

Connecting Oxfordshire: Local Transport Plan
(LTP) 4: Appendix F

Strategic Environmental Assessment (SEA): Area and Supporting Strategy Assessment

Prepared for
Oxfordshire County Council

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1 Introduction

1.1 Area and Supporting Strategies

Area Strategies have been developed by Oxfordshire County Council as part of 'Connecting Oxfordshire'; their new Local Transport Plan 4 (LTP4), for those parts of the county that are due to experience significant housing and/or employment growth. The Area Strategies describe how these different localities or key centres to Oxfordshire, will meet local transport needs in the county.

These Area Strategies comprise: -

- Oxford Transport
- Science Vale (an area encompassing Wantage and Grove, Abingdon, Didcot, Culham Science Centre, Milton Park and Harwell Oxford Campus)
- Bicester
- Banbury
- Witney
- Carterton

The other strategies supporting the LTP4 are: -

- Science Transit Strategy
- Bus Strategy
- Rail Strategy
- Cycling Strategy
- Freight Strategy
- A420 Strategy
- Highways Asset Management Plan

This appendix has been prepared to present the environmental assessment of the revised LTP4 Area Strategies, which replace the respective earlier area strategies, and the supporting strategies that also form part of 'Connecting Oxfordshire: LTP4. This appendix will describe the likely effects on the environment of the 'without LTP4 scenario', the LTP4 Area Strategies and supporting strategies. Together with the Strategic Environmental Assessment (SEA) Environmental Report, this appendix will present the SEA process so that the consultees, including statutory stakeholder and the general public, understand the strategic environmental issues in relation to the LTP4.

1.2 Assessment Criteria

Table 1.1 presents the assessment criteria for scoring the LTP4 Area Strategies. A key to the assessment is also provided in this section.

Table 1.1: Assessment criteria for scoring LTP4 objectives and policies

++ Major Positive	The option would be significantly beneficial to the SEA objective by resolving an existing environmental issue and/ or maximising opportunities for environmental enhancement.
+ Minor Positive	The option would be partially beneficial to the SEA objective by contributing to resolving an existing environmental issue and/or offering opportunity for some environmental enhancement. This effect would not be considered to be of significance.
N Neutral	The option would have a neutral effect on the SEA objective.
? Uncertain	There is insufficient detail available on the option or the baseline situation in order to assess how significantly the SEA objective would be affected by the option.
x Minor Negative	The option would partly undermine the SEA objective by contributing to an environmental problem and/or partially undermine opportunities for environmental enhancement. This effect would not be considered to be of significance.
xx Major Negative	The option would severely undermine the SEA objective by contributing to an environmental problem and/ or undermining opportunities for environmental enhancement. This would be considered to be a significant effect.

- Nature: whether they are anticipated to be:
 - **Positive (+)**
 - **Neutral (N)**
 - **Negative (X)** or
 - **Uncertain (?)**
- Timescale: the timescale over which environmental effects are anticipated to arise:
 - **2015 – 2020**: effects expected up until 2020 (i.e. in the short-term).
 - **2021 - 2031**: effects expected from 2020 to 2031 (i.e. in the medium-term).
 - **Beyond 2031**: effects expected beyond the timescale of the plan (i.e. in the long-term).
- Reversibility:
 - A **reversible** effect (**R**) is an environmental effect that can be reversed, for example an incident of water pollution can be cleaned up over time.
 - An **irreversible** effect (**I**) is an environmental effect that cannot be reversed such as the loss of a historic feature or the loss of agricultural soil due to permanent development.
- Spatial Scale:

- **Local (L):** effect is restricted to the immediate location of the proposal or to a specific site within one of the four areas – Oxford, Larger Towns, Smaller Towns, Rural Oxfordshire
 - **Regional (R):** effect is anticipated to cover a significant proportion or all of Oxfordshire.
 - **National (N):** effect covers the whole of England and/or the UK (also includes international).
- Frequency:
 - A **constant (C)** effect is one that results from a physical change that continues beyond the life of the LTP.
 - A **temporary/intermittent (T)** effect is one which results from an operational change which could change if there is a change of policy, or a short term condition such as a construction phase related impact.

The significance of effects predicted for the Area Strategies of the LTP4 have been evaluated using the scoring criteria shown in Table 1.1.

1.3 Assessment Approach and Limitations

This assessment has been made mainly by using an expert judgement based assessment that is supported by appropriate evidence.

The assessment is a qualitative assessment based upon descriptions about the strategies provided by Oxfordshire County Council. This assessment will require further updates following any changes to the Area Strategies.

2 Assessment of ‘Without LTP4’ Scenario and LTP4 Area Transport Strategies

Table 2.1 presents the assessment of the environmental effects that would be experienced in the absence of the LTP4 Strategy (i.e. the ‘without LTP4’ scenario).

Tables 2.2 to 2.14 present the assessment of the LTP4 Area Strategies and supporting strategies.

Table 2.1: Environmental Effects in the Absence of the LTP4

2.1 'Without LTP4' Scenario

Current forecasts are for over 85,000 new jobs in the county by 2031, with forecast population growth of 90,000 by 2026. There are also major development areas identified in the county including Oxford, Bicester and Science Vale.

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	X	XX	XX	R	L	C	In the absence of the LTP4, the increasing population growth will place additional strain on the transport system and the forecast increase in traffic will result in significant congestion in town centres, and increasingly negative impacts on the wider environment.	N/A
2	Improve accessibility to jobs, facilities and services	X	XX	XX	R	L	C	In the absence of the LTP4, the increasing population growth will place additional strain on public and community transport, reducing accessibility and increasing community severance. This will particularly affect the elderly in rural areas. Longer journey times will make it more difficult to reach jobs, facilities and services.	N/A
3	Protect and enhance green infrastructure and countryside	N	N	N	R	L	C	In the absence of the LTP4, there will be no improvement to the transport infrastructure to support delivery of housing and employment growth. Consequently, there will be no loss of green infrastructure and countryside as a result of the LTP4 improvements nor opportunities to maximise access to natural green space.	N/A

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	X	XX	XX	R	L	C	In the absence of the LTP4, there will be no commitment to protect safety and well-being, and there will be no increase in capacity of transport infrastructure. As traffic growth increases, this is likely to result in community severance and driver stress, which will affect the health of the population. There will also be no improvements to conditions for pedestrians and cyclists, which will be placed at greater risk due to the forecasted traffic growth. Pedal cycle casualties are increasing. The increased demand for movement will have significant adverse impacts on the health of Oxfordshire's population.	N/A
5	Reduce noise pollution	X	X	X	R	L	C	In the absence of the LTP4, noise pollution is likely to increase as a result of increasing traffic growth and increasingly congested roads. Noise from traffic will likely be experienced more frequently in rural locations.	N/A
6	Reduce all forms of transport-related air pollution in the interests of local air quality	X	X	X	R	R	C	Air pollution is likely to increase as a result of increasing traffic growth and increasingly congested roads, and in the absence of the LTP4, air pollution may increase at a greater rate. There will be no policies to encourage and facilitate the use of more sustainable modes of transport or restrict the use of high emission vehicles, and therefore exceedances of air quality standards may increase. It is likely that air quality will become a problem at more locations in the county.	N/A
7	Reduce transport related greenhouse gas emissions	X	X	X	I	N	c	The dependency on fossil fuels for transportation may increase at a greater rate than in the absence of the LTP4 and there will be no policies to encourage and facilitate the use of more sustainable modes of transport. Heavy traffic and increasing congestion will continue to contribute high levels of emissions from transport in Oxfordshire.	N/A

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
8	Protect and enhance habitats and the diversity and abundance of species	N	N	N	I/R	L	C	In the absence of the LTP4, there will be no improvement to the transport infrastructure to support delivery of housing and employment growth. Consequently, there will be no direct impacts on biodiversity or severance of wildlife corridors in the absence of LTP4 nor opportunities to provide biodiversity improvements.	N/A
9	Maintain and improve the quality of water resources	N	N	N	R	L	C	No significant effects upon water quality are anticipated. In the absence of the LTP4, there will be no risk of pollution from new transport related infrastructure nor additional hydromorphological constraints on water bodies.	N/A
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	?	?	?	R	L	C	In the absence of the LTP4, there will be no opportunity to improve the capacity of drainage of existing older infrastructure or include SuDS. However, there will be no increase in flood risk as a result of increased hardstanding areas. The overall impact is therefore uncertain.	N/A
11	Maintain resources such as minerals and soils and enhance geological diversity	N	N	N	R	L	C	In the absence of the LTP4, there will be no large scale demolition or construction of new infrastructure and therefore no impacts on minerals and soils (nor agricultural land).	N/A

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	N	N	N	R	L	C	In the absence of the LTP4, there will be no requirement for land-take, and thus no known impacts.	N/A
13	Adapt transport network to climate change	X	XX	XX	R	L	C	In the absence of the LTP4, there will be no new transport network, and the existing transport network will not be adapted to the effects of climate change. The county's transport networks are likely to be under increasing attack from more frequent flooding due to climate change in the medium to long-term, and harsh winters will continue to damage roads.	N/A
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	N	N	X	R	L	C	In the absence of any new road, rail or public transport improvements, there will be no damage or loss of heritage assets or archaeological remains. There will also be no opportunity to manage forecasted traffic increases that may affect historic towns and villages. Similarly, there will be no opportunity to enhance the historic character of towns and villages nor improve access to key cultural heritage sites, which may become increasingly difficult to access as traffic growth increases. This may result in a negative impact by the long-term.	N/A
15	Maintain and enhance the quality and distinctiveness of the built environment	N	X	X	R	L	C	In the absence of the LTP4, there will be no direct change to the built environment. However, the increasing population growth will place additional strain on the transport system and the forecast increase in traffic will result in significant congestion in urban areas, which will have increasingly negative impacts on the built environment.	N/A

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	N	N	N	R	L	C	<p>In the absence of the LTP4, there will be no improvement to the transport infrastructure and consequently, there will be no change in landscape value through encroachment into the countryside or new lighting provision.</p> <p>While noise disturbance from increasing urbanisation and the forecasted traffic growth will increase and affect the tranquillity of rural areas, in the absence of the LTP4, there will also be no management of traffic or measures to divert traffic along more suitable rural roads.</p>	N/A

Summary: The 'Without LTP4' Scenario will not result in any direct impacts on the environment but will indirectly negatively affect some environmental receptors as traffic growth and congestion increases. No beneficial impacts have been identified and no opportunities for improving the transport infrastructure nor surrounding environment can be implemented as a result of this scenario.

Table 2.2: Oxford Area Strategy

2.2 Oxford Transport Strategy (OTS)

The OTS will support the new Local Transport Plan (LTP4) by identifying an overarching strategy for the transport system for the city to support delivery of housing and employment growth programmed over the next 20 years and beyond.

Oxford is home to over 100,000 jobs. These generate 88,000 commuting movements by some form of travel, of which 45,000 are from outside the City.

The Strategic Housing Market Assessment (SHMA) forecasts the need for a significant acceleration in housing delivery in Oxfordshire. Along with the ambitions for creation of new jobs, this could result in 38,000 additional journeys in Oxford by 2031, a 43% increase from 2011. Initial estimates suggest that, without improvements to the transport network and changes of travel behaviour, this could result in approximately 17,000 more commuter car trips each day.

Even the current Local Plans allocations are forecast to result in a 16% increase in traffic on Oxford’s radial roads and 21% on the ring road in peak hours. By 2031, the impact of congestion is forecast to result in a loss of around £150 million from the economy of the city. Car journey times from the surrounding Oxfordshire towns are anticipated to increase on average by 18% to the city centre and 14% to Headington.

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	++	++	++	R	L	C	It is likely that the environment of Oxford will be improved in the short to long-term. This will be delivered through traffic management, the construction of city centre bus tunnels that should help to improve the public realm, and improved bus access to city centre destinations and reduced journey times. Access restrictions will help to reduce through movements in the city centre (particularly freight movements) while allowing access to parking and employment.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
2	Improve accessibility to jobs, facilities and services	++	++	?	R	L	C	<p>The OTS proposes significant improvements to the strategic rail network and sustainable modes of travel. The strategy will improve cross-city connectivity through bus rapid transit lines and enhance rail connections (with new stations at Oxford Parkway and the reopening of the Cowley line) including larger and better multimodal transport interchanges at stations.</p> <p>The improvements to the transport network will help to manage the increased demand for movement and support the significant traffic growth estimated, thus improving accessibility for some business users. However, the long term effect is uncertain as it will be dependent upon the implementation of some proposals that may be subject to change and transport provision in future plans.</p>	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	+	+	R/I	L	C	<p>The strategy is likely to provide improvements to cycle routes and their facilities that help connect people to 'green' spaces in and around the city in the medium and long-term. However, there is uncertainty as to the effect of road improvements, new multimodal interchanges and modifications to the transport network on existing green infrastructure (including Oxford Green Belt) and open space and trees/vegetation during construction.</p>	<p>In line with guidance from Natural England (2009), new transport developments should be planned to integrate green infrastructure into the design. The demand management element and closure of some of the Park and Ride sites may help to reduce traffic and open up more possibility to convert space otherwise occupied by roads or parking (some of which is within the floodplain) to new elements of green infrastructure. As well as providing wildlife habitat, possible flood storage benefits and a valuable resource for local people, such provision could also provide a buffer between roads such as the ring-road (Redbridge) and the A34 (Seacourt) and the City residential areas which will help, particularly if there are trees, to reduce the impact of the pollution and noise from these roads.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	++	++	++	R	L	C	This strategy demonstrates a commitment to improving facilities and links for pedestrians and cyclists including the provision of super-premium and premium cycle routes to encourage the uptake of cycling and improve safety, a low traffic city centre to improve walking and cycling conditions, and innovative cycle parking facilities with cycle hubs.	Where improvements to cycle and walking routes are proposed, OCC will also consider options that provide through traffic signals and allocation of road space.
5	Reduce noise pollution	x	?	+	R	L	T/C	<p>The impacts of the area strategy on noise are likely to be dependent on location.</p> <p>There is likely to be increased noise pollution associated with construction in the short-term (e.g. associated with new train station and transport interchanges).</p> <p>There are likely to be benefits in terms of reducing noise in the city centre through the construction of bus tunnels (beyond 2031), the relocation of park and ride facilities further from the city and through the implementation of zero emission zone proposals (2020 – 2030), which assume use of quieter electric vehicles and public transport. However, there will be elevated noise levels elsewhere (e.g. at park and ride sites located further from the city) through transport network improvements and increased traffic on certain roads.</p>	<p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p> <p>Construction activities should be planned to minimise disturbance to pedestrians and workers within Oxford, for example through the use of temporary acoustic screening where appropriate.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	+	R	R	T/C	<p>The impacts of the OTS on air quality are likely to be dependent on location.</p> <p>There may be increased air pollution associated with construction in the short-term but the effects of this are currently uncertain.</p> <p>Improvements to air quality are likely to be realised through the support of high capacity vehicles with low or zero emissions in the medium-term, and through zero emissions restrictions for freight and taxis. Additionally, proposals to encourage the use of sustainable modes of transport (e.g. walking and cycling) are likely to improve air quality in some areas. However, increases in air pollutants may result elsewhere from the re-routing of traffic (particularly freight traffic) and the improvements to the transport network.</p> <p>By the long-term, the construction of bus tunnels will also help to improve air quality and is considered to be a beneficial impact.</p>	<p>The application of restrictions on more polluting vehicles within Oxford would help to encourage a cleaner fleet. Consideration could be given as to how to apply a “polluter pays” principle into demand management measures.</p> <p>Some types of trees filter out pollutants and therefore urban tree planting can be beneficial to air quality, and should be considered at project level.</p> <p>Oxfordshire County Council should continue to work with the Highways Agency and Oxford City Council to identify air quality improvements associated with the road network.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
7	Reduce transport related greenhouse gas emissions	?	+	+	I	N	T/C	<p>The area strategy will encourage greater use of sustainable modes of transport (including an improved rail service, park and ride sites and a fully integrated public transport system with bus priority measures), which will help to reduce greenhouse gas emissions in the medium and long-term.</p> <p>The effects of the strategy on this SEA objective are uncertain in the short-term as these benefits may be offset by increased emissions during construction. By the medium term, the reduction in greenhouse gases is likely to be realised and is considered to represent a beneficial impact. It is likely that this beneficial impact on greenhouse gas emissions will also be realised in the longer-term, as there will continue to be a low traffic city centre using zero emission vehicles.</p>	<p>Park & Ride provision should be planned to minimise the likelihood of people driving greater distances than they would otherwise have done if parking in Oxford.</p> <p>The future need at existing Park & Ride sites will be considered as part of a comprehensive study to determine whether these sites should be closed or reduced in size.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
8	Protect and enhance habitats and the diversity and abundance of species	XX	?	?	I	L	C	<p>This strategy assumes a number of new road improvements and cycle routes to improve accessibility and support housing growth, which may have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats and associated species, and potential for an increased number of animal road kills. The possible closure of some Park & Ride car parks may also present the opportunity for redevelopment, which could lead to additional traffic generation with associated impacts of elevated air pollution that could affect flora and fauna (as well as Green Belt land).</p> <p>The additional requirement for minerals is also likely to have a negative impact on biodiversity at mineral extraction sites in the short-term.</p> <p>There is potential for significant impacts on some SSSIs, Local Wildlife Site (LWS) and proposed LWS/SLINCs, which will require further consideration at project level during the development and design of alternative route alignments, particularly for any alternative bus transit routes.</p> <p>There is also potential for strategic highway improvements and other elements of the OTS to impact on Oxford Meadows SAC, and potential indirect impacts on Cothill Fen SAC, which will require consideration in accordance with the Habitats and Species Conservation Regulations 2010 (as amended) – see Habitat Regulations Assessment Screening Report.</p>	<p>Irreversible habitat loss associated with new railway facilities and park & ride may be partially or wholly offset by habitat enhancements/creation. A detailed EIA would inform an appropriate level of mitigation where required.</p> <p>Cycle network proposals may provide opportunity to include native peripheral tree and shrub planting in the design which would provide improved habitats for birds, invertebrates and small mammals.</p> <p>There are also opportunities for biodiversity enhancement from land use changes along highways (e.g. roadside tree planting, different mowing regimes, management to ensure pollutants in run-off from roads are intercepted or otherwise reduced).</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
9	Maintain and improve the quality of water resources	N	N	N	R	L	C	No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.	The integration of SuDS into the design of the new cycle facilities would provide opportunity to enhance the existing drainage network in Oxford and help improve water quality further.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	R	L	T/C	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	The integration of SuDS into the design of the new cycle facilities would provide opportunity to enhance the existing drainage network in Oxford and help improve water quality further. The planting of trees and vegetation along new cycle routes would also help to reduce surface run-off rates.

