Central Bedfordshire Council
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Strategic Environmental Assessment

LOCAL TRANSPORT PLAN 3

Environmental Report

Appendix O
December 2010

Contents

Contents (continued)

Non-technical summary

Introduction

The Environmental Report sets out the results of the Strategic Environmental Assessment (SEA) of Central Bedfordshire Council's Local Transport Plan 3 (LTP3). The purpose of the Environmental Report is to give consultees information on the potential environmental and sustainability effects of the Draft LTP3 and to assist Central Bedfordshire Council in improving the Final LTP3.

The SEA process

The Central Bedfordshire LTP3 is subject to a full SEA in line with the requirements of Statutory Instrument 2004 No. 1633: The Environmental Assessment of Plans and Programmes Regulations 2004 (otherwise known as the SEA Regulations).

SEA is an environmental assessment tool used to establish potential environmental implications of strategic actions in policies, plans and programmes (PPP). The aim of the SEA is to inform decision-makers about environmental consequences of their decision and enable them to integrate environmental considerations into strategic PPP.

The SEA has been carried out by Central Bedfordshire Council's Sustainable Growth Officers.

Central Bedfordshire's LTP3

The Local Transport Act 2008 requires local transport in England to produce and maintain a Local Transport Plan (LTP). The LTP is a statutory document which Central Bedfordshire Council, as the Transport authority for our area, has a legal duty to produce by April 1st 2011. There is currently a single LTPs covering the Central Bedfordshire area as part of the wider Bedfordshire area, reflecting the old two tier local government structures post reorganisation in April 2009.

The proposed timeframe for the SEA of LTP3 is the fifteen-year period 2011-2026 and therefore the temporal scope of this study is 15 years. This timescale aligns with the core strategy and will incorporate a 3 year rolling programme to be updated annually.

The spatial scope and study area for the SEA of LTP3 focuses on the Central Bedfordshire Council boundary, but also considers a 15km buffer around Central Bedfordshire and water courses that have flowed through the CBC area.

The LTP3 consists of a strategy, a set of journey purpose strategies, Local Area Transport Plans and a series of supporting documents referred to as daughter documents. The strategy sets out the overall policy framework within which transport needs to be considered within Central Bedfordshire. The diagram below highlights the framework for LTP3.

The main elements of the LTP3, the approaches to achieve the transport goals, the policies and the interventions (the schemes and measures to be carried out), have all been assessed as part of the SEA. The Environmental Report contains the assessments and summary assessments and the conclusions of the SEA process.

SEA appraisal process
SEA is a tool to ensure the integration of environmental and sustainability considerations into the plan and decision making process. To achieve this aim, SEA is used as a parallel process to inform each stage of the LTP development.

This SEA has considered the strategic options, the preferred option, the policies, and the interventions (schemes and measures) that make up LTP3.

The LTP itself will also be accompanied by a number of daughter documents which will largely be made up of the Council's detailed strategies to deliver certain policy areas e.g. the Access to Services, Freight and Journey to Work Strategies.

Other appraisals
In addition, there are two other appraisal processes taking place alongside the SEA, these being:

- **Habitat Regulations Assessment.** The Conservation of Habitats and Species Regulations 2010 (SI 2010/490) require that any plan or programme that is likely to have a significant effect on a Natura 2000 site (areas of high value for natural habitats homing species of plants and animals which are rare, endangered or vulnerable in the European Community) should be subject to Habitats Regulations Assessment (HRA).

- **Health Impact Assessment (HIA).** The requirement to include the HIA as part of the SEA is set by the *Local Government and Public Involvement in Health Act* (2007), with the specific requirements for HIA detailed in the Department for Transport (DfT) LTP3 guidance published in 2009.

Main SEA Findings
This Environmental Report details the effects of the LTP3 10 potential strategic approaches, policies and generic interventions on the 11 socio-economic and environmental SEA objectives. Those approaches (objectives), policies or generic interventions that have a potential or significant negative impact on any of the objectives are highlighted in the assessments and any recommendations to mitigate the impacts are listed in the matrices.

The SEA Directive requires a consideration of reasonable alternatives of the emerging plan. The alternatives represent different ways of achieving the plan's objectives. The ODPM 2005 guide to SEA Directive states that often considered alternatives include scenarios termed 'no plan', where none already exist; or 'business as usual', which means continuation of an existing plan. As there is a current LTP2 exists one of the alternatives considered was a 'business as usual'. Two other alternatives were considered: 'improved infrastructure' and 'smarter choices'. Those alternatives emerged from the LTP3 and SEA objectives compatibility test. They represent different ways of achieving set objectives.

The alternative approaches were:

- **Alternative 1:** Business as Usual: This alternative assumes continuation of policies set in LTP2 (unless there was time limitation on them). LTP2 was based on delivering transport though a number of interventions which aim to achieve improvement in following areas:

    - congestion and network management,

- accessibility of transport,
- safer roads,
- better air quality,
- asset management,
- developing economy;
- preparing for growth

- **Alternative 2:** Improved infrastructure and services alternative: This alternative is based on assumption that in order to deliver more sustainable transport improvements both to infrastructure and services are required. As a part of infrastructure improvements, a delivery of a number of major schemes was assumed. The following major schemes were identified:

    - Luton Dunstable Busway,
    - M1 widening between Junctions 10-13,
    - A5-M1 Link (Dunstable Bypass),
    - Woodside Connection,
    - M1 Junction 10a,
    - Luton Northern Bypass,
    - East of Leighton Distributor Road,
    - A421 (M1 to Bedford section),
    - Flitwick Westoning Bypass,
    - Biggleswade Eastern Relief Road,
    - East-West Rail.

In addition to delivery of the above schemes, transport needs would be met by use of measures within following categories:

- Land use planning
- Infrastructure and Service Provision
- Network Management
- Demand Management

- **Alternative 3:** Smarter Choices: It was recognised that in order to ensure modal shift towards sustainable transport modes (walking, cycling and public transport) not only appropriate infrastructure and services need to be in place, but also a proactive promotion of behavioural change is needed. This alternative therefore, builds upon the measures included in the previous option with the inclusion of Smarter Choices.

Many environmental impacts result from the accumulation of multiple small and often indirect effects, rather than a few large and apparent ones, this is referred to as Cumulative Effects. The 'cumulative effects' term often covers secondary, cumulative and synergistic effects as these terms are not mutually exclusive (ODPM, 2005). The cumulative effects and affected receptors were identified based on the expert opinion technique. Due to limited quantitative information, a qualitative assessment was conducted

The receptors identified were then assessed against each of the three alternatives. The assessment was based on expert opinion and the preferred alternative was identified as Alternative 3 as it delivers lesser negative effects and has the most beneficial effects upon material assets, human population and its health.

Mitigation

Annex I of the Directive requires the Environmental Report to include "the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme". These measures are referred to in the report as 'mitigation measures'.

Mitigation was considered at the stage of developing alternatives. It was recognised that the 'Business as usual' alternative would not improve existing infrastructure and service provision and therefore would not address the congestion, pollution and health issues within town centres, and existing and proposed AQMAs. It would also not encourage the modal shift towards the sustainable transport modes. This resulted in consideration of the second alternative 'Improved infrastructure and services'. It then was noted that to ensure modal shift towards sustainable transport there is a need for measures to actively promote the shift and the third alternative was developed, called 'smarter choices'.

The Mitigation Measures are outlined for each SEA Objective and SEA Topic.

Monitoring

Monitoring plays an important role is measuring the environmental effects of the LTP3 against the environmental objectives established through SEA. Gathered monitoring information will help to fill any gaps in baseline information and will inform any future plans improvements and development. Monitoring is outlined for each SEA objective and SEA topic.

Preferred Options

The preferred direction for LTP3 is the implementation of alternative 3 ‘Smarter Choices’ as it performed well in both SEA and HIA assessment. This alternative is likely to deliver the established environmental objectives.

The delivery and implementation will be a key factor in determining the extent of the environmental effects of the plan. To minimise any adverse effects on the environment resulting from implementation of LTP3 a range of mitigation measures and recommendations for implementation of the plan were established. The monitoring indicators will allow for effective periodical assessment of these effects.

1. Introduction

This is the Environmental Report for the Strategic Environmental Assessment (SEA) of the Central Bedfordshire Local Transport Plan 3 (LTP3). This also incorporates the Health Impact Assessment (HIA).

1.1 Purpose of environmental report

This document has been prepared for Central Bedfordshire Council (CBC) as part of the Strategic Environmental Assessment (SEA) incorporating the Health Impact Assessment (HIA) of the Central Bedfordshire Local Transport Plan 3 (LTP3). It has been produced in compliance with the SEA Regulations 5 and as required by the SEA Directive 6. The purpose of the Environmental Report is to identify, evaluate and present information on the likely significant effects of the LTP3. It also allows the statutory consultees, the public and any other interested parties the opportunity to offer views on the SEA.

1.2 SEA process and legislation

SEA is an environmental assessment tool used to establish potential environmental implications of strategic actions in policies, plans and programmes (PPP). The aim of the SEA is to inform decision-makers about environmental consequences of their decision and enable them to integrate environmental considerations into strategic PPP.

The objective of the SEA Directive set in Article 1 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, by ensuring that (…) an environmental assessment is carried out of certain plans (…) which are likely to have significant effects on the environment".

The SEA Directive's requirements (presented in the Box 1 on page 10) were introduced to the UK law by the SEA Regulations in 2004. The main requirements of which are that:

- the scope of the assessment must be consulted with statutory consultees: Environment Agency, Natural England and English Heritage;
- the findings of the SEA are published in an Environmental Report (ER), which sets out the significant effects of the draft plan, in this case LTP3;
- consultation is undertaken on the plan and the ER;
- the results of consultation are taken into account in decision-making relating to the adoption of the plan; and
- Information on how the results of the SEA have been taken into account is made available to the public through the SEA Statement.

To fulfil these requirements the ODPM guide to SEA (2005) proposes five stages for the assessment process. Each stage has a number of interrelated tasks which need to be completed (see Figure 1). These will be followed for the SEA of the Central Bedfordshire LTP.

The requirement for the completion of a SEA for LTP3 is set by the European Directive 2001/42/EC *'on assessment of certain plans and programmes on the environment'* (the

SEA Directive), which is enacted in UK law through the *Environmental Assessment of Plans and Programmes Regulations* (2004) (the 'SEA Regulations').

The requirement to include the HIA as part of the SEA is set by the *Local Government and Public Involvement in Health Act* (2007), with the specific requirements for HIA detailed in the Department for Transport (DfT) LTP3 guidance published in 2009.

Box 1. The SEA Directive's requirements (adopted from ODPM, 2005a).

Preparation of an environmental report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated. The information to be given is (Art. 5 and Annex I):

a) An outline of the contents, main objectives of the plan or programme, and relationship with other relevant plans and programmes;
b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;
c) The environmental characteristics of areas likely to be significantly affected;
d) Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC;
e) The environmental protection objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;
f) The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between above factors. (Footnote: These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects);
g) The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;
h) An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encouraged in compiling the required information;
i) A description of measures envisaged concerning monitoring in accordance with Article 10;
j) A non-technical summary of the information provided under the above headings.

The report shall include the information that may reasonably be required taking into account knowledge and methods of assessment, the contents and level of detail in the plan or programme, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process to avoid duplication of the assessment (Art.5.2).

Consultation:

- Authorities with environmental responsibilities, when deciding on the scope and level of the information to be included in the environmental report (Art.5.4).
- Authorities with environmental responsibilities and the public shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme (Art.6.1, 6.2).
- Other EU Member States, where the implementation of the plan or programme is likely to have significant effects on the environment of that country (Art.7).

Taking the environmental report and the results of the consultation into account in decision-making (Art.8).

Provision of information on the decision: When the plan or programme is adopted, the public and any countries consulted shall be informed and the following made available to those informed:

- The plan or programme as adopted;
- A statement summarising how environmental considerations have been integrated into the plan or programme and how the environmental report pursuant to Article 5, the opinions expressed pursuant to Article 6 and the results of consultation entered into pursuant to Article 7 have been taken into account in accordance with Article 8, and the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with; and
- The measures decided concerning monitoring (Art. 9 and 10).

Monitoring of significant environmental effects of the plan's or programme's implementation (Art.10).

Quality assurance: environmental report should be of a sufficient standard to meet the requirements of the SEA Directive (Art. 12).

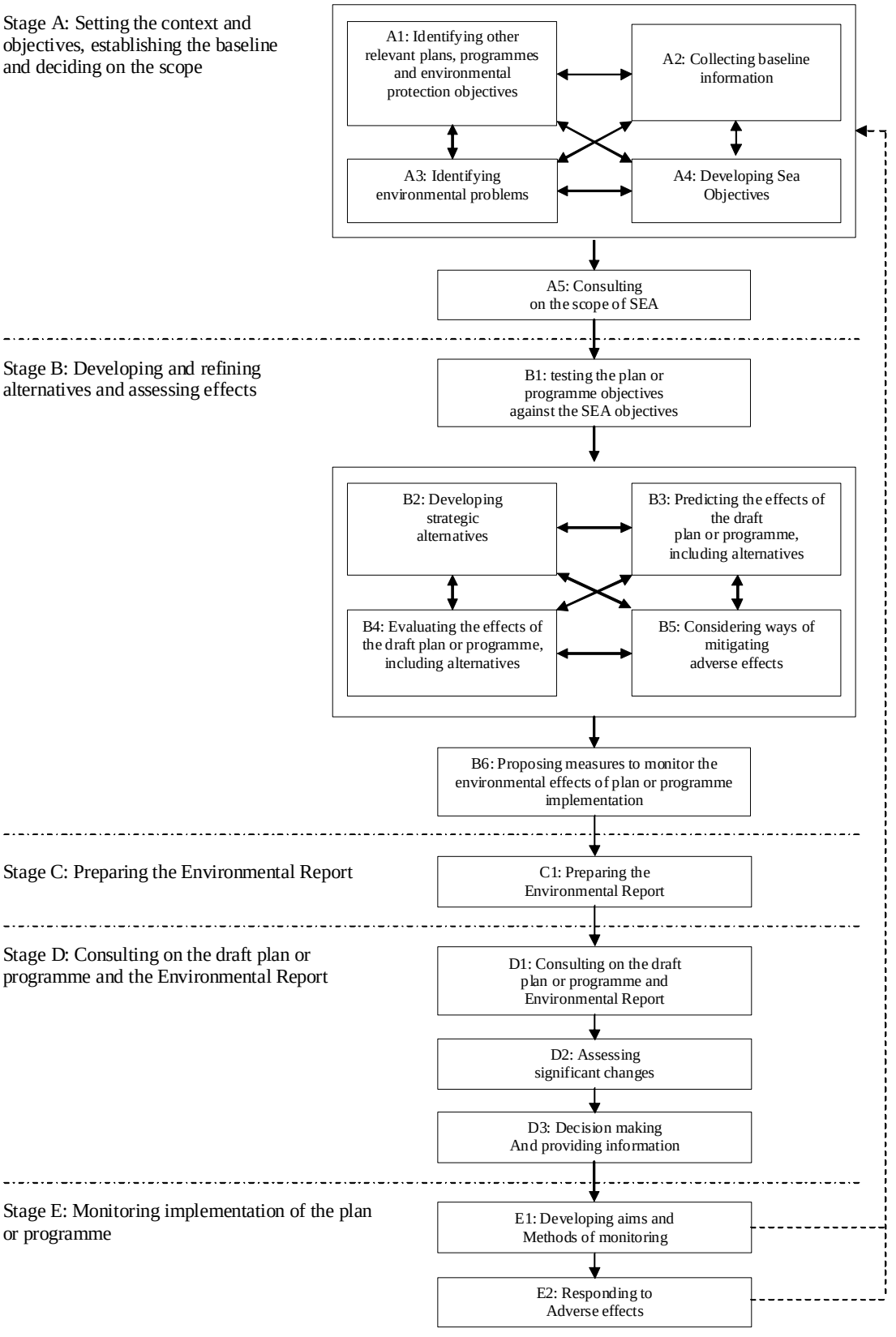

Figure 1. Stages of SEA preparation and relationship between the SEA tasks (adopted from ODPM guidance on SEA, 2005).

1.3 Health Impact Assessment (HIA)

The consideration of 'Human Health' is a legal requirement of a SEA, with it defined as an SEA topic in the European Directive 2001/42/EC. The inclusion of the HIA as an integral part of the SEA ensures that health issues are identified and inform the LTP. The HIA will provide the evidence base to support the decision making process in developing an effective LTP, and will also help mitigate the negative effects on health and well-being. In addition, the HIA assist in:

- secure consistency between the LTP3 and work associated with Sustainable Community Strategies and Local Area Agreements;
- coordinate the public health concerns in respect of air quality, noise and climate change; and
- contribute to the wider agenda relating to quality of life and reducing health inequalities.

The Department of Health (DoH) draft guidance (2007) recommends that the assessment of the impact of the LTP should consider the following topics:

- Transport to work, shops, schools and healthcare;
- Walking and cycling;
- Community severance;
- Frequency and severity of crashes;
- Collisions causing injury and fatal accidents;
- Air pollution, noise; and
- Ageing population and increasing disability.

In developing the approach to undertake the HIA the following guidance has also been taken into account:

- *'Specification for Review of Evidence for Strategic Environmental Assessment of Local Transport Plans round 3 in England'* for the forthcoming new DfT guidance concerning HIA for LTP3;
- *'Health Impact Assessment of Transport Initiatives – A Guide'*; and
- *'Transport Access and Health in the East of England'*.

