partnership Climate Change Strategy (2005/6-2011/12)
- Herefordshire Carbon Management Plan (2005/6-2011/12)
- Herefordshire Highways Maintenance Plan 2004/05
- Herefordshire County Flood Plan
- Herefordshire Council Corporate Plan 2005-2008 – ‘Action for a Better Herefordshire’
- Herefordshire Council Corporate Environmental Strategy 2005-2011
- Herefordshire Economic Development Strategy
- Herefordshire Crime, Disorder and Drugs Reduction Strategy 2005-2008
- Herefordshire Primary Care Trust: A Strategy for Success 2005/6-2007/8
- Tourism Strategy for Herefordshire 2002-2007
- Herefordshire’s Biodiversity Action Plan 2000 and 2005 Targets Review
- Malvern Hills AONB Management Plan (2004-2009)
- Wye Valley AONB Management Plan (2004-2009)

3 State of the Environment

3.1 Background to the Study Area

Herefordshire is situated immediately to the East of the Welsh border and is neighboured by Worcestershire to the East, Shropshire to the North, and Gloucestershire to the South.

The County has a population of 176,900, having grown by 16,500 (10.3%) since the 1991 census. Over 99% of inhabitants class themselves as 'White' (Census 2001) and Christianity is the predominant religion (79%).

The majority of the County is classed as rural, the notable exceptions being the urban centre of Hereford and the Market Towns of Leominster, Ledbury, Bromyard and Ross-on-Wye. In 2001, Herefordshire had a population density of 0.8 persons per hectare, with only 2 local authorities within England having lower densities; Northumberland and Cumbria.

Herefordshire has an ageing population, which can be attributed to the exodus of 25 – 44 year olds to large cities in search of better-paid employment and the influx of a retired populace in search of tranquillity in the countryside.

Herefordshire is well known for its beautiful countryside and attracts visitors who have a keen interest in nature, the arts and local history.

There are twenty-six different bus operators in the County, with 52 main bus services and an additional 50 Market Day services. It has proven difficult to serve the entire population of the County with a bus service due to the rural nature of much of the County. In light of this, the Council has attempted to develop alternative methods to transport the rural population, such as using Demand Responsive Transport. Approximately 4 million passenger journeys are made annually on bus services within Herefordshire.

Rail stations are located at Hereford, Ledbury, Leominster and Colwall. Services from Hereford connect with Birmingham and Shrewsbury in the North and Newport to the South. At present there are 4 direct trains to London daily.

3.2 Baseline Environmental Conditions

In order to understand the impact the LTP2 will have on the environment, it is important that we first appreciate the current state of the environment in each environmental area (as indicated in Table 1.2). The following section examines the environmental factors, which are likely to be significantly affected by the LTP2, and documents the baseline environmental conditions. Sources of information include the LTP1, the 2001 Census, the HLMMS, the Herefordshire Partnership records, Environment Agency and English Heritage websites and other local records.

3.2.1 Biodiversity, Flora & Fauna

Herefordshire is renowned for its countryside and wildlife habitats, encompassing a wide range of floral and faunal species. Herefordshire Nature Trust own and manage 54 Local Nature Reserves across the County amounting to a total area of 265 hectares. Within the County there are 2 Areas of Outstanding Natural Beauty (AONBs); The Malvern Hills (150 sq km) and the Wye Valley (326 sq km). Herefordshire also poses many other sites which are of local, national and international significance:

- 6 Special Areas of Conservation (including the River Wye and River Lugg).
- 75 Sites of Special Scientific Interest.
- 3 National Nature Reserves.
- 750 Special Wildlife Sites.
- 50 Sites of Importance to Nature Conservation.

Five Natural Areas are also recognised within Herefordshire, further information on which can be found at <http://www.wildlifetrust.org.uk/hereford/eel/naturalareas.htm>;

- Clun and North West Herefordshire Hills.
- Black Mountains and Golden Valley.
- Dean Plateau and Wye Valley.
- Malvern Hills and Teme Valley.
- Central Herefordshire.

Approximately 430 Tree Preservation Orders have been designated in the County. Further information on biodiversity in Herefordshire can also be found at <http://www.herefordbap.org.uk/> or in the Council's '*Supplementary Planning Guidance – Biodiversity 2002*' which sets out action plans to protect and enhance biodiversity throughout the County.

There are several ways in which the transport plans and policies of the LTP2 potentially impact upon biodiversity with varying significance (depending upon the strategy adopted and locational choices). These include destruction of or disturbance to habitats and species, soil and water pollution, noise, light pollution and traffic generated air pollution. Habitats which may be affected include trees, roadside verges, hedgerows, railside land, Greenfield land, semi-natural habitats and protected sites. Floral and faunal species living adjacent to these areas may also be affected. Wildlife mortality may additionally occur through road-kill, whilst road accidents may be caused by wildlife crossing the highway. Herefordshire aims to achieve a modal shift from car to bus over the course of the LTP2 thus decreasing traffic on the roads and subsequently reducing pollution from traffic emissions.

An Air Quality Management Area (AQMA) has been designated in Hereford city centre along the A49 corridor due to the likely exceedance of nitrogen dioxide (NO₂) from the UK National Air Quality Standards and Objectives (DEFRA, 2000). An additional AQMA is currently undergoing designation in the Bargates area of Leominster. Targets are set for these to meet the National Air Quality Standards and Objectives for NO₂. These areas are discussed later in this chapter under the topic of Air Quality. However improved air quality in these areas will be beneficial to the health of flora and fauna as well as human health.

The UK Air Pollution Information System (APIS) provides information on the concentration, critical level and exceedance of pollutant thresholds, including nitrogen oxides, sulphur dioxide and ozone, for a range of specific habitat types. Examples for improved grassland in mid Herefordshire are shown in Table 3.1. This provides an important data source from which to assess the potential effects of transport policies on the condition of habitats and their associated species, however the figures are based on broad indications of likely pollutant impacts. Air quality is likely to improve over the LTP2 period, however, impacts on habitats adjacent to new infrastructure and development will need to be considered on a scheme by scheme basis.

Table 3.1 Examples of Pollutant Thresholds for Improved Grassland in Mid Herefordshire

Pollutant	Concentration / Exposure	Critical Level	Exceedance
Nitrogen oxides	14.5 µg NO _x (as NO ₂) m ⁻³	30 µg NO _x (as NO ₂) m ⁻³	-15.5 µg NO _x (as NO ₂) m ⁻³
Sulphur dioxide	2.3 µg/m ³	30 µg/m ³	-27.7 µg/m ³
Ozone	3212 ppb hours	3000 ppb hours	212 ppb hours

Source: Air Pollution Information System <http://www.apis.ac.uk/>
(National Expert Group on Transboundary Air Pollution 2001).

Without the implementation of the LTP2, air quality is likely to deteriorate in the County, particularly within urban areas, therefore affecting biodiversity and human health. The implementation of some schemes, through compensatory measures or landscaping is likely to improve habitats in a number of areas and reduce pollution from a variety of sources through identification of mitigation / compensatory measures within the design process of each scheme. However, land take through new schemes has potentially significant adverse effects on biodiversity both on and adjacent to the site. The potential impacts on biodiversity, flora and fauna may also be linked to potential effects on soil and water.

Due to the rural nature of the County and the number and size of land of designated environmental significance, all transport schemes need to be undertaken in parallel with consultation with the Environmental Team within the County to ensure that the impact on the environment is minimal and that where unavoidable impacts occur suitable mitigation / compensatory measures are put in place. The impact on biodiversity, fauna and flora has a potentially long-term effect, beyond the LTP2 period, and is therefore taken forward as an environmental area that will be significantly affected by the LTP2, although through compensatory measures some effects may only occur at a short to medium term scale.

3.2.2 Population & Human Health - Road Safety

One of the key indicators of population and human health is the number of casualties caused by road traffic accidents; road traffic accidents are one of the major causes of premature death and injury in the UK. These figures indicate the effectiveness of the Council's Local Transport Plan policies in minimising road traffic accidents and the ability for Herefordshire residents to use the transport infrastructure without fear of injury.

Three core national targets have been set for casualty reduction by 2010, based upon the annual average casualties for the period 1994 – 1998. These are stated in Table 3.2 below, along with Herefordshire's performance towards these targets. These show that Herefordshire is already exceeding the targets set for KSI (Killed and Seriously Injured) casualties and children KSI, but a 19% reduction in slight casualties is required.

Table 3.2 2010 Casualty Targets and Herefordshire's Performance

Agreed Target Casualty Type	National Targets at Year 2010	Herefordshire Performance 2004
KSI (Killed and Seriously Injured) casualties	- 40%	- 43%
Children KSI casualties	-50%	- 64%
Slight casualties	-10%	+ 9%

Table 3.3 sets out Herefordshire's annual performance since the 1994-1998 base. Blank spaces indicate figures no longer used for Best Value Performance Indicators (BVPIs). It indicates that significant progress has been made with casualty reduction targets since the base period, most notably in the number of children KSI casualties. The number of overall KSI casualties exceeds the LTP1 target set, whilst the number of slight casualties has

increased. The total number of KSI casualties is plotted graphically in Figure 3.1, demonstrating an overall downward trend.

Table 3.3 Herefordshire's Road Casualty Performance and Targets

Casualty Category	Base 1994-1998	Casualties 2002	Casualties 2003	Casualties 2004	Target 2010
Number of KSI casualties	249	150	146	141	108
Number of children KSI	22	8	6	8	11
Number of pedestrians KSI	13	14	14	-	Target removed
Number of pedal cyclists KSI	19	12	8	-	Target removed
Number of powered two-wheelers KSI	38	26	31	-	Target removed
Number of Slight Casualties	719	847	719	783	724

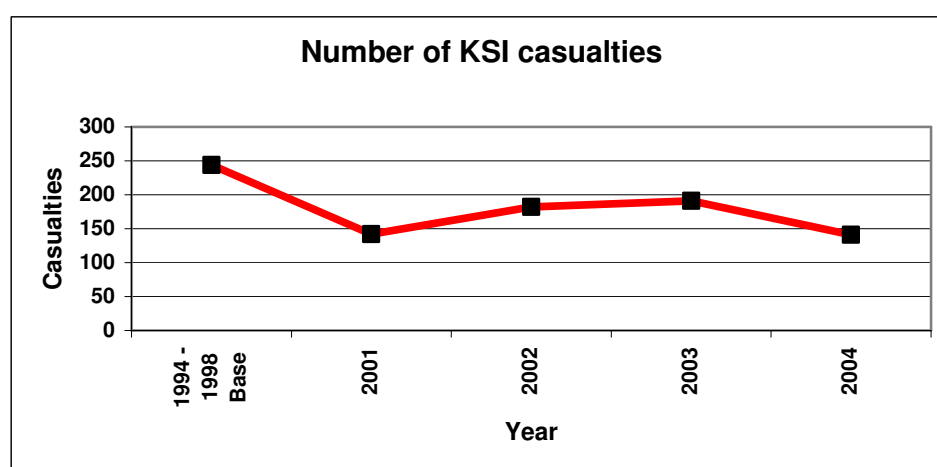


Figure 3.1 Road Traffic Casualties – Trends in KSI since 1994 -1998 Base

The LTP2 is likely to have a significant positive long-term effect on road safety as it contains specific road danger reduction programmes, adding to the schemes which have previously proved successful in reducing the number of accidents and casualties in Herefordshire. Without the implementation of the LTP2, the 2010 targets are unlikely to be met.

3.2.3 Population & Human Health - Security

Crime and the fear of crime can have adverse effects on the quality of life of people who suffer or live in areas where crime is a problem.

Herefordshire's crime rates have reduced steadily over the last 3 years and between April 2003 and March 2004 in excess of 1000 fewer crimes were recorded than the previous year. Over the same period of time, the rates for England and Wales have increased which makes the statistic more significant.

Between April 2003 and March 2004, over half of all crime reported in Herefordshire occurred in Hereford City, which is unsurprising due to the predominantly rural nature of the remainder of the county.

Vehicle crime in the county had reduced to 7.1 crimes per 1000 population in 2003/4; a reduction from 8 per 1000 the previous year. A worrying trend for Herefordshire is the fact that violence against the person has increased on an annual basis since 2001; between 2001/2 and 2003/4 an increase of almost 5%.

Herefordshire Community Safety and Drugs Partnership is a statutory multi-agency partnership which has been set up to tackle community safety and drug issues across Herefordshire. The priorities of the group are dealing with; alcohol related crime & disorder, anti-social behaviour, domestic violence, drugs & drug related crime and road safety.

Providing a secure transport network for the residents of Herefordshire to travel day and night is a priority of the LTP2. Proposals in the LTP2 should ensure a positive effect on personal security in relation to transport within the County.

3.2.4 Population & Human Health - Health

According to the 2001 Census, 8% of respondents within Herefordshire described their health as 'not good'. Increasingly sedentary lifestyles and growing levels of obesity in adults and children are well documented and of major concern to Central and Local Government. Obesity in children is increasing at an alarming rate and poses major risks to health and a burden on the NHS in later life.

Transport and the LTP2 has a key relationship with personal health and well-being on four levels:

1. **Healthy Transport choice;** by choosing physically active modes such as walking and cycling, people can incorporate exercise relatively easily into their daily routine, fighting obesity and heart disease.
2. **Air Quality;** traffic emissions can seriously harm human health through exacerbating respiratory ailments.
3. **Excessive traffic generated noise;** can harm human physical and mental health.
4. **Erosion of environmental quality and character;** through insensitive highways upgrading, intrusive design and lighting, loss of local landscape / heritage features and distinctiveness, can reduce quality of life.

The LTP2 has a very important role to play in the health of the public. The LTP2 policies are aiming to secure a modal shift to sustainable transport including increasing use of public transport, walking and cycling. Using public transport can help to reduce traffic levels and hence cut air pollution and traffic noise whilst increasing levels of physically active transport modes. Without the implementation of the LTP2 human health is likely to decline in the medium to long-term, putting further pressure on the NHS.

3.2.5 Population & Human Health - Accessibility, Mobility and Severance

Accessibility could be deemed to be the ease of which the local population in a given area have access to key services and facilities. The 2001 Census established that 18% of the Herefordshire population had no access to a car or van, making them heavily reliant on public transport, walking and cycling to access employment, education, medical, shopping and leisure opportunities.

There are 52 main bus services within the County and an additional 50 Market Day services, which support the population. Within Hereford City there are 20 services, the majority with at least hourly frequencies. In 2001, just 4% of the population travelled to work by public transport whilst 58% travelled by motorcar or motorcycle (2001 Census).

Herefordshire is in the process of addressing the continued decline in patronage levels on public transport. In recent years, the introduction of low floor buses and better marketing, particularly in rural areas has had a positive effect on the number of people using bus services. It is believed that the forthcoming improvements on the UTC (Urban Traffic Control) system will lead to a higher modal shift to public transport.

The introduction of low floor buses has led to an increase in patronage and has assisted mobility within the County. 71% of the 52 main bus services are now wheelchair accessible, whilst 64% of Market Day and 60% of Hereford services have wheelchair access. Mobility is an extremely important component of accessibility and Herefordshire have taken steps to install Kassell kerbs and improve stations such as Hereford Country and Leominster for people with limited mobility.

Access to Rights of Way for all purposes including recreation is also important. The maintenance of the transport network, including footways, may impact accessibility. Maintenance is covered in the Material Assets section. The LTP2 also includes a Rights of Way Improvement Plan.

A further aspect of accessibility is severance, where major highways or rail corridors create physical and psychological barriers, which effectively cut off communities from key services. A key example of this is the A49 which travels North to South through the City. The volume of traffic and high speeds on the A49 can be intimidating and limit crossing only to designated controlled points.

The LTP2 has a range of policies and programmes, which are intended to improve accessibility and mobility within the County. As such, the LTP2 is likely to have a significant positive effect on both accessibility and mobility in the medium to long-term. Without the implementation of the LTP2, accessibility is unlikely to significantly improve, leading to severance of rural communities.

3.2.6 Soil

Soil pollution is harmful to the health of humans as well as flora, fauna and ecosystems. Soil may become contaminated from a variety of direct or secondary sources, including agriculture, atmospheric deposition, contaminated surface waters or groundwaters, highway surface runoff and runoff from other adjacent contaminated land. Soil is a particularly important resource for agriculture in Herefordshire, therefore its protection is vital for the health of the population and economy.

Herefordshire is dominated by Red Devonian Sandstone and Marls which have produced a characteristic, deep fertile red soil. These range throughout the County, including fertile river flood meadows, light gravel soils on river terraces and typical Herefordshire clay loams on higher ground. Due to the fertility of the soil, agriculture characterises a significant proportion of the land area. Large areas of the County are therefore designated as Nitrate Vulnerable Zones (NVZs). The Soil Map of England and Wales (Soil Survey of England and Wales 1983, Sheet 3, Soils of Midland and Western England) also marks much of the silty and loamy soils as being at risk of water erosion.

The implementation of the LTP2 is deemed to have a potentially significant adverse effect on soil in the medium to long-term. Where schemes are implemented on Brownfield sites, remediation of contaminated land may also be required to protect the health of the population.

3.2.7 Water

Water pollution is harmful to the health of humans, flora and fauna. Surface waters and the adjacent land provide important habitats for a variety of aquatic and non-aquatic species, some of which are rare or protected. Pollution may originate from a number of direct or secondary sources, including wastewater, agricultural land and other adjacent contaminated land. Groundwater may also be polluted through seepage from land and/or surface waters. The River Wye and River Lugg are designated as Special Areas of Conservation and Sites of Special Scientific Interest (SSSI). The River Teme is also an SSSI.