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
11	Maintain resources such as minerals and soils and enhance geological diversity	X	?	?	I	L	C	<p>The potential transport network improvements are likely to be resource intensive, particularly during construction of the OTS elements in the short-term. The proposed changes to accommodate the increased demand for movement will reduce traffic in the city centre and thus may reduce resource requirements but there may be an increase in resource requirements elsewhere (i.e. outside of the city). The impacts of such changes are currently uncertain. The increased frequency of public transport services may help reduce dependence on fossil fuels but this effect is likely to be undermined by the convenience of car use.</p> <p>There is also potential for some impacts on a small area of good quality agricultural land (Grade 2) adjacent to the A420/A34 at Botley as a result of the proposed rapid transit route (Cumnor P&R to Thornhill P&R), however this route will be centred on existing road corridors.</p>	<p>Secondary materials should be promoted to reduce the amount of resource consumption in new designs. Where possible, existing infrastructure should be used or incorporated into designs to minimise the generation of waste.</p> <p>During the delivery of schemes, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).</p>
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	N	N	?	I	L	C	<p>The proposed transport network improvements specifically encourage more efficient land use through workplace parking levy, which will incentivise redevelopment of employment car parking. Additionally, the strategy supports growth on brownfield sites in sustainable locations (although it is unknown at this plan level whether brownfield land will be used for the proposed transport network improvements).</p>	<p>Wherever possible, new park & ride sites should be located where there would be the least impact upon soils, particularly productive agricultural soils. Where this is not feasible, soils should be recovered and used taking into account relevant legislation.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
13	Adapt transport network to climate change	N	+	+	I	L	P	<p>It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.</p>	<p>Tree planting along key pedestrian walkways and cycleways would create shade and have a cooling effect (Huang <i>et al.</i> 1987). Modelling work in Greater Manchester suggested that if we increase our green cover in towns and cities by 10 per cent, we can keep surface temperatures at current levels despite climate change.</p> <p>The use of SuDs and temperature resilient surfaces for new networks would help to meet this SEA objective.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	x	?	I	L	P	<p>The impacts of the area strategy on the historic environment will be dependent on location.</p> <p>The strategy is likely to make a significant contribution to the conservation of the historic city centre through the mass transit changes, reduction in traffic in the centre and construction of bus tunnels. These changes are likely to transform the city centre environment, benefitting heritage assets (including numerous listed buildings) and their setting though improved air quality, visual amenity and reduced vibration in the medium and long-term.</p> <p>However, there are likely to be some negative impacts upon the historic environment from the improvements to the transport network (in particular tunnel construction) and the re-routing of traffic during construction, which may outweigh the longer-term improvements to air quality and reduced vibration. Such impacts have the potential to affect the late Saxon and medieval historic core of Oxford, which is considered a nationally important heritage asset. Other impacts may include negatively affecting the setting of Blenheim Palace World Heritage Site, and significantly affecting listed buildings, scheduled monuments (e.g. the Norman Grandpont Causeway located below the modern road at the indicative access point at the southern end of St Giles-St Aldates tunnel), the character of Conservation Areas and The University Parks/Shotover Registered Park and Garden in Oxford city centre and surroundings, which will require further consideration at project level. There is also potential for severe damage to below ground archaeological remains and possibly for damage to listed buildings from vibrations during tunnelling operations.</p>	<p>Detailed archaeological assessment as part of a scheme level environmental assessment will be required (including consulting the Historic Environment Record) to ensure protection of cultural heritage during construction.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
15	Maintain and enhance the quality and distinctiveness of the built environment	+	+	?	R	L	P	<p>It is likely that improved pedestrian and cycling facilities would have a slight improvement on the built environment. In the short-term, the pedestrianisation of George Street and Queen Street, as well as public realm improvements to St Giles, Magdalen Street and Frideswide Square will improve the quality of public places and the public realm within the city centre.</p> <p>However, the new roads and associated traffic growth to support the housing growth is likely to have negative effects on the built environment in the long-term.</p>	Measures to restrict access of polluting vehicles would help to preserve building facades which are vulnerable to particulate pollution.
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	X	X	+	I	L	C	<p>Road improvements to improve access are likely to have an adverse effect on local landscape character during construction throughout the lifetime of the plan (i.e. 2015 to 2031), as a result of earthworks and the presence of plant and machinery. However, the construction of bus tunnels will help to reduce congestion and improve landscape character in the long-term, and new landscaping schemes as part of new developments may also improve landscape character in areas where there is currently low quality landscapes.</p>	<p>The design of the new infrastructure should seek to preserve and enhance the landscape character of the city and seek to minimise visual intrusion. This would be done through a detailed scheme level environmental impact assessment.</p> <p>Care will also be required during the development of individual transport schemes to avoid harm to the views of Oxford that are considered of considerable heritage value, to support the objectives of the Oxford Views Study.</p>

SEA Objective (abridged)	Assessment of effect						Commentary	Suggested mitigation and enhancement measures or further studies
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
<p>Cumulative, synergistic and secondary effects: The OTS is being developed alongside the Strategic Housing Market Assessment to ensure that it delivers the necessary transport system to support the identified housing and employment growth.</p> <p>The OTS has the potential for in-combination and cumulative impacts with ongoing development within the city (e.g. improvements to rail such as the Oxford Station Materplan and East-West Rail phases 1 and 2) and redevelopment that may occur as a result of transport schemes (e.g. closure of the Park & Ride car parks at Water Eaton, Peartree, Seacourt and Redbridge, which will be phased to coincide with the opening of the alternative proposed sites), which will require further consideration when details of other plans and projects become available. It will therefore be important to plan major programmes accordingly to minimise disruption e.g. considering the construction of programmes alongside each other to minimise duration and/or magnitude of impacts through for example, shared construction sites and accesses, traffic flow maintenance, shared use or beneficial re-use of materials and resources etc.</p> <p>Summary: This OTS has been developed to benefit people and their travel, supporting accessibility, cross-city connectivity and future development/economic growth. Significant positive effects are identified such as improvements to the vitality of the city centre, built environment (including historic assets) and public realm, reduction in noise and air quality pollution in the medium and long-term (subject to the cumulative impacts of other developments), and improved walking and cycling facilities. However, the OTS is likely to give rise to a number of construction related impacts on the environment such as land take, loss of habitats (including the potential for significant impacts on nationally designated habitats), intensive resource use and impacts upon the landscape character, particularly those within the city centre. In many instances, these effects are likely to be better than the 'without LTP4 scenario', where such changes to provide short-term solutions, would be unplanned.</p>								

Table 2.3: Science Vale Area Strategy

2.3 Science Vale: Preferred Area Strategy

Science Vale is focused around the UK’s leading centres for science, technology and innovation at Harwell Oxford, Milton Park and Culham Science Centre and includes the fast growing settlements of Didcot, Wantage and Grove.

This Area Strategy is being developed alongside the adopted South Oxfordshire Core Strategy 2027 (2012) and the Vale of White Horse draft Local Plan 2031 (2014). The latter two documents outline the need to deliver 16,000 new jobs, principally at Harwell, Oxford, Culham Science Centre and Milton Park. There is also significant potential employment growth in Didcot at the decommissioned Didcot A Power Station.

Growth proposals published in the Strategic Housing Market Assessment (SHMA) for Oxfordshire (2014) identified that between 725 and 825 homes are needed per year (2011 – 2013) in South Oxfordshire and 1028 homes per year are needed in the Vale of White Horse area.

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	X	++	?	R	L	T/C	<p>During construction, the proposed network improvements are likely to result in some initial travel disruption within town centres such as Abingdon and Didcot. However, by the medium-term, it is likely that the environment of these town centres will be improved. This will be delivered through alleviating congestion by proposed network improvements at Lodge Hill, Abingdon, through the regeneration of the town centre at Didcot (and improvements to Didcot Station), through planned parking provisions and through improved transport links.</p> <p>An intensive educational programme encouraging local journeys on foot or by bicycle or public transport would help support use of town centre facilities. One of the proposals in the LTP4 is to promote the use of sustainable transport and reduce single occupancy car use for journeys to work through undertaking travel promotions and marketing measures, particularly with partners at Milton Park, Culham Science Centre and Harwell Oxford.</p> <p>Oxfordshire County Council will promote improved accessibility by foot and by bike from Ladygrove to Didcot station and town centre.</p>	

SEA Objective (abridged)		Assessment of effect					Commentary	Mitigation and enhancement measures	
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale			Frequency
2	Improve accessibility to jobs, facilities and services	++	++	?	R	N	C	<p>The Area Strategy proposes significant improvements to the strategic road and rail networks to improve access to the businesses and employment opportunities at Harwell Oxford, Milton Park and Culham Science Centre, in particular to the Science Vale Enterprise Zone sites at Milton Park and Harwell Oxford. The Area Strategy will also enable access from further afield (including rail services from London and airports at Heathrow, Birmingham and Gatwick).</p> <p>The Science Vale cycle strategy and public transport proposals will also help to improve access to employment and services by sustainable modes of travel and for people who do not have access to a car.</p> <p>The improvements to the transport network would also support forecast traffic growth (in response to planned housing growth) by increasing capacity on the road network, and will help to manage community severance effects in the long-term.</p> <p>The long term effect is uncertain as it will be dependent upon the implementation of some proposals that may be subject to change (e.g. aspiration for a train station at Grove) and transport provision in future plans.</p>	<p>Overall investment in transport improvements should take account of those without access to cars and should continue to provide equality of opportunity. This is likely to become more of an issue as the population continues to age.</p> <p>Effective partnerships will continue to be developed with the public and private sector (e.g. Highways Agency, bus operators, Network Rail, and councils) to deliver the vision for improved accessibility and capacity improvements.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	?	?	I	L	?	<p>The strategy is likely to provide improvements to pedestrian and cycle paths and their facilities, improving links between homes and employment.</p> <p>However, some of the road improvements and modifications to the transport network are likely to adversely affect existing green infrastructure e.g. the new road to support Crab Hill housing development and the Wantage Eastern Link Road. These routes will be constructed across areas of agricultural land and open spaces within the countryside that are likely to involve the loss of natural features (e.g. trees and hedgerows) that contribute to the green infrastructure of the Science Vale area.</p>	It is recommended that footpaths and cycleways are improved to link green infrastructure, especially play spaces, which would support safer access by children and improved physical activity.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	++	++	+	?	L	?	<p>This strategy demonstrates a commitment to improving facilities and links for pedestrians and cyclists including the provision of a cycling strategy for Science Vale. Improvements to (and maintaining) existing walking and cycling routes and the provision of new high quality routes to support housing growth will help to improve the health and well-being of local communities, while enabling access to housing sites and facilitating movement between homes and residential areas.</p> <p>A strategy (including junction improvements, speed limit reviews, and footpath/cycleway improvements) has also been developed to deliver safety improvements along the A417 from Wantage and Grove to Blewbury.</p>	<p>Opportunities should be sought at project level to promote sustainable travel to support the planned housing growth, and to improve the safety of existing rights of way as part of strategy area implementation.</p> <p>New walking and cycling infrastructure should be developed that maximise opportunities to natural green space and the countryside, and promotes the creation/extension of and improvements to green and blue infrastructure. Where improvements to cycle and walking routes are proposed, OCC will also consider options that provide through traffic signals and allocation of road space.</p> <p>For new highway improvement schemes, OCC will outline where improvements for cyclists are proposed and engage with cycling user groups, shortly after project inception, so that schemes are developed with improvements built in from the outset.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
5	Reduce noise pollution	?	?	?	R	R	T/C	<p>The impacts of the area strategy on noise are likely to be dependent on location.</p> <p>There may be short-term benefits in terms of reducing noise in town centres but there will be elevated noise levels elsewhere through transport network improvements to support planned growth and increased traffic on certain roads in Science Vale.</p> <p>There is also likely to be increased noise pollution associated with construction and redevelopment (e.g. regeneration of Didcot Station) although this is not anticipated to have any significant impacts following mitigation.</p>	<p>Oxfordshire County Council will seek to ensure that freight uses the most appropriate routes, as outlined in Oxfordshire's Inter-urban Freight Strategy and Oxfordshire Lorry Routes Guidance.</p> <p>The use of low noise surfacing should be considered when delivering new roads, and walking and cycling routes, which would have associated health and well-being benefits.</p> <p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T	<p>The impacts of the area strategy on air quality (and the declared Abingdon Air Quality Management Area) are likely to be dependent on location.</p> <p>Improvements to air quality in the town centre are likely to be realised through the implementation of schemes that deter traffic. Additionally, proposals to encourage the use of sustainable modes of transport (e.g. walking and cycling) are likely to improve air quality in some areas.</p> <p>However, increases in air pollutants may result elsewhere from the re-routing of traffic (particularly freight traffic in and around Didcot) and the improvements to the transport network, which will increase road capacity and encourage traffic growth.</p>	Oxfordshire County Council should continue to work with the Highways Agency and district councils to identify air quality improvements associated with the road network to complement measures to improve nitrogen dioxide levels, identified in the Air Quality Action Plan (Vale of White Horse 2009).
7	Reduce transport related greenhouse gas emissions	?	+	?	I	L	C	<p>The area strategy will encourage greater use of sustainable modes of transport (including an improved rail service, park and ride sites and a fully integrated public transport system with bus priority measures), which will help to reduce greenhouse gas emissions. However, the effects of the strategy on this SEA objective are uncertain in the short-term as these benefits may be offset by increased emissions during construction. By the medium term, the reduction in greenhouse gases is likely to be realised and is considered to represent a beneficial impact.</p> <p>The long term effects will be dependent on traffic growth and emission standards.</p>	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
8	Protect and enhance habitats and the diversity and abundance of species	X	X	X	I	L	C	<p>This strategy assumes a number of new road improvements to improve accessibility and support housing growth, which may have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats, associated species (including potential for an increased number of animal road kills), and locally designated conservation sites (e.g. Furze Brake Local Wildlife Site). The additional requirement for minerals is also likely to have a negative impact on biodiversity at mineral extraction sites in the short-term.</p> <p>However, the strategy also includes a large number of proposals to improve opportunities for sustainable travel including the cycling strategy, bus and rail improvements. Careful consideration will be given to the needs of non-motorised users and vulnerable road-users, which will improve facilities for pedestrians and cyclists. These measures will help to offer a safer alternative to travelling by car, encouraging travel by sustainable modes, reducing the number of trips made by car and alleviating the impact on local habitats and species.</p> <p>A Habitat Regulations Assessment (Appendix D) has been prepared to assess the impacts of the LTP4 on the international conservation sites, including Little Wittenham SAC, which lies over 2km to the east of the new Culham Link Road.</p> <p>There are not anticipated to be any impacts on international or national nature conservation sites as a result of the highway improvements. However, further consideration (and consultation with Natural England) will be required at project level when further detail is available to assess the potential for impacts as a result of planned cycle network</p>	<p>At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. In particular, where proposed new transport infrastructure is planned to cross the Thames, care will be taken to ensure that the river corridor remains undisturbed to maintain the wildlife networks. Detailed assessment at project level should be undertaken to inform specific routes and mitigation requirements.</p> <p>Potential opportunities to incorporate new grassland areas should be explored at project level, as part of the new Chilton-Hagbourne Link road.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution, and the new Thames crossing will be designed to avoid siltation of the river and in-channel disturbance, and to ensure that it does not compromise the objectives of the WFD.	During strategy implementation, all works including the proposed Thames River crossing should follow the Environment Agency's Pollution Prevention Guidelines (including PPG works and maintenance in or near water) and meet WFD requirements.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
11	Maintain resources such as minerals and soils and enhance geological diversity	XX	X	X	R	L	C	<p>The potential transport network improvements are likely to be resource intensive. It is assumed that increases in frequency and length of trips to be taken by road would lead to an ongoing high maintenance requirement and long term high mineral use. The increased frequency of public transport services may help reduce dependence on fossil fuels but this effect is likely to be undermined by the convenience of car use.</p> <p>The proposed transport improvements will also result in the loss of agricultural land, including some areas of Grade 2 (very good) quality land along the route of the proposed Wantage Eastern Link Road and at the southern end of Harwell Link Road Section 2. Further moderate quality agricultural land will be impacted in the footprint of the new roundabout/road as part of Science Bridge, and along the Harwell Link Road Section 1.</p>	<p>Measures to counteract traffic growth would help to reduce the maintenance requirements on the road network.</p> <p>During the delivery of schemes, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).</p>
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	N	I	R	C	<p>The proposed transport network improvements are likely to have some negative effects upon agricultural / greenfield land. However, it is unknown at this plan level whether brownfield land will be used for the proposed transport network improvements.</p>	<p>The effects on land use of individual highway schemes and possible park & ride sites (e.g. Lodge Hill interchange) should be a material consideration in site selection and considered as part of detailed EIA.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
13	Adapt transport network to climate change	+	+	?	R	L	C	<p>It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.</p> <p>Tree planting along routes would increase shade and be beneficial during heat waves but would require consideration as to its appropriateness within the existing landscape character (e.g. within flat vale areas).</p> <p>Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.</p>	