1.4 The new Approach to Appraisal

The New Approach to Appraisal (NATA) provides a framework which aims to improve the consistency and transparency on which transport decisions are made. NATA sets out the Government's five over-arching transport objectives, these being:

- environment,
- safety,
- accessibility,
- economy, and
- integration.

The DfT requires that all forms of transport proposals, including LTPs, are appraised against these objectives. DfT guidance on NATA, as set out in Transport Analysis Guidance (TAG) notes that NATA appraisal methodologies should be used in undertaking SEA of LTPs. TAG Unit 2.11 (2009) provides guidance on integrating the requirements of the SEA Regulations with NATA reproduced below in Table 1. Further

information on the technical scope of the SEA, based on this guidance, is provided in Section 3 of the TAG Unit 2.11.

Table 1. Integration of NATA objectives and sub-objectives with SEA topics.

NATA Objective	NATA Sub-objective	SEA Topic
Environment	Noise	Human health, Population
	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	
	Consumers users	

1.5 Scope of the Study Area

The spatial scope and study area for the SEA of LTP3 focuses on the Central Bedfordshire Council boundary (see Figure 2), but also considers a 15km buffer around Central Bedfordshire and water courses that have flowed through the CBC area.

The proposed timeframe for the SEA of LTP3 is the fifteen-year period 2011-2026 and therefore the temporal scope of this study is 15 years. This timescale aligns with the core strategy and will incorporate a 3 year rolling programme to be updated annually.

The technical scope of the SEA is based on the requirements of SEA Directive and SEA Regulations. They require that the likely significant effects on the environment are assessed for the following areas:

- Biodiversity;
- Population (covering noise issues among other social issues);
- Human health (covering noise health impact);
- Fauna and flora;
- Soil;
- Water;
- Air;
- Noise;
- Climatic factors,
- Material assets (covering transport assets and minerals and waste issues among other asset issues),
- Cultural heritage including architectural and archaeological heritage,

- Landscape (including tranquillity and townscape); and
- The interrelationship between these factors.

The technical scope from a HIA perspective considers the transport needs of vulnerable social groups with regards to their health. These groups are likely to experience transport related exclusion and/or be subject to negative externalities of transport and are as follows:

- **Children** - who, as non-drivers, are reliant on others for motorised transport and who suffer the greatest impacts of transport policy on their health, particularly children in low-income families.
- **Women** – who are more likely not to own a car and find it harder to travel to shops, employment, healthcare and other services.
- **Older people** - who may feel vulnerable using public transport, who often need to seek health services and who are particularly vulnerable to transport related injuries. Their continuing independence at home is often dependent on reliable transport options.
- **Disabled and people with other health problems** - who may not be able to access many forms of transport or need special arrangements to access those. They are likely to find it difficult to walk and may also be disadvantaged by the cost of transport.
- **Those in low-income groups** – who are likely to walk further because they cannot afford public transport or to own a car, and whose lack of transport options may limit life opportunities. They suffer the most from injuries, noise pollution and air pollution.

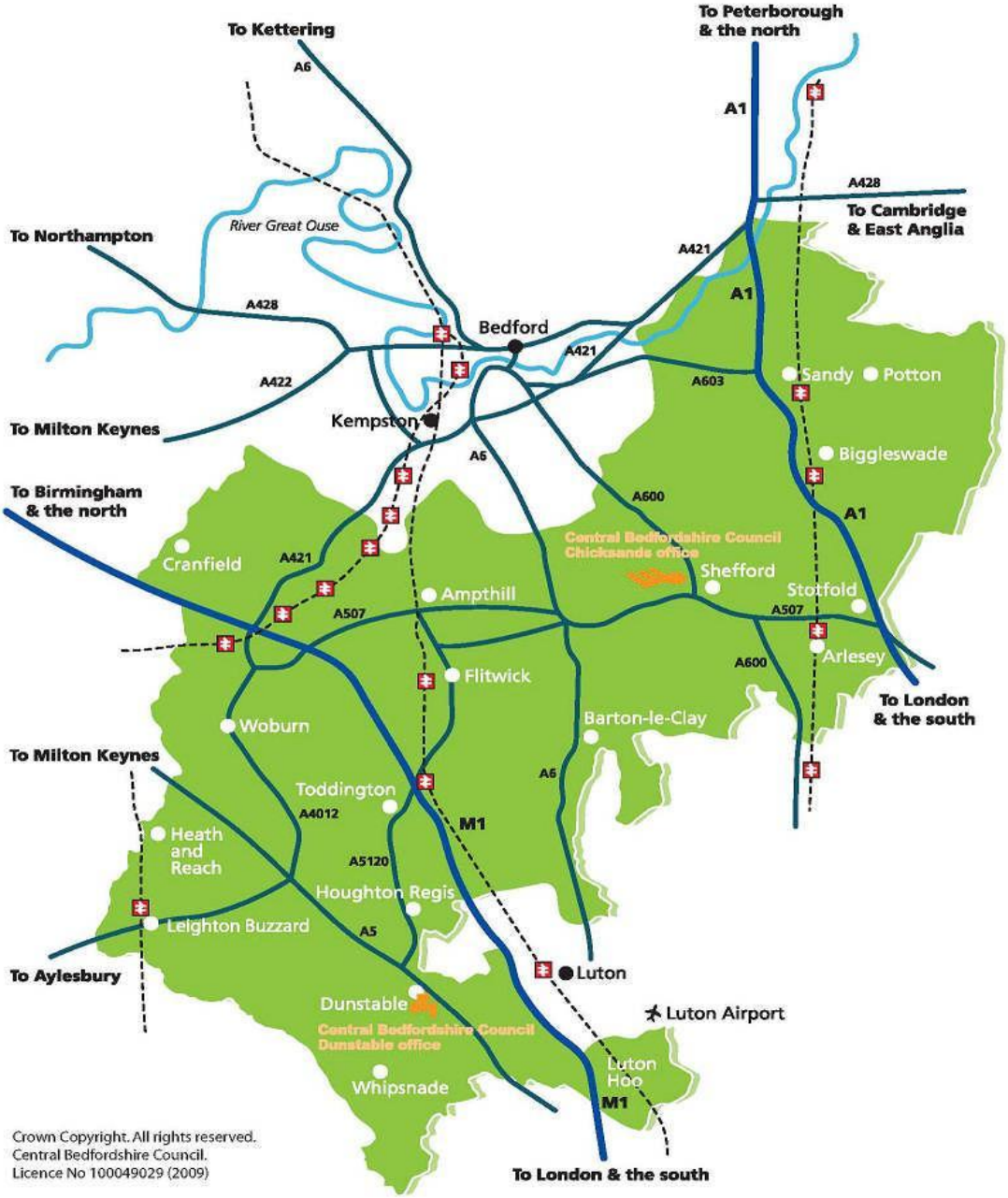

Figure 2. Central Bedfordshire transport map.

1.5.1 SEA Scoping and baseline information

The SEA Scoping Report set out the following information which formed the scope of this Environmental Report:

- Relevant plans, programmes and environmental protection objectives
- Baseline information
- Environmental, social and health issues in Central Bedfordshire
- Proposed SEA objectives
- The methodology to be used in the assessment
- The remaining stages of the SEA

The baseline information identifies current environmental issues and problems in the area which should be addressed in the LTP and provides a basis for predicting and monitoring the effects of implementing the LTP. The baseline may need to be updated during the SEA process as new information emerges and as additional issues come to light.

To ensure the data collected was relevant and captured the full range of environmental issues it was categorised under 14 thematic topics detailed in the Baseline document detailed in Appendix A of this report.

1.5.2 SEA scoping consultation

The scoping report went out for consultation for 5 weeks, starting on the 3rd November 2010 and finished on the 8th December 2010.

The SEA Regulations identify three statutory authorities to be consulted with in regards to the Scoping Report.:

- the Environment Agency,
- Natural England, and
- English Heritage

The Scoping Report was also made available to the public via the 'My Journey' section on the Central Bedfordshire Council Website. A full list of the consultation questions and response can be found in Appendix B

1.6 Summary of the LTP3

The Local Transport Plan (LTP) is a statutory document which Central Bedfordshire Council, as the Transport authority for our area, has a legal duty to produce by April 1st 2011. There is currently a single LTPs covering the Central Bedfordshire area as part of the wider Bedfordshire area, reflecting the old two tier local government structures post reorganisation in April 2009.

The DfT has issued guidance setting out what they expect LTPs to deliver. This guidance is much less prescriptive than that given for previous LTPs, giving the Council a lot more freedom to produce a plan best suited to reflect the transport needs of our area.

The guidance does however contain two major themes, these being that:

- The promotion of walking, cycling and public transport, and;

- The role that transport can play in supporting a wider agenda should be stressed. For instance, rather than having only specific transport objectives within the LTP, it should be explored how the LTP can support other government goals. These are defined in the *Delivering a Sustainable Transport System* (DaSTS) initiative as being:
    - Supporting economic growth
    - Tackling climate change
    - Contributing to safety, security and health
    - Promoting equality of opportunity
    - Improving quality of life and the natural environment.

The Council's Development Task Force considered these goals in January 2010. Members felt that they should be supported but no one objective should be prioritised over another. Additionally, Members emphasised the importance of using the LTP to achieve the Council's strategic objectives for the Central Bedfordshire area (although it was agreed that these objectives were broadly compatible with the DaSTS goals).

The Council's strategic objectives, detailed in the Strategic Plan (2009 – 2011) are:

1) Supporting and caring for an aging population
2) Educating, protecting and providing opportunities for children and young people.
3) Managing growth effectively
4) Creating safer communities
5) Promoting healthier lifestyles

Transport is not an end in itself but a good transport system is important in helping to achieve key Council goals. Resolving transport issues is especially important in relation to promoting and supporting economic prosperity and ensuring sustainable population and housing growth.

1.6.1 LTP Objectives

The objectives of the LTP are listed below, each in turn also contribute towards one or more of the Sustainable Community Strategy priority areas and overall vision of for transport in Central Bedfordshire.

A Increase the ease of access to employment by sustainable modes
B Reduce the impact of commuting trips on local communities
C Increase the number of children travelling to school by sustainable modes of transport
D Improve access to healthcare provision by the core health service (hospitals and GPs)
E Ensure access to food stores particularly in local and district centres
F Enable access to a range of leisure, cultural and tourism facilities for residents and visitors
G Enable the efficient and reliable transportation of freight
H Encourage the movement of freight by sustainable modes
I Minimise the negative impacts of freight trips on local communities
J Reduce the risk of people being killed or seriously injured

1.6.2 The content of the LTP

The LTP will be organised as detailed in Figure 3, with the areas covered by each of the key elements described in more detail in below.

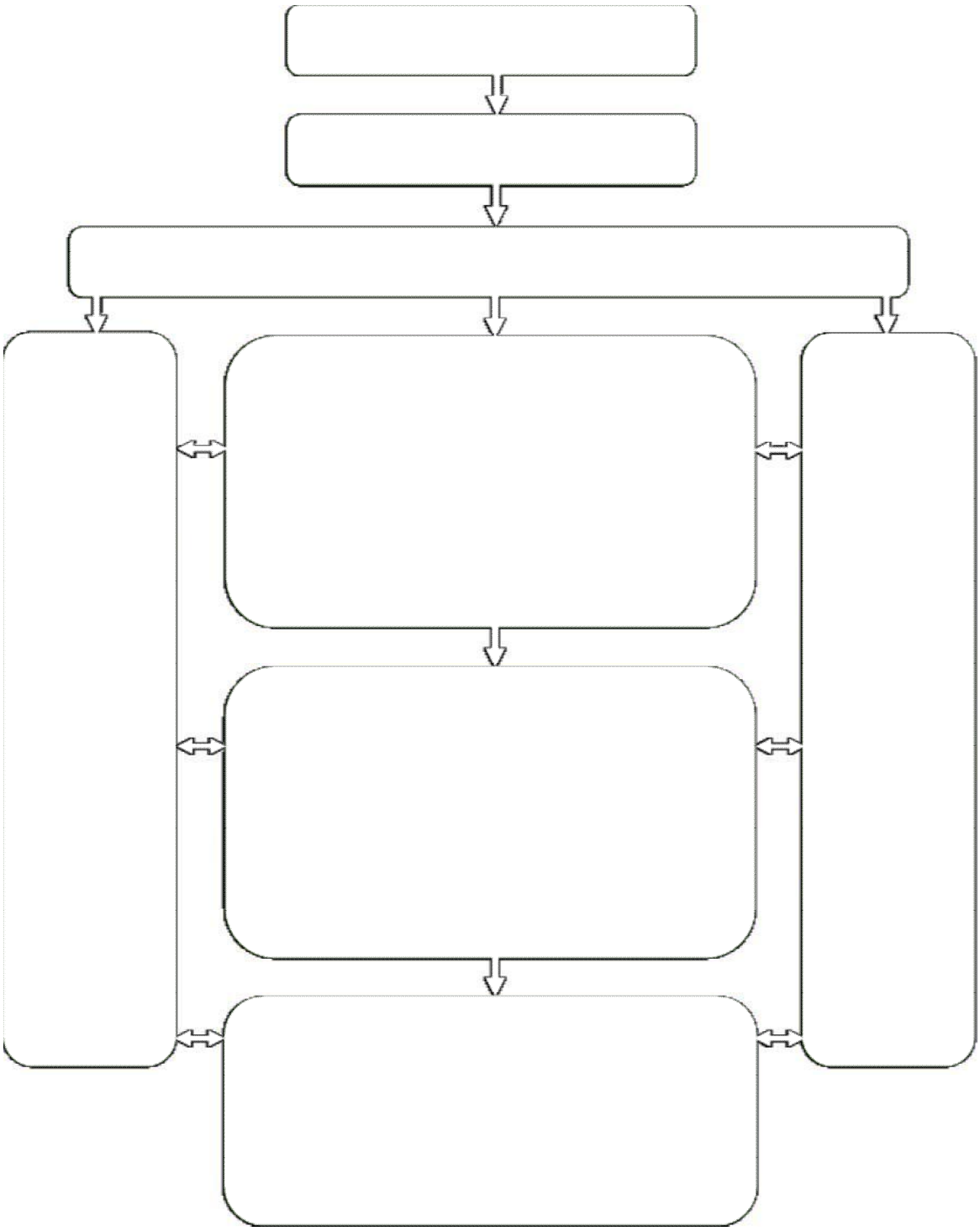

Figure 3. Structure of the LTP

The high level strategy will contain within it three major strands:

- **The growth agenda.** The LTP has a key role to play in promoting and supporting economic prosperity and ensuring sustainable population and housing growth. To

achieve this, significant improvements will need to be made to the transport network. A great deal of work has already been done looking at larger scale schemes to support this, but the LTP will also need to look at more detailed initiatives, such as the further development of measures to support walking and cycling , which will enable this growth to be sustainable in transport terms.

- **The geographical nature of the area:** Central Bedfordshire does not contain a sub-regional-scale centre town within its borders, but there are three very close by (Luton, Bedford and Milton Keynes) and a fourth (Stevenage) which attracts significant commuting from Central Bedfordshire. The LTP will take into account the needs of these neighbouring towns through developing common strategies. Usually, these will take the form of mutual support for larger schemes: for example, for the A5-M1 link with Luton.
- **Funding implications:** A significant decrease in government funding for transport will be factored in. The integrated transport budget has already been cut by 25%, while savings for larger schemes may affect the A5-M1 link and the Luton to Dunstable guided busway. The new LTP will need to demonstrate that the schemes within it are good value for money and help to achieve the council's aims.

Beneath the high level strategies, there are three "journey purpose" strategies. This approach has been chosen over modal strategies because doing so emphasises the role of transport in delivering the wider agenda. For example, the Journey to work and Freight strategies will concentrate on how to get people and goods to places of employment, thus enhancing the competitiveness of employment locally and making it easier for those without jobs to access employment. The accessibility strategy will look at how those without cars can access services such as education, health and social services and shops.

1.6.4 Local Area Transport Plans (LATPs)

The Local Area Transport Plans (LATPs) will consist of specific and financially realistic transport programmes for the areas they cover. Because of the emphasis in the LTP on helping to deliver growth, LATPs will, in the first instance, be drawn up only for the growth points within the council area. These are:

- Biggleswade & Sandy
- Dunstable & Houghton Regis
- Arlesey & Stotfold
- Leighton Linslade.

Plans for other areas will be drawn up after March 2011.

The Local Area Transport Plans (LATPs) will consist of specific and financially realistic transport programmes for the areas they cover. Because of the emphasis of the LTP on helping to deliver growth, in the first instance, LATPs will be drawn up only for the growth points within the council area. These are Biggleswade / Sandy; Dunstable / Houghton Regis; Arlesey / Stotfold and Leighton Linslade. Plans for other areas will be drawn up after March 2011.

In addition to identifying existing needs, the LATPs will identify new transport infrastructure and service provision needed to facilitate development. Predicted funding will therefore go beyond that expected in the next few years from government to include that which developers can reasonably be expected to contribute towards.

Finally, more detailed transport plans can be developed as appropriate. These will be based largely on the strategies and plans shown in figure 3, but will serve to demonstrate to particular users or interest groups how the LTP meets their needs. Such plans will include a walking and cycling strategy and a congestion strategy.