Environment Agency data indicates numerous river quality targets set throughout the County. The River Wye, River Lugg and their tributaries are identified as 'at risk' of failing the objectives of the Water Framework Directive, mainly due to the risk of point source and

diffuse pollution; the River Wye having a catchment of over 1000 km². The River Lugg is also deemed to be at risk of physical or morphological alteration.

Environment Agency monitoring of the quality of nearly 4000 km of rivers and canals in the West Midlands in 2003 gave the following results (information specific to Herefordshire was unable to be sourced):

- 92% of these were of good or fair chemical quality.
- 90% were of good or fair biological quality.
- Only 63% were of good or fair nitrate quality and 48% of good or fair phosphate quality.
- 78% of rivers reached their River Quality Objectives (RQO).
- 11% had significant failures of their RQO.
- 11% were marginal failures, meaning that the size of the failure was too small to be statistically significant and could have been due to natural variability.

A number of groundwater abstraction points and source protection zones (SPZs) also exist throughout the County, which include parts of Hereford, Leominster and Ross-on-Wye. Such zones afford protection to ensure safe drinking water for the population.

Flood risk is also an issue for consideration during the implementation of the LTP2. The Environment Agency's Flood Zone Maps illustrate the risk of flooding from rivers and the sea, with Zones 1 - 3 indicating the significance of the risk (Zone 3 having the highest risk). These flood zones cover urban areas as well as rural land and should be considered when identifying sites for new development.

The Environment Agency is undertaking the following ongoing flood studies in Herefordshire:

- River Wye – River Lugg Modelling from Hereford to Hampton Bishop.
- Critical Ordinary Watercourse Studies on the Eign Brook, Widemarsh Brook and Yazor Brook.

Modelling for the River Wye at Hereford was also undertaken as part of the Flood Alleviation Scheme Study. This also considered the lower Bullingham area of Hereford and included the Withy and Red Brook tributaries. The Wye Catchment is currently being captured using LiDAR imagery to allow a model of the catchment to be created and to refine the understanding of flooding in the area.

Flood risk assessments will need to be considered on a scheme by scheme basis. Issues of flood risk are also covered in the UDP.

The LTP2 is considered to have the potential for adversely impacting water in the medium to long-term through the likely implementation of schemes adjacent to surface waters and/or overlying protected groundwaters.

3.2.8 Air Quality

Air pollution is harmful to human health and can aggravate human respiratory ailments such as asthma and bronchitis and aggravate heart conditions. A Government estimation calculates that high air pollution episodes are responsible for causing 25,000 premature deaths in the UK each year, many amongst the very young or elderly. Air pollution also affects the health of flora, fauna and ecosystems and contributes to climatic change.

The Environment Act 1995 required Herefordshire Council to undertake regular reviews and assessments of the County's air quality against the Government's National Air Quality Strategy (NAQS) objectives for key pollutants, which include nitrogen dioxide (NO₂), PM10 (particulates), ozone and sulphur dioxide. The first round of reviews and assessments commenced in 1999. The Stage 3 Report (2001) of this process concluded that the statutory objectives for NO₂ (see Table 3.4 below) were unlikely to be met by 2005 in Hereford City Centre along the A49 corridor (see Table 3.5 below). Objectives for PM10, ozone and sulphur dioxide, however, are currently being met or are on course to be met.

Table 3.4 National NO₂ Air Quality Standards and Objectives

Objective	Measured as
200 µg/m ³ (105ppb) Not to be exceeded more than 18 times per year	1 Hour Mean
40 µg/m ³ (21ppb)	Annual Mean

Source: Annual Air Quality Progress Report for Herefordshire. Environmental Health and Trading Standards, July 2005.

Table 3.5 Predicted Annual Mean NO₂ levels in Hereford City Centre, 2005

Name of Area Modelled	Range of Maximum Annual Mean Concentration of NO ₂ predicted for 2005 at the specific receptors (ug/m3)	Range of Improvement Required to Achieve Annual Mean Objective of 40 µg/m ³ (ug/m3)
Victoria Street	41.3 – 43.5	1.3 – 3.5
Edgar Street	40.3 – 42.4	0.3 – 2.4

The area was therefore designated as an Air Quality Management Area (AQMA) in November 2001 (see Figure 3.2 below). The Stage 4 review indicated that the area that would not meet the objective was slightly smaller than that originally declared in the AQMA and lied wholly within it.



Figure 3.2 Location of the Hereford Air Quality Management Area

Source: Annual Air Quality Progress Report for Herefordshire, Environmental Health and Trading Standards, July 2005.

Table 3.6 indicates that motor traffic emissions account for the vast majority of NO₂ emissions in central Hereford, accounting for between 78 and 88% within the Air Quality Management Area. Multiple entries for areas represent multiple measurements.

Table 3.6 Proportions of Source Contributions of NO₂ (%) in Hereford, 2005

Name of Area Modelled	Background (%)	Traffic - LDV (%)	Traffic - HGV (%)	Total (%)
Victoria Street (South of Eign Street)	16	36	48	100
Victoria Street (South of Eign Street)	17	35	48	100
Victoria Street (South of Eign Street)	17	35	48	100
Victoria Street (South of Eign Street)	15	36	49	100
Edgar Street	20	32	48	100
Edgar Street	21	31	47	100
Edgar Street	22	31	47	100
Edgar Street	20	32	48	100
Edgar Street	20	32	48	100
Edgar Street	22	31	47	100
Edgar Street	22	31	47	100
Victoria Street (North of Eign Street)	19	34	47	100
Victoria Street (North of Eign Street)	12	36	52	100
Victoria Street (North of Eign Street)	18	33	49	100
Edgar Street Roundabout	15	33	52	100
Edgar Street Roundabout	15	33	52	100
Edgar Street Roundabout	20	31	49	100
Edgar Street Roundabout	20	32	48	100
Edgar Street	21	31	48	100
New Market Street	21	34	45	100
Edgar Street	21	31	48	100
Edgar Street	22	31	47	100
Newtown Road	21	31	48	100
Blue School Street	21	35	45	100
Blue School Street	19	35	46	100
Blue School Street	21	34	45	100

The Stage 4 review identified that 50% of NO₂ emission contributions were from heavy goods vehicles (HGVs) and buses, whilst these vehicles accounted for less than 10% of the annual average daily traffic flow (AADT). The review also calculated the traffic reduction required to achieve the objectives; these are shown in Table 3.7. This shows that reductions of up to almost 50% are required along certain sections of Hereford's road network, although most sections require much lower reductions (on average 11%).

Table 3.7 The reduction in AADT traffic flows required to meet the annual mean NO₂ objective (in 2005)

Name of Area Modelled	Reduction Required (%)
Victoria Street (South of Eign Street)	12
Victoria Street (South of Eign Street)	8
Victoria Street (South of Eign Street)	9
Victoria Street (South of Eign Street)	18
Edgar Street	14
Edgar Street	7
Edgar Street	2
Edgar Street	12
Edgar Street	14
Edgar Street	3
Edgar Street	4
Victoria Street (South of Eign Street)	1
Victoria Street (North of Eign Street)	46
Victoria Street (North of Eign Street)	11
Edgar Street Roundabout	34
Edgar Street Roundabout	31
Edgar Street Roundabout	7
Edgar Street Roundabout	7
Edgar Street	2
New Market Street	3
Edgar Street	7
Edgar Street	7
Newtown Road	5
Blue School Street	4
Blue School Street	14
Blue School Street	1

The second round of air quality review and assessment commenced in 2003. The Updating and Screening Assessment Report (2004) identified that the Bargates area of Leominster was also unlikely to meet the NO₂ annual mean objective by 2005, as confirmed by the Detailed Assessment Report (2004). Herefordshire Council have undertaken public and stakeholder consultation and are currently in the process of designating the area around the housing close to the eastern Bargates junction as an AQMA.

Some deficiencies in data of air quality monitoring are acknowledged in the Annual Air Quality Progress Report (2005). The passive diffusion tubes for NO₂ can be subject to slight error or bias due to variations in analysis and preparations of techniques, variability between laboratories, random error and sampling errors. This data is however adjusted to minimise the degree of uncertainty. The diffusion tubes for ozone and sulphur dioxide are also unable to measure the 8 hour running means and 1 hour mean set as Air Quality Objectives respectively. Instead only monthly and annual readings are used to benchmark and look at trends. The PM10 monitoring location is also not appropriate to monitor the 24 hour mean objective.

Due to the high proportion of NO₂ sourced from road traffic, it is considered that the LTP2 is likely to significantly affect air quality. The main objectives of the LTP2 seek to secure a modal shift to public transport, walking and cycling, thus reducing traffic volumes within the County and the AQMAs, which in turn should reduce air pollutants and have a positive impact on human health and biodiversity. Without the implementation of the LTP2 schemes, it is likely that traffic related air pollution would increase in the long-term and beyond the LTP2 period, particularly in urban areas. This may lead to the National Air Quality Objectives and Targets for NO₂ not being met in additional locations and the Objectives and Targets for PM10, ozone and sulphur dioxide also not being met.

3.2.9 Climate

Human related activity around the World is arguably contributing to global climate change primarily through emissions of greenhouse gases released mainly as a by-product of burning fossil fuels. This has potentially serious consequences for the planet including alteration of weather patterns, rising sea levels and increased risk of flooding.

In March 2005 Herefordshire signed up to the Nottingham Declaration which is a voluntary agreement that over 70 Local Authorities have signed up to. It recognises that climate change is one of the key drivers of change this century. It commits local authorities to deliver the UK Climate Change Programme and to prepare a plan to address the causes and effects of climate change at a local level. Herefordshire has adopted a Carbon Management Action Plan (CMAP) that sets key actions for different community areas, including transport. This required transport data to be incorporated into the CMAP by July 2005. The Council target is to achieve a 12.5% reduction on the 2002 baseline by 2012 and a total 20% reduction by 2020. These targets will be revised in 2008. The total baseline emissions were assessed at 72,428 tonnes of carbon dioxide equivalent per year. The target for 2012 implies a reduction of 9,053 tonnes of carbon dioxide equivalent.

The LTP2 has significant potential to contribute towards the Nottingham Declaration by reducing greenhouse gas emissions from road transport. This reflects the core LTP2 objectives to protect the environment, reduce congestion and increase the use of sustainable modes of travel. Without the implementation of the LTP2 schemes, greenhouse gas emissions are likely to increase in the long-term and beyond the LTP2 period as traffic congestion increases.

3.2.10 Material Assets

In LTP terms, material assets include the physical materials and structures constituting the County's highways, footways and bridges. A component of the LTP2 programme is dedicated to maintaining and improving these assets. Without LTP funding, it is highly likely that the condition of these assets will deteriorate in the short to medium term.

Herefordshire Council, together with the other local authorities that form the 'Midlands Service Improvement Group', are developing a Generic Asset Management Plan, based on the Framework for Highway Asset Management published by the County Surveyors Society (CSS) in 2004. This covers the areas of:

- Levels of Service.
- Service Options and Lifecycle Plans.
- Financial and Risk Management.
- Forward Work Programme.
- Performance Monitoring and Improvement Action Plan.

Herefordshire's Transport Asset Management Plan is expected to be published in April 2006 and will support the LTP2 and Highway Maintenance Plan.

Performance indicators and targets have been set in the LTP2 to help the Council monitor the condition of the transport network, including footways (see Table 3.8 below). The condition of the network is a key determinant of accessibility and it is the Council's intention to improve it over the LTP2 period.

Table 3.8 Indicators for the Condition of Material Assets in Herefordshire

Best Value Indicator	Description	Baseline		Target 2010/11
		Year	Value	
BVP1223	Principal Road Condition	2004/5	55.38 %	5 %
BVP1224a	Non-Principal Road Condition	2005/6	TBC	TBC
BVP1224b	Unclassified Road Condition	2003/4	38.74 %	16 %
BVP1187	Footway Condition	2003/4	35.83 %	20 %

The maintenance and improvement of material assets has the potential to adversely impact any of the environmental areas assessed in the SEA. The Council undertakes maintenance in accordance with Good Environmental Management (GEM) procedures to minimise and mitigate / compensate for any adverse environmental impacts. The maintenance and improvement of material assets also provides opportunities within the LTP2 for the use of recycled aggregates and other recycled materials, in order to reduce the effects of the schemes on the environment and work towards Herefordshire's sustainable development objectives. It also provides opportunities to improve design and minimise / remove inherited adverse environmental problems, such as surface runoff and light pollution.

3.2.11 Cultural, Archaeological & Architectural Heritage

The Council has a strong set of heritage planning policies to protect areas of cultural, archaeological and architectural interest and value, including Conservation Areas, historic buildings and streetscapes. Table 3.9 summarises the key assets within Herefordshire according to the 2005 edition of Heritage Counts: The State of the West Midlands' Historic Environment (English Heritage). However, other non-designated areas of local historic interest and value should also be given equal consideration. These include the wider historic landscape and townscape, historic open spaces and other buildings, features and structures. Much of this has been recorded in the Council's Historic Landscape Characterisation work and the Intensive Urban Survey for Hereford. There is also the potential for unrecorded archaeology.

Table 3.9 Number and Designation of Cultural, Archaeological and Architectural Sites in Herefordshire

Designation	Number
Listed Buildings	5903
Conservation Areas	46
Scheduled Ancient Monuments	263
Registered Parks and Gardens	24

Source: Heritage Counts: The State of the West Midlands' Historic Environment (English Heritage, 2005).

Any LTP2 policy should seek to limit the impact of any transport scheme on the area of land on which historic sites are located. Herefordshire has an Area of Archaeological Importance which covers a large proportion of old Hereford City. It will therefore be essential that the LTP2 policies seek to limit the impact any transport schemes would have on this nationally important site. Numerous other archaeological sites are located throughout Herefordshire at various levels of designation. Much of Hereford City Centre is also designated as an Area of Architectural Importance.

The condition of the historic environment is also a consideration. The National Buildings at Risk Register identifies Grade I and II* Listed Buildings and Scheduled Monuments (structures) known to be 'at risk' due to neglect and decay. A total of 186 buildings are identified within the West Midlands area. English Heritage is currently undertaking a review of the national at risk methodologies as applied to these and Registered Parks and Gardens. This data will be taken into account when updated.

The UDP policies set stringent standards for work within Conservation Areas and archaeological sites. These will also act to safeguard the cultural heritage within Herefordshire. It is anticipated that the LTP2 has the potential to have a significant adverse impact upon Cultural, Archaeological and Architectural Heritage in the long-term and beyond the LTP2 period. Effects on these may in turn affect Landscape and Townscape.

3.2.12 Landscape and Townscape

This is closely linked to the previous section regarding Cultural, Archaeological and Architectural Heritage, including historic landscape character and the character and appearance of designated Conservation Areas. It also relates to Biodiversity, Flora and Fauna; there may be the potential for impacts on AONB landscapes and the landscape of other protected sites. The character and quality of the townscape and the public realm is also important, such as clutter of street furniture.

The UDP has an effective range of policies designed to protect open space. Whilst transport policy is largely restricted to the Highways and streetscape environment, several of the LTP2 policies could result in significant impact on the landscape within rural areas. Consequently, it is considered necessary to look in greater detail at the significant impact upon Landscape in the long-term and beyond the LTP2 period. The potential also exists for wider spatial effects beyond the LTP2 area, for example, long distance views of the landscape from neighbouring counties.

Additionally, there are major development proposals that would result in significant changes in transport movements within the urban area and consequently could have a significant impact upon the Townscape in the medium to long-term, particularly in Hereford and Leominster.

3.2.13 Noise

Noise pollution is included under a wide range of legislation due to the potential effects on the population. Noise is regarded as a nuisance which causes disturbance and has potential impacts on human health (in terms of quality of life) and biodiversity.

The LTP2 is considered to have a potentially significant positive effect on noise due to policies to reduce traffic congestion and increase the use of public transport, as well as cycling and walking. Although noise is likely to be reduced under some schemes, others may increase noise locally, for example, adjacent to new infrastructure. However, without the implementation of the LTP2 schemes, noise is likely to increase in urban areas in the medium to long-term due to further traffic congestion. Noise impacts on areas adjacent to new schemes will need to be considered on a scheme by scheme basis.

3.3 Environmental Problems, Constraints and Opportunities in the LTP2

The consultation phase within the Hereford Local Multi-Modal Study identified a number of issues which had environmental problems. These are presented in Table 3.10 along with opportunities within the LTP2 to improve them.