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	T/C	<p>The impacts of the area strategy on the historic environment are likely to be dependent on location.</p> <p>A reduction in traffic in the town centres is likely to benefit heritage assets and their setting though improved air quality, visual amenity and reduced vibration.</p> <p>However, there may be some negative impacts upon the historic environment from improvements to the transport network and the re-routing of traffic e.g. new roads and roundabouts at Chilton Slips have the potential to affect the setting of a cluster of listed buildings, and the A417 route improvements may affect a Grade II listed milestone to the west of West Hagbourne. Additionally, the safeguarding of land to provide a South Abingdon relief road (if significant additional development is allocated to the south of the town in the future) may affect the Grade II listed Thrupp Farm Cottages.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
15	Maintain and enhance the quality and distinctiveness of the built environment	?	?	?	R	L	C	<p>It is likely that improved pedestrian and cycling facilities would have a slight improvement on the built environment. Additionally, the new highway schemes would help to improve the built environment in other areas by providing alternative routes for traffic to relieve congestion e.g. Science Bridge would help to relieve Manor Bridge in Didcot, thus improving the quality of the built environment around Manor Bridge.</p> <p>However, the new roads and associated traffic growth to support the housing growth are likely to have negative effects on the built environment.</p>	Wherever traffic congestion in town centres is reduced it is recommended that the benefits are locked in through reallocation of road space to enhance the public realm.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	XX	XX	N	I	L	P	<p>Road improvements (including new routes) to improve access are likely to have an adverse effect on landscape character within and outside of the Wessex Downs Area of Outstanding Natural Beauty (AONB) and its wider setting (e.g. impact on landscape features, road signage clutter and road verge erosion, loss of open countryside, loss of tranquillity, loss of dark night skies, change in visual amenity and loss/disturbance to narrow lanes). In particular, the new road crossing over the River Thames (south of Abingdon) and the new Crab Hill Wantage Bypass may have significant long-term changes in landscape.</p> <p>Adverse effects on landscape character are also likely to be experienced during construction as a result of earthworks and the presence of plant and machinery.</p> <p>However, there are proposals to redevelop parts of Science Vale to improve the visual impression of Didcot for visitors arriving by train, which may benefit the area. There is also an aspiration that Science Bridge will form a new landmark gateway feature to welcome people to Didcot and Science Vale.</p> <p>Some elements of the schemes may also help to improve the character of the landscape. For example, strategic transport schemes such as the Harwell Link road will provide relief to local villages such as Harwell village, providing an alternative route for vehicles and reducing the high levels of through traffic through the village. Also, the Harwell Link road will run closely alongside a section of the existing A34, thus helping to screen this part of the A34 from the AONB.</p> <p>New landscaping schemes as part of these new</p>	<p>The design of new infrastructure should take account of regional/local landscape character and the AONB, and Oxfordshire County Council are working with the North Wessex Downs AONB board to minimise visual intrusion and identify appropriate mitigation. This should be implemented through a detailed scheme level EIA.</p> <p>Particular care will be required to avoid road signage clutter, to manage over street lighting design to protect the dark night skies of the AONB and their heritage assets; to protect tranquillity and transport noise; road verge management; litter associated with roads and allowing Parish Council's the ability to manage and clean up road verges in the AONB; good design and materials appropriate to the character of the Cotswolds will be required.</p> <p>Consideration should be given to the creation of "quiet lanes" or rural lanes where walkers/cyclists/riders have more priority/greater safety.</p>

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
<p>Cumulative, synergistic and secondary effects: The Area Strategy is being developed alongside the Vale of White Horse Local Plan 2031 (2014) and the South Oxfordshire Core Strategy (2012) to agree a shared vision for growth and ensure that the policies in the Area Strategy complement and do not conflict with those in the Local Plans and supporting documents (e.g. Science Vale Area Action Plan, supplementary planning documents). Oxfordshire County Council is also working with the District Councils to assess the in-combination transport-related effects (including transport infrastructure improvements) associated with the additional housing growth identified by the SHMA on the environment. In particular, there is potential for cumulative impacts on the landscape character and special qualities of the North Wessex Downs AONB due to increases in rural traffic, pollution, road building and new development resulting from allocated housing in local plans, which will require further consideration as individual road transport schemes are developed. Such cumulative impacts will need to be managed to avoid negative effects on the AONB from road signage, street lighting; transport and housing noise issues; road verge management and litter. As the in-combination impacts are further considered during the development and design of schemes, care will be needed to ensure compliance with Section 85 of the CRow Act 2000 and the National Planning Policy Framework (NPPF).</p> <p>Additionally, this Area Strategy identifies a package of transport measures that are required to mitigate the cumulative impact of development across the Science Vale area, where the impact of development is not attributable to a single development.</p> <p>Summary: This Area Strategy is likely to give rise to a number of construction related impacts such as land take, loss of habitats, travel disruption in Abingdon and Didcot, and intensive resource use, and changes in landscape character within and outside of the Wessex Downs AONB. However, a number of significant positive effects are identified such as reductions in greenhouse gas emissions in medium-term, adaption of the transport network to climate change, improvements to access to jobs, facilities and services, improvements to the built environment at specific locations including town centres, and improved physical and mental well-being and safety.</p>								

Table 2.4: Bicester Area Strategy

2.4 Bicester: Preferred Area Strategy

Bicester is one of the fastest growing economic centres in the country, with a population of approximately 33,000 people (census 2011). Its economy is focused on storage, defence and distribution activities, food processing and engineering. It benefits from good rail connections with London, which will be improved by a direct connection to London from Bicester Town Station as part of East-West Rail Phase One. Further improvements will come forward as part of East-West Rail Phase Two which will connect Bicester with Milton Keynes, Bletchley and Bedford to the north and Didcot and Reading to the south.

The Oxfordshire Local Enterprise Partnership identifies Bicester as part of the Oxfordshire Knowledge Spine (Science Vale – Oxford – Bicester) and within the Strategic Economic Plan this is seen as a key driver for economic growth. Given its advantageous location on the transport network which connects the town with Oxford, Science Vale and the wider south-east region, Bicester is identified for significant residential (up to 10,000 new homes) and economic growth.

This Transport Strategy for Banbury supports delivery of the Cherwell Local Plan and the Bicester Masterplan.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	++	++	?	R	L	T/C	The overall effect upon town centres by this strategy is difficult to predict. However, it is likely that the environment of Bicester town centre will be significantly improved in the short to medium term, with a likely reduction in the volume of traffic accessing the town centre (with a new Park & Ride facility adjacent to the A41), town centre highway modifications, improvements to peripheral routes to constrain traffic and proposals to emphasise the town's attractiveness.	An intensive educational programme encouraging local journeys on foot or by bicycle or public transport would help support use of town centre facilities.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
2	Improve accessibility to jobs, facilities and services	++	++	?	R	R	C	<p>The Area Strategy proposes improvements to access and connections between key employment and residential sites and the strategic transport system by improving connectivity to the strategic highway, delivering effective peripheral routes around the town and working collaboratively to provide transport improvements. The Strategy Area will provide more opportunities for people to live and work in Bicester, thus reducing the current level of out-commuting. The strategy also seeks to enhance pedestrian, cycle and public transport links to Bicester Town Station and Bicester North Station and key employment sites.</p> <p>The road improvements would also accommodate the forecast traffic growth (in response to planned housing growth) by increasing capacity on the road network.</p> <p>The long term effect is uncertain as it will be dependent upon transport provision in future plans.</p>	<p>Overall investment in transport improvements should take account of those without access to cars and should continue to provide equality of opportunity. This is likely to become more of an issue as the growing population continues to age.</p> <p>Continued consultation will be required through policy BIC1 with the Highways Agency, rail industry and Department of Transport to deliver accessibility improvements.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	<p>The strategy will improve pedestrian and cycle paths and their facilities, improving links between homes, employment and retail areas. The strategy will seek to secure green links between proposed development sites on the outskirts of the town and existing Public Rights of Way, providing a series of leisure / health walks, and opportunities will be sought to join a number of missing links in the Public Rights Of Way network through working with developers.</p> <p>However, there is uncertainty as to the effect of road improvements and modifications to the transport network on existing green infrastructure.</p>	It is recommended that footpaths and cycleways are improved to link green infrastructure, especially play spaces, which would support safer access by children and improved physical activity.

SEA Objective (abridged)		Assessment of effect					Commentary	Mitigation and enhancement measures	
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale			Frequency
4	Protect and promote everyone's physical and mental wellbeing and safety	++	++	?	R	L	C	<p>This strategy demonstrates a commitment to improving facilities and links for pedestrians and cyclists through the implementation of a Sustainable Transport Strategy. Improvements to existing walking and cycling routes (e.g. linking the town centre to the railway station, and a new walking route linking the station with Langford Village and Bicester Village outlet/Kingsmere estate) and the provision of new routes will help to improve the health and well-being of local communities. Additionally, green links will be secured between proposed development sites on the outskirts of the town and existing Public Rights of Way to provide a series of leisure/health walks.</p> <p>The reduction in the length of people's journeys also provides opportunities for them to use non-motorised and healthier modes of travel. Investment in the town's bus, walking and cycling network will have an essential role in accommodating growth, encouraging and increasing awareness of sustainable travel choices, influencing behavioural change, and improving health.</p>	<p>Opportunities should be sought at project level to improve the safety and quality of existing rights of way (e.g. improving the quality of surfaces, providing directional signage and allocation of road space) as part of strategy area implementation.</p> <p>New walking and cycling infrastructure should be developed that maximise opportunities to natural green space and the countryside, and promotes the creation/extension of and improvements to green and blue infrastructure.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
5	Reduce noise pollution	?	?	?	R	R	T/C	<p>The impacts of the area strategy on noise are likely to be dependent on location. There may be short-term benefits in terms of reducing noise in some locations (particularly if freight traffic volumes are reduced on the M40, A34 and A43 by supporting proposals to secure a freight interchange at Graven Hill) but also elevated noise levels elsewhere through transport network improvements.</p> <p>There is also likely to be increased noise pollution associated with construction.</p>	<p>The use of low noise surfacing should be considered when delivering new roads, and walking and cycling routes, which would have associated health and well-being benefits.</p> <p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p>
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T	<p>The impacts of the area strategy on air quality are likely to be dependent on location.</p> <p>Improvements to air quality in the town centre are likely to be realised through the implementation of schemes and signage strategies that deter traffic. Such improvements will support Cherwell District Council's emerging Air Quality Strategy, which aims to tackle air pollution in the Kings End / Queens Avenue Air Quality Management Area. Additionally, proposals to encourage the use of sustainable modes of transport (e.g. walking and cycling) are likely to improve air quality in some areas.</p> <p>However, there is uncertainty regarding the changes in air pollutants elsewhere as a result of the re-routing of traffic and the improvements to the transport network, which will increase road capacity and encourage traffic growth.</p>	<p>Oxfordshire County Council should work with the Highways Agency as well as district councils to identify air quality improvements associated with the road network.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
7	Reduce transport related greenhouse gas emissions	?	+	?	I	L	C	<p>The area strategy will encourage greater use of sustainable modes of transport, which will help to reduce greenhouse gas emissions. However, the effects of the strategy on this SEA objective are uncertain in the short-term as these benefits may be offset by increased emissions during construction. By the medium term, the reduction in greenhouse gases is likely to be realised and is considered to represent a beneficial impact.</p> <p>The long term effects will be dependent on traffic growth and emission standards.</p>	<p>Allocated development sites in the Local Plan (2014) will be required to fund improvements to public transport, which will help reduce reliance on private car use and thus greenhouse gases. Such improvements will require careful planning in terms of location, scale and design at project level to ensure gas emission reductions are realised.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
8	Protect and enhance habitats and the diversity and abundance of species	X	X	X	I	L	C	<p>This strategy assumes a number of new road and rail improvements, which may have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats, associated species (including potential for an increased number of animal road kills) and local conservation sites (including Graven Hill and Bicester Meadows Local Wildlife Sites, and the Ray Conservation Target Area).</p> <p>The additional requirement for minerals is also likely to have a negative impact on biodiversity at mineral extraction sites in the short-term.</p> <p>No known impacts on internationally designated sites are anticipated as a result of implementing this Area Strategy. However, there is potential for negative impacts on a couple of nationally designated sites (e.g. Ardley Cutting and Quarry, and Stratton Audley Quarry Sites of Special Scientific Interest), close to Bicester Airfield (which has been proposed as a potential Wildlife Site) which will require further consideration at project level.</p>	At a strategic level it should be possible to identify and where possible reduce impacts on protected sites and sensitive habitats. Detailed assessment and consultation with Natural England at project level should be undertaken to inform specific routes, siting of development and mitigation requirements.
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.
11	Maintain resources such as minerals and soils and enhance geological diversity	XX	X	X	R	L	C	<p>The potential transport network improvements are likely to be resource intensive. It is assumed that increases in frequency and length of trips to be taken by road would lead to an ongoing high maintenance requirement and long term high mineral use. The increased frequency of public transport services may help reduce dependence on fossil fuels but this effect is likely to be undermined by the convenience of car use.</p> <p>The proposed transport improvements will also result in the loss of agricultural land, including some areas of Grade 3B (moderate quality) land along the route of the extension to the perimeter road and possible impacts on moderate quality agricultural land in the footprint of peripheral corridor improvements.</p>	<p>Measures to counteract traffic growth would help to reduce the maintenance requirements on the road network.</p> <p>During the delivery of schemes, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	N	I	R	C	The proposed transport network improvements could have some negative effects upon land use. However, it is unknown at this plan level whether brownfield land can be used for the proposed transport network improvements.	The effects on land use of individual highway schemes and a possible park & ride at Vendee Drive junction area and Bicester Village should be a material consideration in site selection and considered as part of detailed EIA.
13	Adapt transport network to climate change	+	+	?	R	L	C	It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.	Tree planting along routes would increase shade and be beneficial during heat waves, and should be considered during project level assessment. Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.