1.6.5 Strategic direction of the LTP

An important focus of the LTP will be on promoting sustainable transport. This will usually take the form of introducing measures to improve safety and promote walking, cycling and public transport. Where appropriate, the LTP will also look at larger road schemes, such as the A5-M1 link, which, if combined with other measures, is predicted to reduce the number of cars in Dunstable by 10%. There are a number of advantages to this approach. The main ones are:

- It will help to meet Central Bedfordshire's core objectives
- The expected reduction in finance for transport over the next few years will mean that the most cost effective measures will need to be introduced. These are usually measures to promote sustainable transport: a recent government study has shown that for every £10,000 spent on promoting cycling, only one extra person needs to take up cycling for a scheme to have a positive benefit to cost ratio.

Further more it is in accordance with government guidance for the LTP and with statements set out in the coalition agreement for the new government. An emphasis on sustainable transport also brings with it a number of other benefits in terms of the wider agenda. These include but are not limited to:

- **Health benefits:** This includes in reducing the number of people who are killed and seriously injured in road accidents and in helping to tackle obesity
- **Educational benefits:** sustainable transport can help promote independence for children and keep them fit and so better able to learn
- **Social benefits:** There is evidence which suggests that the fewer the number of motor vehicles driving through a street, the more likely the residents of that street are to know their neighbours.

1.6.6 Consultation on the LTP

The SEA will inform the consultation for LTP3. This is taking a number of different forms. It terms of the high level strategy, a website called "My Journey"[1] has been set up and the public are being invited to comment on the principles of the overall strategy. This strategy is also being discussed by members at the Council's Development Task Force.

In terms of the detailed proposals for the LATPs, a three stage process has been set up

- A Member group is established, consisting of all local Members for the area. This group is asked about the principles for the LATP.
- Stakeholder and public consultation on these principles then takes place. This includes specific discussions with the local town and parish councils and with local businesses.
- The principles agreed from this process are then worked up into a specific programme and this programme is taken back to the local Member group for refinement and agreement

[1] www.centralbedfordshire.gov.uk/myjourney/

The LTP, along with supporting documentation (including the SEA) will be taken to the Sustainable Communities Overview and Scrutiny Committee, then to Executive and finally to full Council for approval. Alongside consultation on LTP3, a consultation process on SEA (incorporating HIA) of this LTP will take place.

2. Methodology

The ER documents the potential significant effects on the environment of the LTP3 and compares it with the alternative options. The ER discusses potential mitigation measures to offset environmental impacts identified in the assessment. The assessment procedure is based on the SEA appraisal framework developed through scoping and consultation. The methodology for evaluating the environmental impacts is based on "Transport Analysis Guidance 2.11D", "Strategic Environmental Assessment for Transport Plans and Programmes" (2009).

The assessment was run alongside the drafting of the LTP3 so the significant of the environmental effects of each emerging intervention measure were considered as part of preparing the LTP3.

2.1 Details of who carried out the SEA

This report has been produced by the Council's Sustainable Growth Officers with support from AMEY consultants.

2.2 Data sources and their limitations

Not all information required for evidence base of the SEA appraisal framework was available at the time of writing; however it is still believed that the information presented reflects a comprehensive view of sustainability issues within Central Bedfordshire regarding the new LTP.

The baseline data collected to inform the SEA appraisal was mainly qualitative due to the lack of accessible quantitative data; this meant the prediction of the affects of the LTP on the environment was based on qualitative methods.

The baseline is by its nature strategic and the details of the environmental impact of the individual project will be assessed quantitatively during the project environmental impact assessments.

The uncertainty around the National Indicators which are used for monitoring and reporting for number of these areas means future monitoring of objectives may have to be modified to reflect this.

2.3 Methods of assessment used during the SEA

2.3.1 Compatibility Test of SEA and LTP Objectives

Compatibility tests between both SEA objectives; and between LTP3 and SEA objectives were carried out to identify both synergies and inconsistencies. The compatibility of the objectives was tested using a framework described in "A practical Guide to the Strategic Environmental Assessment Directive", ODPM 2005. The compatibility between objectives was established through the expert judgement and was described as: compatible, incompatible, uncertain or no link.

2.3.2 Development of Alternatives

The SEA Directive requires a consideration of reasonable alternatives of the emerging plan. The alternatives represent different ways of achieving the plan's objectives. The ODPM 2005 guide to SEA Directive states that often considered alternatives include scenarios termed 'no plan', where none already exist; or 'business as usual', which means continuation of an existing plan. As there is a current LTP2 exists one of the alternatives considered was a 'business as usual'. Two other alternatives were considered: 'improved infrastructure' and 'smart choices'. Those alternatives emerged from the LTP3 and SEA objectives compatibility test. They represent different ways of achieving set objectives.

2.3.3 Assessment of Effects

WebTAG Unit 2.11D describes the general methodology for assessment. Carrying out the assessment involves answering, for each strategy or measure, the following questions:

- Is it clear exactly what is proposed, how alternatives differ from each other and how they relate to the plan or programme as a whole?
- Is the strategy likely to have a significant adverse or beneficial effect in relation to each objective?
- If so, can the adverse effect be avoided or its severity reduced or can the beneficial effect be maximised?
- If the adverse effect cannot be avoided, e.g. by conditions or changes to the way it is implemented, can the alternative be changed or eliminated?
- If its effect is uncertain, or depends on how the plan is implemented, how can this uncertainty be reduced?
- Will any social group be disproportionately disadvantaged/ affected by the alternative?

The environmental effects of the Central Bedfordshire LTP3 alternatives were assessed against the SEA appraisal framework developed in the Scoping Report. The proposed framework (see Table 11) was structured around the developed SEA Objectives which cover topics required by the SEA Directive. For each SEA Objective a number of key assessment criteria were established through the scoping workshop and consultation responses received during the scoping process.

2.3.4 Evaluation of the Effects of the LTP3

The prediction of changes with and without the LTP3 and alternatives was based on "business as usual" scenario. The alternative options developed for the LTP3 were assessed against the SEA appraisal framework. The following was considered for each of the LTP alternatives:

- Details of the proposal
- Significant effects in relation to the SEA objectives.
- Can negative effects be avoided or minimised and can positive effects be enhanced?
- If there are residual negative effects can the alternative be modified or eliminated?
- If there is uncertainty about the effects of the alternative or its implementation, can the uncertainty be reduced?

The assessment took into account cumulative and indirect effects of the LTP3.
Preferred option was identified from these assessments and a comparison table of how the Draft LTP3 and alternatives evaluate against the SEA objectives. This assessment was done based on the SEA Appraisal Framework developed at the scoping stage of SEA.

The assessment of significance for SEA relied on expert judgement. The reasoning of the judgement is documented in Appendix D (measures). The assessment was initially carried out by Sustainable Growth Officers and then consulted during the SEA workshop with relevant experts (council officers and NHS representative) to evaluate the findings. This assessment also considered and recorded proposed mitigation measures on how to avoid or minimise any of the identified adverse effects and reduce their impact.

2.3.5 Monitoring

Monitoring of the significant effects of the LTP3 is required as part of the SEA. The monitoring will provide an important indication of the environmental performance of the LTP3. Monitoring of the previous LTP was largely based on National Indicators (NI) and other indicators already used by the council and stakeholders in the area. Nevertheless it has been announced as a result of the Spending Review that the National Indicators will be dropped. The monitoring framework proposed in this report may require adjustment to reflect changes in the National Indicators reporting.

3.2 Relevant policies, plans & programmes and scoping report consultation responses

The SEA Directive requires:
"an outline of the plan or programme's relationship with other relevant plans and programmes"; and;

"the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation."

The LTP must comply with existing policies, plans and programmes at national and regional levels and look to strengthen and support local plans and strategies.

The early review of the policies, plans and programmes and environmental protection objectives relevant to both the LTP3 and the SEA at an early stage is therefore key. This process supports the development of the SEA framework and also allows any inconsistencies or constraints within the LTP to be addressed.

It is recognised that no list of plans or programmes can be definitive and as a result this report describes only the key documents which influence the LTP and SEA process that we are currently aware of. Table 2 outlines the key documents, whilst a comprehensive description of these documents together with their relevance is provided in Appendix C.

Table 2: Relevant plans, policies and programmes

European Union
• EU Directive on Ambient Air Quality and Management (1996/62/EC)
• European Commission White Paper on the European Transport Policy (EC, 2001)
• EU directive 2001/42/EC on assessment of effects of certain plans and programmes on the environment

National
• Transport Act (2000)
• Local Transport Act (2008)
• Guidance on Local Transport Plans
• Delivering a sustainable Transport System (November 2008)
• Low Carbon Transport: A Greener Future (July 2009)
• PPS1: delivering Sustainable Development
• PPS1: Planning and Climate Change – Supplement to planning Policy Statement
• PPS3: Housing (November 2006)
• PPS4: Planning for Sustainable Economic Growth (December 2009)
• PPS5: Planning for the Historic Environment (March 2010)
• PPS9: Biodiversity and Geological Conservation (August 2005)
• PPG13: Transport (March 2001)
• PPS22: Renewable Energy (August 2004)
• PPS23: Planning and Pollution Control (November 2004)
• PPS23: Planning and Pollution Control - Annex 1: Pollution Control, Air and Water Quality (November 2004)
• PPG24: Planning and Noise (September 1994)
• PPS25: Development and Flood Risk (March 2010)
• Strategic Environmental Assessment for Transport Plans and Programmes – TAG Unit 2.11 (December 2004)
• A Practical Guide to the Strategic Environmental Assessment Directive (August 2006)
• UK Air Quality Strategy (ODPM, 2000)
• Transport Act 2000 (as amended by the Local Transport Act 2008)
• The Natural Environment and Communities Act (NERC) 2006
• The Conservation (Natural Habitats, &c) Regulations 1994 (as amended)

Regional
• Sustainable Development Framework for the East of England (2001)
• Our Environment, Our Future – The Regional Environmental Strategy for the East of England (2003)
• Climate East path to low carbon (2010)

Local
• Bedfordshire Waste Core Strategy Preferred Options 2010
• Bedfordshire Local Transport Plan 2 (2006-2011)
• Bedfordshire and Luton Biodiversity Action Plan, 2001
• Bedfordshire and Luton Strategic Green Infrastructure Plan 2007
• Luton and South Bedfordshire Detailed Water Cycle Study Phase 2, (June 2010)
• Central Bedfordshire Sustainable Communities Strategy (2010)
• Central Bedfordshire Climate Change Strategy (2010)
• Traffic Modelling – Halcrow/ Colin Buchanan & Partners/ MVA
• Bedfordshire Outdoor Access Improvement Plan (2009)
• Draft Central Bedfordshire Council Cycling Strategy (2010)

3.2 Key environmental issues and SEA objectives

A key requirement of the SEA Directive is the identification of "*any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC*" "(Annex 1(d)).

The identification of key environmental issues within the SEA process provides an opportunity to refine the SEA objectives by highlighting important areas for assessment. Defining the key environmental issues in relation to the LTP will assist with the selection of indicators for SEA. The following section accounts for the baseline conditions of the study area, highlighting the key issues that are considered to be of significance for the assessment of the LTP in terms of the environment, health, equality and sustainability.

The key environmental issues and problems relevant to the plan were established through the review of:

- objectives and issues from other plans and documents (comprehensive description of which is included in Appendix C);
- baseline data and contextual information;

The findings of this review (see Appendix C) were subsequently discussed with relevant council officers and Bedfordshire Primary Care Trust representative during the SEA scoping workshop. The SEA objectives were derived from the review and agreed during the workshop. The key environmental issues and SEA objectives are listed in the table 3 and discussed in detail below.

Table 3: Key environmental issues and SEA objectives.

SEA topic	Environmental issues	SEA Objectives
Air quality	• Increased air pollution from growth traffic and congestion • Health issues caused by NO_2 and PM10 • High reliance on private car	• Reduce transport related pollution, including air, water, soil and noise • Improve/increase use of active travel and sustainable transport modes
Health and Noise	• Increase in population will put additional strain on health service • New population – increase in congestion and noise above baseline • Link between health and access to open space – positive to mental health and production of vitamin D (sunlight) • Transport noise impact on health including mental health impacts	• Improve public health (both physical and mental) through active and sustainable travel • Enable inclusive communities and promote social inclusion • Reduce transport related pollution, including air, water, soil and noise pollution.
Population and Social inclusiveness	• Increase in population will put additional strain on social and transport infrastructure • Increase in population may increase number of crimes and fear of crime • Equal opportunities and access to facilities including employment, health care, education, shopping, leisure and tourism	• Improve transport safety by reducing accidents, crime and perception of crime • Enable inclusive communities and promote social inclusion
Economy and employment	• Increase in economic activity, access to new jobs needed and transport infrastructure to provide this access	• Enable inclusive communities and promote social inclusion • Enable sustainable economic growth and attract new inward investment
Material assets Including minerals and waste	• Increased demand on land and natural resources • Impact of transport on AONB • Impact of transport on wildlife sites used by locals and tourists • Protect known mineral deposits from being sterilised by transport infrastructure	• Minimise loss/use of natural resources to transport schemes • Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, archaeological and architectural heritage)
Climatic factors	• Increase in greenhouse gas emissions • Increase in number of extreme weather events • Adaptation of transport infrastructure to climate change and increase in severe weather events • Impact of increasing oil prices as we pass the 'peak oil' is not fully understood; moving away from oil dependency will encourage sustainable transport	• Reduce transport related pollution, including air, water, soil and noise pollution • Mitigate the climate change, reduce greenhouse gas emissions • Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions) and 'peak oil'
Water and flooding	• Increase in water demands • Decrease in water availability – water stress • Increase in flooding events • Pollutant run-off	• To protect and improve surface and groundwater quality • Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions) • Reduce transport related pollution, including air, water, soil and noise pollution.

SEA topic	Environmental issues	SEA Objectives
Biodiversity including flora, fauna and soil	• Existing areas/habitats under treat from population influx and infrastructure • Road kill increased due to car use • Severance of habitats by infrastructure schemes and opportunities to create wildlife corridors and green infrastructure	• Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, archaeological and architectural heritage)
Landscape and townscape	• Protection and enhancement of natural and built environment • Impact on AONB • Impact on urban fringe	• Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, archaeological and architectural heritage)
Cultural heritage including architectural and archaeological heritage	• Protection and enhancement of built environment • Use of heritage assets in green transport infrastructure • Street clutter in heritage landscapes and townscapes • Impact of transport infrastructure schemes on heritage assets • Access to heritage assets	• Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, archaeological and architectural heritage)

3.2.1 Air Quality

Road transport is regarded as the main contributor to air pollution in Central Bedfordshire. As well as being the cause of adverse impacts to ecosystems and vegetation, high levels of air pollution have also been connected with human health problems. The pollutants of particular concern to human health are NO_2 and PM10, whereas high levels of NO_x and the deposition of nitrogen and particulates adversely affect flora and fauna. For areas of particularly high air pollution, an AQMA is established to manage the environmental and health risks.

Key SEA issues:

The housing allocations for Central Bedfordshire, and the associated traffic growth expected, could lead to higher levels of NO_2 and PM10 in congested areas. Impacts are likely to be most significant within the Dunstable town centre AQMA, designated for exceedence of the annual NO_2 objective as a result of road traffic. Exceedence of UK air quality objectives may also occur in other areas of Central Beds as a result of traffic growth, particularly in Sandy and Charlton which have previously been recommended for AQMAs in relation to the annual NO_2 Air Quality Objective. Potential air quality impacts are significant as exceedences breach EU Limit Values and cause risk to human health.

3.2.2 Noise

Noise pollution is recognised as one of transport's major externalities. Traffic noise can cause major disturbance leading to human health issues. Changes in traffic flows and induced traffic associated with new infrastructure schemes will require a strategic consideration of the potential noise impacts.

Key SEA issues:
There is the potential for significant adverse noise impacts to arise in some areas of Central Bedfordshire as a result of the proposed major infrastructure schemes. However measures to encourage use of non-motorised and public transport alternatives, as well as innovations such as low noise road surface, have the potential to reduce noise levels throughout the District.

3.2.3 Health

Transport is regarded as bringing both positive and negative impacts to the physical, mental and social wellbeing of a population. There is increasing concern about the social sustainability of transport policies, and how they can harm human health as well as the environment. The promotion of active and sustainable transport alternatives to reduce car dependency can minimise the negative effects of transport on human health such as those caused by air, noise and water pollution and inactive lifestyles leading to obesity. Transport policy can also be used to target social inequalities, road safety issues and traffic-related crime.

Key SEA issues:
Deprivation in Central Bedfordshire is varied with sharp social inequalities in relation to where people live. In the most deprived areas of Houghton Regis, Dunstable, Leighton-Linslade, Flitwick and Sandy, there is potential for transport to help overcome social inequalities by reducing the mobility gap. A well-targeted provision of affordable and accessible transport facilities in these areas could enhance resident participation in life opportunities and reduce social deprivation.

Obesity is increasingly becoming a regarded as a significant risk to human health in the UK. With a quarter of 10-11 year olds in Central Bedfordshire overweight, and a strong likelihood that obesity in children will transcend to adulthood, tackling obesity is of particular significance in the District. Transport can go some way to tackling the problem through measures that encourage active transport participation, in particular to access education facilities and areas of open space.

The housing allocations for Central Bedfordshire could lead to an increase in traffic volume and congestion. The impact of additional traffic to the quality of local air, water and noise may cause significant health risks. Unfavourable traffic levels can also lead to a more hazardous journey for all travellers increasing the potential for road traffic injury.

3.2.4 Social Development Issues

The direction of transport policy is often a reaction to travel demand and the changing mobility requirements of people and places. Significant socio-economic problems such as mobility deficiency and social exclusion can occur if the provision of transport fails to adapt to the changing needs of the population.