Table 3.10 Environmental Problems and Opportunities associated with LTP2

Problems	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural, Archaeological and Architectural Heritage	Landscape & Townscape	Noise	Opportunities in the LTP2
High levels of air pollution along the A49	↙	↙		↙	↙		↙	↙	↙	There are a range of initiatives within the LTP2 that will provide alternative transport options for travelling within Hereford, including the A49. These include cycling and public transport strategies, Park and Ride sites, development of the Hereford Intelligent Transport System and the proposal for a new outer distributor.
Increasing traffic congestion in the urban area of Hereford	↙	↙	↙	↙	↙	↙	↙	↙	↙	As well as the above, there are specific teams within Herefordshire Council that target schools and businesses into considering use of non-car modes or car sharing for education, commuting and business trips. These initiatives will have a positive effect on addressing increasing traffic congestion.
Limited or poor disabled access at the County's railway stations		↙								Access to the transport system, particularly the railway stations at Leominster and Ledbury, are highlighted within the LTP2 as schemes for seeking further works, as well as a new rail station at Rotherwas. These will improve access for the disabled.
Lack of investment in public transport		↙		↙	↙					Some of the problems have been addressed during the LTP1 with low floor buses on urban routes and refurbishment of Hereford Country Bus Station. Further improvements to services and the infrastructure in the urban area are proposed which will address the perception of lack of investment in public transport.
Limited evidence of integration between modes		↙		↙		↙				The public perception is of limited opportunity to interchange between different transport modes. The LTP1 made some progress with redevelopment of the Hereford Country Bus Station. The LTP2 has identified that at present integration between public transport, walking and cycling could be improved. Additionally the proposals to develop Park and Ride sites and a rail-based Park and Ride at Withington will allow for integration between car, rail and bus.
Lack of an integrated cycle network		↙								Some work has been done during the LTP1 to improve cycle infrastructure and integration. Further proposals in the cycling strategy of the LTP2 will improve this further.
Poor access to industrial areas		↙				↙				The main industrial area in Hereford is Rotherwas Industrial Estate. The estate has a dedicated Travel Plan Co-ordinator who works with all businesses on the site to develop different options for travel. A new access road to Rotherwas to allow expansion of the industrial area is being developed as a scheme.

4 Alternative LTP2 Options & Assessment of Significant Effects

4.1 Need for Alternative LTP2 Options

Stages B and C of the SEA require reasonable alternatives to the preferred option for achieving the LTP2 objectives. This allows for the potential negative effects of the plan to be avoided and the positive aspects to be enhanced. The SEA requires the reasons for not choosing an option for further assessment to be made clear.

4.2 Alternative Option Packages

The options assessed are based on those evaluated within the HLMMS. Six different option packages were developed based on the identification of a possible range of transport schemes, initiatives and measures for Hereford over the next thirty years, which allowed for alternative road and public transport strategies to be developed based upon issues resulting from consultations with the public and statutory consultees.

All option packages include a Reference Case which represents committed improvements to Hereford's transport infrastructure. The schemes and measures included in the Reference Case are as follows:

- Local Transport Plan 1 Schemes.
- UDP Committed Land Use.
- The Rotherwas Access Road.
- The Highways Agency A49 bus and freight lane on Edgar Street.
- Inbound bus and freight lanes on Eign Street and Commercial Road.
- One bus-based Park and Ride site (A49 north).
- The Roman Road on-line improvement.

The scheme operational effects have been analysed relative to the 2031 AM peak 'Do Nothing' situation which represents no change to Hereford's existing transport system. A new multi-modal computer model was developed to evaluate the effects of potential transport improvement scheme packages in Hereford. Although current transport conditions were replicated as accurately as possible to provide a base, some error in the analysis of transport schemes and their environmental effects is considered unavoidable. Difficulties were also experienced identifying individual scheme impacts for some schemes where one or a combination of schemes impacted on another. For example, an outer distributor road may reduce vehicle flows and improve air quality on the A49, but increase traffic and reduce air quality in areas surrounding the new road.

Compared with the 'Do Nothing' scenario, the significant operational impacts of the Reference Case were identified as:

1. A49 north: Edgar Street 2-way bus/freight lanes – a 10% decrease in vehicle flow on the A49(N) (i.e. -269 vehicles).
2. A49 north: bus Park and Ride and 2-way bus lane – Park and Ride and bus passenger trips will increase by 109% on the A49(N) (i.e. +263 trips).
3. A438 Eign Street inbound bus lane – a 13% decrease in vehicle flow inbound on Eign Street (i.e. -355 vehicles).
4. A465 Commercial Road inbound bus lane – a 13% decrease in vehicle flow on Commercial Road (i.e. -201 vehicles).

5. Rotherwas Access Road – a 19% reduction in vehicles from Holme Lacy Road (i.e. – 639 vehicles).
6. A49 Greyfriars Bridge – no change to vehicle or public transport passenger flows on Greyfriars Bridge.
7. Overall Network – a 2% decrease in the proportion of car trips (i.e. –1385 trips) and a 2% increase in the proportion of cycle movements (i.e. +1339 trips). Other modes will remain virtually unchanged from the ‘Do Nothing’.

Each of the six option packages developed combines the Reference Case with a selection of different schemes/policy options from the following:

- Bus based Park and Ride sites (between 1 - 3 sites; A49 south and A465 north and south);
- Metro linked to Park and Ride sites A465 north and south;
- Bus priorities (limited or full priority);
- City centre pedestrianisation (full or partial);
- New rail station at Rotherwas;
- Improved cycle and pedestrian facilities;
- 20mph zones in residential areas;
- One rail-based Park and Ride at Withington;
- Dedicated school bus provision;
- Outer Eastern Distributor road (including A49 south to A465 south link);
- Western Distributor road (A49 south to A49 north);
- New link and river bridge within the City - East - from A49 Newtown;
- New link and river bridge within the City - West from A438 Kings Acre Road to A465 Belmont Road, and road improvements to connect A49 (north);
- Roundabout to B4399 Rotherwas; and
- Dualling A49 completed within urban area.

Each of the option packages is presented in Tables 4.1 to 4.6. Predicted environmental impacts of each scheme within each package have been compared to the ‘Do Nothing’ scenario. Each of the initiatives was assigned a positive (+) or negative (-) symbol to highlight likely positive or negative environmental effects they may have against each of the environmental topics, as identified in the HLMMS. A blank space indicates that there is likely to be no discernable overall impact.

Some of the schemes may have mixed impacts on the environmental topics assessed, for example, the Western Distributor may reduce air quality and increase noise local to the scheme, but improve air quality and noise levels in the city centre. The identification of scheme locations during the implementation of the LTP2 may also result in potential unidentified environmental effects, for example, on cultural heritage and landscape. All environmental effects will be assessed in further detail on a scheme by scheme basis during implementation of the LTP2.

A cumulative summary for each environmental topic is provided in the overall impact line of each table which takes into account the HLMMS results and the number of positive and negative effects assigned from each of the schemes. ‘Beneficial’ refers to a positive impact.

It should be noted that assigned positive or negative symbols in the tables vary in the magnitude of their impact. The overall impact for each environmental topic takes these into account, as identified in the HLMMS. The full Appraisal Summary Tables of the HLMMS are included in Appendix D. Option packages are compared in the following section.

Note: The LTP2 does not make reference to the location of a distributor road specifically to the west of Hereford; this is referred to as only the 'Outer Distributor' in the Plan. Further studies will be required to determine the alignment of the scheme in conjunction with current and future development proposals. However, reference to proposals for a new link between the A49(T) Ross Road and the A465(T) Abergavenny Road is made in the Plan and may form part of a staged process towards developing the outer distributor route. The options for the next stages of the route will be assessed, including the provision of a new river crossing to enable a design with a broad alignment to be progressed in consultation with stakeholders as part of the development of the LTP3. This assessment will be coordinated with the review of land use planning policies for the period beyond 2011 (which is when the current UDP ends) to ensure that the route alignment supports the future development and transport needs of the City. A full environmental appraisal will also be carried out. It is proposed that the A49 to A465 link may commence development in 2008/9.

Table 4.1 Option Package 1

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
• One bus based Park & Ride site (A49 south)	-	+		+	+	+	+	-	+
• Metro linked to Park & Ride sites A465 north and south	-	+				+		-	
• Maximum bus priorities		+				-			
• City Centre full pedestrianisation (Widmarsh Street, High Street and Broad Street - access for buses, cyclists and pedestrians only)		+		+	+		+	+	+
• New rail station at Rotherwas	-	+				+	-		
• Improved cycle & pedestrian facilities		+							
• 20mph zones in residential areas									
• One rail-based Park & Ride site at Withington	-	+						-	
• Dedicated school transport provision									
• No new road schemes									
OVERALL IMPACT	Moderate Adverse	Slight Beneficial	Neutral	Slight Beneficial	Slight Beneficial	Slight Adverse	Slight Adverse	Moderate Adverse	Slight Beneficial

Table 4.2 Option Package 2

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
<ul style="list-style-type: none"> Three bus based Park & Ride sites (A49 south and A465 north and south) 	-	+		+	+	+	-	-	+
<ul style="list-style-type: none"> Maximum bus priorities 		+				-			
<ul style="list-style-type: none"> City Centre full pedestrianisation (Widemarsh Street, High Street and Broad Street - access for buses, cyclists and pedestrians only) 		+		+	+		+	+	+
<ul style="list-style-type: none"> New rail station at Rotherwas 	-	+				+	-		
<ul style="list-style-type: none"> Improved cycle & pedestrian facilities 		+							
<ul style="list-style-type: none"> 20mph zones in residential areas 									
<ul style="list-style-type: none"> One rail-based Park & Ride site at Withington 	-	+						-	
<ul style="list-style-type: none"> Dedicated school transport provision 									
<ul style="list-style-type: none"> No new road schemes 									
OVERALL IMPACT	Slight Adverse	Slight Beneficial	Neutral	Slight Beneficial	Slight Beneficial	Slight Adverse	Slight Adverse	Moderate Adverse	Slight Beneficial

Table 4.3 Option Package 3

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
<ul style="list-style-type: none"> One Bus-based Park & Ride site (A49 south) 	-	+		+	+	+	+	-	+
<ul style="list-style-type: none"> Limited bus priorities 		+							
<ul style="list-style-type: none"> City centre partial pedestrianisation (Widemarsh Street and High Street) 		+		+	+		+	+	+
<ul style="list-style-type: none"> One rail-based Park & Ride at Withington 	-	+						-	
<ul style="list-style-type: none"> Improved cycle & pedestrian facilities 		+							
<ul style="list-style-type: none"> Outer Eastern Distributor road 	-	+	-	-	-	+		-	-
OVERALL IMPACT	Large Adverse	Slight Beneficial	Large Adverse	Slight Adverse	Slight Adverse	Large Beneficial	Neutral	Moderate Adverse	Slight Adverse

Table 4.4 Option Package 4

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
<ul style="list-style-type: none"> One Bus-based Park & Ride site (A49 south) 	-	+		+	+	+	+	-	+
<ul style="list-style-type: none"> Limited bus priorities 		+							
<ul style="list-style-type: none"> City Centre partial pedestrianisation (Widemarsh Street and High Street) 		+		+	+		+	+	+
<ul style="list-style-type: none"> One rail-based Park & Ride at Withington 	-	+						-	
<ul style="list-style-type: none"> Improved cycle & pedestrian facilities 		+							
<ul style="list-style-type: none"> Western Distributor Road (A49 south to A49 north) 	-	+	-	-	-	+		-	-
OVERALL IMPACT	Moderate Adverse	Slight Beneficial	Large Adverse	Slight Adverse	Slight Adverse	Moderate Beneficial	Neutral	Moderate Adverse	Slight Adverse

Table 4.5 Option Package 5

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
• One Bus-based Park & Ride site (A49 south)	-	+		+	+	+	+	-	+
• Limited bus priorities		+							
• City Centre partial pedestrianisation (Widemarsh Street and High Street)		+		+	+		+	+	+
• One rail-based Park & Ride at Withington	-	+						-	
• Improved cycle and pedestrian facilities		+							
• New link & river bridge within City – East from A49 Newtown	-	+	-			+	-	-	
• Roundabout to B4399 Rotherwas						+			
• Dualling A49 completed within urban area		+				+	-	-	
OVERALL IMPACT	Moderate Adverse	Slight Beneficial	Large Adverse	Slight Beneficial	Slight Beneficial	Large Beneficial	Moderate Adverse	Moderate Adverse	Slight Beneficial

Table 4.6 Option Package 6

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
<ul style="list-style-type: none"> One Bus-based Park & Ride site (A49 South) 	-	+		-	-	+	+	-	-
<ul style="list-style-type: none"> Limited bus priorities 		+							
<ul style="list-style-type: none"> City Centre partial pedestrianisation (Widemarsh Street and High Street) 		+		-	-		+	+	-
<ul style="list-style-type: none"> One rail-based Park & Ride at Withington 	-	+						-	
<ul style="list-style-type: none"> Improved cycle & pedestrian facilities 		+							
<ul style="list-style-type: none"> New link & river bridge within the City – West from A438 Kings Acre Road to A465 Belmont Road, and road Improvements to connect to A49 (North) 	-	+	-			+	-	-	
<ul style="list-style-type: none"> Dualling A49 completed within urban area 		+				+	-	-	
OVERALL IMPACT	Moderate Adverse	Slight Beneficial	Large Adverse	Slight Adverse	Slight Adverse	Moderate Beneficial	Moderate Adverse	Large Adverse	Slight Adverse

4.3 Comparison of Option Packages

The comparison of option packages below takes into account Tables 4.1 to 4.6 and the HLMMS assessment in relation to NATA sub-objectives (as contained in Appendix D).

4.3.1 Option Package 1

This option package has been estimated to lead to a mode shift of 10.3% from car to public transport compared with the Reference Case. This is estimated to lead to a similar percentage reduction in road vehicle kilometres which would result in proportionate reductions in noise and other vehicle emissions. Local air quality, climate and human health are likely to improve. The Metro would give rise to moderately adverse impacts on landscape and townscape. The bus and Metro Park and Ride sites would have a negative impact on biodiversity and a mixed impact on the water environment. The new rail station at Rotherwas and the potential impact on Rotherwas Chapel would have a negative impact on heritage but the removal of traffic from parts of the city centre would have a positive impact on heritage. There would be a small shift to walking and cycling (0.2%), similar to the other packages, which would improve physical fitness and journey ambience and road accidents are estimated to decrease by 9.4% relative to the Reference Case.

4.3.2 Option Package 2

Option Package 2 includes an additional two bus-based Park and Ride sites from Option Package 1 and omits the Metro scheme and its associated links. This package also estimates a mode shift of 10% from car to public transport, resulting in similar associated beneficial impacts as Option Package 1. The additional two bus-based Park and Ride sites would have a moderately adverse impact on landscape and townscape, with a slight reduction on the impact on biodiversity. Road accidents are also estimated to decrease by 9.4%. Other impacts are similar to Option Package 1.

4.3.3 Option Package 3

This option package results in an increase of 15% in annual road vehicle kilometres compared to the Reference Case mainly due to the Eastern Distributor Road, with a 1.1% shift from sustainable modes to car. The increase in vehicle kilometres would result in increases in noise and other vehicle emissions, although these would be lower in proportion due to higher vehicle speeds and operating efficiencies on new highway facilities. There are also likely to be negative impacts on local air quality, human health and climate. The new road is also estimated to have negative impacts on biodiversity, landscape and the water environment. The potential reduction of traffic in the city centre would have a positive impact on heritage and human health. Road accidents are estimated to decrease by 4.7%.

4.3.4 Option Package 4

This option package is the same as Option Package 3 but with a Western Distributor Road rather than the Eastern. This package results in an increase of 13.4% in annual road vehicle kilometres, resulting in similar associated adverse impacts as Option Package 3. A 0.2% shift from car to public transport is estimated. The new road is estimated to have negative impacts on biodiversity, landscape and the water environment. A 4.2% decrease in road accidents is estimated.

4.3.5 Option Package 5

This option package is the same as Option Package 3, but instead of an outer distributor road includes a new eastern link closer to the city centre between the A49 north and Rotherwas. This package results in a decrease of 1.2% in annual road vehicle kilometres, which gives rise to small decreases in noise and other vehicle emissions. A shift of 1.5% from car to public transport is estimated. The new link is estimated to have adverse impacts

on landscape and biodiversity, although less than that estimated for the outer distributor road. It is also estimated to adversely effect the water environment, townscape and heritage. A 16.6% decrease in road accidents is estimated. The remaining environmental effects are similar to Option Package 3.

4.3.6 Option Package 6

This option package is the same as Option Package 5 but with a new inner link to the west of the city rather than the east. This package results in an increase of 2.7% in annual road vehicle kilometres, with small associated increases in noise and other vehicle emissions. A shift of 0.3% from car to public transport is estimated. The impacts associated with the west link are slightly more adverse than the east link in package 5. The reduction in road accidents is similar as for package 5 and the remaining environmental effects are similar to Option Package 4.

4.4 Refinement of Options – The Blended Package

Stage C of the SEA requires these options to be refined and fewer options to be taken forward for a more detailed environmental analysis. This process was undertaken in the HLMMS. Each of the options was evaluated based on the 5 NATA objectives (environment, safety, economy, accessibility and integration) and assessed against Herefordshire's Local Transport Objectives (see Appendix E). Based on this evaluation, the Steering Group and Wider Reference Group, including the statutory consultees, were consulted to identify a blended package of schemes and measures for further testing.

The following initiatives were not taken forward for further analysis:

- The Metro and linked Park and Ride sites, as it was considered this initiative did not represent value for money;
- The inner eastern and western link roads and the dualling of the A49, as the deliverability of the schemes was questionable and strong concern was expressed during the consultation that these would have an unacceptable impact on the environment and heritage; and
- The eastern outer distributor road, as this raised concerns during consultations on the environmental impact and the deliverability of the scheme.

However, it was supported that some form of new road building was required in order to reduce significant traffic overloading in Hereford City Centre and maintain the possible accommodation of bus priority, pedestrianisation and on road cycle provision. It was concluded that the western distributor road would have less severe adverse impacts on the environment than the eastern distributor or inner link roads. A Blended Package Option was therefore taken forward both with and without a distributor road to the west of Hereford, as requested by the Steering Group.