SEA Objective (abridged)		Assessment of effect					Commentary	Mitigation and enhancement measures	
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale			Frequency
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	XX	?	I	L	?	<p>A reduction in traffic in the town centre is likely to benefit heritage assets and their setting though improved air quality, visual amenity and reduced vibration. Access improvements and the Sustainable Transport Strategy may also improve sustainable access to known heritage sites.</p> <p>However, there may be some negative impacts upon the historic environment from improvements to the transport network and the re-routing of traffic. In particular, there are a large number of listed buildings present within areas proposed for improvement that may be directly affected by the improvement works (particularly in the town centre) and there is potential for impacts on three scheduled monuments (e.g. RAF Bicester WW2 Airfield, Wretchwick deserted medieval settlement and Alchester Roman Site Scheduled Monument) and their settings. Potential alternative routing of the Bicester South East Perimeter Road through the centre of the Alchester Roman Site Scheduled Monument has the potential to directly and significantly impact on the monument and its setting.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise negative effects during construction and ensure protection of the listed buildings, scheduled monuments and non-designated heritage features (including archaeological remains). In particular, care should be taken to ensure that the perimeter road avoids impact on the Alchester Scheduled Monument.</p> <p>Opportunities should also be sought as part of the Sustainable Transport Strategy to improve walking and cycling routes to the heritage assets in and around Bicester.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
15	Maintain and enhance the quality and distinctiveness of the built environment	+	+	?	R	L	C	<p>It is likely that improved pedestrian and cycling facilities would have a slight improvement on the built environment. There will also be public realm improvements e.g. at Bicester Market Square and The Causeway, to enhance the quality of the pedestrian environment by creating a sense of 'place'. This will complement the major investment in the town centre redevelopment and will be progressed once other developments impacting on the Market Square are completed.</p> <p>However, it is not certain that traffic growth would be curbed under this scenario and therefore the long term effects are uncertain.</p>	Wherever traffic congestion in town centres is reduced it is recommended that the benefits are locked in through reallocation of road space to enhance the public realm.
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	x	?	?	I	L	C	<p>Adverse effects on landscape character are likely to be experienced during construction as a result of earthworks and the presence of plant and machinery.</p> <p>In the medium to longer term, the road improvements to improve access are likely to have an adverse effect on local landscape character, although new landscaping schemes as part of these new developments may improve landscape character in areas where there is currently low quality landscapes.</p> <p>No designated landscapes (other than those associated with heritage assets) are likely to be affected by the area strategy.</p>	The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA.

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
							<p>Cumulative, synergistic and secondary effects: The Area Strategy is being developed alongside the Cherwell District Local Plan (2014) and the emerging Bicester Masterplan to ensure that the policies in the Area Strategy complement and do not conflict with these plans.</p> <p>The LTP4 has the potential for in-combination and cumulative impacts with future infrastructure including proposed strategic rail initiatives, such as the East West Rail and plans for electrification, and a possible future Rail Freight Interchange, to strengthen Bicester’s position on the national rail network, which will require further consideration when details of their plans become available.</p> <p>It is likely that there will be in-combination accessibility issues (i.e. reduced accessibility into the town centre) at London Road with the East West Road Project, as a result of an increased frequency of rail services across London Road level crossing. Oxfordshire County Council will work closely with the rail industry and the Department for Transportation to develop a solution to the likely restrictions.</p> <p>Summary: This Area Strategy is likely to give rise to a number of construction related impacts such as land take, loss of habitats, intensive resource use and impacts upon landscape character. However, significant positive effects are identified such as reductions in greenhouse gas emissions, improvements to accessibility and built environment at specific locations including town centres, a likely reduction in town centre out-commuting, improvements to the public realm at Bicester Market Square and The Causeway, and improved health.</p>	

Table 2.5: Banbury Area Strategy

2.5 Banbury: Preferred Area Strategy

Banbury is Cherwell’s largest town and Oxfordshire’s second largest settlement, with a population of nearly 47,000¹. Banbury acts as a Primary Regional Centre that serves a wide sub-region, with a diverse economy focused on manufacturing, logistics, distribution and services and increasingly, high tech manufacturing. In addition to the provision of significant employment opportunities, the town also provides a focus for major retail, housing, cultural, leisure and community activities.

The Cherwell Local Plan anticipates that the town will continue to grow significantly by 2031, with new employment and residential areas proposed, and creation of a more diverse economy. By 2031, the Local Plan² proposes that there will be an additional 7,000 houses³ and 7,000 jobs in Banbury, at key employment sites including Central M40, to the east of Banbury (2,500 jobs); Southam Road (1,000 jobs); and on land North East of M40 Junction 11 (3,500 jobs)⁴. The emerging Banbury Masterplan supports the Local Plan proposals and will provide the overall framework and Vision for guiding the sustainable growth of the town to 2031 and beyond. It aims to rejuvenate the town centre with a focus on developing shopping, leisure and night time economy activities, and to secure the long term role of the town centre.

This Transport Strategy for Banbury supports delivery of both the Cherwell Local Plan; the Banbury Masterplan and its overall Vision for Banbury; and the Canalside Masterplan/ SPD.

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		

¹ Census Data 2011, NOMIS

² Proposed Modifications to the Submission Local Plan 2016-2031 (August 2014)

³ Inclusive of committed development and Cherwell Local Plan Main Modifications (August 2014)

⁴ Land North East of Junction 11 is the ‘Banbury 15’ proposal in the Cherwell Local Plan Main Modifications (August 2014), subject to an EiP in December 2014.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	++	++	?	R	L	T/C	<p>The overall effect upon the town centre by this strategy is difficult to predict. However, it is likely that the environment of Banbury will be significantly improved in the short to medium term, and Banbury Rail Station will be revitalised through opportunities sought in association with electrification of the rail line by the government.</p> <p>An intensive educational programme encouraging local journeys on foot or by bicycle or public transport would help support use of town centre facilities.</p> <p>The development of Construction Logistics Plans should take into consideration the need to reduce the traffic impacts in the public realm of Banbury.</p>	

SEA Objective (abridged)		Assessment of effect					Commentary	Mitigation and enhancement measures	
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale			Frequency
2	Improve accessibility to jobs, facilities and services	++	++	?	R	R	C	<p>The Area Strategy proposes significant improvements to infrastructure to support regeneration (including town centre redevelopment and the Canalside development) and improvements to links between residential areas, employment, leisure and retail destinations and the rail station, including improved car park distribution, a bus strategy and signage. The strategy includes improvements to bus links (including faster and more reliable bus journeys) between residential development on the west side of Banbury and employment sites on the east side of the town.</p> <p>The infrastructure improvements (e.g. to the A361, A4260 Oxford Road Link Road and Hennef Way) would also help to accommodate the forecast traffic growth (in response to planned housing growth) by increasing capacity on the road network.</p> <p>The long term effect is uncertain as it will be dependent upon transport provision in future plans, and future measures to manage the anticipated traffic growth at M40 Junction 11, and traffic movements within Banbury,</p>	<p>Overall investment in transport improvements should take account of those without access to cars and should continue to provide equality of opportunity. This is likely to become more of an issue as the growing population continues to age.</p> <p>Continued consultation will be required through policy BAN2 with Cherwell District Council and other strategic partners (e.g., bus operators, developers, local employers and business groups) to ensure the accessibility improvements are taken forward.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	<p>The strategy is likely to provide improvements to pedestrian and cycle paths and their facilities, improving links between homes, employment and Banbury town centre. However, there is uncertainty as to the effect of road improvements and modifications to the transport network on existing green infrastructure and countryside, particularly the capacity improvement link options.</p> <p>It is recommended that footpaths and cycleways are improved to link green infrastructure, especially play spaces, which would support safer access by children and improved physical activity.</p> <p>The development of Construction Logistics Plans should take into consideration route plans that minimise impacts on natural green space and the countryside.</p>	

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	+	+	?	?	L	?	<p>This strategy demonstrates a commitment to improving facilities and links for pedestrians and cyclists and reducing the proportion of journeys made by car. Improvements to (and maintaining the attractiveness of) existing walking and cycling routes, the provision of new routes and reducing car trips on the network will help to improve the health and well-being of local communities.</p> <p>Opportunities should be sought at project level to improve the safety and quality of existing rights of way (e.g. improving the quality of surfaces, providing directional signage and allocation of road space) as part of strategy area implementation.</p> <p>New walking and cycling infrastructure should be developed that maximise opportunities to natural green space and the countryside, and promotes the creation/extension of and improvements to green and blue infrastructure.</p> <p>Continue working with developers of new residential and employment sites will be required to provide facilities for pedestrians and cyclists to access key off-site amenities such as trips to work, school, and access to the rail station.</p>	

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
5	Reduce noise pollution	?	?	?	R	R	T/C	<p>The impacts of the area strategy on noise are likely to be dependent on location. There may be short-term benefits in terms of reducing noise in the town centre but also elevated noise levels elsewhere through transport network improvements. There is also likely to be increased noise pollution associated with construction of infrastructure improvements.</p> <p>The use of low noise surfacing should be considered when delivering new roads, and walking and cycling routes, which would have associated health and well-being benefits.</p> <p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p>	

SEA Objective (abridged)		Assessment of effect					Commentary	Mitigation and enhancement measures	
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale			Frequency
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T	<p>The impacts of the area strategy on air quality (and the Air Quality Management Area) are likely to be dependent on location.</p> <p>In the short-term, construction works may elevate pollution levels.</p> <p>By 2021, there are likely to be improvements to air quality in and around Banbury through the implementation of schemes that facilitate and promote sustainable travel including walking, cycling and bus use, which complement Cherwell District Council's emerging Air Quality Strategy. Traffic calming along the A361 (South Bar Street/Horsefair Corridor) will reduce traffic speed and deter use of this area, which has recently been declared an AQMA (although it is possible that that introducing traffic calming methods in this area, will further increase the starting/stopping of vehicles' engines which, in turn, will cause an increase in air pollution - contrary to the aims of the AQMA)).</p> <p>There is uncertainty regarding the changes in air pollutants elsewhere as a result of the re-routing of traffic and the improvements to the transport network, to increase road capacity.</p>	Oxfordshire County Council should work with the Highways Agency as well as district councils to identify air quality improvements associated with the road network.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
7	Reduce transport related greenhouse gas emissions	?	+	?	I	L	C	<p>The area strategy will encourage greater use of sustainable modes of transport (e.g. through development of a bus strategy), and play an important role in reducing traffic volume associated with the growth of Banbury, which will help to reduce greenhouse gas emissions. However, the effects of the strategy on this SEA objective are uncertain in the short-term as these benefits may be offset by increased emissions during construction. By the medium term, the reduction in greenhouse gases is likely to be realised and is considered to represent a beneficial impact.</p> <p>The long term effects will be dependent on traffic associated with Banbury's growth.</p>	Developers of allocated development in the Cherwell Local Plan (2014) will be required to fund improvements to transport infrastructure to mitigate their development. Such improvements will require careful planning in terms of location, scale and design at project level to ensure gas emission reductions are realised, and contribute to the improvements set out in Cherwell District Council's Infrastructure Delivery Plan.
8	Protect and enhance habitats and the diversity and abundance of species	X	X	X	I	L	C	<p>This strategy assumes a number of infrastructure improvements, which may have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats, associated species (including potential for an increased number of animal road kills) and a local conservation site (following the route of the Saltway close to the proposed A361 to A4260 spine road).</p> <p>The additional requirement for minerals is also likely to have a negative impact on biodiversity at mineral extraction sites in the short-term.</p> <p>There will be no known impacts on internationally or nationally designated nature conservation sites anticipated as a result of implementing this Area Strategy.</p>	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment (and consultation with Nature England) at project level should be undertaken to inform specific routes and mitigation requirements.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.	None identified.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
11	Maintain resources such as minerals and soils and enhance geological diversity	XX	X	X	R	L	C	<p>The potential transport network improvements are likely to be resource intensive. It is assumed that improved infrastructure would lead to an ongoing high maintenance requirement and long term high mineral use. The improvements to public transport services (including rail and bus) may help reduce dependence on fossil fuels but this effect is likely to be undermined by the convenience of car use.</p> <p>The proposed transport improvements will also result in the loss of agricultural land, including some areas of Grade 2 (very good quality) and Grade 3A (good quality) land along the route of the A361 to A260 spine road to support planned housing. There is also potential for encroachment on Grade 3A land along the preferred north-south improvements.</p> <p>Care will be required if any road improvements are undertaken at Drayton, in association with the new housing west of Warwick Road, to avoid obscuring the exposures of the geologically designated Neithrop Field Cutting Site of Special Scientific Interest (SSSI), and to maintain the conservation face clear of vegetation and build-up of rock debris.</p>	<p>Measures to counteract traffic growth would help to reduce the maintenance requirements on the road network.</p> <p>During the delivery of schemes, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	N	I	R	C	The proposed transport network improvements could have some negative effects upon land use, and it is likely that the capacity improvement link options will affect some greenfield land. However, it is unknown at this plan level whether brownfield land can be used for the proposed transport network improvements.	The effects on land use of individual schemes should be a material consideration in site selection and considered as part of detailed EIA.
13	Adapt transport network to climate change	+	+	?	R	L	C	It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.	Tree planting along routes would increase shade and be beneficial during heat waves. Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>The impacts of the area strategy on the historic environment are likely to be dependent on location. However, Policy BAN1 seeks opportunities to deliver transport schemes in Banbury to support regeneration and growth while ensuring that the historically sensitive areas of the town are protected.</p> <p>A reduction in traffic in the town centre is likely to benefit heritage assets and their setting though improved air quality, visual amenity and reduced vibration.</p> <p>However, there may be some negative impacts upon the historic environment from improvements to the transport network and the re-routing of traffic. Particular care will be required to conserve the numerous listed buildings in and around the upgraded roads and junctions e.g. along Hennef Way Corridor, at Bridge Street, along the Cherwell Street Easter Corridor and at Bloxham Road improved junction. Additionally, care will be required to protect the setting of the Former World War I National Filling Factory Scheduled Monument to the south of a potential link road (east of M40 Junction 11). The delivery of an east-west link from the A361 Bloxham Road to join White Post Road is also likely to affect the Bodicote Conservation Area, and the link road from Higham Way to Central M40 has the potential to affect the archaeological remains of the former Banbury National Filling Station No.9 on the west side of the M40 which, although not scheduled (unlike the remains on the east side, which are) are regarded by Historic England as being of national significance and should be offered the same protection as a Scheduled Monument.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to avoid or minimise effects on the listed buildings during construction and ensure protection of historically sensitive areas.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p> <p>The development of Delivery & Servicing Plans (DSPs) will be an important tool for managing trips on the road network and protecting historic areas e.g. by providing a mechanism for encouraging deliveries to take place outside of peak hours, and for larger vehicles to use designated routes away from sensitive sites.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
15	Maintain and enhance the quality and distinctiveness of the built environment	+	+	?	R	L	C	It is likely that improved pedestrian and cycling facilities would have a slight improvement on the built environment and there will be public realm improvements associated with improvements to Bridge Street junction. However, it is not certain that traffic growth would be curbed under this scenario and therefore the long term effects are uncertain.	Wherever traffic congestion in the town centre is reduced it is recommended that the benefits are locked in through reallocation of road space to enhance the public realm.
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	X	X	N	I	L	C	<p>The infrastructure improvements are likely to have an adverse effect on landscape character.</p> <p>New landscaping schemes as part of these new developments may improve landscape character in areas where there is currently low quality landscapes.</p> <p>Adverse effects on landscape character are also likely to be experienced during construction as a result of earthworks and the presence of plant and machinery.</p>	The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA.
<p>Cumulative, synergistic and secondary effects: The Area Strategy is being developed alongside the Cherwell District Local Plan (2014) and the emerging Banbury Masterplan to ensure that the policies in the Area Strategy complement and do not conflict with these plans.</p> <p>The LTP4 has the potential for in-combination and cumulative impacts with future infrastructure including the government's proposals for electrification of the railway line at Banbury, which will require further consideration when details of their plans become available.</p> <p>Summary: This Area Strategy is likely to give rise to a number of construction related impacts such as land take, loss of habitats, changes in landscape character and intensive resource use. However, significant positive effects are identified such as reductions in greenhouse gas emissions, improvements to accessibility that supports regeneration of the town and Canalside Development, and improvements to the built environment at specific locations including the town centre, Bridge Street Junction and railway station.</p>									

Table 2.6: Witney Area Strategy

2.6 Witney: Preferred Area Strategy

Witney is the largest town in West Oxfordshire, containing the main commercial, leisure, health and other services for the district. It has a diverse economy and is home to some of Oxfordshire’s most successful high technology manufacturing and engineering firms. The historic Market Square, High Street, Woolgate Centre and Marriott’s Walk make Witney an outstanding retail and leisure attraction.

This Area Strategy is being developed alongside the emerging West Oxfordshire Local Plan. Growth proposals from the WODC Pre-submission Draft Local Plan 2011 - 2031 (March 2015) comprise 3,700 new homes in the Witney sub area by 2031. Three Strategic Development Areas are identified: 1,000 homes at West Witney, 400 at East Witney and 1000 homes at North Witney. Twenty hectares of land has been identified for employment to enable Witney to attract inward investment and new jobs. The draft Local Plan also contains policies to maintain and enhance Witney’s town centre shopping, leisure and cultural attractions.

The Witney Area transport Strategy will be revised following the adoption, by West Oxfordshire District Council, of the Local Plan.