Key SEA Issues:
Approximately 255,000 people live in Central Bedfordshire within a mix of rural areas, urban centres and market towns. The District has a population density of 356 people per square kilometre making Central Bedfordshire one of the least densely populated unitary councils. Central Beds is classified as predominately rural with just over half of the population living in rural areas and as a consequence, car reliance is likely to be high to satisfy personal mobility requirements. The scattered nature of a rural population

presents a significant challenge for transport policy to address social inequalities, as well as encourage more sustainable transport patterns.

Central Bedfordshire's population is forecast to grow rapidly over the next 20 years putting additional strain on the transport network. The extra demands for mobility may have a negative effect on existing transport externalities such as congestion and pollution. The additional service requirements to support a growing population such as transport infrastructure, housing, water supply and waste generation may also create numerous adverse environmental impacts.

As well as an increasing population, the demographic profile of Central Beds is also forecast to shift towards an aging population. Transport and mobility requirements change with age, and with the prospect of an aging population, it is important for transport policies to promote mobility if quality of life is to be sustained.

3.2.5 Economy

An efficient transport network is an important component of a successful economy. Mobility provides the opportunity for economic activity. High mobility is often linked with development while reduced mobility can impede development. A transport network can provide economic and social opportunities such as accessibility to employment and new external investment. Insufficient capacity and reliability within a transport network can lead to economic and social costs such as wasted travel time, induced stress and missed opportunities for economic growth.

Key SEA Issues:

Central Bedfordshire has a vision for economic growth and the transport network is required to play a key role in achieving the vision. The major infrastructure schemes planned for Central Bedfordshire could encourage economic growth by easing congestion and improving journey reliability across the District. Transport network improvements would also need to provide accessibility to areas of employment while tackling the mobility inequalities that currently occur within the region.

3.2.6 Biodiversity

The transport sector is often the cause of adverse impacts to biodiversity. Negative effects can occur as a result of fragmentation, disturbance and direct damage to habitats and species. Land take associated with the construction of transport infrastructure has the potential to cause direct impacts to ecosystems through habitat loss. The presence of transport infrastructure can dissect wildlife corridors and prevent the free movement of species resulting in habitat fragmentation. Transport related pollution such as lighting, noise and hazardous run-off can also have indirect impacts to flora and fauna. The key challenge is to balance the preservation and protection of biodiversity against the transport needs of the District. Through careful planning, transport's impacts on biodiversity can be managed, often enabling the enhancement of flora and fauna.

The impact of climate change on habitats and species is a key global concern. The transport sector is regarded as a major contributor to climate change owing to the high levels of atmospheric carbon dioxide concentrations associated with motorised travel. Transport policy is therefore required to target emissions reduction through the implementation of measures that address high levels of car dependency.

Key SEA Issues:
The major infrastructure schemes planned for Central Bedfordshire have the potential to cause destruction and fragmentation to a range of habitats including Sites of Special Scientific Interest, Local Nature Reserves, and County Wildlife Sites. The potential biodiversity impacts for each major scheme will be assessed at project level and met with sufficient mitigation. The cumulative effects of all major schemes must also be given due consideration.

Minimising the causes of climate change is a major challenge within transport policy. Car ownership is considerably higher in Central Bedfordshire than in England as a whole indicating high levels of car dependency and car use among residents. Investment in green infrastructure schemes and public transport facilities is one way of reducing car dependency and contributing to achieving national greenhouse gas targets. The protection, preservation and enhancement of woodland habitats through increased planting in strategic locations can also provide a contribution to reducing the causes of climate change.

As well as CO_2 emissions, there are many other traffic related pollution issues which can cause damage to habitats. In particular, critical threshold levels of pollutants for SSSIs and for other sensitive habitats and species can be exceeded through changes in traffic flows and through the construction of new infrastructure.

3.2.7 Minerals and Waste

At present the transport sector is reliant on non-renewable energy sources. The majority of motorised vehicles currently run on crude oil based fuels and require high quantities of energy for their manufacture. The transport infrastructure itself also requires significant material resources and energy for construction and maintenance.

Waste generation is an inevitable outcome of major construction schemes. However, there has been an increase in the use of recycled materials and better waste management through the implementation of Site Waste Management Plans to reduce the amount of construction waste sent to landfill.

Key SEA Issues:
The demand for minerals and the level of waste generation in the transport sector is likely to increase in line with the housing allocations for Central Bedfordshire. The extra strain on the transport network resulting from local population growth is likely to generate the need for additional highway maintenance and network capacity enhancements. To minimise minerals and waste impacts and maximise the opportunity to recycle and reuse waste materials, the development of new infrastructure schemes can target previously developed land. Traffic demand management would also limit the strain placed on infrastructure, reducing the need for regular maintenance.

Some transport infrastructure schemes have the potential to sterilise mineral deposits. For mineral deposits that would be potentially be sterilised by the footprint of the scheme the minerals should be extracted and used as part of the scheme where feasible. The movement of extracted minerals from sites within Central Bedfordshire via sustainable transport methods would also benefit transport's carbon footprint.

3.2.8 Water and Flooding

Transport activities cause surface to groundwater flow modifications, as well as adversely impact on water quality through the run-off of oil, heavy metals, salts and fertilisers during heavy rain events. Pollution risks increase with the accumulation of pollutants and during dry weather periods busier roads become the most polluting.

Modification in the flow of surface and groundwater caused by the impermeable nature of transport infrastructure can increase the effects of water run-off, contributing to flooding, soil erosion and major disruption to transport networks.

Key SEA Issues:
Central Bedfordshire is within the driest region of the UK and there is a need to encourage sustainable water conservation. Drinking water comes from various sources including aquifers and the Great River Ouse. New infrastructure schemes constructed to meet the increasing traffic demands can introduce risks of water pollution and flooding through interception of rainfall, increased run-off and loss of floodplain storage space. Through effective drainage management, the risk of flooding can be reduced as well as the prevention of potentially harmful pollutants from entering water courses.

3.2.9 Climatic Factors

The atmosphere's concentration of CO_2 has dramatically increased in recent times and transport is recognised as a key contributor to this increase. Amplified levels of carbon are regarded as a major cause of climate change. The amount of travel, and therefore the carbon footprint of the transport sector, has increased over time in line with growing mobility needs. The majority of travel is reliant on non-renewable energy resources and as a result of personal mobility requirements, most journeys are undertaken via one of the most unsustainable travel modes; the private car.

Transport has an impact on climate change but equally, the effects of climate change pose significant challenge to maintaining an efficient transportation network. The likelihood of extreme weather events such as flooding, heat waves or freeze conditions can potentially have a serious effect on the condition of transport infrastructure.

Key SEA Issues:
In keeping with UK resident's personal mobility desires, car dependency in Central Bedfordshire is high. Car use dominates modal choice in the District and as a result, the effect of traffic congestion has produced a demand for capacity enhancements and the removal of impediments to traffic flow thereby prioritising the car over alternative and more sustainable forms of travel. Reducing car reliance within a community is a significant challenge that extends beyond the remit of transport policy. But the provision of high quality green infrastructure schemes that provide a real alternative to car travel, combined with measures that disadvantage car use such as high parking charges, can reduce car reliance, congestion and transport's overall contribution to climate change.

Over the next 30 years Central Bedfordshire faces the challenge of significant population growth. To support this growth transport network capacity enhancements are required. Although CO_2 levels are likely to increase, there is the opportunity to meet new travel demands with sustainable infrastructure and non-car travel alternatives.

The vision for economic development within Central Bedfordshire is at the centre of the District's transport policy. An efficient transport network can provide the foundations for economic growth. But economic development is often only achieved at the detriment of

environmental quality. Economic success in a transport sense is a function of an efficient transport network with good accessibility and mobility for all passengers. As mobility is largely reliant on the private car within Central Bedfordshire, increasing movement is likely to increase transport pollution levels. The challenge for transport policy is therefore to achieve high mobility among the population without inducing more car journeys.

The existing and proposed transport network in Central Bedfordshire is at risk from the effects of a changing climate. More extreme weather events and sea level rise pose a significant threat to the efficiency of the transport network. As a result, infrastructure maintenance costs could increase and the potential for traffic flow disruption may become more likely. Any new infrastructure schemes should therefore take the effects of climate change into consideration in their design.

3.2.10 Cultural Heritage

Cultural heritage assets which include archaeological remains, Scheduled Ancient Monuments, historic parks and gardens, and historic landscapes and townscapes can be adversely affected by transport either directly or indirectly. Land-take associated with the construction of new transport infrastructure can cause direct damage to, or loss of cultural heritage features. Alternatively, the presence of traffic nearby a cultural heritage asset can adversely impact the 'setting' through loss of tranquillity, additional lighting and changes to the visual surroundings.

Key SEA Issues:
There are a large number of sites of cultural and historic importance across Central Bedfordshire which contribute to the historic environment and local distinctiveness of the District. Growing demands on the transport network as a result of the housing allocations for Central Bedfordshire will need to be met, probably through network capacity enhancements and the construction of new transport infrastructure. The key challenge is to meet transport demand without compromising the historic character of Central Bedfordshire. The enhancement of cultural heritage features through the removal of traffic from a historic setting is also possible with the provision of alternative route options.

3.2.11 Landscape

Transport policies and proposals can affect landscape and townscape by altering either the 'quality' or 'character' of the setting. The most likely source of impact is through alterations to existing transport infrastructure and the construction of new schemes. Impacts on landscape quality can occur as a result of either the enhancement or deterioration of features that are valued by society. Changes in transport patterns or the construction of new infrastructure can also impact the character of a landscape or townscape by reducing the tranquillity of a setting. Road maintenance and road safety measures can positively or negatively alter a streetscape depending on sensitivity of infrastructure design.

Key SEA Issues:
The expansion of the transport network in Central Bedfordshire as a response potential increased demand resulting from the housing allocations has the potential to significantly affect the landscape and townscape character of the District. Visual intrusion, light pollution and loss of tranquillity resulting from land take, insensitive signage and traffic noise are some of the landscape impacts associated with transport network capacity enhancements. Green Belt and statutory landscape designations, as well as landscape sensitivity ratings ensure that landscape quality is given due consideration in the

planning process. The inclusion of mitigation as appropriate for each major scheme can also go some way to reducing the landscape impact of transport.

4. Compatibility of SEA objectives.

The developed SEA objectives were tested for compatibility with each other. The compatibility test aims to establish whether the objectives support and reinforce each other, have no link, or have a negative effect on each other.

Where the objectives are found to be incompatible, the possibility of adjusting of the objectives should be considered. In same cases, one objective's positive effect may be reduced by other objectives negative effect, e.g. providing a new road may be necessarily to enable community to have access to services, but it may increase carbon dioxide emissions. In this case the mitigation measures should be considered, e.g. installation of cycle ways and footways and other green infrastructure, with wildlife corridors, alongside the carriageways in road schemes.

The results of the conducted compatibility test of the SEA objectives are presented in table 4. The majority of the objectives where found to be compatible with each other. In only three instances the objectives were found incompatible. Some were judged to have uncertain impact on each other and some to have no link with each other.

Table 4: Results of the SEA objectives compatibility test.

SEA objectives compatibility test											
1											
2	✓										
3	-	?									
4	✓	✓	✓								
5	✓	?	✓	?							
6	x	✓	✓	✓	✓						
7	✓	✓	-	✓	-	x					
8	✓	✓	?	✓	✓	x	✓				
9	-	✓	-	✓	✓	✓	✓	✓			
10	✓	✓	-	✓	-	?	✓	✓	✓		
11	✓	✓	-	✓	✓	?	✓	✓	✓	✓	
Objectives	1	2	3	4	5	6	7	8	9	10	11

Legend:

✓ Compatible **?** Uncertain **X** Incompatible **-** No link

The SEA objectives are:

1. Reduce transport related pollution, including air, water, soil and noise pollution;
2. Improve public health (both physical and mental) through active and sustainable travel;
3. Improve transport safety by reducing accidents, crime and perception of crime;
4. Improve/increase use of active travel modes and sustainable transport;
5. Enable inclusive communities and promote social inclusion;
6. Enable sustainable economic growth and attract new inward investment;
7. Minimise loss/use of natural resources to transport schemes;
8. Mitigate the climate change, reduce greenhouse gas emissions;
9. Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions) and 'peak oil';
10. Protect and improve surface and groundwater quality;
11. Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage).

The following objectives were found incompatible with each other:

- 1 and 6 - any growth will increase a pollution; mitigating measures to reduce potential pollution to minimum, e.g. through use of green technologies;
- 6 and 7 - any growth will cause use of natural resources;
- 6 and 8 – any growth will increase greenhouse gas emissions.

A number of objectives were found to have uncertain impact:

- 2 and 3 - more people walking and cycling may increase number of accidents with cars; mitigating measures need to be put in place to reduce chances of accidents;
- 2 and 5 – elderly and disable people may not be able to use active forms of transport, may lead to social exclusion;
- 3 and 8 – in order to reduce greenhouse gas emissions from transport more people would have to use active modes of transport which may lead to more accidents;
- 4 and 5 - elderly and disable people may not be able to use active forms of transport, may lead to social exclusion;
- 6 and 10 – increase transport activities associated with growth may have negative impact on water quality – increased pollution from road run-off;
- 6 and 11 - increase transport activities associated with growth may have negative impact on natural and built environment.

5. Compatibility of SEA and LTP3 objectives

Each of the LTP3 and SEA objective was tested against each other whether they are compatible, incompatible, uncertain or no link. Where the objectives were judged to be incompatible or their relation was uncertain, the potential mitigation measures or alternatives were stated for consideration. Table 5 presents the results of the assessment. The assessment was based on the expert judgement and was qualitative.

Table 5. Compatibility of SEA & LTP3 Objectives

Compatibility		SEA OBJECTIVES										
		1	2	3	4	5	6	7	8	9	10	11
LTP3 OBJECTIVES	A	✓	✓	-	✓	✓	✓	X	✓	✓	✓	✓
	B	✓	✓	✓	✓	✓	X	-	✓	✓	✓	✓
	C	✓	✓	?	✓	✓	-	-	✓	✓	✓	✓
	D	?	✓	-	✓	✓	-	X	?	✓	X	?
	E	?	✓	-	✓	✓	✓	X	?	✓	X	?
	F	?	✓	-	✓	✓	✓	X	?	✓	X	?
	G	?	-	-	?	?	✓	X	?	✓	X	X
	H	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓
	I	✓	-	-	✓	✓	X	X	✓	✓	X	X
	J	-	✓	✓	?	✓	-	-	-	✓	-	-

Legend:

✓ Compatible ? Uncertain X Incompatible - No link

SEA objectives:

1. Reduce transport related pollution, including air, water, soil and noise pollution.
2. Improve public health (both physical and mental) through active and sustainable travel
3. Improve transport safety by reducing accidents, crime and perception of crime
4. Improve/increase use of active travel modes and sustainable transport
5. Enable inclusive communities and promote social inclusion
6. Enable sustainable economic growth and attract new inward investment
7. Minimise loss/use of natural resources to transport schemes
8. Mitigate the climate change, reduce greenhouse gas emissions
9. Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions)
10. Protect and improve surface and groundwater quality
11. Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage)

LTP Objectives:

A Increase the ease of access to employment by sustainable modes
B Reduce the impact of commuting trips on local communities
C Increase the number of children travelling to school by sustainable modes of transport
D Improve access to healthcare provision by the core health service (hospitals and GPs)
E Ensure access to food stores particularly in local and district centres
F Enable access to a range of leisure, cultural and tourism facilities for residents and visitors
G Enable the efficient and reliable transportation of freight
H Encourage the movement of freight by sustainable modes
I Minimise the negative impacts of freight trips on local communities
J Reduce the risk of people being killed or seriously injured

The assessment identified a number of LTP3 and SEA objectives as incompatible with each other, those are listed in Table 6.

Table 6. Incompatible LTP3 and SEA objectives.

Objectives	Comments
6&B	Economic growth is likely to increase a number of commuting trips to the area, ensure adequate ST provision to minimise private car commuting journeys
6&I	economic growth is likely to increase number of freight trips, ensure minimal negative impact on local communities (supported by LTP Objective I)
7&D 7&E 7&F 7&G	Better transport provision is likely to require improvement to existing network and therefore is likely to use natural resources, to minimise the negative impact, ensure that the previously developed land and recycled materials are used as far as possible
7&I	By-pass provision is likely to be required to ease the impact of freight on local communities, to minimise the negative impact, ensure that the previously developed land and recycled materials are used as far as possible
10&G 10&I	Delivery of efficient and reliable freight and reduction of freight impact on local communities are likely to require delivery of major schemes which will increase surface of hard standing surfaces and runoff of pollutants to water; to reduce impact ensure that the routing of new infrastructure is away from vulnerable habitats and the water runoff from roads is appropriately managed
11&G 11&I	Delivery of efficient and reliable freight and reduction of freight impact on local communities are likely to require delivery of major schemes which will have a very negative impact, to minimise this impact ensure that the routing of new infrastructure is away from vulnerable habitats, landscapes, historical settings; compensate for lost habitats through creation of new ones as far as possible

LTP3 and SEA objectives which were found to have uncertain relation with each other are listed in Table 7.

Table 7. Uncertain LTP3 and SEA objectives.