The Blended Package Option includes the Reference Case and the following initiatives:

- City centre full pedestrianisation (Widemarsh Street, High Street and Broad Street - access for buses, cyclists and pedestrians);
- Improved cycle and pedestrian facilities;
- Two bus based Park and Ride sites (A49 south and A465 south);
- Maximum feasible bus priorities;
- New rail station at Rotherwas;
- Rail-based Park and Ride site at Withington;
- 20mph zones in residential areas off main routes;
- School transport package;
- Behavioural Change Campaign (to achieve additional shift from car to sustainable modes of 6% by 2011 and 12% by 2031); and
- The 'Blended Package with the Western Distributor' includes the western outer distributor road. The 'Blended Package without the Western Distributor' omits this scheme.

Tables 4.7 and 4.8 show the impacts of the blended package options on the environment. The full Appraisal Summary Tables can be seen in Appendix D.

As can be seen from these tables, the option without the distributor road has fewer and less severe environmental impacts than the option with the road. The blended package option with the distributor road is expected to have significant environmental effects upon the landscape and soil and water environment.

Any inconsistencies between the alternatives and other relevant plans, programmes and policies will be ironed out as the LTP2 is finalised. For example, some plans are currently in draft, such as the UDP, and some are currently being revised, such as the Herefordshire Plan. As these are developed and finalised, the implementation of the LTP2 will take any alternations into consideration.

Table 4.7 Blended Package with Distributor Road

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
• City Centre full pedestrianisation		+		+	+		+	+	+
• Improved cycle & pedestrian facilities		+							
• Two bus-based Park & Ride sites	-	+		+	+	+		-	+
• Maximum feasible bus priorities		+							
• New rail station at Rotherwas	-	+				+	-		
• Rail-based Park & Ride site at Withington	-	+						-	
• 20mph zones in residential areas									
• School transport package									
• Behavioural Change Campaign									
• Western Distributor Road	-	+	-	-	-	+		-	-
COMBINED IMPACT	Moderate Adverse	Moderate Beneficial	Large Adverse	Slight Beneficial	Slight Beneficial	Moderate Beneficial	Slight Adverse	Large Adverse	Slight Beneficial

Table 4.8 Blended Package without Distributor Road

Initiatives	Biodiversity	Population & Human Health	Soil & Water	Air Quality	Climate	Material Assets	Cultural Heritage	Landscape and Townscape	Noise
• City Centre full pedestrianisation		+		+	+		+	+	+
• Improved cycle & pedestrian facilities		+							
• Two bus-based Park & Ride Sites	-	+		+	+	+		-	+
• Maximum feasible bus priorities		+							
• New rail station at Rotherwas	-	+				+	-		
• Rail-based Park & Ride site at Withington	-	+						-	
• 20mph zones in residential areas									
• School transport package									
• Behavioural Change Campaign									
COMBINED IMPACT	Slight Adverse	Moderate Beneficial	Neutral	Slight Beneficial	Slight Beneficial	Slight Beneficial	Slight Adverse	Moderate Adverse	Slight Beneficial

5 Mitigation

5.1 Introduction

The SEA guidance (TAG Unit 2.11, December 2004), states that ‘where a strategy is likely to have significant adverse environmental effects, measures should be considered to prevent, reduce or offset these effects.’ This hierarchy of mitigation is shown in Figure 5.1 below.

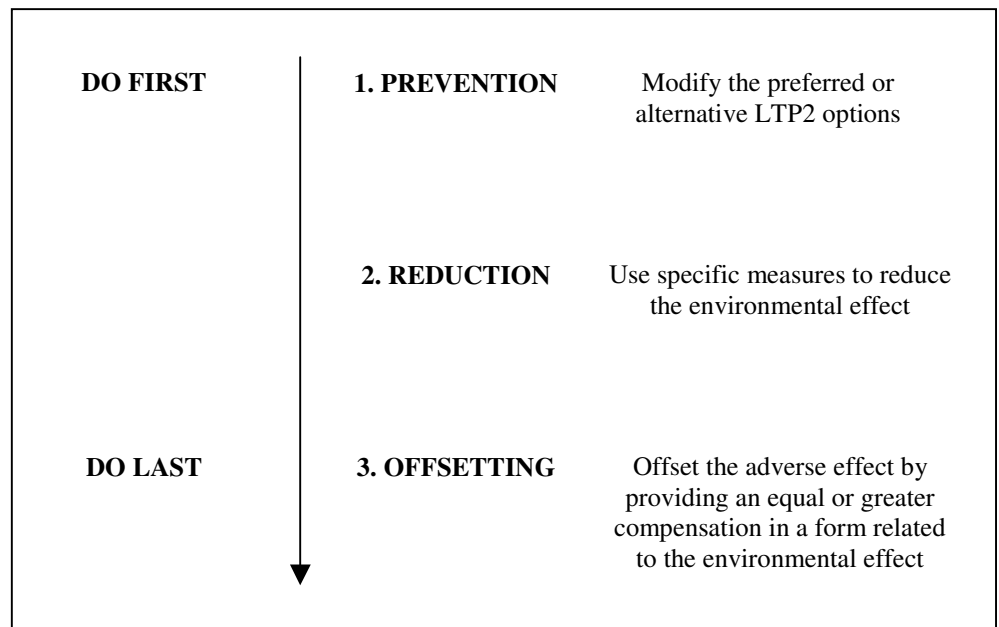


Figure 5.1 Hierarchy of Mitigation

In this section details are provided of how the potentially significant adverse impacts on the environment will be mitigated. The negative environmental effects of the LTP2 have been identified from the blended package options as biodiversity, soil and water (where the outer distributor road is included), cultural heritage and landscape. Although only these are described in detail below, the other environmental effects, some of which may have adverse components despite being beneficial overall, will also be mitigated as appropriate through the implementation of individual schemes and in relation to the SEA Objectives.

The Council aims to take a proactive approach to mitigation, identifying opportunities to enhance the environment on a scheme by scheme basis. It is also recognised that some aspects may have effects beyond the LTP2 period and beyond the LTP2 spatial area. These will be considered during scheme implementation and mitigated as appropriate, in consultation with neighbouring authorities where required.

The costs and feasibility of mitigation measures will be considered during the development and implementation of individual schemes, when scheme locations have been identified, however allowances have been made for mitigation costs in the LTP2 programming. Wider sustainability issues will also be considered for schemes, including the use of recycled materials where possible.

Herefordshire Council has been certified to ISO 14001 since July 2002 for its Good Environmental Management (GEM) system. It seeks to place environmental issues on an equal footing with economic and social considerations, as well as promoting sustainable development. Through this and Herefordshire Council’s Corporate Environmental Strategy (2005-2011), it is anticipated that a high level of protection to the environment is ensured and the environmental effects arising from schemes will be mitigated and / or compensated for as far as is practicable.

The HLMMS stated that:

‘The advantages of including the western distributor in the blended package could outweigh the disadvantages but only if the scheme is built in the medium to long term after the bulk of the other schemes and measures are delivered.’

During the consultation phases the majority of respondents had supported some degree of road building in order that the study objectives could be met. The preferred outer western distributor, whilst having some significant environmental impacts, was included within the blended package as the environmental impacts were less than those that would be anticipated with inner distributor roads or an outer distributor to the east of Hereford.

However, as discussed in the previous chapter, the location of a distributor road specifically to the west of Hereford is not referred to in the LTP2. Mitigation and compensatory measures required for the ‘Outer Distributor’ will therefore be developed as the alignment of and justification for the scheme is progressed. The proposals for a new link between the A49 and A465 and further stages, which may form the Outer Distributor, will involve the identification of mitigation measures as the scheme stages develop and through Environmental Impact Assessments (EIAs).

5.2 Proposed Mitigation for Significant Adverse Environmental Effects

The proposed mitigation for the potential significant adverse environmental effects of the implementation of the LTP2 are as follows:

5.2.1 Biodiversity

Biodiversity is likely to be adversely affected by the provision of the two Park and Ride sites in Hereford, the rail-based Park and Ride at Withington, the new rail station at Rotherwas and the Outer Distributor. Consideration regarding the location of the schemes will take into account biodiversity and include an EIA where appropriate.

Where possible the location with the least environmental impacts will be selected and that which avoids protected areas, Greenfield land and severance of sensitive areas. Where impacts on biodiversity are unavoidable, these will be compensated for, either adjacent to the site or in other locations requiring improvement for biodiversity and nature conservation. This may include options for planting native species which encourage colonisation of other important species, tunnels to allow passes for badgers and other fauna or translocation. Compensatory mitigation will be at least equal to that lost and / or damaged through the scheme. Where possible opportunities to enhance local biodiversity will be identified. Stakeholder and public consultation will be included throughout the process where appropriate.

5.2.2 Soil and Water

Soil and water is likely to be adversely affected by the Outer Distributor Road. Although the alignment of the road is not yet confirmed, it is likely to include some Greenfield land which may be agricultural.

The selection for the location of the road will consider the effects on soil and water and where possible avoid sensitive sites and those at risk of flooding. This will include geological assessments, contaminated land assessments and flood risk assessments. Similarly, the location of Park and Ride sites and other schemes will take soil and water considerations into account. Changes to the local hydrology will be minimised where possible in the design. Balancing ponds and other Sustainable Urban Drainage systems (SUDs) will be included where required to reduce the risk of pollution from surface runoff and provide additional capacity for floodwater. SUDs will also be considered as an alternative to piped drainage where possible on a scheme by scheme basis. These may also

become potential wildlife habitats. Where required, flood storage compensation will also be included in scheme design.

5.2.3 Cultural heritage

Cultural heritage is likely to be adversely affected by the new rail station at Rotherwas although the potential effects from other schemes will be assessed on a scheme by scheme basis during implementation of the LTP2.

Mitigation measures will be incorporated into the design process using best practice guidance. The selection of locations for relevant schemes will avoid impacts on cultural heritage sites wherever possible, including architectural and archaeological sites of importance. This will involve archaeological assessments where appropriate. They will also take into account elements of the natural landscape such as topography and screening to minimise the impacts of visual intrusion, noise and vibration on cultural heritage. Where the effects are unavoidable, landscaping options such as planting and street furniture will be considered. Opportunities for enhancement will also be considered where possible, for example, improving access to historic assets and improving the condition of the historic environment, including buildings on the National Buildings at Risk Register. The Council's Historic Landscape Characterisation work will also be taken into account on a scheme by scheme basis.

5.2.4 Landscape

Landscape is likely to be adversely affected by the two Park and Ride sites in Hereford, the rail-based Park and Ride at Withington and the Outer Distributor.

The Council aims to take a proactive approach to landscape mitigation / compensation and utilise the Herefordshire Landscape Character Assessment (LCA). The LCA undertaken has identified descriptive site specific areas and Landscape Types and included analysis to assess significance, vulnerability, tolerance, resilience and sensitivity as well as spatial and numerical analysis to identify habitat value and opportunities of individual Land Cover Parcels (LCPs). Aspects included in the landscape descriptions include landform, geology, soils, history, land cover, land use, trees and woodland, rivers, coastline and water, biospanersity, building style, settlement pattern and forces for change.

Some of the effects on landscape can be mitigated through the design process. The selection of locations for relevant schemes will take into account the landscape and make use of existing contours, vegetation and other natural features as far as possible. Where required landscaping and screening will be used to minimise the effect of the scheme. Landscape enhancement zones or corridors will also be considered on a scheme by scheme basis to improve the surrounding landscape and habitats. Landscape will inevitably be assessed in greater detail through the EIA process for the stages of the Outer Distributor.

For other schemes such as the city centre pedestrianisation, improved cycle and pedestrian facilities and traffic calming in residential areas, the consideration of materials in the design process will also assist to minimise the visual impact of the scheme, in conjunction with landscaping options, including planting and well designed street furniture.

The effects on the landscape of AONBs and other protected areas will be resolved on a scheme by scheme basis, in consultation with the appropriate bodies and management plans.

6 Monitoring

6.1 Introduction

The SEA Directive requires that monitoring of the significant environmental effects of the implementation of plans is undertaken in order to identify unforeseen adverse effects at an early stage, so that appropriate remedial action can be undertaken. The LTP2 sets performance indicators and targets for delivering the objectives in relation to accessibility, tackling congestion, safer roads and better air quality. Monitoring towards achieving these objectives will include monitoring of environmental data for the significant environmental effects identified during the SEA, in accordance with Section 7 of the SEA Guidance (TAG Unit 2.11, December 2004), and relate to the SEA Objectives. This will be done in relation to baseline environmental conditions.

6.2 Proposed Monitoring for Significant Adverse Environmental Effects

Proposed monitoring for the significant environmental effects of implementing the LTP2 are as follows and will be further developed as schemes undergo development and implementation, and as locations are identified:

6.2.1 Biodiversity

To ensure that biodiversity is not adversely affected by the implementation of schemes, habitat and ecological surveys will be required for schemes where an effect on the local flora and fauna is deemed likely and for any scheme EIAs. This will enable identification of protected, rare and other sensitive habitats and species prior to design and construction, enabling the identification of mitigation options and / or consideration of alternative sites.

Where effects on flora and fauna local to the site are deemed possible and unavoidable during construction, monitoring of species by ecologists throughout this phase will identify any issues relating to disturbance and allow consideration for immediate mitigation options if required.

Habitat and ecological surveys following scheme implementation will allow the outcome effect on biodiversity to be identified and for further mitigation if required. Similarly, where compensatory habitat improvements are made either on site or in other areas, initial surveys and surveys following improvements will identify the scale of enhancements made and ensure that these are at least equal to that lost due to scheme implementation. Follow-up land management of biodiversity assets affected by schemes and the monitoring of the effectiveness of that management will ensure that the effects on biodiversity are successfully mitigated throughout and beyond the LTP2 period.

The UDP sets out the following monitoring measures for biodiversity which will be used in conjunction with the LTP2 monitoring. These measures include:

- The review and rolling forward of the AONB Management Plans for the Wye Valley, Malvern Hills and their subsidiary strategies.
- The review of the River Wye Strategy for the river corridor throughout Herefordshire to ensure its proper conservation and management. The environmental impacts of development and activities affecting the river corridor will be monitored to allow the identification of new initiatives for river corridor management.
- The review and rolling forward of the Herefordshire Biodiversity Action Plan, monitoring changes to protected habitats and impacts on species, reviewing and updating tertiary wildlife sites registers.

- Monitoring of tree planting schemes and woodland management schemes to gauge changes to the tree stock and its capacity for carbon-fixing.
- Monitoring felling of protected trees and monitoring of hedgerow loss due to development and agricultural changes.

6.2.2 Soil and Water

Similarly for soil and water, initial, construction phase and outcome surveys will be required to monitor the effect of schemes and allow identification of further mitigation options if required. Surveys will also be required as part of scheme EIAs. Initial soil sampling to identify contaminated land issues will require further sampling following remediation if required. Similarly, monitoring of surface water and groundwater throughout scheme implementation will be required if effects are likely.

6.2.3 Air Quality

Although the LTP2 is likely to improve air quality in Herefordshire, this is included as a monitored environmental effect due to the objective for better air quality in the LTP2 which requires monitoring to measure performance (as well as the statutory requirement for local air quality monitoring). The designated Air Quality Management Area (AQMA) in Hereford and the proposed AQMA in Leominster require improved air quality to meet the National Air Quality Standards and Objectives for NO₂.

Herefordshire Council currently monitors NO₂ at 23 locations in Hereford City, including the AQMA (see Figure 6.1 below). NO₂ diffusion tube monitoring has been undertaken since 1993, with the installation of a chemiluminescent NO₂ continuous analyser in 1995 at Edgar Street Roundabout. This monitoring will continue to assist Herefordshire Council in helping to ensure that the Government target of 40µg/m³ (annual mean) is met in the AQMA and that all other sites remain below this. Further NO₂ monitoring is also planned in Hereford and Leominster due to the rising trend in levels.

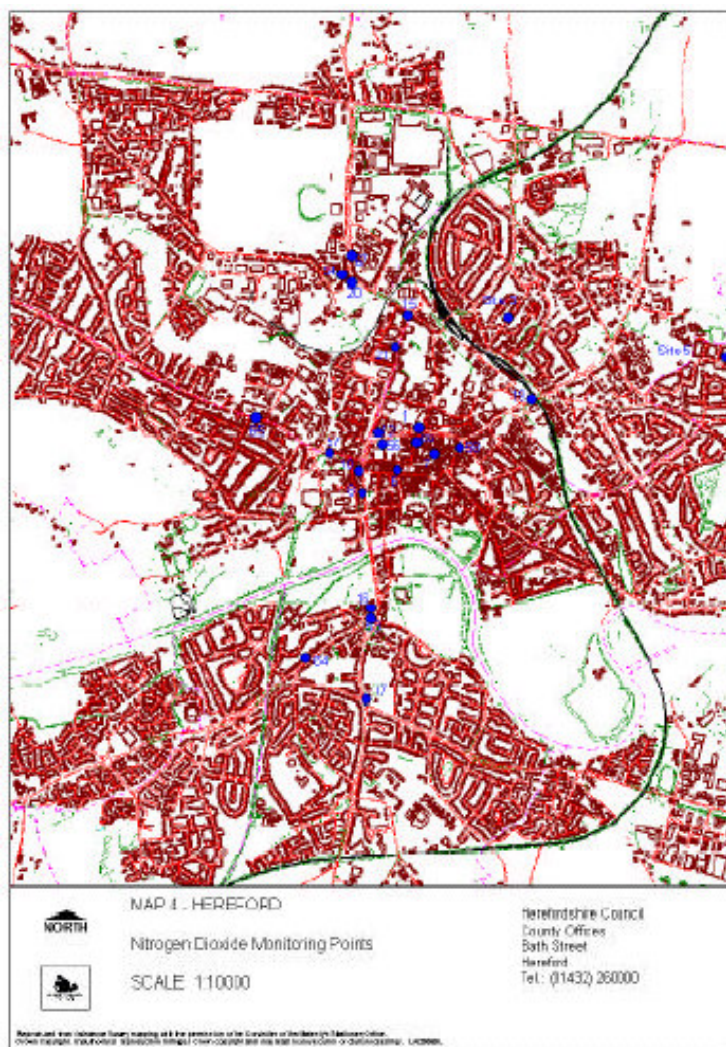


Figure 6.1 NO₂ Monitoring Points in Hereford
Source: Annual Air Quality Progress Report for Herefordshire, July 2005.