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1 Maintain the vitality of town centres	?	?	?	R	R	T/C	<p>The overall effect upon town centres by this strategy is difficult to predict.</p> <p>The area strategy is likely to improve congestion in the town centre but this may be undermined by the programme of improvements to the strategic transport network, which could support the convenience of out of town retail developments.</p>	<p>An intensive educational programme encouraging local journeys on foot or by bicycle or public transport may be required to help support use of town centre facilities.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
2	Improve accessibility to jobs, facilities and services	++	++	?	R	R	C	<p>The Area Strategy proposes significant improvements to access between towns and new employment sites, and strategic transport networks (e.g. new A40 junctions, public transport priority measures), which link businesses and residents.</p> <p>The road improvements will help to accommodate forecast traffic growth (in response to planned housing growth) by increasing capacity on the road network.</p> <p>The long term effect is uncertain as it will be dependent upon transport provision in future plans.</p> <p>Proposals WIT1 and WIT2 support future growth and seek to attract economic investment (e.g. by identifying 20ha of land for employment) while improving access to the strategic transport networks and managing through traffic in Witney's central areas.</p>	Overall investment in transport improvements should take account of those without access to cars and should seek to provide equality of opportunity. This is likely to become more of an issue as the general population continues to age.
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	<p>The scenario is likely to provide for improvements to footways and cycle ways through reallocation of existing road space and the construction of new links between homes, employment and the town centre. It is uncertain whether this scenario would increase provision or link areas of green infrastructure.</p>	It is recommended that footpaths and cycleways are improved to link green infrastructure, especially play spaces, which would support safer access by children and improved physical activity.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	+	+	?	?	L	?	<p>This strategy (notably Proposal WIT5) demonstrates a commitment to improving facilities for pedestrians and cyclists. Improvements to existing walking and cycling routes and the provision of new routes (e.g. between Witney and Carterton) will help to improve the health and well-being of local communities.</p> <p>Additionally, proposals WIT1 and WIT2 identify a sequence of schemes to free up routes within Witney for walking, cycling and bus use.</p>	<p>Opportunities should be sought at project level to improve the safety and quality of existing rights of way as part of strategy area implementation (e.g. improving the quality of surfaces, providing directional signage and allocation of road space) as part of strategy area implementation.</p> <p>New walking and cycling infrastructure should be developed that maximises opportunities to natural green space and the countryside, and that promotes the creation/extension of and improvements to green infrastructure.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
5	Reduce noise pollution	?	?	?	R	R	C	<p>The impacts of the area strategy on noise are likely to be dependent on location. There may be short-term benefits in terms of reducing noise in town centres but also elevated noise levels associated with construction.</p> <p>There is also uncertainty regarding the changes in noise, which may be increased elsewhere as a result of the re-routing of traffic and the improvements to the transport network, which will increase road capacity and encourage traffic growth.</p>	<p>The use of low noise surfacing should be considered when delivering new roads, and walking and cycling routes, which would have associated health and well-being benefits.</p> <p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T/C	<p>The impacts of the area strategy on air quality (and the declared Witney Air Quality Management Area) are likely to be dependent on location.</p> <p>Improvements to air quality in the town centre are likely to be realised through the implementation of schemes that deter traffic from using Bridge Street and Woodstock Road. Additionally, proposals WIT1 and WIT2 identify a sequence of schemes to free up routes within Witney for walking, cycling and bus use, which may improve air quality in some locations.</p> <p>However, there is uncertainty regarding the changes in air pollutants, which may be increased elsewhere as a result of the re-routing of traffic and the improvements to the transport network, which will increase road capacity and encourage traffic growth.</p>	<p>Measures to counteract traffic growth (e.g. by improving opportunities for sustainable transport) would help to reduce overall air pollution.</p> <p>Following the opening of the Shores Green slip roads, opportunities should be sought for travel by sustainable transport, which may improve air quality at some locations.</p> <p>Oxfordshire County Council should continue to work with the Highways Agency and West Oxfordshire District Council to identify air quality improvements associated with the road network to complement measures identified in the Air Quality Action Plan (2010).</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
7	Reduce transport related greenhouse gas emissions	?	+	?	I	L	C	<p>The area strategy (in particular Proposal WIT4) will result in improvements to the public transport system, which will help to reduce greenhouse gas emissions. However, the effects of the strategy on this SEA objective are uncertain in the short-term as these public transport benefits may be offset by increased emissions during construction. By the medium term, the reduction in greenhouse gases is likely to be realised and is considered to represent a beneficial impact.</p> <p>The long term effects will be dependent on traffic growth and emission standards.</p>	A more intensive programme of 'Intelligent Mobility' services and demand management is likely to be successful in increasing the uptake of more carbon efficient travel (public transport, walking and cycling) within large towns where there is significant opportunity because of the relative close proximity of various services.
8	Protect and enhance habitats and the diversity and abundance of species	X	X	X	I	L	C	<p>This strategy assumes a number of new road improvements and junctions, which are likely to have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats, associated species (including known populations of water vole and otter), and local conservation sites (e.g. potential impacts on downstream Grimes Mead Local Wildlife Site).</p> <p>The additional requirement for minerals is also likely to have a negative impact on biodiversity at mineral extraction sites in the short-term.</p> <p>No known impacts on internationally or nationally designated sites are anticipated as a result of implementing this Area Strategy (although the Ducklington Mead SSSI lies approximately 500m south of the A4095 redesignation, which should be considered further at project level with regard to potential downstream hydrological impacts on the neutral hay meadows).</p>	At a strategic level it should be possible to identify and where possible avoid or reduce impacts on protected sites and sensitive habitats. Detailed assessment (and consultation with Natural England) at project level should be undertaken to inform specific routes and mitigation requirements (including timing of works).

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
9	Maintain and improve the quality of water resources	?	?	?	-	R	-	It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution. However, a possible new road bridge crossing the River Windrush (part of the Windrush and tributaries (Little Rissington to Thames waterbody)) will require further consideration to avoid impacts on its water quality.	None identified.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated although there are opportunities to provide flood storage (see 'mitigation and enhancement measures'. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	At the project level, consider viability of, and opportunities for the West End Link Road to provide a dual role in terms of transport and flood risk reduction/flood storage, in consultation with Natural England, West Oxfordshire District Council, and the Oxfordshire Local Enterprise Partnership is also involved.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
11	Maintain resources such as minerals and soils and enhance geological diversity	XX	X	X	R	L	P	<p>The potential transport network improvements are likely to be resource intensive. It is assumed that increases in frequency and length of trips to be taken by road would lead to an ongoing high maintenance requirement and long term high mineral use. The additional public transport provision would help reduce dependence on fossil fuels but this effect is likely to be undermined by the convenience of car use.</p> <p>There is potential for some losses of moderate quality agriculture land in the footprint of the scheme at Station Lane Industrial Area, however it is unlikely that any road improvements will affect Grades 3a and above agriculturally productive land.</p>	<p>Measures to counteract traffic growth would help to reduce the maintenance requirements on the road network.</p> <p>During the delivery of schemes, care should be taken to avoid (where possible) or limit losses of agricultural land.</p>
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	X	X	N	I	R	C	<p>The proposed transport network improvements would have a negative effect upon land use. However, the proposed reallocation of some road space within towns to enable bus priority, improved footways and cycle routes would make more efficient use of land within towns. Therefore overall the effect is likely to be minor negative.</p>	<p>The effects on land use of individual highway schemes and a park & ride at Eynsham Park should be a material consideration in site selection and considered as part of detailed EIA.</p>
13	Adapt transport network to climate change	+	+	?	R	L	C	<p>It is assumed that all new developments under this strategy would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.</p>	<p>Tree planting along routes would increase shade and be beneficial during heat waves.</p> <p>Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>The impacts of the area strategy on the historic environment are likely to be dependent on location.</p> <p>A reduction in congestion in the town centre is likely to benefit heritage assets and their setting though improved air quality, visual amenity and reduced vibration. However, there may be some negative impacts upon the historic environment from improvements to the transport network and the re-routing of traffic. In particular, there may be impacts on listed buildings and/or their setting as a result of constructing the possible west end link road 2, and the upgraded A40/Shores Green roads, which will require further consideration at project level.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>
15	Maintain and enhance the quality and distinctiveness of the built environment	?	+	?	R	L	C	<p>It is likely that improved pedestrian facilities and some reallocation of road space would have a slight improvement on the built environment. However, it is not certain that traffic growth would be curbed under this strategy and therefore the long term effects are uncertain.</p>	<p>Wherever traffic congestion in town centres is reduced it is recommended that the benefits are locked in through reallocation of road space to enhance the public realm.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	?	?	N	I	L	C	<p>New elements in the landscape such as road and junction improvements, and a potential park & ride are likely to have an adverse effect on landscape character. However, new landscaping schemes as part of these new developments may improve landscape character in areas where there is currently low quality landscapes. Pedestrian improvements may also improve the streetscape in some areas.</p> <p>Adverse effects are also likely to be experienced on landscape character during construction as a result of earthworks and the presence of plant and machinery.</p>	The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA.

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
							<p>Cumulative, synergistic and secondary effects: The Area Strategy is being developed alongside the emerging West Oxfordshire Local Plan (2012) to ensure that the policies in the Area Strategy complement and do not conflict with those in the draft Local Plan.</p> <p>The LTP4 has the potential for in-combination and cumulative impacts with the Local Plan as a result of the transport needs associated with new housing and employment sites identified in the Local Plan, which will require further consideration. Once the Local Plan is adopted, OCC will work with West Oxfordshire District Council to develop proposals for a Witney Town Centre Transport Strategy, to address these impacts.</p> <p>Additionally, the West End Link – Bridge route may influence the aims of the Windrush Conservation Target Area, which will require further consideration at project level.</p> <p>Based upon the current understanding of this Area Strategy, it is likely that various trends will continue including the trend for residents working outside of Witney to travel to employment at Oxford and locally in West Oxfordshire.</p> <p>Witney will continue to experience increased car use despite measures in the Area Strategy to improve public transport and walking and cycling. The transport network improvements support the convenience of the car and therefore there may also be a continued cumulative effect on the environment associated with traffic (noise, land take, increasing trends in obesity, wildlife road kills, and impacts upon landscape character).</p> <p>There are opportunities for beneficial cumulative impacts associated with the provision of the West End Link Road and flood storage/flood risk reduction, which should be explored further at the project level.</p> <p>Summary: This Area Strategy is likely to give rise to a number of construction related impacts such as land take, loss of habitats and intensive resource use. Some positive effects are identified such as reduction in greenhouse gas emissions, improvements to accessibility to support future growth and investment, improvements to the built environment at specific locations including reallocation of road space to pedestrians, and improvements to human health as a result of improved pedestrian and cyclist facilities.</p>	

Table 2.7: Carterton Area Strategy

2.7 Carterton: Preferred Area Strategy

Carterton, the second largest settlement in West Oxfordshire, is a relatively modern town which has grown, in the main, to serve RAF Brize Norton. It has a small but varied economy, largely focused around the provision of local services, and has been identified as a growth area by West Oxfordshire District Council, and Carterton Town Council with opportunities for both residential and employment growth.

This Area Strategy is being developed alongside the emerging West Oxfordshire Local Plan. Growth proposals from the WODC Housing Consultation paper (July 2014) comprise 2,450 new homes in the Carterton sub area by 2029. Strategic Development Areas to the east of Carterton have been identified (700 homes) and 400 homes at REEMA North and Central (current military personnel housing areas). Twenty hectares of land has been identified for employment to enable Witney to attract inward investment and new jobs. The draft Local Plan (2012) also seeks to deliver a more attractive and vibrant town centre.

The Carterton Area transport Strategy will be revised following the adoption, by West Oxfordshire District Council, of the Local Plan and Carterton Master Plan.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
1	Maintain the vitality of town centres	++	++	?	R	L	T/C	The overall effect upon town centres by this strategy is difficult to predict. However, it is likely that the environment of Carterton town centre will be significantly improved in the short to medium term (particularly in-combination with the effects of the Carterton Master Plan once adopted), with a likely reduction in the volume of traffic (including military freight) accessing the town centre.	An intensive educational programme encouraging local journeys on foot or by bicycle or public transport would help support use of town centre facilities.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
2	Improve accessibility to jobs, facilities and services	++	++	?	R	R	C	<p>The Area Strategy proposes significant improvements to encourage people to access jobs (including those at Oxford's Northern Gateway) and services by sustainable transport modes. In particular, improvements to the frequency of bus services, the provision of more bus stops and the use of public transport priority measures are proposed, which will improve accessibility, particularly for commuters and those in education.</p> <p>The road improvements (e.g. to the B4477/A40) will also accommodate forecast traffic growth (in response to planned housing growth) by increasing capacity on the road network, and will help to manage community severance effects.</p> <p>The long term effect is uncertain as it will be dependent upon transport provision in future plans.</p>	Overall investment in transport improvements should take account of those without access to cars and should continue to provide equality of opportunity. This is likely to become more of an issue as the growing population continues to age.
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	<p>The strategy is likely to provide improvements to pedestrian and cycle paths and their facilities, improving links between homes, employment and Carterton town centre. However, there is uncertainty as to the effect of road improvements and modifications to the transport network on existing green infrastructure.</p>	It is recommended that footpaths and cycleways are improved to link green infrastructure, especially play spaces, which would support safer access by children and improved physical activity.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
4	Protect and promote everyone's physical and mental wellbeing and safety	+	+	?	?	L	?	<p>This strategy demonstrates a commitment to improving facilities and links for pedestrians and cyclists. Improvements to (and maintaining the attractiveness of) existing walking and cycling routes and the provision of new routes will help to improve the health and well-being of local communities.</p>	<p>Opportunities should be sought at project level to improve the safety and quality of existing rights of way (e.g. improving the quality of surfaces, providing directional signage and allocation of road space) as part of strategy area implementation.</p> <p>New walking and cycling infrastructure should be developed that maximise opportunities to natural green space and the countryside, and promotes the creation/extension of and improvements to green and blue infrastructure.</p>
5	Reduce noise pollution	?	?	?	R	R	C	<p>The impacts of the area strategy on noise are likely to be dependent on location. There may be short-term benefits in terms of reducing noise in town centres (particularly if military freight traffic are re-routed) but also elevated noise levels elsewhere through transport network improvements.</p> <p>There is also likely to be increased noise pollution associated with construction.</p>	<p>The use of low noise surfacing should be considered when delivering new roads, and walking and cycling routes, which would have associated health and well-being benefits.</p> <p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T/C	<p>The impacts of the area strategy on air quality are likely to be dependent on location.</p> <p>Improvements to air quality in the town centre are likely to be realised through the implementation of schemes that deter traffic. Additionally, proposals to encourage the use of sustainable modes of transport (e.g. walking and cycling) are likely to improve air quality in some areas.</p> <p>However, there is uncertainty regarding the changes in air pollutants elsewhere as a result of the re-routing of traffic and the improvements to the transport network, which will increase road capacity and encourage traffic growth.</p>	Oxfordshire County Council should work with the Highways Agency as well as district councils to identify air quality improvements associated with the road network.
7	Reduce transport related greenhouse gas emissions	?	+	?	I	L	C	<p>The area strategy will encourage greater use of sustainable modes of transport, which will help to reduce greenhouse gas emissions. However, the effects of the strategy on this SEA objective are uncertain in the short-term as these benefits may be offset by increased emissions during construction. By the medium term, the reduction in greenhouse gases is likely to be realised and is considered to represent a beneficial impact.</p> <p>The long term effects will be dependent on traffic growth and emission standards.</p>	Allocated development sites in the Local Plan (2012) will be required to fund improvements to public transport, which will help reduce reliance on private car use and thus greenhouse gases. Such improvements will require careful planning in terms of location, scale and design at project level to ensure gas emission reductions are realised.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
8	Protect and enhance habitats and the diversity and abundance of species	X	X	X	I	L	C	<p>This strategy assumes a number of new road improvements, which may have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats and associated species (including potential for an increased number of animal road kills). The additional requirement for minerals is also likely to have a negative impact on biodiversity at mineral extraction sites in the short-term.</p> <p>No known impacts on internationally or nationally designated sites are anticipated as a result of implementing this Area Strategy.</p>	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment at project level should be undertaken to inform specific routes and mitigation requirements.
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.	None identified.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
11	Maintain resources such as minerals and soils and enhance geological diversity	XX	X	X	R	L	C	<p>The potential transport network improvements are likely to be resource intensive. It is assumed that increases in frequency and length of trips to be taken by road would lead to an ongoing high maintenance requirement and long term high mineral use. The increased frequency of public transport services may help reduce dependence on fossil fuels but this effect is likely to be undermined by the convenience of car use.</p> <p>There is potential for the upgraded road improvements and slip roads to encroach on limited areas of moderate quality (Grade 3B) agricultural land.</p>	<p>Measures to counteract traffic growth would help to reduce the maintenance requirements on the road network.</p> <p>During the delivery of schemes, care should be taken to avoid (where possible) or limit losses of agricultural land.</p>
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	N	I	R	C	<p>The proposed transport network improvements could have some negative effects upon land use. However, it is unknown at this plan level whether brownfield land can be used for the proposed transport network improvements.</p>	<p>The effects on land use of individual highway schemes and a possible park & ride at Eynsham Park should be a material consideration in site selection and considered as part of detailed EIA.</p>
13	Adapt transport network to climate change	+	+	?	R	L	C	<p>It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.</p>	<p>Tree planting along routes would increase shade and be beneficial during heat waves.</p> <p>Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>The impacts of the area strategy on the historic environment are likely to be dependent on location.</p> <p>A reduction in traffic in the town centre is likely to benefit heritage assets and their setting though improved air quality, visual amenity and reduced vibration. However, there may be some negative impacts upon the historic environment from improvements to the transport network and the re-routing of traffic.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>
15	Maintain and enhance the quality and distinctiveness of the built environment	?	+	?	R	L	C	<p>It is likely that improved pedestrian and cycling facilities would have a slight improvement on the built environment. However, it is not certain that traffic growth would be curbed under this scenario and therefore the long term effects are uncertain.</p>	<p>Wherever traffic congestion in town centres is reduced it is recommended that the benefits are locked in through reallocation of road space to enhance the public realm.</p>
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	X	X	N	I	L	C	<p>The road improvements to improve access to the A40 are likely to have an adverse effect on landscape character.</p> <p>New landscaping schemes as part of these new developments may improve landscape character in areas where there is currently low quality landscapes.</p> <p>Adverse effects on landscape character are also likely to be experienced during construction as a result of earthworks and the presence of plant and machinery.</p>	<p>The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA.</p>