Objectives	Comments
1&D 1&E 1&F	depends on delivery, more transport infrastructure and services may lead to increase in pollution, but these can be minimise by promotion of sustainable transport, with strong emphasis on active travel modes: walking and cycling.
1&G	depends on delivery, number of freight trips may increase to service growth areas and may lead to increase levels of pollution, this can be partly offset by encouraging movement of freight by sustainable modes
3&C 4&J	more children and adults using sustainable modes of transport may lead to increase in accidents levels, ensure provision of appropriate training how to use network safely, e.g. cycle and road awareness training
4&G	pedestrians and cyclist may slow down freight, ensure adequate safe

Objectives	Comments
	routing of freight and cyclist and pedestrians to ensure safety, and training (supported by LTP objective I)
5&G	depends on delivery, heavy load traffic has a negative impact on communities, ensure minimal impact of freight on residential areas (supported by LTP objective I)
8& D 8&E 8&F	depends on delivery, more transport infrastructure and services may lead to increase in pollution, but these can be minimise by promotion of sustainable transport, with strong emphasis on active travel modes: walking and cycling.
8&G	depends on delivery, number of freight trips may increase to service growth areas and may lead to increase levels of pollution, this can be partly offset by encouraging movement of freight by sustainable modes
10&D 10&E 10&F	depends on delivery, more transport infrastructure and services may lead to increase in pollution runoff from roads to watercourses and soils and then groundwater, but these can be minimise by promotion of sustainable transport, with strong emphasis on active travel modes: walking and cycling
11&D 11&E 11&F	Better transport provision is likely to require improvement to existing network and therefore is likely to have impact on surroundings, to minimise the negative impact, ensure that any new infrastructure is sympathetic, promote sustainable transport to minimise impacts from traffic movement and congestion.

The compatibility assessment also highlighted a potential conflict between SEA objective 4 and LTP3 objectives D, E and F. It should be noted that certain vulnerable groups of people will not be able to use sustainable and especially active forms of transport. An adequate transport infrastructure and services provision should be ensured to avoid social exclusion of these groups.

6. LTP3 alternatives and their significant effects on the environment

The alternatives define different ways of achieving the same objectives. To aid the development of alternatives, possible transport intervention measures were listed and their potential effects on the environment assessed against the SEA Appraisal Framework (please see appendix D for details of the assessment). The results of this assessment and the above compatibility test of LTP3 and SEA objectives informed development of alternatives and helped to identify different ways of delivering LTP3 objectives.

Firstly, business as usual alternative was considered. This alternative was based on assumption that policies and measures of existing LTP2 would be continued and no major scheme would be delivered. In addition to this alternative, two other broad alternatives were identified: 'Improved infrastructure and services' and 'smarter choices'. First alternative was based on delivery of both infrastructure and public transport improvements, including delivery of a number of major schemes. The second alternative assumed delivery of infrastructure and service improvements with a strong emphasis on promotion of active and sustainable transport through delivery of smarter choices.

The three alternatives were assessed against the SEA Appraisal Framework to identify any significant effects on the environment. The assessment looked at short, medium and long term effects, both direct and indirect.

Table 8 and 9 below provide a summary assessment of the measures and major schemes that make up the LTP alternatives. The detailed assessment of is shown in Appendix D and E.

Table 8. Assessment of Local Transport Plan major schemes - summary

Major Infrastructure Schemes	SEA Objective										
	1	2	3	4	5	6	7	8	9	10	11
Luton Dunstable Busway	++	+	0	++	++	++	+	++	0	0	0
M1 widening Junctions10-13	+	0	+	0	+	++	-	-	0	0	--
A5 – M1 Link (Dunstable Bypass)	-	-	+	-	-	+	-	-	0	0	--
Woodside Connection	-	/	/	-	/	++	-	-	0	0	--
M1 Junction 10a	0	+	+	-	/	++	-	-	0	0	--
Luton Northern Bypass	-	-	+	-	-	+	-	-	0	0	--
East of Leighton Distributor Road	-	0	0	0	+	+	-	-	0	0	-
A421 (M1 to Bedford)	-	0	+	-	-	+	-	-	0	0	--
Flitwick Westoning Bypass	-	0	0	0	+	+	-	-	0	0	-
Biggleswade Eastern Relief Road	-	0	0	0	+	+	-	-	0	0	-
East-West Rail	+	0	0	++	+	++	0	++	+	0	-

- -	-	/	O	+	++
Very negative	Negative	No link	Neutral	Positive	Very positive

Table 9. Assessment of Local Transport Plan measures - summary

Measure	SEA Objective										
	1	2	3	4	5	6	7	8	9	10	11
Land-Use Planning											

Mixed use development	?	+	?	?	?	++	?	+	?	?	?
Links to existing transport networks	?	?	?	?	?	+	?	?	?	?	?
Sustainable transport provision	++	++	?	+	+	?	?	+	?	+	+
Accession runs for all new development	+	+	+	++	+	+	+	++	/	+	?
Smarter Choices											
Travel Plans	++	++	++	++	++	/	++	++	/	+	+
Volunteer drivers - rural	0	0	0	/	0	0	0	0	/	0	0
Car sharing	++	0	+	+	0	+	+	++	/	+	+
Car Clubs	+	0	+	+	+	0	+	+	/	+	+
Ticketing	+	/	/	++	+	/	+	+	/	+	+
Information and Marketing	+	++	++	++	++	+	+	+	/	+	+
Infrastructure and Service Provision											
Transport Interchanges	+	+	+	++	+	+	?	+	?	+	+
High Frequency PT services	+	+	+	++	++	++	?	+	?	+	+
Assessment of existing PT services to determine potential improvement	+	+	+	+	+	+	++	+	/	+	+
Improved inter-regional services	+	+	+	+	++	++	?	+	?	+	?
Reallocation of road space: Bus Lane; Cycle Lane; Shared Space, Pedestrianisation	/	++	++	++	+	+	+	++	?	?	+
Secure cycle storage	+	+	+	++	/	/	/	+	/	+	+
Bus waiting areas / shelters at key origin and destination 'waiting' stops	+	/	?	+	+	/	+	+	?	+	+
Network Management											
Variable Message Signing	+	+	+	+	+	+	+	+	/	/	/
Real Time Passenger Information	+	+	/	+	+	+	+	+	+	/	/
CCTV	/	+	++	++	+	+	/	/	/	/	/
Automatic Number Plate Recognition	+	+	+	+	/	/	/	/	/	/	/
Maintenance and New Roads and Street Works Act	+	+	++	+	+	+	0	+	?	?	?
Speed reduction measures	+	+	++	++	+	/	?	?	/	/	+
Management of unplanned accidents	+	/	++	++	/	+	/	+	/	++	/
Demand Management											
Freight management	+	++	++	++	+	+	?	+	?	?	?
Car parking provision	?	?	?	-	+	+	?	--	?	?	?
Park and Ride & Transport Hubs	+	+	?	++	++	++	-	+	?	0	?
Access restrictions	0	++	++	+	+	0	/	0	0	+	+
Tele working	++	/	+	/	0	+	+	++	+	+	+
Electric Car Charging points	++	-	-	+	+	/	+	++	/	+	+

- -	-	/	?	O	+	++
Very negative	Negative	No link	Uncertain	Neutral	Positive	Very positive

6.1 Business as usual alternative.

This alternative assumes continuation of policies set in LTP2 (unless there was time limitation on them). LTP2 was based on delivering transport though a number of interventions which aim to achieve improvement in following areas:

- congestion and network management,
- accessibility of transport,
- safer roads,
- better air quality,
- asset management,
- developing economy;
- preparing for growth

The table below provides the SEA assessment of this alternative.

Table 10. SEA assessment of 'Business as Usual' alternative.

SEA Objective	SEA Criteria	Effects	
1) **0** Reduce transport related pollution, including air, water, soil and noise pollution	Does it reduce emissions to air?	Number of vehicles fell below that anticipated in LTP2 target and there was increase in rail travel, but the LTP2 is below target in modal shift and quality of roads and footways surface was below expected quality therefore it can be assumed that if LTP policies were kept in place, there would not be sufficient improvement to have a positive effect. Neutral effect.	**0**
	Does it reduce NO_2 and PM10 concentrations in the AQMAs?	The LTP2 did not have any AQMAs established in the CBC administration area. It could be assumed that there would be no improvements in the AQMAs and concentrations of NO_2 and PM10 could get worse with planned growth in the area and likely increase in traffic.	**--**
	Does it reduce transport related pollution of water?	Number of vehicles fell bellow that anticipated in LTP2 target and there was increase in rail travel, but the LTP2 is below target in modal shift and quality of roads and footways surface was below expected quality therefore it can be assumed that if LTP policies were kept in place, there would not be sufficient improvement to have a positive effect. Neutral effect.	**0**
	Does it reduce transport related pollution of soil?	Number of vehicles fell bellow that anticipated in LTP2 target and there was increase in rail travel, but the LTP2 is below target in modal shift and quality of roads and footways surface was below expected quality therefore it can be assumed that if LTP policies were kept in place, there would not be sufficient improvement to have a positive effect. Neutral effect.	**0**
	Does it reduce noise pollution?	Number of vehicles fell bellow that anticipated in LTP2 target and there was increase in rail travel, but the LTP2 is below target in modal shift and quality of roads and footways surface was below expected quality therefore it can be assumed that if LTP policies were kept in place, there would not be sufficient improvement to have a positive effect. Neutral effect.	**0**
2) **0** Improve public	Does it encourage walking and cycling?	Maintenance of walking and cycling infrastructure was below targets so it is likely that it would not encourage	**0**

SEA Objective	SEA Criteria	Effects	
health (both physical and mental) through active and sustainable travel		walking and cycling. Leighton cycle town – a great success initiative, needs to be rolled out to other towns positive effect. However as the plan would not facilitate further promotion of active modes the would not be any further improvement. Overall neutral effect.	
	Does it help to reduce obesity?	The uptake of active travel and sustainable travel by school kids slightly below target, neutral effect. Number of improvements to countryside access were made (see point below).	**0**
	Does it improve access to open spaces and leisure facilities?	Through link with Rights of Way Improvement Plan, approximately 13.5km of new off highway cycle routes were built (total length in CBC 1,343km); number of rights of way improvement projects were delivered. Continuation of current plan would not facilitate any further improvements. Overall neutral effect.	**0**
3) **-** Improve transport safety by reducing accidents, crime and perception of crime	Does it seek to help reduce the number of killed or seriously injured in road accidents?	The 2008 progress report on LTP2 shows no change in 'total killed and seriously injured' indicator, neutral effect.	**0**
	Does it ensure that pedestrian and cycle routes are safe for users?	The satisfaction survey identified a big gap in road and footways surface maintenance, poor quality road surfaces are more likely to lead to accidents.	**-**
	Does it seek to reduce levels of crime (particularly transport related) and improve the security of people using the transport network?	LTP2 policies aim to reduce crime and fear of crime on the transport network by following best practice and promoting crime reduction initiatives. However, there is not data available to suggest this has been achieved.	**?**
4) **0** Improve/ increase use of active travel modes and sustainable transport	Does it encourage the use of sustainable and active modes of transport?	Maintenance of walking and cycling infrastructure was below targets so it is likely that it would not encourage walking and cycling. Neutral effect.	**0**
	Does it improve access to public transport?	Target for new development according to national guidance, 30 min; neutral effect.	**0**
	Does it encourage the use of Travel Plans for educational institution, businesses and other large scale developments?	Yes, 174 out of 203 schools have a Travel Plan	**+**
	Does it encourage use of alternatively fuelled vehicles?	No	**-**
5) **+** Enable inclusive communities	Does it improve access to open spaces, leisure facilities and other services?	Through link with Rights of Way Improvement Plan, approximately 13.5km of new off highway cycle routes were built (total length in CBC 1,343km); number of rights of way improvement projects were delivered.	**0**

SEA Objective	SEA Criteria	Effects	
and promote social inclusion	Does it positively impact on the well being of residents?	The provision of transport network accessibility and mobility improvements including non-car initiatives has positively impacted on the well being of residents.	+
	Does it promote social equality?	The policies and strategies of LTP2 promote social equality through measures which aim to reduce social exclusion and provide access to services and facilities for all residents.	+
6) **+** Enable sustainable economic growth and attract new inward investment	Does it improve business development and attract investment through accessibility?	Rail travel above national can indicate that there is economic growth and jobs creation in the area.	+
	Does it secure job opportunities for residents of all abilities through accessibility?	No data, but accessibility improvements (e.g. lowering kerbs) were added to implementation plan.	?
7) **-** Minimise loss/use of natural resources to transport schemes	Does it seek to reduce loss/use of natural resources?	Delivery of some of the identified major schemes led to loss of natural resources. Countinuation of plan would not encourage use of sustainable transport and would lead to higher numbers of private car journeys and higher use of fuel. Overall a very negative effect.	--
	Does it seek to optimise use of existing infrastructure?	Existing transport and planning policy aim to optimise use of exiting infrastructure through capacity enhancements such as 'Hard shoulder running' and development infrastructure on brownfield sites including the Luton Dunstable Busway	+
	Does it sterilise mineral resources?	No data	?
8) **0** Mitigate the climate change, reduce greenhouse gas emissions	Does it seek to reduce CO_2 emissions?	Number of vehicles fell bellow that anticipated in LTP2 target and there was increase in rail travel, but the LTP2 is below target in modal shift and quality of roads and footways surface was below expected quality therefore it can be assumed that if LTP policies were kept in place, there would not be sufficient improvement to have a positive effect. Neutral effect.	0
9) **0** Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions) and prepare for impacts of peak oil.	Is the plan resilient to future climate change: prevents flooding, provides adequate surface drainage (SUDS), infrastructure able to adapt to future climate changes?	Drainage was highlighted in satisfaction survey as unsatisfactory quality.	-
	Does it help reduce urban temperatures through evaporation/ evapotranspiration?	The policies aim to reduce congestion and travel demand which can have a positive impact to urban temperatures	+
10) **-** Protect and	Does the plan minimise risk of pollution of water	Drainage was highlighted in satisfaction survey as unsatisfactory quality, it is therefore likely that rain water run-of from road surfaces will have a negative impact on	-

SEA Objective	SEA Criteria	Effects	
improve surface and groundwater quality	courses?	water courses.	
11) **0** Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage)	Does the document seek to protect and enhance natural environment: designated sites, natural and semi-natural sites, SSSI and other green spaces?	The promotion of sustainable travel has beneficial impacts, though unsustainable travel patterns continue unless met with more stringent policy response. Where no further major schemes are proposed, further significant impacts to local biodiversity and designated sites is unlikely.	**0**
	Does the document seek to protect and enhance sites, features and areas of value both urban and rural areas?	A key objective of LTP2 is to protect and enhance Bedfordshire's natural and built environment, though the focus on delivering the conditions for growth and economic development may take priority.	**0**
	Does it seek to enhance the range and quality of the public realm and open spaces?	The expansion of the transport network to accommodate growth is likely to negatively impact the quality of the public realm and open spaces. However, LTP2 includes enhancement of access to open spaces.	**0**
	Does the plan seek to preserve and enhance heritage designations such as: conservation areas, listed buildings, historic parks and gardens, and other culturally important features?	LTP2 policies that promote economic growth and expansion of the transport network may have a negative impact to designated sites. However, significant impacts are avoided or mitigated against through planning and development control.	**0**
	Does the plan seek to maintain and strengthen local distinctiveness and character?	Expansion of the transport network, capacity enhancements, and policies to meet travel demand rather than aim to reduce it will contribute to transport's impacts on Central Bedfordshire's character areas. However, where no further major schemes are proposed additional significant impacts are likely to only occur to areas adjacent to the existing transport network through increased traffic volume.	**0**

6.2 Alternative 2: Improved infrastructure and services alternative.

This alternative is based on the assumption that in order to deliver more sustainable transport and economic development, improvements both to infrastructure and services are required. As a part of infrastructure improvements, a delivery of a number of major schemes was assumed. The following major schemes were identified:

- Luton Dunstable Busway,
- M1 widening between Junctions 10-13,
- A5-M1 Link (Dunstable Bypass),
- Woodside Connection,
- M1 Junction 10a,
- Luton Northern Bypass,
- East of Leighton Distributor Road,
- A421 (M1 to Bedford section),
- Flitwick Westoning Bypass,
- Biggleswade Eastern Refief Road,
- East-West Rail.

In addition to delivery of the above schemes, transport needs would be met with a number of measures under the following four categories:

- Land use planning measures aim to locate new developments in locations with existing links to transport networks and opportunities to provide or enhance a sustainable transport capacity. New development will be mixed use to reduce a need to travel to jobs, shops, culture and leisure facilities. A freight management strategy would be positioned in locations which allow use of road-alternatives eg rail.
- Infrastructure and Service Provision covers pedestrian network improvement, dedicated cycle networks, supported bus services, bus waiting facilities, rail station interchanges, and reallocation of road space: bus lanes, cycle lanes, shared space and pedestrianisation. Specific details of measures for walking, cycling and parking are considered in modal based strategies;
- Network Management covers range of measures aiming to make the most of the existing infrastructure network through better signage and information provision. Well signed routes enable to concentrate traffic flows on the most suitable routes and reduce number of vehicles on less suitable routes. Signage is particularly relevant in the management of freight movement, non-local traffic and for diversions. The use of Variable Message Signs (VMS) allows real time information to be displayed on the road network warning drivers of incidents, delays ahead, diversions or the availability of parking spaces for example. The Real Time Passenger Information enables commuters to make informed choices and reduces their time journey;
- Demand Management through access restrictions relating to the type, height, weight or width of vehicles, together with those relating to the timing of access or turning manoeuvres may be applied to reduce demand to travel on certain routes.

The table below provides the SEA assessment of this alternative.

Table 11. SEA assessment of 'Improved Infrastructure and Services' alternative.