NO₂ is also currently monitored at 7 locations in Leominster, including the proposed AQMA (see Figure 6.2 below), 4 locations in Ross-on-Wye, 5 locations along the A40(T) corridor and one location in Ledbury, Bromyard, Kington, Weobley and Pembridge.

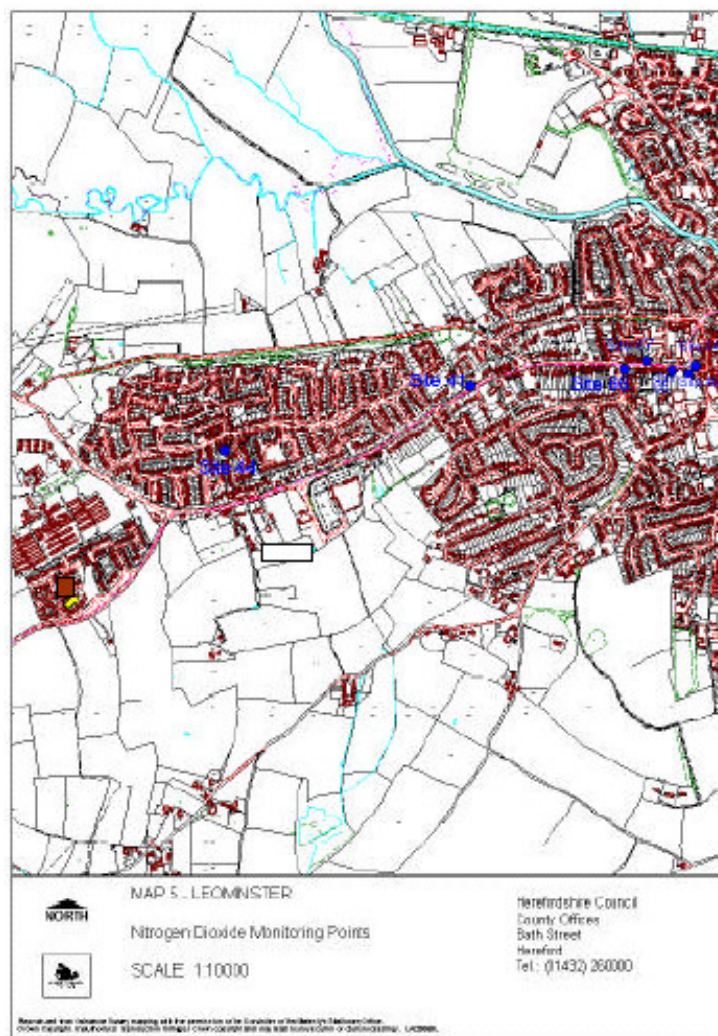


Figure 6.2 NO₂ Monitoring Points in Leominster

Source: Annual Air Quality Progress Report for Herefordshire, July 2005.

Particulates (PM10) have been continuously monitored at the Edgar Street Roundabout in Hereford City since 1997. Ozone is monitored by monthly diffusion tubes also at Edgar Street Roundabout in Hereford and in Wellington (for rural background data). Sulphur dioxide is monitored by diffusion tubes at Garrick House in Hereford. All monitoring will continue throughout the LTP2 period to ensure that the National Air Quality Standards and Objectives are met and/or continue to be met.

6.2.4 Cultural heritage

The effects on cultural heritage will similarly be monitored throughout the stages of scheme implementation where effects are deemed likely and for scheme EIAs. These may include monitoring of noise and vibration as appropriate. Initial surveys of protected buildings and sites, as well as further surveys throughout implementation will identify any effects requiring immediate and long-term mitigation.

The UDP also sets out the following monitoring measures which will be used in conjunction with LTP2 monitoring:

- Production of Conservation Area appraisals to describe their special qualities and features and provide guidance on how development and restoration should be undertaken.
- Review of existing Conservation Areas to assess any need for boundary changes, and to assess possible new designations.
- Monitoring of historic buildings at risk and maintenance of a register to help prevent valuable built features falling irretrievably into disrepair.
- Monitoring of changes to rural buildings resulting from re-use.
- Maintenance of the County Sites & Monuments Register to ensure that valuable archaeological remains are recorded.
- Requirement for planning applicants to commission archaeological surveys where there is evidence of the existence of important remains.
- Monitoring of change to archaeological sites/areas.
- Monitoring of changes to historic landscapes and implementation of conservation programmes in co-operation with landowners.

6.2.5 Landscape

The effects on landscape will also require monitoring before, during and after scheme implementation under scheme EIAs. This may include landscape assessments and photographic records to assess the effects of a scheme and to develop detailed mitigation measures. Landscape has the potential to be effected beyond the LTP2 period and beyond the LTP2 spatial area, therefore wider monitoring may be required where appropriate.

In conjunction with those described for cultural heritage, the UDP also sets out other monitoring measures for landscape including the production and publication of the GIS-based Herefordshire LCA. The LCA also provides strong links to Historic Landscape Characterisation and will enable the monitoring of landscape to be undertaken throughout the LTP2 period of scheme implementation.

References

BS EN ISO 14001: 2004 Environmental Management Systems: Requirements with Guidance for Use.

Census, 2001.

County Surveyors Society (June 2004) Framework for Highway Asset Management.

DEFRA (2000) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working Together for Cleaner Air. HMSO.

Department for Transport (DfT) (December 2004) Full Guidance on Local Transport Plans: Second Edition.

DfT (December 2004) Strategic Environmental Assessment for Transport Plans and Programmes, Transport Analysis Guidance (TAG) Unit 2.11.

English Heritage (2005) Heritage Counts: The State of the West Midlands' Historic Environment.

Herefordshire Council (February 2001) Third Stage Air Quality Review and Assessment, Environmental Health and Trading Standards.

Herefordshire Council (February 2003) Hereford Transport Review Local Multi-Modal Study, Final Report.

Herefordshire Council (March 2004) Updating and Screening Assessment Report, Environmental Health and Trading Standards.

Herefordshire Council (June 2005) Herefordshire Council Corporate Environmental Strategy, 2005-2011, Environment Directorate.

Herefordshire Council (July 2004) Detailed Assessment Report, Environmental Health and Trading Standards.

Herefordshire Council (July 2005) Annual Air Quality Progress Report for Herefordshire, Environmental Health and Trading Standards.

Soil Survey of England and Wales (1983) The Soil Map of England and Wales, Sheet 3 Soils of Midland and Western England.

DOCUMENT CONTROL SHEET

Project Title:	Herefordshire Local Transport Plan 2 (2006/7 - 2010/11) Strategic Environmental Assessment
Project Number:	551321
Document / Report Title:	Environmental Report (March 2006)
Document / Report Number:	1

**ISSUE
STATUS/AMENDMENT**

Prepared

Reviewed

Approved

Version No. 1 Date of Issue: March 2006	Name: Nicola Cook Signature: <i>N Cook</i> Date: 03/04/06	Name: Will Warner Signature: <i>W Warner</i> Date: 03/04/06	Name: Will Warner Signature: <i>W Warner</i> Date: 03/04/06
--	---	---	---

(Enter Details of Amendment)	Name: (print) Signature: Date:	Name: (print) Signature: Date:	Name: (print) Signature: Date:
------------------------------	---	---	---

(Enter Details of Amendment)	Name: (print) Signature: Date:	Name: (print) Signature: Date:	Name: (print) Signature: Date:
------------------------------	---	---	---

(Enter Details of Amendment)	Name: (print) Signature: Date:	Name: (print) Signature: Date:	Name: (print) Signature: Date:
------------------------------	---	---	---

Appendix A

SEA Statement

Herefordshire LTP2 Strategic Environmental Assessment (SEA)

SEA Statement

Purpose of Statement

This statement summarises how environmental considerations have been integrated into the LTP2. In line with the DfT's guidance, Strategic Environmental Assessment for Transport Plans and Programmes - TAG Unit 2.11 (December 2004), this statement covers:

- Ways in which responses to consultation have been taken into account, including how the plan was changed to take account of issues raised, or why no changes were made.
- Any changes or deletions from the plan in response to the information in the Environmental Report.
- Reasons for choosing the plan as adopted, and why other reasonable alternatives were rejected.
- Monitoring measures. The Environmental Report has already documented proposed measures concerning monitoring; these are now confirmed in light of the consultation responses.

The Environmental Report and Consultation Process

A Strategic Environmental Assessment (SEA) of the LTP2 was carried out in line with the requirements of the European Directive 2001/42/EC *on the assessment of the effects of certain plans and programmes on the environment*; known as the SEA Directive. The SEA was undertaken and a draft Environmental Report (ER) prepared in parallel with the preparation of the provisional LTP2. The draft ER underwent consultation prior to the submission of the final LTP2.

The consultation process involved the four statutory consultees: the Environment Agency, English Nature, the Countryside Agency and English Heritage. The draft ER was also placed on Herefordshire Council's website for open consultation with the public and other interested parties.

Each comment received during the consultation period was considered in line with the SEA Directive, associated guidance and in relation to the provisional LTP2. Where appropriate the LTP2 was changed to take account of the issues raised. However, some of the issues raised in the consultation exercise were not relevant to the LTP2 or were issues that had already been addressed in the provisional LTP2. All comments raised during the consultation period and their influence on the ER and LTP2 are summarised in the table at the end of this statement. Those comments that have resulted in changes to the LTP2 are described further below.

Alterations to the LTP2

No deletions have been made from the LTP2 as a result of the SEA, however, as a result of comments from statutory consultees on the draft ER, there have been four additions to the final LTP2, as follows. No comments were received from the public.

1. AONB Management Plans

The Countryside Agency suggested that Area of Outstanding Natural Beauty (AONB) Management Plans should be included in the list of local plans in the ER. ***AONB Management Plans have been included in the LTP2 policy and context section (Section 2).***

2. Outer Distributor Road

The Countryside Agency queried the inclusion of the Western Distributor in the appraisal packages of the ER, despite the omission of a named route in the LTP2 (referred to in this document as only the Outer Distributor). It was suggested that either the LTP2 should include a route for the Outer Distributor, or alternatively mention of the Western Distributor should be omitted from the SEA.

The Western Distributor was included in the appraisal packages of the ER as it was originally part of the Hereford Local Multi-Modal Study (HLMMS), which was discussed at some length. The LTP2 document states that the broad alignment of the Outer Distributor is to be progressed in consultation with stakeholders as part of the development of the LTP3, in line with the review of land use planning policy and development of the Local Development Framework. This will ensure that the route alignment supports the future development and transport needs of the City. However, the proposals for a new Link Road between the A49(T) Ross Road and the A465(T) Abergavenny Road may form part of a staged process towards developing the Outer Distributor route.

English Nature also suggested that greater certainty on the balance of environmental benefit / disbenefit should be established before significant investment is provided to the Outer Distributor. *A statement has been added to the LTP2 on the need to carry out a full environmental appraisal of the Outer Distributor as part of the option appraisal (included in Section 5).*

3. Landscape Character Assessment

The Countryside Agency stated that landscape mitigation measures in the ER focused on screening and street furniture and would not utilise the Herefordshire Landscape Character Assessment (LCA) to its full potential. The provisional LTP2 highlighted the quality of the landscape and referred to the LCA in Section 1. *Additional text has been added to the LTP2 (Section 2) to indicate the need to refer to the LCA for appropriate projects.*

4. Risk of Flooding

The Environment Agency noted that flood risk was not mentioned as an issue under Water, including the use of the Agency's flood zone maps as a constraint and consideration that development should have regard to flood risk. *The LTP2 has been strengthened with the addition of text on the need to consider flood risk on a scheme by scheme basis (Section 2).*

The Adopted LTP2 and Alternatives

The LTP2 was chosen as adopted because:

- The schemes fit well with the Shared Priorities of delivering accessibility, tackling congestion, safer roads and better air quality, as well as other strategies.
- The schemes have less significant environmental impacts than the alternatives assessed.
- The schemes provide deliverability and value for money.

Alternative schemes, as assessed through the HLMMS, consisted of:

- **A Metro and linked Park and Ride sites** – this was rejected because it was not considered value for money.
- **Inner eastern and western distributor roads and dualling of the A49** – these were rejected because the deliverability of the schemes was questionable and strong concern

was expressed during the consultation that these would have an unacceptable impact on the environment and heritage.

- **An outer eastern distributor road** – this raised concerns during consultations on the environmental impact and the deliverability of the scheme.

However, it was supported that some form of new road building was required in order to reduce significant traffic overloading in Hereford City Centre; the outer western distributor having the least significant environmental impacts.

Monitoring Measures

The ER documents proposed measures concerning monitoring of the potential significant adverse environmental impacts of implementing the LTP2. These are confirmed following the consultation process. Monitoring measures include monitoring of baseline data during construction and follow-up monitoring on a scheme by scheme basis. Air quality monitoring and modelling work is also underway within designated Air Quality Management Areas (AQMA) but there are no modelling outputs to report yet.

Draft ER Consultation Comments Summary Table

The following table summarises comments from statutory consultees on the draft ER, and indicates how the SEA process and LTP2 have been influenced:

Consultee	ER Section	Consultation Response	Influence on Environmental Report	Influence on LTP2
Countryside Agency	2.3.11	Include AONB Management Plans in list of local plans.	AONB Management Plans included in list of local plans (Section 2).	AONB Management Plans added to LTP2 policy context section (Section 2).
	3.2.10	Assessment of environmental effects of transport network maintenance not included in SEA.	Environmental effects of maintenance works taken into account in Section 3.	Council has ISO 14001 (GEM) accreditation and highway maintenance is undertaken in accordance with GEM procedures (Section 8). No change to LTP2.
	4	Inclusion of Western Distributor in appraisal package despite omission from LTP2 and statement in Environmental Report (ER) that route has not been selected. Either LTP2 should include route so environmental impact can be assessed accurately, or Western Distributor should be omitted from SEA.	Western Distributor was included in the draft ER as it was part of the HLMMS. LTP2 refers only to an 'Outer Distributor', the named route of which has not yet been selected, as stated in the ER. Clearer wording included in Section 4.	LTP2 states route of Outer Distributor to be assessed during development of LTP3. Statement added on need to carry out full environmental appraisal of the outer distributor as part of option appraisal (Section 5).
	5.2.4	Landscape mitigation measures are focused on screening and street furniture. This approach is simplistic and will not utilise the Herefordshire Landscape Character Assessment (LCA) to its full potential. Landscape criteria in LCA may be relevant for setting targets and indicators in LTP2.	Focus of landscape mitigation expanded (Section 5). Landscape criteria from Herefordshire LCA taken into account.	The LTP2 highlights the quality of the landscape and refers to the Landscape Character Assessment in Section 1. Additional text added in Section 2 to indicate the need to refer to the LCA for appropriate projects.
	Consultee comments under 6. Also relevant to 3 and 5.	SEA should consider impacts of transport packages proposed on AONB Landscapes. Where a package or proposal will have an impact on an AONB this should be highlighted within the scoring methodology (Appendix C).	The Appendix C appraisal summary tables are from the HLMMS. Impacts of transport packages proposed on AONB landscapes and other protected sites taken into account (Sections 3 and 5).	No change to LTP2.