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Permanence		
<p>Cumulative, synergistic and secondary effects: The Area Strategy is being developed alongside the emerging West Oxfordshire Local Plan (2012) to ensure that the policies in the Area Strategy complement and do not conflict with those in the draft Local Plan.</p> <p>The LTP4 has the potential for in-combination and cumulative impacts with future changes and new infrastructure provided by the MOD through the intensification of military operations at RAF Brize Norton, which will require further consideration when details of their plans including Programme GATEWAY become available.</p> <p>Similarly, the LTP4 has the potential for in-combination and cumulative impacts with the emerging masterplan for Carterton by Carterton Town Council, which will seek transport infrastructure and services to support regeneration initiatives. OCC will work with Carterton Town Council to ensure that there are no conflicts between the two plans.</p> <p>Additionally, this Area Strategy identifies a package of transport measures (excluding public transport) that are required to mitigate the cumulative impact of development across the Carterton area, where the impact of development is not attributable to a single development.</p> <p>Summary: This Area Strategy is likely to give rise to a number of construction related impacts such as land take, loss of habitats, resource use and impacts upon landscape character. However, significant positive effects are identified including reductions in greenhouse gas emissions, improvements to accessibility and improvements to the built environment at specific locations including Carterton town centre (with reduced traffic and freight volumes).</p>								

Table 2.8: Science Transit Area Strategy

2.8 Science Transit: Supporting Strategy

Science Transit relates to connectivity within, to and from the Oxfordshire Knowledge Spine (Bicester - Oxford - Science Vale UK), which the Oxfordshire Local Enterprise Partnership's (LEP) Strategic Economic Plan (SEP) identify as the key driver for local economic growth.

Science Transit is part of a suite of LTPs and strategies that will combine to address existing and future traffic congestion challenges in Oxfordshire.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	?	?	?	R	L	T/C	There is uncertainty as to the effect of road improvements and modifications to the transport network on the vitality of town centres.	Projects to be implemented as part of the LTP4 should seek opportunities through data innovation and Intelligent Mobility to maintain the attractiveness of town centres.
2	Improve accessibility to jobs, facilities and services	+	?	?	R	R	C	Projects within this strategy aim to improve connectivity to new and existing development locations and are likely to improve connections between key areas along the Knowledge Spine (e.g. upgrading pinch point junctions and constructing new rapid transit bus lanes) although many will be subject to funding (and therefore some uncertainty relating to delivery). There will also be some route enhancements, which will improve connections between key locations	Develop the concept of Intelligent Mobility and apply it to transport systems within the county during the implementation of the LTP4.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	There is uncertainty as to the effect of road improvements and modifications to the transport network on existing green infrastructure.	It is recommended that footpaths and cycleways are improved to link green infrastructure, especially play spaces, which would support safer access by children and improved physical activity.
4	Protect and promote everyone's physical and mental wellbeing and safety	+	+	+	?	L	?	This strategy demonstrates a commitment to improving travel information and integrated and reliable services for the population to improve the traveller experience and road safety. Such a system will seek to work with modern lifestyles and align with aspirations for personalised mobility options. Additionally, the LTP4 together with the Science Transit will develop interchange points between multiple modes of transport (hubs) that will maintain safe walk and cycle access by keeping people segregated from public transport and vehicles.	None identified
5	Reduce noise pollution	?	?	?	R	R	T/C	It is uncertain how the Science Transit will align with the LTP4 and affect noise patterns through improved frequency, speed and reliability of services.	Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T/C	The Science Transit will seek to address air quality issues associated with the high carbon footprint of transport in Oxfordshire. However, it is uncertain how the Science Transit will affect air quality through improved frequency, speed and reliability of services at this strategic level.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
7	Reduce transport related greenhouse gas emissions	+	?	?	I	L	C	<p>The Science Transit will seek to address air quality issues associated with the high carbon footprint of transport in Oxfordshire e.g. through reducing traffic congestion, the trialling and delivery of modern hybrid or emission free buses with high levels of service between key residential areas and Oxford city centre.</p> <p>However, there remains some uncertain in the medium and long-term as to how the Science Transit will be delivered following trials and how this will affect greenhouse gas emissions.</p>	None identified
8	Protect and enhance habitats and the diversity and abundance of species	?	?	?	I	L	C	<p>There is uncertainty as to the effect of road improvements and modifications to the transport network on biodiversity, additional to those impacts already identified in the other Area Strategies.</p>	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment at project level should be undertaken to inform specific routes and mitigation requirements.
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	<p>No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.</p>	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.
11	Maintain resources such as minerals and soils and enhance geological diversity	?	?	?	R	L	C	There is uncertainty as to the effect of road improvements and modifications to the transport network on minerals and soils, additional to those impacts already identified in the other Area Strategies.	Measures to counteract traffic growth would help to reduce the maintenance requirements on the road network.
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	?	I	R	C	The proposed transport network improvements could have some negative effects upon land use. However, it is unknown at this plan level whether brownfield land can be used for the proposed transport network improvements.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
13	Adapt transport network to climate change	+	+	?	R	L	C	<p>It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.</p>	<p>Tree planting along routes would increase shade and be beneficial during heat waves.</p> <p>Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.</p>
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>The impacts of the area strategy on the historic environment are likely to be dependent on location. There is also uncertainty as to the effect of road improvements and modifications to the transport network on the historic environment, additional to those impacts already identified in the other Area Strategies.</p>	<p>Detailed archaeological appraisal of projects should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>
15	Maintain and enhance the quality and distinctiveness of the built environment	+	?	?	R	L	C	<p>It is likely that improved pedestrian and cycling facilities would have a slight improvement on the built environment. However, it is not certain that traffic growth would be curbed and therefore the medium and long term effects are uncertain.</p>	<p>Wherever traffic congestion in town centres is reduced it is recommended that the benefits are locked in through reallocation of road space to enhance the public realm.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	?	?	?	I	L	C	There is uncertainty as to the effect of key infrastructure improvements and proposed service enhancements on landscape, additional to those impacts already identified in the other Area Strategies at this strategic level.	The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through detailed scheme level EIA, where appropriate.
<p>Cumulative, synergistic and secondary effects: The Science Transit Strategy has been developed to align with Oxfordshire County Council’s strategies for improving the county’s transport networks, including the LTP4, supporting area strategies, bus, rail and cycle strategies, and is likely to result in beneficial in-combination impacts that improve accessibility/connectivity and reduce the need for car-based mobility (improving intelligent mobility).</p>									
<p>Summary: This Science Transit Strategy is likely to give rise to some negative impacts associated with the key infrastructure improvements; however, these impacts will largely be dependent on how the improvements are delivered, and will require further consideration at the project level. The approach to delivering Science Transit involving the creation and use of new mobility and data-driven systems, and achieving high quality services are likely to benefit the local population and wider environment; however, until further details of how these will be delivered, many of the impacts have been appraised as uncertain.</p>									

Table 2.9: Bus Strategy

2.9 Bus Strategy

In line with the overall LTP4: Connecting Oxfordshire policy goals, this strategy will contribute to:

- the sustainable delivery of new housing, employment and retail development;
- the economic vitality of the whole of Oxfordshire by improving access to and within urban and rural areas, especially by promoting the vitality and viability of existing town centres;
- reducing traffic congestion by providing an attractive and credible alternative to car travel;
- providing suitable access through fully integrated transport systems to job opportunities and essential services and facilities for people without a car by choice or necessity.
- reducing transport carbon emissions through the use of more energy efficient buses and reducing the amount of car travel.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	?	++	++	R	L	T/C	The overall effect upon town centres by this strategy is difficult to predict. However, the bus strategy seeks to improve access to and within urban and rural areas, and promote the vitality and viability of existing town centres by 2031.	An intensive educational programme encouraging local journeys on foot or by bicycle or public transport would help support use of town centre facilities.
2	Improve accessibility to jobs, facilities and services	?	++	++	R	R	C	The Bus Strategy including super premium and premium transit services proposes significant improvements to accessibility. These comprise extending the strategic bus network to include new routes and upgrading the level and importance of some routes and services. Such improvements will provide access through fully integrated transport systems to job opportunities and essential services and facilities for people without a car, by choice or necessity. The strategy will also enable good access on foot to major destinations.	Overall investment in transport improvements should take account of those without access to cars and should continue to provide equality of opportunity. This is likely to become more of an issue as the growing population continues to age.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	There is uncertainty at this strategic level as to how the bus strategy will affect green infrastructure and the countryside, which will largely be dependent on the need for new bus infrastructure in the countryside.	None identified
4	Protect and promote everyone's physical and mental wellbeing and safety	?	++	++	?	L	?	This strategy demonstrates a commitment to improving facilities and links for pedestrians and cyclists. Improving access and connectivity to bus stops and other interchanges (e.g. rail stations) from other modes, particularly walking and cycling, will be essential in promoting walking and cycling and encouraging increased use of public transport. OCC will consider access to walking and cycling networks and location of supporting facilities when investigating the siting of new bus stops.	New walking and cycling infrastructure should be developed that maximise opportunities to natural green space and the countryside, and promotes the creation/extension of and improvements to green and blue infrastructure. Improvements to walking and cycling routes will consider improving the quality of surfaces, providing directional signage and allocation of road space) as part of strategy area implementation.
5	Reduce noise pollution	?	?	?	R	R	C	The impacts of the area strategy on noise are likely to be dependent on location. There may be short-term benefits in terms of reducing noise in town centres but also elevated noise levels elsewhere through bus network improvements and the provision of more bus services in more rural tranquil areas. There is also likely to be increased noise pollution associated with construction of bus infrastructure.	Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	+	R	R	T/C	The bus strategy seeks to achieve a substantial shift to sustainable, low carbon modes of travel by the long-term, which is likely to have beneficial impacts on air quality.	Oxfordshire County Council should work with the Highways Agency as well as district councils to identify air quality improvements associated with the road network.
7	Reduce transport related greenhouse gas emissions	?	?	+	I	L	C	The bus strategy seeks to reduce transport carbon emissions though the use of more energy efficient buses, reducing the amount of car travel and tackling congestion and delays by implementing bus priority or other traffic management measures at specific points along the major bus routes.	None identified
8	Protect and enhance habitats and the diversity and abundance of species	?	?	?	I	L	C	There is uncertainty at this strategic level as to how the bus strategy will affect biodiversity, which will largely be dependent on the location of new bus infrastructure.	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment at project level should be undertaken to inform specific routes and mitigation requirements.
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new bus infrastructure would be designed with appropriate drainage to address potential surface water pollution.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new bus infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.
11	Maintain resources such as minerals and soils and enhance geological diversity	?	?	?	R	L	C	There is uncertainty at this strategic level as to how the bus strategy will affect minerals and soil (including areas of agricultural land), which will largely be dependent on the location of new bus infrastructure.	During the delivery of schemes, care should be taken to avoid (where possible) losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	?	I	R	C	The proposed transport network improvements could have some negative effects upon land use. However, it is unknown at this plan level whether brownfield land can be used for the proposed bus network improvements.	Enhanced partnership working with local planning authorities and use of the planning system to achieve better coordination between land use planning and future bus service provision.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
13	Adapt transport network to climate change	+	+	?	R	L	C	<p>It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.</p>	<p>Tree planting along bus routes would increase shade and be beneficial during heat waves.</p> <p>Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.</p>
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>There is uncertainty at this strategic level as to how the bus strategy will affect the historic environment, which will largely be dependent on the location of new bus infrastructure.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>
15	Maintain and enhance the quality and distinctiveness of the built environment	?	?	?	R	L	C	<p>There is uncertainty at this strategic level as to how the bus strategy will affect the built environment.</p>	<p>None identified</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	?	?	?	I	L	C	<p>There is uncertainty at this strategic level as to how the bus strategy will affect the landscape, which will largely be dependent on the siting of new bus infrastructure. New landscaping schemes as part of new bus developments may improve landscape character in areas where there is currently low quality landscapes.</p> <p>Adverse effects on landscape character are also likely to be experienced during construction as a result of earthworks and the presence of plant and machinery.</p>	The design of new bus infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA.
<p>Cumulative, synergistic and secondary effects: The Bus Strategy is being developed alongside the other supporting strategies of the LTP4 to ensure that the policies in do not conflict.</p>									
<p>Summary: This Bus Strategy will result in significant beneficial impacts on the population of Oxfordshire through access improvements to and within rural and urban areas and improved connectivity, which are anticipated to materialise by the medium to long-term, and also improvements to air quality and a reduction in greenhouse gas emissions. Impacts on other receptors are uncertain and will be dependent on the siting of new bus infrastructure, which will require further consideration at the project level.</p>									