SEA Objective	SEA Criteria	Effects	
1) **0** Reduce transport related pollution, including air, water, soil and noise pollution	Does it reduce emissions to air?	Improvement in provision of PT will have positive effect on number of private cars on the road, but cumulative effect of increased traffic related to major schemes development will result in a very negative long term effect.	**--**
	Does it reduce NO_2 and PM10 concentrations in the AQMAs?	The planned major schemes aim to reduce traffic in congested town centres and therefore there will be a positive effect on air quality in AQMAs.	**+**
	Does it reduce transport related pollution of water?	Indirect effect, promotion of PT may result in reduction in Private cars journey, but may result in increase emissions from increased PT provision. Neutral effect.	**0**
	Does it reduce transport related pollution of soil?	Indirect effect, promotion of PT may result in reduction in Private cars journey, but may result in increase emissions from increased PT provision. Neutral effect.	**0**
	Does it reduce noise pollution?	Indirect effect, promotion of PT may result in reduction in Private cars journey, but may result in increase emissions from increased PT provision. Delivery of major schemes will reduce noise levels in town centres, but they will only move a noise pollution to a new location. Neutral effect.	**0**
2) **+** Improve public health (both physical and mental) through active and sustainable travel	Does it encourage walking and cycling?	The alternative does not aim to actively promote walking and cycling. The reduced traffic flows due to major schemes development and improvement in PT services may encourage people to walk and cycle more as reduced traffic gives increases feeling of road safety. A slight positive effect.	**+**
	Does it help to reduce obesity?	Indirectly, through walking and cycling promotion. A positive effect.	**+**
	Does it improve access to open spaces and leisure facilities?	Yes, improved services, especially PT will improve access.	**+**
3) **+** Improve transport safety by reducing accidents, crime and perception of crime	Does it seek to help reduce the number of killed or seriously injured in road accidents?	Improved PT service together with delivery of major schemes (which aim to reduce traffic congestion) will have a positive effect on reduction of accidents.	**+**
	Does it ensure that pedestrian and cycle routes are safe for users?	Improved infrastructure together should help to achieve safer pedestrians and cycle routes. The delivery of the major schemes will also positively impact on reducing heavy traffic in town centres, which would then have a positive effect on safety of pedestrians and cyclist.	**+**
	Does it seek to reduce levels of crime	Improved infrastructure and public transport provision will encourage more people use it and increase perceived safety of the PT network. A positive effect.	**+**

SEA Objective	SEA Criteria	Effects	
	(particularly transport related) and improve the security of people using the transport network?		
4) **0** Improve/ increase use of active travel modes and sustainable transport	Does it encourage the use of sustainable and active modes of transport?	The improved infrastructure and PT service will encourage people to use it, however delivery of major schemes can encourage more car journeys. A neutral effect.	**0**
	Does it improve access to public transport?	Improved PT provision and transport infrastructure combined with network and demand management measures (e.g. park and ride, speed reduction, RTPI) will have a positive effect. The positive effect can be reduced by development of most of major schemes which may encourage more car journeys. Two schemes: Luton-Dunstable Busway and East-West Rail promote use of PT. Overall neutral effect.	**0**
	Does it encourage the use of Travel Plans for educational institution, businesses and other large scale developments?	No.	**0**
	Does it encourage use of alternatively fuelled vehicles?	No.	**0**
5) **+** Enable inclusive communities and promote social inclusion	Does it improve access to open spaces, leisure facilities and other services?	Improved infrastructure and service provision of PT will have a positive effect. Delivery of major schemes can help residents to access those destinations.	**+**
	Does it positively impact on the well being of residents?	The infrastructure improvement and delivery of major schemes to reduce congestion will have a positive effect on wellbeing through improvements to the environment (reduced congestion and noise levels). A positive effect.	**+**
	Does it promote social equality?	Provision of ST (public transport, walking and cycling routes) promotes social inclusion. A positive effect.	**+**
6) **+** Enable sustainable economic	Does it improve business development	Delivery of improved infrastructure combined with delivery of major schemes (e.g. Woodside Connection, Luton-Dunstable Busway) will improve access and will encourage business development.	**+**

SEA Objective	SEA Criteria	Effects	
growth and attract new inward investment	and attract investment through accessibility?		
	Does it secure job opportunities for residents of all abilities through accessibility?	Delivery of major schemes, infrastructure and PT services will allow people to choose right form of transport for them which may help them to access jobs.	+
7) - Minimise loss/use of natural resources to transport schemes	Does it seek to reduce loss/use of natural resources?	Delivery of major schemes will result in a loss of natural resources, loss of agricultural land and habitats. A negative effect.	-
	Does it seek to optimise use of existing infrastructure?	Yes, improvements in existing service provision seek to maximise use of existing infrastructure.	+
	Does it sterilise mineral resources?	There will be some loss of agricultural land and use of natural resources to build the schemes.	-
8) 0 Mitigate the climate change, reduce greenhouse gas emissions	Does it seek to reduce CO_2 emissions?	Delivery of most of the major schemes may result in increased number of car journeys and therefore CO_2 emissions. Although some of this journey will be only re-routed from existing network to new roads. Two major schemes are providing new PT service and delivery of improved existing services should reduce need for use of private cars. Overall it would be a neutral effect.	0
9) + Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions) and prepare for impacts of peak oil.	Is the plan resilient to future climate change: prevents flooding, provides adequate surface drainage (SUDS), infrastructure able to adapt to future climate changes?	Depends on delivery. The construction of major schemes will result in more impermeable surfaces and therefore can slightly increase risk of local flooding. Management of surface waters run-off will be dealt at a project level for each of the major schemes. Overall neutral effect.	0
	Does it help reduce urban temperatures through evaporation/ evapotranspiration?	Depends on delivery, but the measures aim to reduce congestion and travel demand which can have a positive impact to urban temperatures	+
10) 0 Protect and improve	Does the plan minimise risk of pollution of	Delivery of major schemes may increase risk of run-off of oil and metal pollutants from road surface into drainage system and road verges during heavy rain	0

SEA Objective	SEA Criteria	Effects	
surface and groundwater quality	water courses?	events. Improvement in PT services will result in more people using it and fewer cars on the road and therefore less pollution. Overall neutral affect.	
11) **--** Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage)	Does the document seek to protect and enhance natural environment: designated sites, natural and semi-natural sites, SSSI and other green spaces?	Major schemes will have potentially adverse impact on designated sites and landscape, including loss of farmland and vegetation and habitats. M1 J10 is likely to cause habitat disturbance within County Wildlife Sites; Luton Northern Bypass – adverse impact on AONB, SSSI and County Wildlife Sites The improvements in infrastructure and PT services may result in fewer cars which will slightly offset the negative impact of delivery of major schemes and likely increase in vehicles. Overall a very negative effect.	--
	Does the document seek to protect and enhance sites, features and areas of value both urban and rural areas?	Major schemes will have a negative impact on rural tranquillity through the introduction of lighting and traffic noise. There will be a positive impact resulting from Luton and Dunstable Busway reducing traffic within urban centres which may enhance quality of townscape within the town. The improvements in infrastructure and PT services may result in fewer cars which will slightly offset the negative impact of delivery of major schemes and likely increase in vehicles. Overall a negative effect.	-
	Does it seek to enhance the range and quality of the public realm and open spaces?	Major schemes will have a negative impact on rural tranquillity through the introduction of lighting and traffic noise. There will be a positive impact resulting from Luton and Dunstable Busway reducing traffic within urban centres which may enhance quality of townscape within the town. The improvements in infrastructure and PT services may result in fewer cars which will slightly offset the negative impact of delivery of major schemes and likely increase in vehicles. Overall a negative effect.	-
	Does the plan seek to preserve and enhance heritage designations such as: conservation areas, listed buildings, historic parks and gardens, and other	Major schemes will have potentially adverse impact on buried archaeological remains, and sites of cultural and historical importance. Biggleswade Eastern Relief Road, Flitwick Westoning Bypass, East of Leighton Distributor Road and Luton Northern Bypass – adverse impact to protected cultural heritage: scheduled monuments, listed buildings, areas of archaeological importance and ancient woodland. East-West Rail – potential adverse impacts (depends on route alignment) to designated sites and buried archaeological remains, sites of landscape and cultural importance. Luton and Dunstable Busway positive impact resulting	--

SEA Objective	SEA Criteria	Effects	
	culturally important features?	from reducing traffic within urban centres which may enhance quality of cultural heritage sites within the town. A421 (M1 to Bedford) – adverse impact on 'setting' of a number of local historic or listed buildings and local archaeological sites. The improvements in infrastructure and PT services may result in fewer cars which will slightly offset the negative impact of delivery of major schemes and likely increase in vehicles. Overall a very negative effect.	
	Does the plan seek to maintain and strengthen local distinctiveness and character?	There will be a positive impact resulting from Luton and Dunstable Busway reducing traffic within urban centres which may enhance quality of townscape and cultural heritage within the town. Improvement in infrastructure and PT service may result in fewer private car journeys, but major schemes may encourage more people to travel by car. Overall a negative effect.	-

6.3 Alternative 3: Smarter Choices.

It was recognised that in order to ensure modal shift towards sustainable transport modes (walking, cycling and public transport) not only appropriate infrastructure and services need to be in place, but also a proactive promotion of behavioural change is needed. This alternative therefore, builds upon the measures included in the previous option with the inclusion of Smarter Choices.

- Smarter Choices: comprise methods which influence travel behaviour without the need for hard infrastructure schemes. They incorporate methods to change the perception of the public in terms of the way they travel and the consequences of those choices, whilst also raising awareness and the public's ability to use existing provision in place. These measures also include provision of information about freight management measures to freight operators

The table below provides the SEA assessment of this alternative.

Table 12. SEA assessment of 'Smarter Choices' alternative.

SEA Objective	SEA Criteria	Effects	
1) **+** Reduce transport related pollution, including air, water, soil and noise pollution	Does it reduce emissions to air?	Combined efforts to improve public transport and encourage people to use Sustainable Transport modes (PT, walking, cycling) should result in reducing a number of private cars and reduce emissions. These positive effects can be partly reduced by potentially increased traffic movement due to major schemes development (designed to divert traffic from congested town centres). Emission to air is a long term, negative cumulative effect with other sources of emissions to air (from housing and industry).	**-**
	Does it reduce NO_2 and PM10 concentrations in the AQMAs?	The planned major schemes aim to reduce traffic in congested town centres and therefore there will be a positive effect on air quality in AQMAs. Encouragement of using sustainable transport will further reduce emissions in AQMAs. Long term, positive cumulative effect.	**++**
	Does it reduce transport related pollution of water?	Indirectly through reduction in private car journeys due to modal shift away from car to ST modes, will result in a slightly positive effect.	**+**
	Does it reduce transport related pollution of soil?	Indirectly through reduction in private car journeys due to modal shift away from car to ST modes.	**+**
	Does it reduce noise pollution?	Indirectly through reduction in private car journeys due to modal shift away from car to ST modes and combine with cumulative effect of taking traffic away from town centres it should result in lower level of noise. However it need to be noted that major schemes only move noise problem to a new location. Cumulative, slightly positive effect.	**+**
2) **++** Improve public health (both	Does it encourage walking and cycling?	The alternative looks to actively promote walking and cycling to take advantage of reduced traffic flows due to delivery of major schemes and promotion of PT through smarter ticketing, information provision and travel plans. A very positive effect.	**++**

SEA Objective	SEA Criteria	Effects	
physical and mental) through active and sustainable travel	Does it help to reduce obesity?	Indirectly through more people walking and cycling, although it is likely that people will walk and cycle are those who are already active. Overall positive effect.	+
	Does it improve access to open spaces and leisure facilities?	Yes, the improved service provision and promotion of ST will have a very positive effect on access.	++
3) ++ Improve transport safety by reducing accidents, crime and perception of crime	Does it seek to help reduce the number of killed or seriously injured in road accidents?	Improved PT service together with delivery of major schemes (which aim to reduce traffic congestion) will have a positive effect on reduction of accidents.	+
	Does it ensure that pedestrian and cycle routes are safe for users?	Improved infrastructure together should help to achieve safer pedestrians and cycle routes. The delivery of the major schemes will also positively impact on reducing heavy traffic in town centres, which would then have a positive effect on safety of pedestrians and cyclist.	+
	Does it seek to reduce levels of crime (particularly transport related) and improve the security of people using the transport network?	Encouraging people to use ST: PT, walk and cycle will increase number of people using the network and increase natural surveillance and therefore increase feeling of safety. In addition provision of secure cycle storage places will help to reduce crime levels and Travel Plans will allow identifying the best route for users. A very positive effect.	++
4) + Improve/ increase use of active travel modes and sustainable transport	Does it encourage the use of sustainable and active modes of transport?	The improved infrastructure and PT service will encourage people to use it. In addition promotion of ST though marketing and Travel Plans will have a positive impact. However the delivery of most of major schemes can encourage more car journeys. Two schemes: Luton-Dunstable Busway and East-West Rail promote use of PT. Overall positive effect.	+
	Does it improve access to public transport?	Improved PT provision and transport infrastructure combined with network and demand management measures (e.g. park and ride, speed reduction, RTPI) will have a positive impact. Promotion of the improved services through marketing, smarter ticketing system and Travel Plans with enforced the positive effect. However the delivery of major schemes can encourage more car journeys. Overall a cumulative, positive effect.	+
	Does it encourage the use of Travel Plans for educational institution, businesses and other large scale developments?	Yes.	++
	Does it encourage use	Yes	+

SEA Objective	SEA Criteria	Effects	
	of alternatively fuelled vehicles?		
5) **++** Enable inclusive communities and promote social inclusion	Does it improve access to open spaces, leisure facilities and other services?	Improved infrastructure and service provision of PT will have a positive effect. The marketing, Travel Plans and smarter ticketing will strengthen this positive effect. Delivery of major schemes can also help residents to access those destinations. A very positive effect.	**++**
	Does it positively impact on the well being of residents?	The infrastructure improvement and delivery of major schemes to reduce congestion will have a positive effect on wellbeing through improvements to the environment (reduced congestion and noise levels). This positive effect will be strengthened by smarter choices (e.g. Travel Plans, information provision, smarter ticketing).	**++**
	Does it promote social equality?	Positive effect of ST provision will be strengthened by information provision about different travel options, Travel Plans and smarter ticketing (which will make purchase of tickets easier and remove one of the barriers to travel). A very positive effect.	**++**
6) **+** Enable sustainable economic growth and attract new inward investment	Does it improve business development and attract investment through accessibility?	Delivery of improved infrastructure combined with delivery of major schemes (e.g. Woodside Connection, Luton-Dunstable Busway) will improve access and will encourage business development.	**+**
	Does it secure job opportunities for residents of all abilities through accessibility?	Delivery of major schemes, infrastructure and PT services will allow people to choose right form of transport for them which may help them to access jobs.	**+**
7) **0** Minimise loss/use of natural resources to transport schemes	Does it seek to reduce loss/use of natural resources?	Delivery of major schemes will result in a loss of natural resources, loss of agricultural land and habitats. Active promotion of sustainable transport will result in fewer private car journeys and therefore less fuel usage. Overall a neutral effect.	**0**
	Does it seek to optimise use of existing infrastructure?	Yes, improvements in existing service provision seek to maximise use of existing infrastructure. Provision of information, marketing and travel plans will promote the best use of existing infrastructure so more people are using it in the best possible way.	**++**
	Does it sterilise mineral resources?	There will be some loss of agricultural land and use of natural resources to build the schemes.	**-**
8) **+** Mitigate the climate change, reduce greenhouse gas emissions	Does it seek to reduce CO_2 emissions?	Delivery of most of the major schemes may result in increased number of car journeys and therefore CO_2 emissions. Although some of this journey will be only re-routed from existing network to new roads. Two major schemes are providing new PT service and delivery of improved existing services should reduce need for use of private cars. Active promotion of ST should further reduce a reliance on private cars. Overall it would be aa positive effect.	**+**
9) **+** Adapt to the	Is the plan resilient to	Depends on delivery. The construction of major schemes will result in more impermeable surfaces and	**0**

SEA Objective	SEA Criteria	Effects	
impacts of a changing climate (including flooding, drought and adverse weather conditions) and prepare for impacts of peak oil.	future climate change: prevents flooding, provides adequate surface drainage (SUDS), infrastructure able to adapt to future climate changes?	therefore can slightly increase risk of local flooding. Management of surface waters run-off will be dealt at a project level for each of the major schemes. Overall neutral effect.	
	Does it help reduce urban temperatures through evaporation/ evapotranspiration?	Depends on delivery, but the measures aim to reduce congestion and travel demand which can have a positive impact to urban temperatures	+
10) + Protect and improve surface and groundwater quality	Does the plan minimise risk of pollution of water courses?	Delivery of major schemes may increase risk of run-off of oil and metal pollutants from road surface into drainage system and road verges during heavy rain events. Improvement in PT services and active promotion of active travel modes will result in more people using it and fewer cars on the road and therefore less pollution. Overall slightly positive effect.	+
11) - Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage)	Does the document seek to protect and enhance natural environment: designated sites, natural and semi-natural sites, SSSI and other green spaces?	Major schemes will have potentially adverse impact on designated sites and landscape, including loss of farmland and vegetation and habitats. M1 J10 is likely to cause habitat disturbance within County Wildlife Sites; Luton Northern Bypass – adverse impact on AONB, SSSI and County Wildlife Sites Delivery of major schemes is likely to increase number of vehicles, but these can be offset by a positive effect achieved through active promotion of active modes of transport and modal shift towards ST. Overall a negative effect.	-
	Does the document seek to protect and enhance sites, features and areas of value both urban and rural areas?	Major schemes will have a negative impact on rural tranquillity through the introduction of lighting and traffic noise. There will be a positive impact resulting from Luton and Dunstable Busway reducing traffic within urban centres which may enhance quality of townscape within the town. Delivery of major schemes is likely to increase number of vehicles, but these can be offset by a positive effect achieved through active promotion of active modes of transport and modal shift towards ST. Overall a neutral effect.	0
	Does it seek to enhance the range and	Major schemes will have a negative impact on rural tranquillity through the introduction of lighting and traffic noise.	0

SEA Objective	SEA Criteria	Effects	
	quality of the public realm and open spaces?	There will be a positive impact resulting from Luton and Dunstable Busway reducing traffic within urban centres which may enhance quality of townscape within the town. Delivery of major schemes is likely to increase number of vehicles, but these can be offset by a positive effect achieved through active promotion of active modes of transport and modal shift towards ST. Overall a neutral effect.	
	Does the plan seek to preserve and enhance heritage designations such as: conservation areas, listed buildings, historic parks and gardens, and other culturally important features?	Major schemes will have potentially adverse impact on buried archaeological remains, and sites of cultural and historical importance. Biggleswade Eastern Relief Road, Flitwick Westoning Bypass, East of Leighton Distributor Road and Luton Northern Bypass – adverse impact to protected cultural heritage: scheduled monuments, listed buildings, areas of archaeological importance and ancient woodland. East-West Rail – potential adverse impacts (depends on route alignment) to designated sites and buried archaeological remains, sites of landscape and cultural importance. Luton and Dunstable Busway positive impact resulting from reducing traffic within urban centres which may enhance quality of cultural heritage sites within the town. A421 (M1 to Bedford) – adverse impact on 'setting' of a number of local historic or listed buildings and local archaeological sites. Delivery of major schemes is likely to increase number of vehicles, but these can be offset by a positive effect achieved through active promotion of active modes of transport and modal shift towards ST. Overall a negative effect.	-
	Does the plan seek to maintain and strengthen local distinctiveness and character?	There will be a positive impact resulting from Luton and Dunstable Busway reducing traffic within urban centres which may enhance quality of townscape and cultural heritage within the town. Major schemes may encourage more people to travel by car, but improvement in infrastructure and PT service, and active promotion of ST may result in modal shift towards ST. Overall neutral effect.	**0**

6.4 Comparison of the effects of the considered alternatives

The assessment of environmental effects of the considered alternatives is summarised in Table 13. It shows overall scoring of each of the alternatives assessed against each of the SEA objectives. The best alternative to achieve each of the SEA objectives is identified in the column 'Appraisal Comments'.