Consultee	ER Section	Consultation Response	Influence on Environmental Report	Influence on LTP2
Countryside Agency	6.2.5	Develop specific Landscape indicators that can be used to monitor and direct EIA and Planning Applications for each development.	No indicators are included in the ER. The SEA Directive does not specifically require the use of objectives or indicators in SEA, but they are a recognised way in which environmental effects can be described. Objectives are included to allow the description, analysis and comparison of environmental effects throughout the SEA process. No change to ER.	No change to LTP2.
Environment Agency	3.2.7	No mention of flood risk as an issue under Water including use of EA's flood zone maps as a constraint and consideration that development should have regard to flood risk.	Wording on issues of flood risk, flood zone maps and considerations regarding development added to Section 3.	LTP2 would be strengthened by specific reference to need to consider flood risk. A reference to flood risk has been included in Section 2.
	5.2.2	Include mitigation issues associated with flood risk, e.g. flood storage loss and compensation.	Wording on mitigation issues associated with flood risk added to Section 5.	No change to LTP2.
	5	Suggest Park and Ride sites should be considered against flood risk maps.	All sites are assessed for flood risk by Herefordshire Council on a scheme by scheme basis. No change to ER.	No change to LTP2.
	5	Flood risk considerations for Rotherwas Access Road and the A49 Ross Road to Abergavenny Road.	Site specific comments taken into account by Herefordshire Council. No change to ER.	No change to LTP2.
English Heritage	(Scoping)	Not consulted at Scoping Stage. Consultation appears to have jumped to Stage D.	The potential environmental effects of transport packages in the LTP2 were considered in the HLMMS which underwent consultation.	No change to LTP2.
	All, particularly 4	ER should more clearly reflect the contents of the provisional LTP2.	Chapter 4 is based on the alternatives assessed in the HLMMS. Clearer wording included in Section 4.	No change to LTP2.
	All	Spatial and temporal scope of SEA. SEA should recognise that certain aspects will have longer term effects than the 5 year time span and impact beyond the spatial area for the LTP2.	Wording added to include potential longer term effects beyond LTP2 and wider spatial effects (Sections 3, 5 and 6).	No change to LTP2.
	1.6	Expand and more clearly explain derivation of SEA objectives. Translation into a sustainability framework for the SEA process is unclear. Recommend amendments to wording of objectives. Recommend two tier approach using headline objectives and sub objectives. No indicators are identified for monitoring stage.	Explanation for derivation of objectives expanded in Section 1 and some objectives reworded. The SEA Directive does not specifically require the use of objectives or indicators in SEA, however objectives have been included to allow the description, analysis and comparison of environmental effects throughout the SEA process.	No change to LTP2.
	All	Consultee recommends a list of questions to be tailored to the LTP2 and plan area relating to features and areas of historical, archaeological and cultural value.	Herefordshire Council assesses heritage issues on a scheme by scheme basis. No change to ER.	No change to LTP2

Consultee	ER Section	Consultation Response	Influence on Environmental Report	Influence on LTP2
English Heritage	Appendix B and 2.3.11	Replace reference to English Heritage Environmental Policy Statement with PPGs 15 and 16. Add Regional Cultural Strategy to 2.3.11.	Reference to English Heritage Environmental Policy Statement replaced with PPGs 15 and 16 in Appendix. Regional Cultural Strategy added to Section 2.	No change to LTP2.
	3.2.10	Suggestions/considerations regarding Herefordshire Council Transport Asset Management Plan.	Herefordshire Council has considered comments specific to the Asset Management Plan. No change to ER.	No change to LTP2.
	3.2.11	Cultural, archaeological and architectural heritage section requires further detail and data on additional designations (sources of data provided).	Further detail and additional data added to Section 3.	No change to LTP2.
	3.2.12	Relate landscape and townscape to previous chapter and expand to include issues of character and quality of townscape and public realm.	Landscape and townscape section related to previous section in more detail and issues of character and quality of townscape and public realm addressed.	No change to LTP2.
	4	Concerns over HLMMS and how this relates to the SEA process. Further explanation needed to explain notation used in assessment tables. Suggest see HLMMS response letter dated 15 September 2003.	The HLMMS compares and assesses the environmental impacts of a range of transport packages. The study underwent consultation and was amended accordingly. Wording on assessment table notation expanded in Section 4.	No change to LTP2.
	5.2.3 and 5.2.4	Strengthen sections to provide a more positive and proactive approach to mitigation.	Wording added to Section 5 to provide a more proactive approach to mitigation.	No change to LTP2.
	6	Suggest inclusion of indicators, as mentioned above.	The SEA Directive does not specifically require the use of objectives or indicators in SEA, however objectives have been included to allow the description, analysis and comparison of environmental effects throughout the SEA process.	No change to LTP2.
English Nature	All	Various minor additions to text/comments throughout report.	Minor additions made to text throughout report where appropriate.	No change to LTP2.
	(comment in 1.5)	Query where light pollution, recreation network and wider sustainability matters, e.g. use of secondary aggregates instead of primary raw materials, are addressed.	Wording on light pollution and recreation network maintenance included in Section 3. Use of secondary aggregates already addressed in Material Assets section.	No change to LTP2.
	1.6	Recommend use of Guiding Principles for the West Midlands RPG review (Annex A of RPG11, ODPM June 2004). Should inform and influence LTP preparation and implementation, as well as policies in Chapter 9 of RPG.	No change to ER.	The LTP2 has been developed in the context of RPG and there are detailed references to the RPG throughout the document. No change to LTP2.

Consultee	ER Section	Consultation Response	Influence on Environmental Report	Influence on LTP2
English Nature	1.6	SEA objectives should carry through to LTP2, as underpinning of vision and strategy and asserting that the LTP2 objectives are implemented in ways which positively secure these objectives	No change to ER.	One of the key LTP2 objectives is 'safeguarded environment' and this covers the collection of objectives identified in respect of the SEA process. No change to LTP2.
	1.6	Suggest additional objective regarding infrastructure for recreational use of the countryside and open spaces	SEA objective added to Section 1 to include maintenance and enhancement of access and infrastructure for recreational use of the countryside and open spaces.	The Rights of Way Improvement Plan in Section 9.6 covered the approach to this issue. No change to LTP2.
	2.3.11	Addition of BAP 2000 and 2005 Targets Review to list of local plans	BAP 2000 and 2005 Targets Review added to list of local plans in Section 2.	No change to LTP2.
	3.2.1	Addition of quantitative baseline data and targets to biodiversity section (sources of info recommended)	Further detail and additional data added to Section 3.	No change to LTP2.
	3.2.1	Question whether LTP2 mitigates for the effects of existing traffic emissions on habitats and whether the background pollutant level trends will increase despite the LTP2	No change to ER.	Air quality modelling work is underway – no outputs to report yet. This is confined to where AQMA have been designated. No change to LTP2.
	3.2.5	Suggest inclusion of Rights of Way for all purposes including recreation and upkeep of that infrastructure	Wording added on Rights of Way, accessibility for recreation and associated maintenance (Section 3).	The Rights of Way Improvement Plan in Section 9.6 covered the approach to this issue. No change to LTP2.
	3.2.7	Suggest a prioritised programme of replacement of point source drains that impact on sensitive sites to SUDs	Herefordshire Council assesses SUDs on a scheme by scheme basis. Wording added to Section 5.	No change to LTP2.
	3.2.8	Questions what measures are in place to shift freight to rail and replace older buses with greener vehicles	No change to ER.	The Low Floor Bus Project completed during LTP1 has initiated a step change in improving the bus fleet (Section 1). Rail freight is being pursued at a regional level (Section 9.8). No change to LTP2.
	3.2.9	Suggest include quantitative targets for reducing greenhouse gas emissions through Nottingham Declaration	Quantitative targets for reducing greenhouse gas emissions through Nottingham Declaration included in Section 3.	No change to LTP2.
	4.2	Suggest greater certainty on the balance of environmental benefit/disbenefit should be established before significant investment is provided to the Outer Distributor	No change to ER.	Statement added on need to carry out full environmental appraisal of the outer distributor as part of option appraisal (Section 5).
	4.4	Suggest alteration to assessment tables regarding Western Distributor	Changes to assessment tables considered and altered where appropriate.	No change to LTP2.

Consultee	ER Section	Consultation Response	Influence on Environmental Report	Influence on LTP2
English Nature	4.4	Suggest LTP2 should advance sustainable development by including alternatives which seek to control Hereford road traffic volumes in LTP2 through sub-regional and regional working, particularly regarding freight and HGVs	No change to ER.	The LTP2 Strategy focuses on controlling traffic and a key proposal is the Hereford Intelligent Transport System which will seek to improve efficiency of the network in advance of road building options. Regional support has also been secured for the Rotherwas Access Road which will remove HGV traffic in the Hinton residential area. No change to LTP2.
	5.2.4	Suggest inclusion of landscape enhancement zones or corridors around schemes to express intent to achieve landscape betterment, not solely minimising adverse effects on a sub-optimal or vulnerable existing landscape	Wording added to consider inclusion of landscape enhancement zones or corridors on a scheme by scheme basis (Section 5).	No change to LTP2.
	6.2.1	Provision must be made for continuity of appropriate follow-up land management of biodiversity assets affected by schemes and the monitoring of the effectiveness of that management	Wording added to Section 6 on follow-up land management of biodiversity assets affected by schemes.	No change to LTP2.
	6.2.2	Monitoring of the effects of existing transport network on soil and water desirable	No change to ER.	Whilst possibly desirable there are not sufficient resources for this other than in case specific circumstances. No change to LTP2.
	6.2.3	Assessment of effects of airborne pollutants on wildlife habitat interests desirable as context for the LTP2 goal to improve air quality (to benefit the natural environment)	No change to ER.	Whilst possibly desirable there are not sufficient resources for this other than in case specific circumstances. No change to LTP2.

Organisations consulted as part of the Hereford Local Multi-Modal Study

Organisations consulted as part of the Hereford Local Multi-Modal Study

- Advantage West Midlands
- Bulmers
- Chamber of Commerce H&W/Hereford City Partnership
- Community Transport Forum
- Countryside Agency
- County Youth Service
- Council for the Protection of Rural England
- Eign Enterprises
- English Heritage
- English Nature
- Environment Agency
- Freight Transport Association
- Government Office for West Midlands
- Hereford and Worcester Chamber of Commerce
- Herefordshire Pedestrian Forum
- Herefordshire Council – Chief Executive, Education, Policy and Community, Housing and Social Care, Forward Planning, Engineering and Transportation
- Herefordshire Partnership
- Herefordshire Bus Operators Forum
- Herefordshire Cycle Forum
- Herefordshire Primary Care Trust
- Herefordshire Industrial Association
- Herefordshire Taxi Association
- Highways Agency
- National Farmers Union
- Rail for Herefordshire
- Railtrack Great Western
- Railway Development Society
- Rotherwas Access Group
- SRA Stakeholder relations manager
- Sun Valley
- West Mercia Police
- West Midlands Sustainability Forum
- Wiggin Special Metals
- Hereford Transport Review Steering Group / Friends of the Earth
- Herefordshire Rural Transport Partnership / Herefordshire Association of Local Councils
- Voluntary Sector Assembly

APPENDIX C

List of additional relevant plans and policies with environmental issues considered in the LTP2 process

List of additional relevant plans and policies with environmental issues considered in the LTP2 process

- CA 145 Quality of Life in Tomorrows Countryside
- CA 169 Integrated Rural Development
- CA 207 The Countryside in and around Towns: A Vision for Connecting Town and Country in the Pursuit of Sustainable Development
- Countryside Agency's Quiet Lanes Interim Guidance 2003a
- Countryside Agency's Dealing with Traffic in Rural Areas
- Countryside Agency's Eat the View
- Countryside Agency's Science Strategy (2004)
- DCMS (Department of Culture, Media and Sport): The Historic Environment – A Force for our Future
- DEFRA: Towards a National Ambient Noise Strategy
- DfT: Control of Body Noise from Commercial Vehicles
- English Heritage: Social Inclusion Goals and Easy Access to Historic Buildings, DCMS – The Historic Environment: A Force for our Future
- English Heritage: Transport and the Historic Environment
- English Nature's Environmental Report 2000/2001
- English Nature: State of Nature, Lowlands – Future Landscapes for Wildlife
- Environment Agency Position Statement on Air Quality
- Environment Agency Position Statement on Climate Change
- Environmental Report - 2003/4 (Environment Agency)
- Environment Agency Position Statement on Reducing Environmental Impacts of Road and Air Transport
- Environment Agency: Soil – The Hidden Resource
- Environment Agency: The State of Soils in England & Wales
- Government Policy in creating a Flood Risk Assessment
- Local Authority Conservation Provision in England (English Heritage)
- Making Rural Communities Safer: Consultation on Community Safety (Countryside Agency & NACRO)
- Planning Policy Guidance 15: Planning and the Historic Environment
- Planning Policy Guidance 16: Archaeology and Planning

Full Hereford Local Multi-Modal Study Appraisal Summary Tables

Option Package 1	<p>Package Description:</p> <ul style="list-style-type: none"> One bus based park and ride site (A49 south) Metro linked to park and ride sites A465 north and south Maximum bus priorities City centre full pedestrianisation (Widemarsh St, High St, Broad St – access for bus, cyclists and pedestrians) New rail station at Rotherwas Improved cycle and pedestrian facilities 20mph zones in residential areas One rail based park and ride site at Withington Dedicated school bus provision No new road schemes
-------------------------	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Reduction in Study Area road traffic produces a slight benefit in respect of noise.	%age change in annual vehicle kms.	-10.1%
	Local Air Quality	Reduction in road vehicle traffic in Study Area has a slight benefit on the local air quality.	%age change in annual vehicle kms. Approx. change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	-10.1% -6.5 tonnes/year -0.5 tonnes/year
	Greenhouse Gases	Reduction in road vehicle traffic in the Study Area reduces green house gas emissions	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	-10.1% -12,485 tonnes/year
	Landscape	Metro linked park and ride gives a potentially moderate adverse impact on landscape. Bus and rail park and ride slight adverse. Remainder neutral.	1 Scheme moderate adverse. 2 Schemes slight adverse. 7 Schemes neutral.	Moderate Adverse.
	Townscape	Moderate impact on townscape from metro. Slight impact rail-based park and ride. Moderate beneficial effect from pedestrianisation.	1 Scheme moderate adverse. 1 Scheme slight adverse. 7 Schemes neutral/moderate beneficial.	Moderate Adverse.
	Heritage of Historic Resources	Potential positive effects from removal of traffic from historic area. Negative effects from the new rail station at Rotherwas.	7 Schemes Mixed. 2 Schemes Potential Positive. 1 Scheme Negative	Negative Impact
	Biodiversity	Probably minor negative impact on biodiversity from bus/rail park & ride sites and rail station. Probably intermediate negative impact from metro park & ride sites.	3 Schemes probably minor negative impact. 1 Scheme probably intermediate negative impact. 6 Schemes insignificant impact.	Probably Intermediate negative impact.
	Water Environment	Mixed impacts from metro linked and rail park & ride and rail stations. Other impacts insignificant.	3 Schemes mixed impact. 7 Schemes insignificant impact.	Mixed Impact.
	Physical Fitness	The overall effect of the package of measures is a slight shift from car to soft modes (walk and cycle) giving physical fitness benefits.	%age Mode shift from car to soft modes.	+0.20%
	Journey Ambience	Rail based park and ride, and metro linked to park and ride provide moderate beneficial impacts. One bus-based park and ride, maximum bus priorities, new rail station at Rotherwas, and improved cycle and pedestrian facilities provide slight beneficial impact.	2 schemes moderate beneficial impact 4 schemes slight beneficial impact 4 schemes neutral impact	Slight beneficial impact
SAFETY	Accidents	Reduction in road vehicle traffic will lead to a proportionate reduction in accidents.	Reduction in all personal injury accidents	40no. (-9.4%)
	Security	Metro linked to park and ride, pedestrianisation, a new rail station at Rotherwas and improved cycle/pedestrian facilities provide a slight beneficial impact.	4 Schemes slight beneficial impact 6 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2010 to 2031 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private: -£270.5m Goods: £104.2m Public Transport: £9.4m	Overall NPV -£227m Overall PVC -£59m PVC to Gov. -£56m (Grant/Subsidy -£55m) Overall BCR -2.8
	Reliability	The reduction in vehicle-kilometres due mainly to fewer car trips results in less traffic delay due to congestion on the network.	% Change in congestion delay.	-29%
	Wider Economic Impacts	Improved access to Rotherwas industrial area by train. Improved access to City commercial centre via metro and bus and park & ride.	No. of regeneration, commercial and industrial areas with improved transport access.	2 areas
ACCESSIBILITY	Option Values	Increased bus service frequencies, park and ride, metro and new rail station will increase travel options.	Change in public service vehicle-kms. % Mode shift from car to public transport.	+30% increase in psv kms +10.3% shift to public transport
	Severance	The central area has a large benefit with an average 24% reduction in traffic flow, whilst the A49 also has a large benefit with an average 40% reduction. Similarly the A465 benefits with an average 30% reduction. In addition the metro has a moderate disbenefit due to loss of amenity on the proposed metro route.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The metro, improved bus priorities and frequencies, rail station, improved cycle and pedestrian facilities will all benefit those who do not have access to a car.		Strong Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of one bus based park and ride, metro linked park and ride sites, one rail based park and ride and a new rail station at Rotherwas.	No. of new or improved transport and freight interchanges.	6 new interchanges
	Land-Use Policy	The Package 1 plan options will support the draft UDP Town Centres and Retail policies, and the Rotherwas station will mitigate access constraints to the Rotherwas employment area.	Three point GOMMMS scale	Beneficial