Table 2.10: Rail Strategy

2.10 Rail Strategy

Oxfordshire’s Rail Strategy sets out the council’s ambition and priorities for rail investment in Oxfordshire, and would be taken forward in partnership with Network Rail and train operators. The strategy covers both the planning and delivery of schemes within the current control period (2014 – 2019) and sets out the priorities and evidence base to support investment in the industry’s subsequent five year planning periods.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	+	+	+	R	L	T/C	<p>The overall effect upon town centres by this strategy is difficult to predict. However, it is likely that the environment of town centres will be improved if more people use rail transport in preference to vehicles.</p> <p>Continued planning work with Network Rail to deliver rail improvements to 2043 will also help to reduce freight movements in Oxfordshire in the longer-term, and has the potential to improve the vitality of town centres.</p>	An intensive educational programme encouraging local journeys on foot or by bicycle to train stations would help support use of town centre facilities.
2	Improve accessibility to jobs, facilities and services	++	++	++	R	R	C	<p>The Rail Strategy proposes significant improvements to rail services including service upgrades, a greater choice of routes and increase in services with better links through Oxfordshire between Didcot, Oxford and Bicester to further afield. Continued planning work with Network Rail to deliver improvements to 2043 will also help to improve accessibility in the longer-term.</p>	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	There is uncertainty as to the effect of rail improvements and connections on existing green infrastructure, which will be dependent on the scale and nature of the works proposed.	None identified
4	Protect and promote everyone's physical and mental wellbeing and safety	+	?	?	?	L	?	This strategy demonstrates a commitment to improving facilities and links for those using public transport in the short-term. However, the medium and longer-term impacts remain uncertain.	<p>Opportunities will be sought at project level to improve the safety and quality of existing rights of way to rail services. For example, OCC will support the provision of secure and accessible cycle parking at local rail stations</p> <p>New walking and cycling infrastructure should be developed that provides better integration with the rail and strategic bus networks proposed as part of Science Transit.</p>
5	Reduce noise pollution	X	?	?	R	R	T/C	The impacts of the area strategy on noise are likely to be dependent on location. There may be elevated noise levels through rail network improvements. There is also likely to be increased noise pollution associated with construction of new facilities including platforms, buildings, stations and car parks.	<p>The use of low noise surfacing should be considered when constructing new car parks.</p> <p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	X	+	?	R	R	T/C	In the short-term, the construction of new rail infrastructure and facilities is likely to elevate air pollution. However, the strategy demonstrates a commitment to improving the rail network, which by the medium-term, will help to reduce air pollution and encourage the use of sustainable modes of transport (e.g. walking and cycling) are likely to improve air quality in some areas.	Oxfordshire County Council will work with Network Rail and train operators as well as district councils to identify air quality improvements during construction of the rail network improvements.
7	Reduce transport related greenhouse gas emissions	X	+	?	I	L	C	In the short-term, the construction of new rail infrastructure and facilities is likely to elevate air pollution. However, the strategy demonstrates a commitment to improving the rail network, which by the medium-term, will may help to reduce vehicle emissions (particularly those from freight transport) and encourage the use of more sustainable modes of transport (e.g. walking and cycling) are likely to improve air quality in some areas.	None identified.
8	Protect and enhance habitats and the diversity and abundance of species	X	X	X	I	L	C	This strategy assumes a number of new rail improvements, which may have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats and associated species (including potential for an increased number of animal kills). Such impacts will be dependent on the nature, location and siting of the proposed improvements, which will require further consideration at project level. Any rail improvements proposed will require consideration in terms of the Habitat Regulations.	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment at project level should be undertaken to inform specific improvements and mitigation requirements.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.	None identified.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.
11	Maintain resources such as minerals and soils and enhance geological diversity	XX	X	X	R	L	C	The potential transport network improvements are likely to be resource intensive and have the potential to impact on agricultural land, which will require further consideration.	During the delivery of rail infrastructure, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	N	I	R	C	The proposed rail network improvements are likely to have some negative effects upon agricultural / greenfield land. However, it is unknown at this plan level whether brownfield land will be used for the proposed improvements.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
13	Adapt transport network to climate change	+	+	?	R	L	C	It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is an increasing risk that infrastructure would be overwhelmed by extreme weather events.	Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>The impacts of the rail strategy on the historic environment are likely to be dependent on location.</p> <p>A reduction in vehicle traffic may benefit heritage assets and their setting though improved air quality, visual amenity and reduced vibration. However, there may be some negative impacts upon the historic environment from improvements to the rail network and the construction of new rail infrastructure and associated facilities.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>
15	Maintain and enhance the quality and distinctiveness of the built environment	?	?	?	R	L	C	There are uncertain effects on the built environment, as a result of the changes from new rail infrastructure and associated car parking facilities, stations and platforms.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	X	X	X	I	L	C	<p>The rail improvements and associated facilities are likely to adversely affect landscape character through the construction of new buildings, car parks and rail facilities.</p> <p>New landscaping schemes will require consideration as part of these new developments to maintain local landscape character and to improve landscape character in areas where there are currently low quality landscapes.</p> <p>Adverse effects on landscape character are also likely to be experienced during construction as a result of earthworks and the presence of plant and machinery.</p>	The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA.
<p>Cumulative, synergistic and secondary effects: The Rail Strategy is being developed alongside the other Oxfordshire road strategies in partnership with Network Rail and other train operators to ensure that the policies do not conflict. Further consideration will need to be given to the programming of such schemes to identify in-combination constraints (e.g. travel disruption) and opportunities (beneficial re-use of resources) associated with construction.</p>									
<p>Summary: This Rail Strategy has been developed to benefit people and their travel, supporting accessibility, forecasted rail demand and future development/economic growth. Significant positive effects are identified such as improvements to accessibility and air quality in the medium-term. However, the strategy is likely to give rise to a number of construction related impacts on the environment such as land take, loss of habitats, resource use and impacts upon the historic environment, which will require further consideration at scheme level.</p>									

Table 2.11: Cycling Strategy

2.11 Cycling Strategy

The cycling strategy has been developed in collaboration with the Oxfordshire Cycling Network (OCN), which represents most of the cycling campaigning groups and clubs in the county.

Oxfordshire County Council's target is to treble the level of cycling to work in Oxfordshire by the end of this strategy. Cycling will be something that is a part of everyday life, which people are used to from an early age. To achieve this, OCC will work with partner organisations, businesses, local councils, schools and communities to promote, enable and increase understanding of cycling throughout the county. OCC will investigate measures to encourage people to try cycling and will build on the OXONBIKE pilot cycle hire scheme, identifying other locations that may be feasible.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	+	+	?	R	L	T/C	The cycling strategy will encourage a greater uptake of cycling, improved cycle parking facilities in cities and towns, and a higher quality cycle network, which, together with an improved public transport system, is likely to help reduce the use of cars in town centres in the short to medium term. However, as traffic volumes increase, the extent to which the cycling strategy will maintain the vitality of town centres in the longer term is difficult to predict and remains uncertain.	An intensive educational programme encouraging local journeys on foot or by bicycle or public transport would help support use of town centre facilities.
2	Improve accessibility to jobs, facilities and services	++	++	?	R	R	C	The Cycling Strategy proposes significant improvements to improve accessibility and includes the development of cycling strategies for towns and journey to work/schools. These will enable people to cycle into towns, park bikes securely, and access shops, offices, stations and priority bus routes.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	Cycling requires relatively small infrastructure changes to the environment, but any impacts on the countryside will be dependent on appropriate siting of new cycle routes and cycling infrastructure.	It is recommended that new cycleways are improved to link green infrastructure, especially play spaces, which would support safer access by children and improved physical activity.
4	Protect and promote everyone's physical and mental wellbeing and safety	++	++	++	?	L	?	<p>The cycling strategy seeks to increase cycle usage, provide a high quality cycle network and provide a safe form of transport that contributes to health and well-being of those living in Oxfordshire.</p> <p>Cycling is an important form of exercise. Cycles suitable for people with movement impairments are available in the UK, allowing more people to cycle. A successful policy to increase the level of cycling will have substantial public health benefits and lead to long-term savings for the NHS.</p>	<p>Opportunities should be sought at project level to improve the safety and quality of existing cycle routes (e.g. improving the quality of surfaces, providing directional signage, providing more through routes and lowering speed limits, where appropriate) as part of strategy area implementation. New developments need to be designed so that cycling is the most convenient transport method for the majority of trips.</p> <p>New cycling infrastructure should be developed that maximises opportunities to natural green space and the countryside, and promotes the creation/extension of and improvements to green and blue infrastructure.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
5	Reduce noise pollution	?	?	?	R	R	C	Improvements to the cycle network may help to reduce the reliance on vehicle based transport and reduce noise levels, though it is unlikely that this strategy alone will reduce noise pollution.	The use of low noise surfacing should be considered when delivering new cycling routes, which would have associated health and well-being benefits. Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.
6	Reduce all forms of transport-related air pollution in the interests of local air quality	+	+	+	R	R	T/C	Cycling is a largely carbon-free form of transport and will therefore help to reduce the reliance on vehicle based transport and associated air pollutants from transport.	None identified
7	Reduce transport related greenhouse gas emissions	+	+	+	I	L	C	Cycling is a largely carbon-free form of transport and will therefore help to reduce the reliance on vehicle based transport and associated greenhouse gas emissions from transport. Where journeys by bike replace vehicle trips, this helps to reduce emissions overall.	None identified
8	Protect and enhance habitats and the diversity and abundance of species	?	?	?	I	L	C	Cycling requires relatively small infrastructure changes to the environment, but any impacts on biodiversity will be dependent on appropriate siting of new cycle routes and cycling infrastructure.	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment at project level should be undertaken to inform specific routes and mitigation requirements.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.	None identified.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.
11	Maintain resources such as minerals and soils and enhance geological diversity	?	?	?	R	L	C	Cycling requires relatively small infrastructure changes to the environment, but any impacts on minerals and soils (including agricultural land) will be dependent on appropriate siting and construction of new cycle routes and cycling infrastructure.	During the delivery of cycle schemes, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	?	I	R	C	The proposed cycle network improvements could have some negative effects upon land use through encroachment on currently undeveloped land. The strategy will however seek to use previous brownfield land, where possible, for example, a currently disused underpass under the railway at Milton Park, which will be reopened for cyclists.	Previously developed sites will be sought in the design and construction of new cycling infrastructure.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
13	Adapt transport network to climate change	N	N	N	R	L	C	It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure.	Tree planting along routes would increase shade and be beneficial during heat waves. Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	Cycling requires relatively small infrastructure changes to the environment, but any impacts on the historic environment will be dependent on appropriate siting and construction of new cycle routes and cycling infrastructure.	Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment. Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.
15	Maintain and enhance the quality and distinctiveness of the built environment	+	+	+	R	L	C	Cycling requires relatively small infrastructure changes to the environment, many of which will bring improvements for the built environment, for example street calming measures.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	?	?	?	I	L	C	<p>Cycling requires relatively small infrastructure changes to the environment, but any impacts on landscape will be dependent on appropriate siting and construction of new cycle routes and cycling infrastructure.</p> <p>Enhancements to existing cycle routes may including lighting to avoid conflicts between use of space by walkers and cyclists and this will require careful consideration in areas of high landscape value and rural locations.</p>	The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion.

Cumulative, synergistic and secondary effects: The Cycling Strategy is being developed alongside the other supporting strategies in the LTP4 to ensure that the policies in the LTP4 do not result in any in-combination impacts.

Summary: This Cycling Strategy will have a significant beneficial impact on the health of the population through the provision of improved conditions for cyclists and a commitment to promoting the health benefits of cycling. The strategy will also help to reduce air quality and greenhouse gas emissions through encouraging the uptake of cycling in preference to unsustainable modes of transport, which will benefit the environment. There are some uncertain impacts associated with the strategy on some environmental receptors including biodiversity, the historic environment and landscape, which will require further appraisal at project level when further detail on the location of new cycling infrastructure is available.

Table 2.12: Freight Strategy

2.12 Freight Strategy

The nature and volume of freight traffic is likely to change substantially over the period of the strategy. The Department for Transport's central prediction for England is that by 2040, we shall see road traffic increases of 80% for light commercial vehicles and 19% for heavy goods vehicles. Freight traffic growth from Oxfordshire County Council's Strategic Economic Plan, with its aim to promote high tech industry, is likely to reflect and even exceed this national pattern.

To provide for this, more efficient use of transport networks and systems across all modes of transport, including use of the rail network is required.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	+	+	?	R	L	T/C	<p>In the short and medium-term, the strategy is committed to deterring the use of freight on inappropriate minor roads and movements through towns (except where this is essential for local access) and reinforcing the attractiveness of recommended lorry routes to avoid important market towns, in particular at Burford, Chipping Norton and Henley-on-Thames. In Oxford, signage will be reviewed on the ring road to ensure that lorries are directed to their destinations within the city by the most appropriate routes. Additionally, as a result of investment in strategic rail in Oxfordshire, there may also be a shift in freight from road to rail in support of Route Based Strategies in the county. These measures will help to maintain the vitality of town centres.</p> <p>As light commercial vehicles increase by 80% and HGVs by 19% by 2040 (long-term), there is uncertainty as to the effects on town centres, as congestion will increase. The effects will vary depending on location, as lorries may increasingly negotiate narrow streets through villages and market towns.</p>	Working with hauliers and logistics companies to influence how they plan their activities so that route planning takes account of environmentally sensitive areas.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
2	Improve accessibility to jobs, facilities and services	+	+	?	R	R	C	<p>The strategy commits to planning the location of new employment sites and any related transport infrastructure so that these can function well, with efficient freight access to and from the strategic transport network without adverse impacts on local communities, other road users and the environment.</p> <p>However, the increase in freight traffic growth in the long-term, could lead to further community severance effects and reduce accessibility for some business users and residents. The long term effect is also uncertain as it will be dependent upon transport provision in future plans.</p>	<p>OCC will work closely with local planning authorities within the constraints of the National Planning Policy Framework to influence the location and design of new employment sites and any related transport infrastructure.</p> <p>OCC will ask developers of major sites to prepare Construction Logistics Plans to minimise impacts of large scale residential and business development planned for Oxfordshire, as well as Delivery and Servicing Plans to ensure that businesses make ongoing arrangements for sustainable freight and logistics.</p>
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	<p>There is uncertainty as to the effect of measures to manage freight movements on existing green infrastructure in the short to medium term.</p> <p>As light commercial vehicles increase by 80% and HGVs by 19% by 2040 (long-term), there is also uncertainty as to the effects from increasing congestion on green infrastructure.</p>	<p>OCC will seek to minimise environmental damage from HGVs through the use of Routing Agreements and Construction Logistics Plans associated with new developments.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	+	+	?	?	L	?	<p>This strategy demonstrates a commitment to improving safety. For example, features will be developed as part of the Freight Gateway to influence lorry routes and journey times that reduce the danger that lorries pose to cyclists. Additionally, rest areas and proper facilities will be developed for lorry drivers with security, refreshments, washing and toilets catering better for drivers in terms of health and safety.</p> <p>In the longer term, there may be increasing risks to cyclists and pedestrians from the estimated increase in large lorries, and therefore the impact is uncertain.</p>	<p>OCC will define the roads that are suitable and unsuitable for HGVs and install and maintain fixed signage to direct lorry drivers to the advisory freight routes, thus reducing dangerous experiences for cyclists and pedestrians.</p> <p>Need to co-ordinate route diversions for freight with work to develop the cycle network to try to reduce the danger that lorries pose to cyclists.</p>
5	Reduce noise pollution	?	?	?	R	R	T/C	<p>The impacts of the freight strategy on noise are likely to be dependent on location. There may be short-term benefits in terms of reducing noise in town centres (particularly if freight traffic are re-routed) but also elevated noise levels elsewhere.</p> <p>There is also likely to be increased noise pollution associated with construction of new facilities associated with freight movements.</p>	Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T/C	<p>The impacts of the freight strategy on air quality are likely to be dependent on location.</p> <p>Improvements to air quality in cities and town centres are likely to be realised through the implementation of measures that deter freight traffic, the consolidation of items, combining them for onward delivery to the same destination, and the use of smaller or low emission vehicles in sensitive environments such as urban centres with poor air quality. However, the re-routing of freight traffic may affect air quality elsewhere.</p> <p>In the long-term, there is uncertainty regarding the changes in air pollutants as a result of the increase in light commercial vehicles by 80% and HGVs by 19%.</p>	Oxfordshire County Council should work with the Highways Agency as well as district councils to identify air quality improvements associated with the road network.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
7	Reduce transport related greenhouse gas emissions	?	?	?	I	L	C	<p>The impacts of the freight strategy on greenhouse gases are likely to be dependent on location.</p> <p>Improvements to vehicle emissions in cities and town centres are likely to be realised through the implementation of measures that deter freight traffic, the consolidation of items, combining them for onward delivery to the same destination, and the use of smaller or low emission vehicles in sensitive environments such as urban centres with poor air quality. However, the re-routing of freight traffic may affect emissions elsewhere.</p> <p>In the long-term, there is uncertainty regarding the changes as a result of the increase in light commercial vehicles by 80% and HGVs by 19%.</p>	Allocated development sites in the Local Plan (2012) will be required to fund improvements to public transport, which will help reduce reliance on private car use and thus greenhouse gases. Such improvements will require careful planning in terms of location, scale and design at project level to ensure gas emission reductions are realised.
8	Protect and enhance habitats and the diversity and abundance of species	?	?	?	I	L	C	<p>The impacts on biodiversity are uncertain and will be dependent on the project level details of measures taken to improve freight movements. Impacts, for example, may include direct loss of habitat, potential for an increased number of animal collisions with HGVs or indirect impacts on biodiversity resulting from changes in noise or air quality.</p>	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment at project level should be undertaken to inform specific measures and mitigation requirements.
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	<p>No significant effects upon water quality are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential surface water pollution.</p>	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new infrastructure would be designed with appropriate drainage to address potential flood risk.	None identified.
11	Maintain resources such as minerals and soils and enhance geological diversity	?	?	?	R	L	C	The effects on soils (including agricultural land) and geological diversity will be dependent on the location and design of any structural measures taken to improve freight movements.	Measures to counteract freight traffic growth would help to reduce the maintenance requirements on the road network. During the delivery of schemes, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	?	I	R	C	The proposed freight improvements could have some negative effects upon land use. However, it is unknown at this plan level whether brownfield land can be used.	None identified
13	Adapt transport network to climate change	+	+	?	R	L	C	It is assumed that all new developments under this scenario would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.	Tree planting along routes would increase shade and be beneficial during heat waves. Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>The impacts of the freight strategy on the historic environment are likely to be dependent on location.</p> <p>A reduction in freight traffic in the town centre is likely to benefit heritage assets and their setting though improved air quality, visual amenity and reduced vibration. However, there may be some negative impacts upon the historic environment from the re-routing of lorries.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Environmental weight limits will be retained where HGVs could cause environmental damage to the historic character and fabric of historic town and village centres.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
15	Maintain and enhance the quality and distinctiveness of the built environment	+	+	?	R	L	C	<p>In the short and medium-term, the strategy is committed to deterring the use of freight on inappropriate minor roads and reinforcing the attractiveness of recommended lorry routes to avoid important market towns, in particular at Burford, Chipping Norton and Henley-on-Thames. Additionally, as a result of investment in strategic rail in Oxfordshire, there may also be a shift in freight from road to rail in support of Route Based Strategies in the county, which may help to improve the built environment.</p> <p>However, as light commercial vehicles increase by 80% and HGVs by 19% by 2040 (long-term), there is uncertainty as to the effects on the built environment, as congestion will increase. The effects will vary depending on location.</p>	None identified
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	?	?	?	I	L	C	<p>The effects on landscape are uncertain as changes in freight patterns and movements take place.</p>	<p>The design of new infrastructure (e.g. resting facilities for lorry drivers etc) should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA, where appropriate.</p>

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
<p>Cumulative, synergistic and secondary effects: Oxfordshire County Council will take careful account of the need for an efficient and sustainable freight network as Infrastructure Development Plans are refined as part of emerging Local Plans.</p> <p>As measures are taken forward as part of the Freight Strategy, consideration will be given to the potential for in-combination and cumulative impacts on freight and logistics associated with large scale residential and business developments and the council will ask developers of such sites to prepare Construction Logistics Plans and Delivery and Servicing Plans to ensure that businesses make ongoing arrangements to ensure protection of the environment.</p> <p>Summary: This Area Strategy is likely to give rise to a number of beneficial impacts that are likely to improve the built environment in urban areas, and help to accommodate the forecasted increase in freight traffic within the timescale of the LTP4. However, many of the effects are uncertain and will be dependent on the location and nature of physical changes in freight infrastructure and changes in freight patterns and movements.</p>								

Table 2.13: A420 Strategy

2.13 A420 Strategy

The A420, is the principal and only direct route between Swindon and Oxford. It is an important strategic link in the Oxfordshire hierarchy, and a primary route which the Council expects to be of a standard to allow for free passage of current and expected future traffic for the majority of the traffic day. In addition to providing a direct route to Oxford city centre from Swindon, the A420 serves the many settlements along the corridor including Shrivenham, Watchfield, Faringdon, Kingston Bagpuize and Cumnor. The A420 is also a premium bus route corridor.