Table 13. Comparison of the effects of the considered alternatives.

Objective	SEA Topic	Alternative 1 Business as usual	Alternative 2 Improved Infrastructure and services	Alternative 3 Smarter Choices	Appraisal Comments
1) Reduce transport related pollution, including air, water, soil and noise pollution	• Air quality • Transport • Health • Noise • Climatic factors • Water and flooding	0	0	+	**Preferred Alternative 3**
2) Improve public health (both physical and mental) through active and sustainable travel	• Health • Noise • Population	+	+	++	**Preferred Alternative 3**
3) Improve transport safety by reducing accidents, crime and perception of crime	• Population	-	+	++	**Preferred Alternative 3**
4) Improve/ increase use of active travel modes and sustainable transport	• Population • Health	0	O	+	**Preferred Alternative 3**
5) Enable inclusive communities and promote social inclusion	• Health • Population	+	+	++	**Preferred Alternative 3**
6) Enable sustainable economic growth and attract new inward investment	• Population	+	+	+	**No preferred Alternative**

Objective	SEA Topic	Alternative 1 Business as usual	Alternative 2 Improved Infrastructure and services	Alternative 3 Smarter Choices	Appraisal Comments
7) Minimise loss/use of natural resources to transport schemes	• Material assets • Water	--	-	0	**Preferred Alternative 3**
8) Mitigate the climate change, reduce greenhouse gas emissions	• Climatic factors	0	0	+	**Preferred Alternative 3**
9) Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions) and prepare for impacts of peak oil.	• Climatic factors • Water • Population	0	+	+	**Preferred Alternative 2 and 3**
10) Protect and improve surface and groundwater quality	• Water and flooding	-	0	+	**Preferred Alternative 3**
11) Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage)	• Material assets including Minerals and waste • Biodiversity including flora, fauna and soil • Landscape and townscape • Cultural heritage including architectural and archaeological heritage	0	--	-	**Preferred Alternative 1**

The above comparison of the environmental effects of each of the alternatives shows that most of the objectives are more likely to be achieved through implementation of alternative 3 'Smarter Choices'. Only SEA objective 11 would be better delivered by Alternative 1. Therefore the preferred direction for LTP3 is to implement alternative 3 and ensure that the mitigation measures are put in place to minimise the negative effects of this alternative on achieving SEA objective 11.

6.5 Health Impact Assessment of the alternatives.

The Department of Health (DoH) draft guidance (2007) recommends that the assessment of the impact of the LTP should consider the following topics:

- Transport to work, shops, schools and healthcare;
- Walking and cycling;
- Community severance;
- Frequency and severity of crashes;
- Collisions causing injury and fatal accidents;
- Air pollution, noise; and
- Ageing population and increasing disability

From the HIA point of view the alternative 3 consist of the right mixture of measures to deliver the best transport solutions. Through improvements to transport infrastructure and service it will ensure effective transport of residents to work, shops, schools and healthcare. The improved infrastructure will have a positive effect on reducing numbers and severity of collisions and therefore numbers of injuries and deaths in transport accidents. The improvements in PT service will provide opportunity to cater for ageing, disable and disadvantaged groups of society. Promotion of walking and cycling would have a positive health and social inclusion impact and also will contribute to reduction of air pollution and noise.

6.6 Habitat Regulation Assessment

Land use plans are subject to the provisions of Article 6 (3) and (4) of the Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive) and may therefore require the undertaking of an Habitat Regulations Assessment (HRA) of their implications for European Sites.

The purpose of HRA is to assess the impacts of a land-use plan against the conservation objectives of a European site and to ascertain whether it would adversely affect the integrity of that site, whether alone or in combination with other plans and projects. Where significant negative effects are identified, alternative options should be examined to avoid any potential damaging effects.

The Habitats Regulations Assessment Screening Report has been carried out on behalf of Central Bedfordshire Council by AMEY and will be made available as part of the suite of documents that will support the LTP.

6.7 Significant secondary, cumulative and synergistic effects

Many environmental impacts result from the accumulation of multiple small and often indirect effects, rather than a few large and apparent ones. The identification of these issues is very difficult at a project level assessment through EIA. They are the easiest and most effectively assessed at the SEA level.

The SEA Directive requires identification of secondary, cumulative and synergistic effects. The box 2 includes definitions of these effects provided in 'A Practical Guide to the Strategic Environmental Assessment Directive' (ODPM, 2005).

Box 2. The definitions of secondary, cumulative and synergistic effects (adopted from ODPM, 2005).

Secondary or indirect effects are effects that are not a direct result of the plan, but occur away from the original effect or a result of a complex pathway (e.g. a development that changes a water table and thus affects the ecology of a nearby wetland).

Cumulative effects arise, for instance, where several developments each have insignificant effects but together have a significant effect; or where several individual effects of the plan (e.g. noise, dust and visual) have a combine effect.

Synergistic effects interact to produce a total effect greater than the sum of the individual effects (e.g. a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes areas too small to support the species at all).

The 'cumulative effects' term often covers secondary, cumulative and synergistic effects as these terms are not mutually exclusive (ODPM, 2005). In this assessment the 'cumulative effects' term is used to describe secondary, cumulative and synergistic effects.

The cumulative effects and affected receptors were identified based on the expert opinion technique. Due to limited quantitative information, a qualitative assessment was conducted and the results were recorded in the table 14.

Table 14. Cumulative effects and their causes.

Cumulative effects	Receptors	Causes
Air pollution	Human population (health) Fauna and flora	NOx and PM10 Emissions from transport, industry
Water pollution of surface and groundwater including aquifers	Human population Fauna and flora	Run off of pollution from roads Agricultural run off
Flooding	Human population Material assets (including cultural, historical and archaeological) Wildlife: flora and fauna Habitats	More impermeable surfaces (transport schemes and development as a result of growth agenda) Structures in flood plain reducing flood storage capacity
Climate change	Human population	Greenhouse emissions from transport,

Cumulative effects	Receptors	Causes
	Wildlife: flora and fauna Habitats	industry and domestic sector
Visual impacts of infrastructure on landscape	landscape	Transport schemes and other development due to growth agenda
Loss of tranquillity in countryside	countryside	Development of major transport schemes, residential and industrial development due to growth agenda, and industrial, commercial and residential development that is part of growth agenda
Noise pollution	Human population Fauna and flora	Development of major schemes and diversions of existing vehicle movement
Habitat fragmentation	Fauna and flora	Development of Major Scheme, building of new transport hubs and development of sustainable transport networks, and industrial, commercial and residential development that is part of growth agenda

The cumulative effects of the alternatives were assessed for each of the receptors identified above. The assessment was based on expert opinion and the results are presented in Table 15 below. The preferred alternative delivering lesser negative effects or better positive effects was identified and stated in the 'appraisal comments' column.

Table 15. Cumulative effects of LTP3 on receptors.

Receptor	Alternative 1: BAU	Alternative 2: Improved infrastructure and services	Alternative 3: Smarter Choices	Appraisal comments
Human population (health)	No major schemes delivered no infrastructure or PT services and therefore no reduction in traffic congestion in town centres, cumulative effect of emissions of NOx, PM10 and noise. With predicted growth in population, there will be likely increase in vehicles numbers and therefore pollution and noise. The emissions from	Delivery of major schemes and improvement of infrastructure and PT services will result in fewer cars in town centres reducing both pollution (and noise impact on human health. The alternative will reduce the emissions from transport which contributes to climate change and pollution of water, the negative effect on human health will be reduced.	Delivery of major schemes and improvement of infrastructure and PT services and promotion of ST through smart choices will reduce number of vehicles in town centres even further than alternative 2 and therefore reduce pollution and noise. There will be also a very positive effect from promotion of active modes of transport in reducing obesity	The cumulative effects of alternative 3 are the most beneficial to human population and its health. **Alternative 3 is preferred**.

Receptor	Alternative 1: BAU	Alternative 2: Improved infrastructure and services	Alternative 3: Smarter Choices	Appraisal comments
	transport will contribute to climate change and pollution of water which will have a negative effect on human health. Overall a negative effect.	Overall a positive effect.	and likelihood of associated diseases. The alternative will reduce the emissions from transport which contributes to climate change and pollution of water, the negative effect on human health will be reduced. Overall a very positive effect.	
Flora & Fauna	No major schemes delivered, but no improvements in infrastructure or PT services and therefore no reduction in traffic this will mean no reduction in water pollution, noise pollution or air pollution. This alternative will not cause any further habitat fragmentation, but will not improve current levels of pollution affecting the species. Overall neutral effect.	Delivery of major schemes and improvement of infrastructure and PT services will result in fewer cars in town centres. This will reduce air, noise and water pollution but may increase habitat fragmentation. The reduction in greenhouse emissions from transport will contribute to minimising the impacts of climate change. Overall slightly negative effect.	Delivery of major schemes and improvement of infrastructure and PT services and promotion of ST through smart choices will reduce number of cars and therefore pollution and noise, however habitat fragmentation may increase. Due to a promotion of active transport modes there will be a greater reduction in greenhouse emissions from transport which will contribute to minimising the impacts of climate change. Overall neutral effect	The cumulative effects of alternatives 1 and 3 are the least damaging to flora and fauna **Alternatives 1 and 3 are preferred**.
Wildlife Habitats	No major schemes delivered any infrastructure or PT services therefore no reduction in	Delivery of major schemes and improvement of infrastructure and PT services will result in fewer cars in town centres.	Delivery of major schemes and improvement of infrastructure and PT services will result in fewer cars in town	Wildlife Habitats are least affected in Alternatives 1 and 3. **Alternatives 1 and 3 are**

Receptor	Alternative 1: BAU	Alternative 2: Improved infrastructure and services	Alternative 3: Smarter Choices	Appraisal comments
	Greenhouse gas emissions; however no increase in flooding due to no increase in growth. Overall, a neutral effect.	This will reduce air, noise and water pollution but may increase flooding with planned improvements. Major schemes will have an impact upon designated sites and reduce habitat areas, this should be compensated through implementation of mitigation measures. Promotion of PT will result in fewer private cars journeys and less pollution which will help to minimise impacts of climate change. Overall, a slightly negative effect.	centres. This will reduce air, noise and water pollution but may increase flooding with planned improvements. Major schemes will have an impact upon designated sites and reduce habitat areas. Smarter choices will help to encourage active modes of transport and reduce vehicle movements even further than alternative 2. Overall, a neutral effect.	**preferred.**
Landscape and Countryside	No major schemes developed means there will be no landscape or countryside fragmentation, loss of tranquillity or visual impact. Overall a neutral effect.	Development of major schemes will increase landscape fragmentation and decrease tranquillity of countryside. Development of PT services will help to reduce vehicle movements, which will contribute to minimising negative effect on countryside from pollution and climate change. Overall a negative effect.	Development of major schemes will increase landscape fragmentation and decrease tranquillity of countryside. Development of PT services and smarter choices, promotion of active travel modes will help to reduce vehicle movements even further than alternative 2 within urban and rural settings, which will contribute to minimising negative effect on countryside from pollution and climate change.	Landscape and Countryside are least affected in Alternatives 1 and 3. **Alternatives 1 and 3 are preferred.**

Receptor	Alternative 1: BAU	Alternative 2: Improved infrastructure and services	Alternative 3: Smarter Choices	Appraisal comments
			Overall a neutral effect.	
Material assets	No major schemes developed means that although there will not be any mineral assets lost, there will not be any improvements to traffic congestion and there will be negative impact on material assets such as infrastructure and both built and natural environment. Overall a neutral effect.	Improvements to existing transport infrastructure and services will relief congestion and will have a positive impact on material assets. There will be increase likelihood of localised flooding from surface water runoff from road surfaces, but this can be minimised through implementation of appropriate drainage solutions, and therefore it should not have any negative impact on material assets. Overall a slightly positive effect.	Improvements to existing transport infrastructure and services will relief congestion and will have a positive impact on material assets. This positive impact will be strengthened by promotion of sustainable transport modes, which will result in fewer private car journeys. There will be increase likelihood of localised flooding from surface water runoff from road surfaces, but this can be minimised through implementation of appropriate drainage solutions, and therefore it should not have any negative impact on material assets. Overall a positive effect.	The cumulative effects of alternative 3 are the most beneficial to material assets. **Alternative 3 is preferred.**
Cultural and Heritage	No major schemes developed means there will be no disruption of heritage sites. No infrastructure improvement or PT provision will mean no reduction in water pollution, noise pollution or air pollution. This will	Development of major schemes, infrastructure improvements and PT services will help to reduce traffic and pollution within urban areas, this will increase the quality of public realm. They may disrupt heritage sites through development of	Development of major schemes, infrastructure improvements, PT services and smarter choices will help to reduce traffic and pollution within urban areas even further than alternative 2, this will increase the quality of public	Cultural and Heritage sites are least affected in Alternative 3. **Alternative 3 is preferred**

Receptor	Alternative 1: BAU	Alternative 2: Improved infrastructure and services	Alternative 3: Smarter Choices	Appraisal comments
	increase degradation of the public realm and have a negative impact on historical and cultural sites. Overall a negative effect.	major schemes, this can be minimise through appropriate route alignment. Overall a slightly negative effect.	realm through increase walking, cycling and sustainable modes of transport. They may disrupt heritage sites through development of major schemes, this can be minimise through appropriate route alignment. Overall a neutral effect.	

Based on cumulative effect assessment the preferred option is alternative 3. It has the least negative effects on receptors such as wildlife habitats, flora and fauna, cultural and historical heritage, landscape and countryside and has most beneficial effects on material assets, human population and its health.

6.8 Proposed mitigation and implementation measures

Annex I of the Directive requires the Environmental Report to include "the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme". These measures are referred to in this report as 'mitigation measures'.

The ODPM guide to SEA provides following examples of mitigation measures:

- Changes to the alternative concerned, or to the plan or programme as a whole;
- Changes to a specific proposal within the plan or programme;
- Inclusion of new provisions within the plan or programme;
- Technical measures to be applied during the implementation stage, e.g. buffer zones, application of design principles;
- Identifying issues to be addressed in project EIAs;
- Proposals for changing other plans and programmes.

Mitigation was considered at the stage of developing alternatives. It was recognised that the 'Business as usual' alternative would not improve existing infrastructure and service provision and therefore would not address the congestion, pollution and health issues within town centres, and existing and proposed AQMAs. It would also not encourage the modal shift towards the sustainable transport modes. This resulted in consideration of the second alternative 'Improved infrastructure and services'. It then was noted that to ensure modal shift towards sustainable transport there is a need for measures to actively promote the shift and the third alternative was developed, called 'smarter choices'.

It is recognised that most of transport activities result in adverse effects on the environment and further mitigation measures were considered during the assessment of the LTP3 to address any negative effects identified in the SEA. The identified measures are presented in the Table 15 below. Those measures aim at preventing, reducing or offsetting the negative effects of the LTP3.

Table 15. Mitigation measures.