Option Package 2	Package Description: Three bus based park and ride sites (A49 south, A465 north and south) Maximum bus priorities City centre full pedestrianisation (Widemarsh St, High St, Broad St – access for bus, cyclists and pedestrians) New rail station at Rotherwas Improved cycle and pedestrian facilities 20mph zones in residential areas One rail based park and ride site at Withington Dedicated school bus provision No new road schemes
-------------------------	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Increase in road vehicle traffic has a slight benefit on noise.	%age change in annual vehicle kms.	-9.9%
	Local Air Quality	Increase in road vehicle traffic has a slight benefit on the local air quality.	%age change in annual vehicle kms. Approx. change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	-9.9% -6.4 tonnes/year -0.47 tonnes/year
	Greenhouse Gases	Increase in road vehicle traffic in the study area should be taken in a wider context.	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	-9.9% -12,311tonnes/year
	Landscape	Bus based park and ride potential moderate impact; Slight impact from rail base park and ride. Other schemes neutral.	1 Scheme moderate adverse. 1 Scheme slight adverse. 7 Schemes neutral.	Moderate adverse.
	Townscape	3 bus based park and ride potentially slight to moderate adverse. Rail based park and ride slight adverse. City centre pedestrianisation moderate beneficial.	1 Scheme moderate adverse. 1 Scheme slight adverse. 6 Schemes neutral. 1 Scheme moderate beneficial.	Moderate adverse
	Heritage of Historic Resources	Potential negative impact from 3 bus based park and ride sites, positive impact of city centre pedestrianisation.	1 Scheme negative impact. 1 Scheme positive impact. 7 Schemes mixed impact.	Negative impact.
	Biodiversity	Bus and rail park and ride, and rail station probably minor negative impact, other schemes insignificant.	3 Schemes probably minor negative impact. 6 Schemes insignificant impact.	Probably minor negative.
	Water Environment	Potential mixed impact from 3 bus-based and rail park and ride sites and rail station, other schemes likely to be insignificant.	3 Schemes mixed impact. 6 Schemes insignificant impact.	Mixed impact.
	Physical Fitness	The overall effect of the package of measures is to reduce the number of car trips which have no physical fitness benefit.	%age Mode shift from car to soft modes.	+0.2%
	Journey Ambience	Three bus-based and one rail-based park and ride sites provide a moderate beneficial impact. Maximum bus priorities and a new rail station at Rotherwas provide a slight beneficial impact.	2 Schemes moderate beneficial impact 2 Schemes slight beneficial impact 5 Schemes neutral impact	Slight beneficial impact.
SAFETY	Accidents	Reduction in road vehicle traffic will lead to a proportionate reduction in accidents.	Reduction in all personal injury accidents	40no. (-9.4%)
	Security	New rail station at Rotherwas and improved cycle/pedestrian facilities provide a slight beneficial impact.	2 Schemes slight beneficial impact 7 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2010 to 2031 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private User Benefits: -£307.5m Goods Vehicles Benefits: £106.8m Public Transport User Benefits: £8.9m	Overall NPV -£233m Overall PVC -£31m PVC to Gov. -£28m (Grant/Subsidy -£27m) Overall BCR -6.5
	Reliability	The reduction in vehicle-kilometres due mainly to fewer car trips results in less traffic delay due to congestion on the network.	% Change in congestion delay.	-29%
	Wider Economic Impacts	Improved access to Rotherwas by train. Improved access to city centre via bus and park and ride.	No. of regeneration, commercial and industrial areas with improved transport access.	2 areas
ACCESSIBILITY	Option Values	Increased bus service frequencies, park and ride and new rail station will increase travel options.	Change in public service vehicle kms. % Mode shift from car to public transport.	+27% increase in psv kms +10.0% shift to public transport
	Severance	The central area has a large benefit with an average 25% reduction in traffic flow, whilst the A49 also has a large benefit with an average 40% reduction. Similarly, the A465 benefits with an average 28% reduction.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The improved bus priorities and frequencies, rail station, improved cycle and pedestrian facilities will all benefit those who do not have access to a car.		Strong Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of three bus based park and ride sites, a new rail station and a rail based park and ride.	No. of new or improved transport and freight interchanges.	5 interchanges
	Land-Use Policy	The Package 2 plan options will support the draft UDP policies S4 Employment, S5 Town centres and retail and S6 Transport	Three point GOMMMS scale	Beneficial

Option Package 3	Package Description: One bus based park and ride site (A49 South) Limited bus priorities City centre pedestrianisation (Widemarsh St, High St) Improved cycle and pedestrian facilities One rail based park and ride site at Withington Eastern distributor (incl. A49 South to A465 South link)
-------------------------	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Increase in road vehicle traffic has a slight adverse impact on noise.	%age change in annual vehicle kms.	+15%
	Local Air Quality	Increase in road vehicle traffic has a slight adverse impact on the local air quality. The impact will be proportionately less than the increase in traffic as vehicle speeds will be increased and vehicles will operate more efficiently.	%age change in annual vehicle kms. Approx. change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	+15% +14.6 tonnes/year + 0.5 tonnes/year
	Greenhouse Gases	Increase in road vehicle traffic in the study area should be taken in a wider context. The impact will be proportionately less than the increase in traffic as vehicle speeds will be increased and vehicles will operate more efficiently.	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	+15% +3,247 tonnes/year
	Landscape	Eastern distributor large adverse. Bus and rail park and ride slight adverse. Remaining schemes neutral.	1 Scheme large adverse. 2 Schemes slight adverse. 3 Schemes neutral.	Large adverse.
	Townscape	Rail based park and ride slight adverse impact, city centre pedestrianisation moderate beneficial, other schemes neutral.	1 Scheme slight adverse. 4 Schemes neutral. 1 Scheme moderate beneficial.	Slight adverse.
	Heritage of Historic Resources	Positive impacts from 1 bus park and ride and city centre pedestrianisation other impacts mixed.	2 Schemes potential positive impact. 4 Schemes mixed impact.	Mixed impact.
	Biodiversity	Eastern distributor probably major negative impact, bus park and ride and rail based park and ride probably minor negative impact, other schemes insignificant.	1 Scheme probably major negative impact 2 Schemes probably minor impact. 3 Schemes insignificant impact.	Probably Major Negative.
	Water Environment	Potential significant negative impact from Eastern distributor, rail based park and ride mixed impact other schemes insignificant.	1 Scheme significant negative impact. 1 Scheme mixed impact. 4 Schemes insignificant impact.	Significant Negative.
	Physical Fitness	The overall effect of the package of measures is to increase the number of car trips which have no physical fitness benefit.	%age Mode shift from car to soft modes.	-1.1%
	Journey Ambience	Rail-based park and ride and the eastern distributor road provide a moderate beneficial impact. One bus-based park and ride provides a slight beneficial impact.	2 Schemes moderate beneficial impact. 1 Scheme slight beneficial impact. 3 Schemes neutral impact.	Slight beneficial impact.
SAFETY	Accidents	Although there is an increase in road vehicle traffic, some of this traffic will transfer to new safer roads.	Reduction in all personal injury accidents	20no. (-4.7%)
	Security	City centre partial pedestrianisation and improved cycle/pedestrian facilities provide a slight beneficial impact.	2 Schemes slight beneficial impact 4 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2010 to 2031 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private: £842.3m Goods: £116.3m Public Transport: -£0.3m	Overall NPV £913m Overall PVC - £32m PVC to Gov. -£35m (Grant/Subsidy -£3.5) Overall BCR 29.7
	Reliability	Less congestion due to traffic moving from the centre and using the new eastern distributor road.	% Change in congestion delay.	-42.9%
	Wider Economic Impacts	Improved access to city centre via bus park and ride. Improved access to Holmer Road and Rotherwas industrial areas by road.	No. of regeneration, commercial and industrial areas with improved transport access.	3 areas
ACCESSIBILITY	Option Values	Improved bus priorities and frequencies and park and ride will increase travel options.	Change in public service vehicle kms. % Mode shift from car to public transport.	-5.2% decrease in psv kms -0.4% shift to car
	Severance	The central area has a very large benefit with an average 39% reduction in traffic flow. Both the A49 and A465 have large adverse impacts close to the junctions with the Eastern distributor with a 65% increase in flow. However, large benefits are gained on the A465 north and A49 south with 40% reductions in flow.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The improved bus priorities, and improved cycle and pedestrian facilities will benefit those who do not have access to a car.		Moderate Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of one bus-based and one rail-based park and ride sites.	No. of new or improved transport and freight interchanges.	2 interchanges
	Land-Use Policy	The Package 3 plan options will support the draft UDP policies S4 Employment, S5 Town centres and retail and S6 Transport.	GOMMMS three point scale	Beneficial

Option Package 4	Package Description: One bus based park and ride site (A49 South) Limited bus priorities City centre pedestrianisation (Widemarsh St, High St) Improved cycle and pedestrian facilities One rail based park and ride site at Withington Western distributor (A49 South to A49 North)
-------------------------	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Increase in road vehicle traffic has a slight adverse impact on noise.	%age change in annual vehicle kms.	+13.4%
	Local Air Quality	Increase in road vehicle traffic has a slight adverse impact on the local air quality. The impact will be proportionately less than the increase in traffic as vehicle speeds will be increased and vehicles will operate more efficiently.	%age change in annual vehicle kms. Approx. change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	+13.4% +13.0 tonnes/year + 0.4 tonnes/year
	Greenhouse Gases	Increase in road vehicle traffic in the study area should be taken in a wider context. The impact will be proportionately less than the increase in traffic as vehicle speeds will be increased and vehicles will operate more efficiently.	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	+13.4% +2,195 tonnes/year
	Landscape	Western distributor large adverse, bus based park and ride and rail based park and ride slight adverse, other schemes neutral.	1 Scheme large adverse. 2 Schemes slight adverse. 3 Schemes neutral.	Large adverse.
	Townscape	City centre pedestrianisation moderate beneficial. Rail based park and rise slight adverse, other schemes neutral.	1 Scheme slight adverse. 4 Schemes neutral. 1 Scheme moderate beneficial.	Slight adverse.
	Heritage of Historic Resources	City centre pedestrianisation and bus based park and ride potential positive, other schemes mixed impact.	2 Schemes potential positive. 4 Schemes mixed impact.	Mixed impact.
	Biodiversity	Western distributor probably intermediate negative, bus and rail based park and ride probably minor negative, other schemes insignificant.	1 Scheme probably intermediate negative. 2 Schemes probably minor negative. 3 Schemes insignificant.	Probably Intermediate Negative.
	Water Environment	Western distributor probably significant negative. Rail based park and ride mixed impact. Other schemes insignificant.	1 Scheme probably significant negative impact. 1 Scheme mixed impact. 4 Schemes insignificant impact.	Significant Negative.
	Physical Fitness	The overall effect of the package of measures is to increase the number of car trips which have no physical fitness benefit.	%age Mode shift from car to soft modes.	-0.9%
	Journey Ambience	Rail-based park and ride and the western distributor road provide a moderate beneficial impact. One bus-based park and ride provides a slight beneficial impact.	2 Schemes moderate beneficial impact. 1 Scheme slight beneficial impact. 3 Schemes neutral impact.	Slight beneficial impact.
SAFETY	Accidents	Although there is an increase in road vehicle traffic, some of this traffic will transfer to new safer roads.	Reduction in all personal injury accidents	18no. (-4.2%)
	Security	City centre partial pedestrianisation and improved cycle/pedestrian facilities provide a slight beneficial impact.	2 Schemes slight beneficial impact 4 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2010 to 2031 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private £452.0m Goods: £77.7m Public Transport: -£0.4m	Overall NPV £499m Overall PVC -£27m PVC to Gov. -£30m (Grant/Subsidy -£5.0m) Overall BCR 19.14
	Reliability	Less congestion due to traffic moving from the centre and using the new western distributor road.	% Change in congestion delay	-29.3%
	Wider Economic Impacts	Improved access to city centre via bus and park and ride. Improved road access to Rotherwas and Holmer Road industrial/commercial areas.	No. of regeneration, commercial and industrial areas with improved transport access.	3 areas
ACCESSIBILITY	Option Values	The new Western Distributor results in a 1.3% decrease in public service vehicle kilometres but the more frequent bus services and park and ride schemes result in a 0.17% shift from car to public transport.	Change in public service vehicle kms. % Mode shift from car to public transport.	-1.3% decrease in PSV kms +0.17% mode shift from car to Public transport
	Severance	The central area has a large benefit with an average 31% reduction in traffic flow. Both the A49 and A465 have large adverse impacts close to the junctions with the Western distributor with a 30-70% increase in flow. However, large benefits are gained on the A465 north and A49 south with 20-50% reductions in flow.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The improved bus priorities, and improved cycle and pedestrian facilities will benefit those who do not have access to a car.		Moderate Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of one bus-based and one rail-based park and ride sites	No. of new or improved transport and freight interchanges.	2 interchanges
	Land-Use Policy	The Package 4 plan options will support the draft UDP policies S4 Employment, S5 Town centres and retail and S6 Transport.	GOMMMS three point scale	Beneficial

Option Package 5	Package Description: One bus based park and ride site (A49 South) Limited bus priorities City centre pedestrianisation (Widemarsh St, High St) Improved cycle and pedestrian facilities One rail based park and ride site at Withington New link and river bridge within City – East – A49 Newtown roundabout to B4399 Rotherwas Dualling A49 completed within urban area
-------------------------	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Reduction in road vehicle traffic has a slight benefit on noise.	%age change in annual vehicle kms.	-1.2%
	Local Air Quality	Reduction in road vehicle traffic has a slight benefit on the local air quality.	%age change in annual vehicle kms. Approx. change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	-1.2% +3.6 tonnes/year -0.2 tonnes/year
	Greenhouse Gases	Reduction in road vehicle traffic in the study area should be taken in a wider context.	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	-1.2% -11,291 tonnes/year
	Landscape	New river bridge in city east moderate adverse, and 1 bus based park and ride and rail based park and ride slight adverse.	2 Schemes slight adverse. 1 Scheme moderate adverse 4 Schemes neutral.	Moderate adverse.
	Townscape	New river bridge in city east and dualling A49 moderate adverse. Rail based park and ride slight adverse. City centre pedestrianisation moderate beneficial, others neutral.	2 Schemes moderate adverse. 1 Scheme slight adverse. 3 Schemes Neutral. 1 Scheme moderate beneficial.	Moderate adverse.
	Heritage of Historic Resources	New river bridge in city east and dualling A49 negative. City centre pedestrianisation and bus based park and ride potential positive.	2 Schemes negative. 2 Schemes positive. 3 Schemes mixed.	Negative Impact.
	Biodiversity	New bridge in city east probably intermediate negative, rail based park and ride and bus based park and ride probably minor negative, other schemes insignificant.	2 Schemes probably minor negative. 1 Scheme probably intermediate negative. 4 Schemes insignificant.	Probably Intermediate Negative.
	Water Environment	New bridge in city east significant negative impact. Rail based park and ride mixed. Other schemes insignificant impact.	1 Scheme significant negative. 1 Scheme mixed. 5 Schemes insignificant.	Significant Negative.
	Physical Fitness	The overall effect of the package of measures is to reduce the number of car trips which have no physical fitness benefit.	%age Mode shift from car to soft modes.	-0.45%
	Journey Ambience	Rail-based park and ride, improved cycle and pedestrian facilities, and the new river bridge all provide a moderate beneficial impact. One bus-based park and ride and dualling of the A49 provide slight beneficial impact.	3 Schemes moderate beneficial impact 2 Schemes slight beneficial impact 2 Schemes neutral impact	Slight beneficial impact.
SAFETY	Accidents	A slight reduction in traffic and the safer new and improved roads will lead to a reduction in accidents.	Reduction in all personal injury accidents	7Ino. (-16.6%)
	Security	City centre partial pedestrianisation and improved cycle/pedestrian facilities provide a slight beneficial impact.	2 Schemes slight beneficial impact 5 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2010 to 2031 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private: £755.0m Goods: £134.1m Public Transport: -£0.4m	Overall NPV £840m Overall PVC -£30m PVC to Gov. -£31m (Grant/Subsidy -£3.4m) Overall BCR 29.4
	Reliability	Less congestion due to traffic moving from the centre and using the new link and river bridge and dualled A49.	% change in congestion delay	-39.6%
	Wider Economic Impacts	Improved access to city centre via bus and park and ride. Improved access to Rotherwas via new link and river bridge.	No. of regeneration, commercial and industrial areas with improved transport access.	2 areas
ACCESSIBILITY	Option Values	Improved bus priorities and frequencies and park and ride increase travel options.	Change in public service vehicle kms. % Mode shift from car to public transport.	+12.3% + 1.5%
	Severance	The central area has a large benefit with an average 39% reduction in traffic flow, whilst the A49 also has a large benefit with an average 40% reduction. A very small increase in flow occurs on the A465 but this is negligible.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The improved bus priorities, and improved cycle and pedestrian facilities will benefit those who do not have access to a car.		Moderate Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of one bus-based and one rail-based park and ride sites	No. of new or improved transport and freight interchanges.	2 interchanges
	Land-Use Policy	The Package 5 plan options will support the draft UDP policies S4 Employment, S5 Town centres and retail and S6 Transport.	GOMMMS three point scale	Beneficial