The Vale of White Horse Local Plan 2031 aims to make provisions for growth of 23,000 new jobs and at least 20,560 new homes by 2031. It lists 21 strategic site allocations, 6 of these are along the A420. Swindon Borough Council's Local Plan (2026) identifies an area called 'Eastern Villages' with an allocation of around 8,000 new homes plus employment land on the eastern edge of the town, adjacent to the Oxfordshire boundary and the A420.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	?	?	?	R	L	T/C	The overall effect upon town centres by the A420 strategy is difficult to predict. Improved access between Oxford and Swindon has the potential to increase traffic in town centres.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
2	Improve accessibility to jobs, facilities and services	++	++	?	R	R	C	<p>The A420 Strategy proposes improvements to access to settlements including Oxford and development areas, moving people quickly and efficiently between Swindon and Oxford. The strategy also proposes improved capacity through junction improvements, A420 modifications and improvements to the A420 bus service.</p> <p>A major upgrade of the A420 corridor is not proposed for the current LTP period as any significant scheme (such as further dualling of all or part of the A420 route) would attract more traffic and be likely to encourage further sites on this corridor to be identified for development. The long term effect on accessibility is uncertain as it will be dependent upon transport provision in future plans and future development applications.</p>	Overall investment in transport improvements should take account of those without access to cars and should continue to provide equality of opportunity. This is likely to become more of an issue as the growing population continues to age.
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	<p>The capacity improvements have the potential to impact on the countryside as a result of land-take, which will require further consideration at project level. However, these impacts are currently uncertain.</p>	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	+	+	?	?	L	?	<p>This strategy demonstrates a commitment to improving facilities for pedestrians and cyclists, which may help to improve the health and well-being of local communities. Such improvements comprise improved bus stops including walk/cycle connections and crossing provision, cycle parking and high quality waiting/shelter provision.</p> <p>The strategy also seeks to improve safety and deter 'rat running' through parallel communities (e.g. at Bourton and Great Coxwell).</p> <p>In the long term, the impacts are uncertain as the forecast increase in traffic flows could increase the number of accidents along the A420.</p>	<p>Opportunities should be sought at project level to improve the safety and quality of existing rights of way (e.g. improving the quality of surfaces, providing directional signage) as part of strategy area implementation.</p> <p>New walking and cycling infrastructure should be developed that maximise opportunities to natural green space and the countryside, and promotes the creation/extension of and improvements to green and blue infrastructure.</p>
5	Reduce noise pollution	x	?	?	R	R	T/C	<p>There is likely to be increased noise pollution associated with construction of junction and capacity improvements although the effects on noise between 2020 and post 2031 are uncertain.</p>	<p>Noise will be assessed as part of scheme design and suitable noise mitigation will be used to reduce any impacts identified.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
6	Reduce all forms of transport-related air pollution in the interests of local air quality	?	?	?	R	R	T/C	<p>The impacts of the area strategy on air quality are likely to be dependent on location.</p> <p>Proposals to encourage the use of sustainable modes of transport (e.g. walking and cycling) are likely to improve air quality in some areas. However, there is uncertainty regarding the changes in air pollutants elsewhere as a result of improvements to the transport network, which will increase road capacity and encourage traffic growth in the long-term.</p>	Oxfordshire County Council should work with the Highways Agency as well as district councils to identify air quality improvements associated with the road network.
7	Reduce transport related greenhouse gas emissions	?	+	?	I	L	C	<p>The A420 strategy will encourage greater use of sustainable modes of transport (e.g. enhancement of the A420 premium bus route), which will help to reduce greenhouse gas emissions. However, the effects of the strategy on this SEA objective are uncertain in the short-term as these benefits may be offset by increased emissions during construction. By the medium term, the reduction in greenhouse gases is likely to be realised and may represent a beneficial impact.</p> <p>The long term effects will be dependent on traffic growth and emission standards.</p>	The A420 improvements will require careful planning in terms of location, scale and design at project level to ensure gas emission reductions are realised.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
8	Protect and enhance habitats and the diversity and abundance of species	X	X	X	I	L	C	<p>This strategy assumes a number of new capacity and access improvements, which may have an overall adverse effect upon biodiversity through the loss and fragmentation of habitats and associated species (including known populations of otters and badgers).</p> <p>No known impacts on internationally designated sites are anticipated as a result of implementing this Area Strategy. However, there is potential for impacts on the floodplain fen and neutral pasture at Tuckmill Meadows SSSI and LNR (e.g. through encroachment and changes in water quality, frequency and extent of flooding), located on the eastern edge of the A420 between the A420 and Watchfield.</p>	At a strategic level it should be possible to identify and where possible avoid protected sites and sensitive habitats. Detailed assessment (and consultation with Natural England) should be undertaken at project level to inform specific junction and access improvements and mitigation requirements.
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that new capacity and access improvements would be designed with appropriate drainage to address potential surface water pollution.	None identified.
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	N	N	N	-	R	-	No significant effects upon the flood regime are anticipated. It is assumed that new capacity and access improvements would be designed with appropriate drainage to address potential flood risk.	Continued working with partners and agencies to deliver the strategy, ensuring that the A420 is resilient to flooding, to ensure that the network can continue to flow and operate.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
11	Maintain resources such as minerals and soils and enhance geological diversity	XX	X	X	R	L	C	<p>The potential transport network improvements are likely to be resource intensive and has potential to encroach on agricultural land along the route of some improvement works. It is assumed that increases in frequency and length of trips to be taken by road would lead to an ongoing high maintenance requirement and long term high mineral use. The improvements to the A420 bus service may help reduce dependence on fossil fuels but this effect is likely to be undermined by the convenience of car use.</p>	<p>Measures to counteract traffic growth would help to reduce the maintenance requirements on the road network.</p> <p>During the delivery of network improvements, care should be taken to avoid (where possible) or limit losses of agricultural land (particularly losses of good to very good quality (Grades 3a and above) agriculturally productive land).</p>
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	N	I	R	C	<p>The proposed transport network improvements could have some negative effects upon land use. However, it is unknown at this plan level whether brownfield land will be optimised/prioritised when safeguarding land for transport schemes.</p>	None identified
13	Adapt transport network to climate change	+	+	?	R	L	C	<p>It is assumed that all new capacity and access improvements would be constructed to design standards that take account of climate change predictions and therefore be more resilient than existing infrastructure. However in the long term there is a risk that infrastructure would be overwhelmed by extreme weather events.</p>	<p>Tree planting along routes would increase shade and be beneficial during heat waves.</p> <p>Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.</p>

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	<p>The impacts of the A420 strategy on the historic environment are likely to be dependent on location. Further consideration will be required at project level to understand the risk to heritage and archaeology once the location and nature of junction and access improvements have been determined.</p>	<p>Detailed archaeological appraisal of schemes should be carried out to minimise effects during construction and ensure protection of the historic environment.</p> <p>Further consultation will be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England as the design of schemes progress.</p>
15	Maintain and enhance the quality and distinctiveness of the built environment	?	+	?	R	L	C	<p>It is likely that improved pedestrian and cycling facilities would have a slight improvement on the built environment. However, it is not certain that traffic growth would be curbed under this scenario and therefore the long term effects are uncertain.</p>	<p>Wherever traffic congestion in town centres is reduced it is recommended that the benefits are locked in through reallocation of road space to enhance the public realm.</p>
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	X	X	N	I	L	C	<p>The capacity and access improvements to improve access to the A420 are likely to have an adverse effect on landscape character. Adverse effects on landscape character are also likely to be experienced during construction as a result of earthworks and the presence of plant and machinery.</p>	<p>The design of new infrastructure should take account of regional and local landscape character and seek to minimise visual intrusion. This should be implemented through a detailed scheme level EIA.</p>

SEA Objective (abridged)	Assessment of effect						Commentary	Mitigation and enhancement measures
	2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
<p>Cumulative, synergistic and secondary effects: The A420 Strategy is being developed alongside the Vale of White Horse Local Plan and Swindon Borough Council's Local Plan to ensure that the policies in the A420 Strategy complement and do not conflict with those in the Local Plans. In particular, work is taking place by OCC to understand the potential for in-combination or cumulative transport impacts on Oxfordshire from the Eastern Villages development proposed by Swindon Borough, which will require further consideration as the LTP4 is implemented through project level schemes.</p> <p>The A420 strategy also proposes measures to mitigate the cumulative impact of development across the Science Vale area and implement the transport measures identified in the A420 strategy, as described in Proposal 5, which includes securing strategic transport infrastructure contributions from all new development based on the contribution rate per dwelling or per m² for non-residential developments, and securing strategic public transport service contributions for new or improved public transport services as well as bus stop infrastructure to support sustainable development.</p> <p>Summary: This A420 Strategy is likely to give rise to a number of construction related impacts such as land take, loss of habitats, resource use and impacts upon the historic environment. However, significant positive effects are identified such as improvements to accessibility and safety.</p>								

Table 2.14: Highway Asset Management Plan

2.14 Highways Asset Management Plan (HAMP) 2014 - 2019

A Highways Asset Management Plan (HAMP) identifies the current assets and develops a framework for Asset Management to enhance existing good practices and improve the management of the network. The 4500km highway network in Oxfordshire comprises a number of diverse assets and all of these need managing.

The Council published its first HAMP in 2008. The first HAMP provided a good overview of the authority's highway asset inventories and an action plan for moving the authority towards a more asset management based approach. The decision to review, revise and publish a more up to date HAMP reflects the significant improvements Oxfordshire has made over the last 6 years and recognises the asset management approach and process that has been adopted.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
1	Maintain the vitality of town centres	N	N	N	R	L	T/C	The HAMP will not have any significant impacts on town centres as existing assets are maintained in a 'fit for purpose' condition.	None identified
2	Improve accessibility to jobs, facilities and services	N	N	N	R	R	C	The HAMP will not have any significant impacts on accessibility as existing assets are maintained in a 'fit for purpose' condition.	None identified.
3	Protect and enhance green infrastructure and countryside	?	?	?	?	L	?	In the absence of further details of proposed works (e.g. repairs, practices to minimise waste disposal etc) as part of the HAMP, it is uncertain whether there will be any impacts on green infrastructure and the countryside.	It is likely that any adverse impacts can be avoided through appropriate design and siting.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
4	Protect and promote everyone's physical and mental wellbeing and safety	+	+	+	?	L	?	This strategy demonstrates a commitment to maintaining the safety and condition of local roads, footways and cycleways including improving and maintaining the condition of roads and highway related assets with systematic prioritisation where there are safety related issues, premium bus routes and high pedestrian and cycle usage whilst still maintaining the network as a whole.	None identified
5	Reduce noise pollution	N	N	N	R	R	T	In the absence of further details of proposed works (e.g. repairs, practices to minimise waste disposal etc) as part of the HAMP, it is uncertain whether there will be any noise impacts as a result of implementation. However, as any such noise impacts will be temporary, should they occur, they are not considered to be significant.	The use of low noise surfacing should be considered when carrying out repairs.
6	Reduce all forms of transport-related air pollution in the interests of local air quality	N	N	N	R	R	T	In the absence of further details of proposed works (e.g. repairs, practices to minimise waste disposal etc) as part of the HAMP, it is uncertain whether there will be any air pollutants released as a result of implementation. However, as any such air quality impacts are likely to be minor and temporary, should they occur, they are not considered to be significant.	None identified

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
7	Reduce transport related greenhouse gas emissions	N	N	N	I	L	C	There are likely to be some temporary transport related gas emissions during the maintenance and repair works proposed as part of the HAMP; however these are not considered to be significant.	Highway construction and maintenance will be carried out in an energy efficient manner, which should maximise the use of recycled materials where appropriate, taking into account the carbon emissions of transporting them.
8	Protect and enhance habitats and the diversity and abundance of species	?	?	?	I	L	C	In the absence of further details of proposed works (e.g. verge cutting, highway shrub and tree maintenance etc) as part of the HAMP, it is uncertain whether there will be any impacts on habitats and species.	At a strategic level it should be possible to identify, avoid where possible, and manage protected sites (including designated Roadside Verge Nature Reserves), and sensitive habitats. Detailed assessment at project level should be undertaken to inform specific maintenance, management and mitigation requirements.
9	Maintain and improve the quality of water resources	N	N	N	-	R	-	No significant effects upon water quality are anticipated. It is assumed that maintained infrastructure would be designed with appropriate drainage to address potential surface water pollution.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
10	Retain the floodwater storage function of riparian land and the floodplain and reduce the risk of flooding where it would be detrimental	+	+	+	-	R	-	The strategy demonstrates a commitment to maintaining drainage and associated infrastructure to minimise flooding on and from the highway network. This includes (but is not limited to) adopting a strategic approach to drainage and flood management and investigating reports of highway flooding and damaged or blocked highway drains and take appropriate measures to get water off of the highway, alleviate or mitigate flooding as appropriate.	None identified.
11	Maintain resources such as minerals and soils and enhance geological diversity	+	+	+	R	L	P	The strategy demonstrates a commitment to making the best use of natural mineral resources, planning for Oxfordshire's long-term minerals need whilst minimising waste going to landfill.	None identified.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
12	Optimise the use of previously developed (brownfield) land thereby reducing waste generation	?	?	?	I	R	P	It is uncertain at this plan level whether brownfield land can be used for any maintenance or repair works. However, there is a commitment to maintaining the highway assets, following the principles of Reduce, Reuse, Replace in its use and disposal of materials. This will be done by reducing the need to transfer waste material to landfill sites by reusing material where possible and by taking a whole life approach to asset management which optimises maintenance requirements.	None identified
13	Adapt transport network to climate change	+	+	+	R	L	C	This strategy demonstrates a commitment to improving the condition of local roads, footways and cycleways, including resilience to severe weather events.	Maintenance requirements should also take into account climate change predictions in seeking to make adaptations such as more temperature resilient surfacing.
14	Conserve and enhance the historic environment, the significance of heritage assets and their settings	?	?	?	I	L	?	In the absence of further details and locations of proposed maintenance as part of the HAMP, it is uncertain whether there will be any impacts on the historic environment.	Detailed archaeological appraisal may be required at some locations to ensure protection of the historic environment. Some consultation may be required with Oxfordshire's Archaeologist, Oxford City Council's Conservation Officer and Archaeologist, Historic England, dependent on the nature of maintenance activities.

SEA Objective (abridged)		Assessment of effect						Commentary	Mitigation and enhancement measures
		2015 - 2020	2021 - 2031	Beyond 2031	Reversibility	Scale	Frequency		
15	Maintain and enhance the quality and distinctiveness of the built environment	+	+	+	R	L	C	This strategy demonstrates a commitment to maintaining street furniture, road markings and other assets that contribute to the quality of the built environment.	None identified
16	Conserve and enhance the quality and character of the landscape, including its contribution to the setting and character of settlements	+	+	+	I	L	C	This strategy demonstrates a commitment to maintaining street furniture and other assets that contribute to the local landscape character. Redundant or obsolete street furniture will be removed.	None identified.
<p>Cumulative, synergistic and secondary effects: No cumulative impacts have identified at this strategic level. When project level detail (including location of maintenance and repair works) is available, further assessment of potential in-combination or cumulative impacts should be considered.</p>									
<p>Summary: The HAMP is unlikely to have any significant adverse environmental impacts if maintenance and repair works are carefully designed, planned and constructed.</p>									