Objective	SEA Topic	Description of mitigation and implementation recommendations
1) Reduce transport related pollution, including air, water, soil and noise pollution	• Air quality • Transport • Health • Noise • Climatic factors • Water and flooding	• Manage dust creation with the application of Construction Environmental Management Plan (CEMP) for all major construction schemes. • Where residential properties are affected, use strict controls and good site practice to minimise construction noise & vibration and introduce landscape bunding and noise barriers. • Devise drainage design plan before construction works begin and include sustainable drainage where appropriate. • Incentivise bus travel to encourage modal shift with measures such as affordable and integrated ticketing systems and safe, weather proof waiting facilities. • Improve public perception of bus travel through good quality marketing scheme. • Ensure Busway serves both existing and new housing allocations with regular services that target commuters as well as those with low mobility. • Use good quality fuel efficient bus fleet and sustainable

Objective	SEA Topic	Description of mitigation and implementation recommendations
		biofuels. • Include measures that make driving through Dunstable town centre AQMA less appealing. • Use of “low noise” surface and noise fencing or bunding to screen road traffic noise. • Accompany any transport interchanges development / improvement with high quality pedestrian and cycle access provisions. • Use landscaping and green infrastructure to intercept pollutants, e.g. pollution can be contained be SUDs, in particular reed beds, swales and retention ponds.
2) Improve public health (both physical and mental) through active and sustainable travel	• Health • Noise • Population	• Provide cycle storage facilities at bus/rail waiting areas. • Consider Busway route options to include provision of access to open spaces and leisure facilities • Give high priority to green infrastructure in the design of the major schemes and provide high quality ‘Green Bridges’ where appropriate for non-motorised transport users. • Provision of noise barriers and use of a low-noise road surface. • Provide a number of high quality crossing points for non-motorised transport users for each of the major schemes and provide access from crossing points to areas of open space and leisure facilities • Where possible, provide access links from cycleway to areas of open space and leisure facilities. • Include high quality active transport options as part of development of major schemes. • Effective landscaping of roads helps brings direct benefits to road users - reducing stress, reducing carbon dioxide , filtering pollutants. • Ensure link to the outdoor access improvement plan
3) Improve transport safety by reducing accidents, crime and perception of crime	• Population	• Provide well lit bus/rail waiting facilities and access routes. The use of CCTV may also enhance safety of bus travel. • High quality road space/crossings for pedestrians and cyclists as part of major schemes development. • Safety lighting will enable safer after dark usage for non-motorised travel. • High quality road design (including safety lighting) increases road safety. • Use of natural surveillance and lighting and multi-modal spaces will help to reduce crime.
4) Improve/ increase use of active travel modes and sustainable transport	• Population • Health	• Prioritise bus travel over car use to encourage modal shift. • Where possible, ensure Busway serves both existing and new housing allocations, areas of employment and educational facilities with regular services that target commuters as well as those with low mobility. • Use good quality fuel efficient fleet and sustainable biofuels. • As part of major schemes development provide high quality road space/crossings for pedestrians and cyclists. • Safety lighting will enable safer after dark usage for non-motorised travel.

Objective	SEA Topic	Description of mitigation and implementation recommendations
		• Incorporate priority for efficient public transport access to major employment areas. • Introduce measures alongside the major schemes which discourage car travel and encourage non-motorised travel. • Include high quality active transport options as part of development of major schemes. • Ensure good landscape design to enhances walking and cycling routes • Ensure link to the outdoor access improvement plan
5) Enable inclusive communities and promote social inclusion	• Health • Population	• Improvements focused in areas of social deprivation and low car ownership. • Ensure bus/rail ticket prices are affordable for all. • Provide a number of high-quality 'Green bridges' for non-motorised transport users on new schemes. • Public transport options connecting residents to facilities and employment opportunities. • Services should be sited within easy walking or cycling distance of residential areas. • Sustainable transport modes should be integrated with services and open spaces at the planning stage.
6) Enable sustainable economic growth and attract new inward investment	• Population	• Public transport options connecting residents to facilities and employment opportunities to reduce focus on car travel. • Ensure that accession runs are an integral part of development and master planning. • Ensure that improved PT helps people of all abilities to access jobs (fleet able to serve residents of ageing and disable residents).
7) Minimise loss/use of natural resources to transport schemes	• Material assets • Water	• Minimise land take in route alignment where possible. • Use good quality fuel efficient fleet. • Minimise use of natural resources in construction of project through re-use and recycling materials on site, use of recycled materials in construction where possible. • Re-use earthworks on site where possible.
8) Mitigate the climate change, reduce greenhouse gas emissions	• Climatic factors	• Provide sustainable transport options alongside capacity improvements (development of major schemes). • Prioritise alternative modes of travel over car use to encourage modal shift. • Incentives to use non-car alternative transport options. • Use good quality fuel efficient fleet and sustainable biofuels. • Where possible discourage single-occupancy car travel. • Incorporation of SUDs and infrastructure that will be suitable for hotter and wetter environments will be crucial for a climate change adaptation plan.
9) Adapt to the impacts of a changing climate (including flooding, drought and	• Climatic factors • Water • Population	• Devise drainage design plan before construction works begin and include sustainable drainage where appropriate. • Include porous surface where appropriate to minimise impact of heavy rainfall. • Use of alternative fuels in bus fleet • Use of alternatives to crude oil based fuel for rail fleet.

Objective	SEA Topic	Description of mitigation and implementation recommendations
adverse weather conditions) and prepare for impacts of peak oil.		Renewable energy sources. • The introduction of green corridors and green spaces will help mitigate against the urban heat island affect. • Ensure that if new infrastructure or improvements to existing one are needed, it is made as resilient to climate change as possible
10) Protect and improve surface and groundwater quality	• Water and flooding	• Devise drainage design plan before construction works begin and include sustainable drainage where appropriate. • A421: Balancing ponds and filter drains would reduce potential pollution effects of routine run-off. • The introduction of SUDs and reed beds will help mitigate against pollution to waterways.
11) Protect and enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage)	• Material assets including Minerals and waste • Biodiversity including flora, fauna and soil • Landscape and townscape • Cultural heritage including architectural and archaeological heritage	• Detailed archaeological investigations to be undertaken prior to construction. • Dependant on site selection. Where possible, define route alignment to avoid sites of archaeological importance, landscape designations and areas of ecological importance. • Visual screening measures can reduce impact to character of the surroundings if required. Visual and acoustic screening by planting, fencing and construction of earthwork mounds or bunds. • Enhancement of local biodiversity and habitat replacement. Where possible, replace and enhance existing habitats with native species. Relocate any protected species. Retain existing vegetation where possible. • Replacement habitats include woodland, individual trees, hedgerows which can also act as visual screening measure to minimise landscape impacts. • Replacement/enhancement of habitat connectivity to mitigate effects of severance. • Route alignment integrated into contours of surrounding landscape where possible. Also achievable through appropriate use of woodland planting. Replace landscape features lost to the Scheme. • Appropriate landscape design including the integration of existing landscape features into the scheme's design. • Ensure that any new or improved infrastructure has sympathetic style with surroundings and compliments local distinctiveness and character.

It should be noted that the detailed mitigation measure for each of the major schemes should be included in the Environmental Impact Assessment of the scheme.

6.9 Implementation and monitoring

The SEA Regulations require the plan maker to "…monitor the significant environmental effects of the implementation of each plan or programme with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate action (Section 17 (1))". Annex 1 (i) states that "The Environmental Report should provide information on a description of the measures envisaged concerning monitoring".

The aim of the monitoring is to measure environmental effects of the LTP3 against the environmental objectives established through SEA. Gathered monitoring information will help to fill any gaps in baseline information and will inform any future plans improvements (need for mitigation measures implementation) and development. The proposed monitoring indicators are included in Table 16, below.

Table 16. Monitoring indicators of LTP3.

SEA objective	SEA topics	Key assessment criteria	Potential monitoring indicators
1) Reduce transport related pollution, including air, water, soil and noise pollution	• Air quality • Health • Noise • Climatic factors • Water	• Does it reduce emissions to air? • Does it reduce NO_2 and PM10 concentrations in the AQMAs? • Does it reduce transport related pollution of water? • Does it reduce transport related pollution of soil? • Does it reduce noise pollution?	• Annual mean NO_2 and PM10. Number of exceedance of PM10 daily mean and hourly mean NO_2 objective • CO_2, NO_x and PM10 emissions • Changes to Annual Average Daily Traffic flow and speed on road network • Number of transport related water pollution incidents • River Quality- length of good river quality • Ambient noise from major roads, railways and Luton Airport monitored through Defra noise mapping • CPRE Tranquil Areas • Change in area wide road traffic mileage • Road condition: a) principal, b) non-principal, c) unclassified
2) Improve public health (both physical and mental) through active and sustainable travel	• Health • Noise • Population	• Does it encourage walking and cycling? • Does it help to reduce obesity? • Does it improve access to open spaces and leisure facilities?	• Km of paths and cycle routes • % of obese and overweight children, adults • Number of open spaces accessible to public • Number of cycling trips on the network • Number of walking trips • Share of journeys to school by car • Perceived impact of freight movement
3) Improve transport safety by reducing accidents, crime and perception of crime	• Population	• Does it seek to help reduce the number of killed or seriously injured in road accidents? • Does it ensure that pedestrian and cycle routes are safe for users? • Does it seek to reduce levels of crime (particularly	• Number of people/ children killed or seriously injured in road traffic accidents? • Number of slight injuries • Recorded crime rates on public transport and to people engaged in active travel • Perceived impact of freight movement

SEA objective	SEA topics	Key assessment criteria	Potential monitoring indicators
		transport related) and improve the security of people using the transport network?	
4) Improve/ increase use of active travel modes and sustainable transport	• Population • Health	• Does it encourage the use of sustainable and active modes of transport? • Does it improve access to public transport? • Does it encourage the use of Travel Plans for educational institution, businesses and other large scale developments? • Does it encourage use of alternatively fuelled vehicles?	• Proportion of trips made by public transport, walking and cycling • Satisfaction with local bus services • Number of Travel plans adopted • % of alternative fuelled vehicles and classified as low emissions • Km of paths and cycle routes • Public transport patronage: Bus passenger journeys and thousands of passenger journeys per year in the authority
5) Enable inclusive communities and promote social inclusion	• Health • Population	• Does it improve access to open spaces, leisure facilities and other services? • Does it positively impact on the well being of residents? • Does it promote social equality?	• Accessibility to open spaces and services • Access to major centres • Access to employment by public transport • Perceived ease of access to employment • Perceived ease of access to healthcare • Perceived ease of access to retail • Perceived ease of access to culture and tourism
6) Enable sustainable economic growth and attract new inward investment	• Population	• Does it improve business development and attract investment through accessibility? • Does it secure job opportunities for residents of all abilities through accessibility?	• Number of 'green' enterprises? • Perceived ease of transportation of goods • Proportion of employment by industry class and location in relation to public transport accessibility • Proportion of employment by occupational type in relation to public transport accessibility • Unemployment rate in relation to public transport accessibility
7) Minimise loss/use of natural resources to transport schemes	• Material assets • Water	• Does it seek to reduce loss/use of natural resources? • Does it seek to optimise use of existing	• Tonnes of mineral deposits used to built / improve transport infrastructure • Tonnes of mineral deposits sterilised by transport infrastructure schemes

SEA objective	SEA topics	Key assessment criteria	Potential monitoring indicators
		infrastructure? • Does it sterilise mineral resources?	• Road condition • % recycled materials used • Area of Grade 1-3a agricultural land lost as part of new transport infrastructure development (including major schemes)
8) Mitigate the climate change, reduce greenhouse gas emissions	• Climatic factors	• Does it seek to reduce CO_2 emissions?	• Carbon dioxide emissions from road transport • Carbon dioxide emissions from transport industry • Road transport energy consumption by vehicle type • Number of electric vehicle charging points • % coverage workplace travel plans • Change in area wide traffic mileage
9) Adapt to the impacts of a changing climate (including flooding, drought and adverse weather conditions) and prepare for impacts of peak oil.	• Climatic factors • Water • Population	• Is the plan resilient to future climate change: prevents flooding, provides adequate surface drainage (SUDS), infrastructure able to adapt to future climate changes? • Does it help reduce urban temperatures through evaporation/ evapotranspiration ?	• Change in annual mean temperature and rainfall, and number (frequency) of severe weather events • Number of SUDS installed as part of transport infrastructure projects • % change in flood storage capacity associated with transport infrastructure schemes • % change in number of trees managed by Highways • Length of hedgerows along highways and railways lost or gained as a result of LTP3
10) Protect and improve surface and groundwater quality	• Water and flooding	• Does the plan minimise risk of pollution of water courses?	• Number of SUDS installed as part of transport infrastructure projects • Measures to prevent water run-off from road and other transport infrastructure • Number of flooding prevention measures • Number of flood risk areas and types of flooding incidents impacting on transport network • Number of water pollution incidents resulting directly from transport activities, e.g. flooding from blocked or poorly maintained highways, drains and gullies • Chemical and biological river quality – length of good quality river
11) Protect and	• Material assets	• Does the	• Spatial extent and condition of

SEA objective	SEA topics	Key assessment criteria	Potential monitoring indicators
enhance natural (designated and non-designated sites, green network and landscape) and built environment (including cultural, historic, archaeological and architectural heritage)	including Minerals and waste • Biodiversity including flora, fauna and soil • Landscape and townscape • Cultural heritage including architectural and archaeological heritage	document seek to protect and enhance natural environment: designated sites, natural and semi-natural sites, SSSI and other green spaces? • Does the document seek to protect and enhance sites, features and areas of value both urban and rural areas? • Does it seek to enhance the range and quality of the public realm and open spaces? • Does the plan seek to preserve and enhance heritage designations such as: conservation areas, listed buildings, historic parks and gardens, and other culturally important features? • Does the plan seek to maintain and strengthen local distinctiveness and character?	SSSIs • Number and condition of Local Wildlife Sites • Number and condition of Local Nature Reserves • Sites of Special Verges • Sites of Protected Lanes • % of Central Bedfordshire land area that is covered by Woodland and Ancient woodland • Number of Local Geological Sites • Number of habitat and species targets achieved in Local and Regional BAPs • Number of buildings on the Buildings at Risk Register (BARR) • Number of Listed Buildings at risk • Size and condition of conservation areas • Number and condition of registered and unregistered historic parks and gardens • Scheduled Monuments at risk • Number and condition of historic structures incorporated into green infrastructure. • Number and condition of transport heritage assets (historic bridges, milestones and historic signage) • Number and extent of street / public realm audits • % of visitor attractions within the AONB that have published information on access by sustainable transport • Countryside Quality Counts • Length of hedgerows lost or gained as a result of the LTP3 • Change in CPRE tranquil areas • % of population with access to Accessible Natural Greenspace Standards • % of journeys, made by residents and visitors, in AONB made by sustainable transport

It is anticipated that monitoring and LTP3 environmental effects review will be undertaken as a part of the LTP3 Progress Report process. The SEA Monitoring Report will form an appendix to the LTP Progress Report. If and when undesirable or unacceptable levels of LTP3 impacts on the environment occur, mitigation measures will be implemented. If

there any unforeseen negative effects on environment are recorder a review of mitigation measures will be undertaken and appropriate mitigation action proposed.

7. Conclusions and recommendations

The conclusions and recommendations are based on results of the above assessment. The preferred direction for LTP3 is implementation of alternative 3 ‘Smarter Choices’ as it performed well in both SEA and HIA assessment. This alternative is likely to deliver the established environmental objectives.

The delivery and implementation will be a key factor in determining the extent of the environmental effects of the plan. To minimise any adverse effects on the environment resulting from implementation of LTP3 a range of mitigation measures and recommendations for implementation of the plan were established. The monitoring indicators will allow for effective periodical assessment of these effects.

8. Consultation and decision making

The SEA Directives require:
"The authorities [with relevant environmental responsibilities] and the public… shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying Environmental Report before the adoption of the plan or programme" (Article 6(2)).

"The environmental report …, the opinions expressed [in responses to consultation]… and the results of any transboundary consultations … shall be taken into account during the preparation of the plan or programme and before its adoption…" (Article 8).

"…when a plan or programme is adopted, the [environmental] authorities… [and] the public … are informed and the following items [shall be] made available to those so informed: (a) the plan or programme as adopted, (b) a statement summarising how environmental considerations have been integrated into the plan or programme…. [including] the reasons for choosing the plan or programme as adopted, in light of other reasonable alternatives dealt with, and (c) the measures decided concerning monitoring" (Article 9(1)).

8.1 Timescales for consultation

The key role of the Environmental Report is to facilitate the consultation with interested stakeholders, including public, through information provision on likely significant environmental effects of the proposed plan. The Environmental Report is published alongside the draft LTP3 to encourage stakeholders to influence development of the plan prior to its completion.

The Environmental Report is available alongside the draft LTP3.

8.2 Decision making and adoption of LTP3

Comments received during the consultation period will be taken into consideration before completion and adoption of the plan. Any significant changes to the plan will be assessed against SEA Appraisal Framework and information will be made available to the public.

On adoption of the final LTP3, the LTP team will issue a statement on how the findings of the SEA and results of consultation were taken into account in finalising the plan.

The SEA Statement will be made available to the stakeholders via the 'My Journey' section on the Central Bedfordshire Council Website and will cover the following:

- How environmental consideration have been integrated into the LTP3 (response to the findings of the Environmental Report);
- How the consultation responses have been taken into account, including information on changes to LTP3 made or reasons for not incorporating the suggestions into the plan;

- The reasons for choosing the LTP3 options as adopted in the light of other reasonable alternatives dealt with;
- The measures to monitor the significant environmental effects of the LTP3 (measures included in the Environmental Report to be confirmed or modified in the light of consultation responses).

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