Option Package 6	Package Description: One bus based park and ride site (A49 South) Limited bus priorities City centre pedestrianisation (Widemarsh St, High St) Improved cycle and pedestrian facilities One rail based park and ride site at Withington New link and river bridge within City – West – A438 Kings Acre Rd to A465 Belmont Rd and road improvements to connect to A49 (North) Dualling A49 completed within urban area
-------------------------	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Increase in road vehicle traffic has a slight adverse impact on noise.	%age change in annual vehicle kms.	+2.7%
	Local Air Quality	Increase in road vehicle traffic has a slight adverse impact on the local air quality.	%age change in annual vehicle kms. Approx. change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	+2.7% +5.9 tonnes/year -0.1 tonnes/year
	Greenhouse Gases	Increase in road vehicle traffic in the study area should be taken in a wider context.	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	+2.7% -11,240 tonnes/year
	Landscape	New bridge in city west large adverse. 1 bus based park and ride and rail based park and ride slight adverse, other schemes neutral.	1 Scheme large adverse. 2 Schemes slight adverse. 4 Schemes neutral.	Large adverse.
	Townscape	New bridge in city west and dualling A49 moderate adverse. Rail and bus based park and ride slight adverse. City centre pedestrianisation moderate beneficial, other schemes neutral.	2 Schemes moderate adverse. 2 Schemes slight adverse. 2 Schemes neutral. 1 Scheme moderate beneficial.	Moderate adverse.
	Heritage of Historic Resources	New bridge in city west and A49 dualling potential negative. City centre pedestrianisation and 1 bus based park and ride potential positive.	2 Schemes negative. 2 Schemes positive. 3 Schemes insignificant impact.	Negative impact.
	Biodiversity	New bridge west has a probably intermediate negative impact, 1 bus and rail park and ride have a probably minor negative impact, other 4 schemes insignificant.	2 Schemes probably minor negative impact. 1 Scheme probably intermediate negative impact. 4 Schemes insignificant impact.	Probably Intermediate Negative.
	Water Environment	Significant negative impact from bridge crossing. Mixed impact from rail based park and ride. Other schemes insignificant.	1 Scheme significant negative impact. 1 Scheme mixed impact. 5 Schemes insignificant impact.	Significant Negative.
	Physical Fitness	The overall effect of the package of measures is to increase the number of car trips which have no physical fitness benefit.	%age Mode shift from car to soft modes.	-0.8%
	Journey Ambience	Rail-based park and ride, improved cycle and pedestrian facilities, and new link and river bridge all provide moderate beneficial impact. One bus-based park and ride and dualling of the A49 provide slight beneficial impact.	3 Schemes moderate beneficial impact. 2 Schemes slight beneficial impact 2 Schemes neutral impact.	Slight beneficial impact.
SAFETY	Accidents	Although there is an increase in road vehicle traffic, some of this traffic will transfer to new safer roads.	Reduction in all personal injury accidents	64no. (-14.9%)
	Security	City centre partial pedestrianisation and improved cycle/pedestrian facilities provide a slight beneficial impact.	2 Schemes slight beneficial impact 5 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2010 to 2031 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private: £399.3m Goods: £69.1m Public Transport: -£0.4m	Overall NPV £436m Overall PVC -£28m PVC to Gov. -£31m (Grant/Subsidy -£4.9m) Overall BCR 16.3
	Reliability	Less congestion due to traffic moving from the centre and using the new link and river bridge and dualled A49.	% change in congestion delay	-21.1%
	Wider Economic Impacts	Improved access to city centre via bus and park and ride.	No. of regeneration, commercial and industrial areas with improved transport access.	1 areas
ACCESSIBILITY	Option Values	Improved bus priorities and frequencies and park and ride will increase travel options.	Change in public service vehicle kms. % Mode shift from car to public transport.	0% change in psv kms +0.3% mode shift to Public Transport
	Severance	The central area has a large benefit with an average 29% reduction in traffic flow, whilst the A49 has a moderate benefit south of the River Wye with an average 29% reduction. The new western link has a large adverse effect on the A465 south with a 143% increase in traffic flow.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The improved bus priorities, and improved cycle and pedestrian facilities will benefit those who do not have access to a car.		Moderate Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of one bus-based and one rail-based park and ride sites	No. of new or improved transport and freight interchanges.	2 interchanges
	Land-Use Policy	The Package 6 plan options will support the draft UDP policies S4 Employment, S5 Town centres and retail and S6 Transport.	Three point GOMMMS scale	Beneficial

Blended Package with Western Distributor	<p>Package Description:</p> <ul style="list-style-type: none"> Two bus based park and ride site (A49 south and A465 south) Maximum feasible bus priorities City centre full pedestrianisation (Widemarsh St, High St, Broad St – access for bus, cyclists and pedestrians) New rail station at Rotherwas Improved cycle and pedestrian facilities 20mph zones in residential areas One rail based park and ride site at Withington School transport package Behavioural Change Campaign to achieve shift from car to more sustainable modes of 6% by 2011 and 12% by 2031 Western Distributor Road
---	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Reduction in Study Area road traffic produces a slight benefit in respect of noise.	%age change in annual vehicle kms.	-13.4%
	Local Air Quality	Reduction in road vehicle traffic in Study Area has a slight benefit on the local air quality.	%age change in annual vehicle kms. Approx change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	-13.4% -4.3 tonnes/year -0.5 tonnes/year
	Greenhouse Gases	Reduction in road vehicle traffic in the Study Area reduces green house gas emissions.	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	-13.4% -10,644 tonnes/year
	Landscape	Western Outer Distributor gives a large adverse impact on landscape. Two bus park and ride moderate adverse. Rail park and ride slight adverse. Remainder neutral.	1 Scheme large adverse. 1 Scheme moderate adverse. 1 Scheme slight adverse. 7 Schemes neutral.	Large Adverse.
	Townscape	Moderate adverse impact on townscape from two bus-based park and ride. Slight adverse impact from rail-based park and ride. Moderate beneficial effect from pedestrianisation.	1 Scheme moderate beneficial. 1 Scheme moderate adverse. 1 Scheme slight adverse. 7 Schemes neutral	Moderate Adverse.
	Heritage of Historic Resources	Potential positive effects from removal of traffic from historic area. Negative effects from the new rail station at Rotherwas.	8 Schemes Mixed. 1 Schemes Potential Positive. 1 Scheme Negative	Negative Impact
	Biodiversity	Slight negative impact on biodiversity from bus/rail park & ride sites and rail station. Moderate negative impact from Western Outer Distributor.	3 Schemes slight negative impact. 1 Scheme moderate negative impact. 6 Schemes insignificant impact.	Moderate Negative Impact.
	Water Environment	Mixed impacts from rail park & ride and rail station. Western Outer Distributor significant negative impact. Other impacts insignificant.	1 Scheme significant negative 2 Schemes mixed impact. 7 Schemes insignificant impact.	Significant Negative Impact.
	Physical Fitness	The overall effect of the package of measures is a shift from car to soft modes (walk and cycle) giving physical fitness benefits.	%age Mode shift from car to soft modes.	6.9%
	Journey Ambience	Western Distributor, two-bus and one rail park and ride provide moderate beneficial impacts. Maximum bus priorities, new rail station at Rotherwas, and improved cycle and pedestrian facilities provide slight beneficial impact.	3 schemes moderate beneficial impact 3 schemes slight beneficial impact 4 schemes neutral impact	Moderate beneficial impact
SAFETY	Accidents	A reduction in road vehicle traffic will lead to a reduction in accidents.	Reduction in all personal injury accidents	76no. (-22.3%)
	Security	Pedestrianisation, a new rail station at Rotherwas and improved cycle/pedestrian facilities provide a slight beneficial impact.	3 Schemes slight beneficial impact 7 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2001 to 2041 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private: £866.4m Goods: £118.5m Public Transport: £6.7m	Overall NPV £891.1m Overall PVC -£69.3m PVC to Gov. -£64.0m (Grant/Subsidy -£38m) Overall BCR 13.9
	Reliability	Less congestion due to traffic moving from the centre and using the new western distributor road.	% Change in congestion delay.	-64%
	Wider Economic Impacts	Improved access to Rotherwas industrial area by train. Improved access to City commercial centre via bus and park & ride. Western Distributor improves access to both Rotherwas and Holmer.	No. of regeneration, commercial and industrial areas with improved transport access.	3 areas
ACCESSIBILITY	Option Values	Increased bus service frequencies, park and ride and new rail station will increase travel options.	Change in public service vehicle-kms. % Mode shift from car to public transport.	+23.7% increase in psv-kms +8.0% shift to public transport
	Severance	The central area has a very large benefit with an average 38% reduction in traffic flow, whilst the A49 also has a large benefit with an average 39% reduction. Similarly the A465 benefits with an average 27% reduction in flow.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The improved bus priorities and frequencies, rail station, improved cycle and pedestrian facilities will all benefit those who do not have access to a car.		Strong Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of two bus based park and ride, one rail based park and ride and a new rail station at Rotherwas.	No. of new or improved transport and freight interchanges.	4 new interchanges
	Land-Use Policy	The Blended Package plan options will support the draft UDP policies S4 Employment, S5 Town centres and retail and S6 Transport.	Three point GOMMMS scale	Beneficial

Blended Package Without Western Distributor	Package Description: Two bus based park and ride site (A49 south and A465 south) Maximum feasible bus priorities City centre full pedestrianisation (Widemarsh St, High St, Broad St – access for bus, cyclists and pedestrians) New rail station at Rotherwas Improved cycle and pedestrian facilities 20mph zones in residential areas One rail based park and ride site at Withington School transport package Behavioural Change Campaign to achieve shift from car to more sustainable modes of 6% by 2011 and 12% by 2031
--	---

OBJECTIVE	SUB- OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Reduction in Study Area road traffic produces a slight benefit in respect of noise.	%age change in annual vehicle kms.	-21.8%
	Local Air Quality	Reduction in road vehicle traffic in Study Area has a slight benefit on the local air quality.	%age change in annual vehicle kms. Approx.change in NOx emissions (tonnes/year) Approx. change in PM emissions (tonnes/year)	-21.8% -10.4 tonnes/year -0.7 tonnes/year
	Greenhouse Gases	Reduction in road vehicle traffic in the Study Area reduces green house gas emissions	%age change in annual vehicle kms. Approx. change in CO ₂ emissions (tonnes/year)	-21.8% -16,482 tonnes/year
	Landscape	Two bus park and ride moderate adverse. Rail park and ride slight adverse. Remainder neutral.	1 Scheme moderate adverse. 1 Scheme slight adverse. 7 Schemes neutral.	Moderate Adverse.
	Townscape	Moderate adverse impact on townscape from two bus-based park and ride. Slight adverse impact from rail-based park and ride. Moderate beneficial effect from pedestrianisation.	1 Scheme moderate beneficial. 1 Scheme moderate adverse. 1 Scheme slight adverse. 6 Schemes neutral	Moderate Adverse.
	Heritage of Historic Resources	Potential positive effects from removal of traffic from historic area. Negative effects from the new rail station at Rotherwas.	7 Schemes Mixed. 1 Schemes Potential Positive. 1 Scheme Negative	Negative Impact
	Biodiversity	Slight negative impact on biodiversity from bus/rail park & ride sites and rail station.	3 Schemes slight negative impact. 6 Schemes insignificant impact.	Slight Negative Impact.
	Water Environment	Mixed impacts from rail park & ride and rail station. Other impacts insignificant.	2 Schemes mixed impact. 7 Schemes insignificant impact.	Mixed Impact.
	Physical Fitness	The overall effect of the package of measures is a shift from car to soft modes (walk and cycle) giving physical fitness benefits.	%age Mode shift from car to soft modes.	7.1%
	Journey Ambience	Two-bus and one rail park and ride provide moderate beneficial impacts. Maximum bus priorities, new rail station at Rotherwas, and improved cycle and pedestrian facilities provide slight beneficial impact.	2 schemes moderate beneficial impact 3 schemes slight beneficial impact 4 schemes neutral impact	Moderate beneficial impact
SAFETY	Accidents	Reduction in road vehicle traffic will lead to a proportionate reduction in accidents.	Reduction in all personal injury accidents	75no. (-22.0%)
	Security	Pedestrianisation, a new rail station at Rotherwas and improved cycle/pedestrian facilities provide a slight beneficial impact.	3 Schemes slight beneficial impact 6 Schemes neutral impact	Slight beneficial impact.
ECONOMY	Transport Economic Efficiency	Current analysis is evaluating Transport Economic Efficiency over the period 2001 to 2041 using two modelled years 2011 and 2031	Forecast Users Benefits by mode – Private: £513.7m Goods: £85.8m Public Transport: £7.3m	Overall NPV £535.6m Overall PVC -£45.9m PVC to Gov. -£38.6m (Grant/Subsidy -£36.7m) Overall BCR 12.7
	Reliability	The reduction in vehicle-kilometres due mainly to fewer car trips results in less traffic delay due to congestion on the network.	% Change in congestion delay.	-47%
	Wider Economic Impacts	Improved access to Rotherwas industrial area by train. Improved access to City commercial centre via bus and park & ride.	No. of regeneration, commercial and industrial areas with improved transport access.	2 areas
ACCESSIBILITY	Option Values	Increased bus service frequencies, park and ride and new rail station will increase travel options.	Change in public service vehicle-kms. % Mode shift from car to public transport.	+52.6% increase in psv kms +11.6% shift to public transport
	Severance	The central area has a very large benefit with an average 35% reduction in traffic flow, whilst the A49 also has a large benefit with an average 41% reduction. Similarly, the A465 benefits with an average 35% reduction in traffic flow.	Assessment from the change in am peak hour 2 way road vehicle flows	Large benefit due to the significant reduction in traffic within the central area.
	Access to the Transport System	The improved bus priorities and frequencies, rail station, improved cycle and pedestrian facilities will all benefit those who do not have access to a car.		Strong Beneficial
INTEGRATION	Transport Interchange	New interchanges as a result of two bus based park and ride, one rail based park and ride and a new rail station at Rotherwas.	No. of new or improved transport and freight interchanges.	4 new interchanges
	Land-Use Policy	The Blended Package plan options will support the draft UDP policies S4 Employment, S5 Town centres and retail and S6 Transport.	Three point GOMMMS scale	Beneficial

Initial Option Packages: Distillation Against Local Transport Objectives

LOCAL TRANSPORT OBJECTIVE	REF	SUMMARY OF IMPACTS
To ensure that people can gain access to existing and future employment, education, leisure and shopping sites, particularly by public transport, cycling and walking.	HT1	Options 1 and 2 increase public transport options significantly with an increase of around 30% in psv kms and a mode switch of 10% from car to public transport compared with the Reference Case. Option Packages 3 to 6 incorporate less public transport options and produce little change in public transport share. All Option packages include improvements to walk and cycle facilities but indicate only small increases or decreases in 'soft' mode share. Options 1 and 2 are slightly beneficial in this respect whilst other options are slightly adverse. Reduced traffic flows in the Central Area in all Options would give large beneficial effects in reducing severance for pedestrians and cyclists.
To provide for the movement of freight into and out of the City whilst seeking to reduce the impact of road freight, and encourage greater use of rail.	HT2	All Option Packages will improve road conditions relative to the Reference Case by reducing congestion and thereby reduce delays to freight movements in and out of the City. Option Packages 3 and 5, which incorporate outer and inner eastern distributor roads, reduce congestion delay by 40%, Options 1, 2 and 4 by around 30% and Option 6 by 20%. Options 3, 4 and 5 would also improve road access for freight to the Rotherwas industrial estates. Rail freight facilities could potentially be improved by the new rail station at Rotherwas as included in Options 1 and 2. Options 3 and 4 which incorporate outer distributor roads help to remove HGV traffic from the central area with positive benefits for Heritage of Historic Resources.
To improve road safety and personal security, particularly for vulnerable road users, such as pedestrians and cyclists.	HT3	Forecast annual accident reductions compared with the Reference Case vary from 18 to 20 PIA's for Option Packages 3 and 4, 40 PIA's for Packages 1 and 2 and 64 to 71 PIA's for Option Package 5 and 6. Security for travellers shows a slight beneficial improvement for all Options due to pedestrianisation in the City Centre, new or improved passenger interchanges and improved provisions for pedestrians and cyclists.
To make the transport system more accessible to people with mobility difficulties.	HT4	Public transport improvements incorporated within all options would need to pay due attention to improving access for people with mobility difficulties but the increase in Public Transport provision in Options 1 and 2 will also be beneficial to this group.
To increase the proportion of trips made by public transport, cycling and walking, particularly for journeys to the city centre and major work sites.	HT5	The proportion of trips made by public transport compared with the Reference Case is significantly increased, by a 10% shift from car to public transport, only for Option Packages 1 and 2. There is a small mode shift from car to walk and cycle of 0.2% for Option Packages 1 and 2 but 'soft' mode share reduces slightly for other Options.
To improve the attractiveness and convenience of public transport so as to improve access to mobility for those without the use of a car and to reduce car dependence.	HT6	Option Packages 1 and 2 significantly increase the availability and convenience of public transport with increased frequencies and the Metro scheme in Package 1. These options also include 5 or 6 new or improved passenger interchanges including P&R sites, new rail stations which will improve access to public transport. Public transport provision in other Option packages is significantly less.
To reduce the impact of transport on the environment by encouraging the use of less polluting and more energy efficient modes, such as public transport, cycling and walking.	HT7	Option Packages 1 and 2 are the only packages that significantly contribute to this objective.
To conserve and enhance the environment of Hereford, particularly within the City Centre, and ensure that it remains an attractive place to visit and in which to live, work and invest.	HT8	All packages would contribute to this objective by the reduction of traffic and congestion in the central area compared with the Reference Case. This would also positive benefits in relation to Heritage in the City Centre. Although all Options would give a reduction in noise and other vehicle emissions in the central area, Option Packages 3 and 4 would significantly increase vehicle emissions over the whole Study Area.
To increase the proportion of short trips made by cycle or on foot.	HT9	None of the initial options indicate a significant increase in walk or cycle trips compared with the Reference case.
To reduce the need to travel, in the longer term, by the co-ordination of land use planning with transport.	HT10	All Options have been tested using development assumptions consistent with the draft Unitary Development Plan for Herefordshire.
To ensure the City's transport system enables all the residents of Hereford to lead a healthy lifestyle.	HT11	All options show slight beneficial impacts on Security and Journey ambiance. Only Options 1 and 2 show significant benefits in reducing noise and improving air quality compared with the Reference Case whilst Options 3 and 4 show significant adverse impacts in this respect due to the increase in vehicle kilometres.

Source: Hereford Transport Review Local Multi-Modal Study, Final Report February 2003.