APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, HIGHWAYS PACKAGE

SEA Analysis Table	Highways Package		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** **(including mitigating negative effects and improving positive effects)**
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P-	Any new infrastructure will impact on the local environment and biodiversity, especially bypasses, relief roads and new major junctions on the existing primary route network. Biodiversity could also be affected by air/noise/light pollution as a result of any new infrastructure; these issues would all be considered in an EIA.	Major projects will always have a separate Environmental Impact Assessment (EIA) undertaken (and full public consultation) which would mitigate any negative impacts, i.e. creating new habitats or moving habitats to another location. The use of noise minimisation measures where possible. Any scheme should consider saving established vegetation.

SEA Analysis Table	Highways Package		
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P-	Providing new infrastructure and more capacity will only increase the reliance on the car, and this could have a negative impact on health. New infrastructure will require land uptake and could impact on open space that is currently used for recreation (including Rights of Way). If electric vehicle uptake is substantially increased due to the instalment of infrastructure, this would improve air quality and possibly a decrease in noise pollution from road traffic, providing improvements in both physical and mental health.	Any new infrastructure should consider air and noise pollution, and mitigation measures for both issues. New road infrastructure should also consider provision for walking and cycling as part of any scheme.
To reduce crime and create safe environments	P+	The A602 improvement scheme will improve safety along the route, particularly at junctions.	
SEA Topic - Water and soil			
To improve the sustainable use of resources	X	Any new road infrastructure would require significant amounts of resources/material.	New road infrastructure should consider using sustainable construction material, including recycled material (aggregates), and local materials.
To move away from waste disposal to minimisation, reuse, recycling and recovery	X	The construction of new roads would create construction waste.	Construction waste should be recycled/ reused wherever possible.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, HIGHWAYS PACKAGE

SEA Analysis Table	Highways Package		
To ensure the efficient use of water, and safeguard water resources	U	There could be increased incidents of flooding if more infrastructure is built and increased surface run-off, which would impact on nearby water resources.	HCC is now responsible for SuDS (Sustainable Drainage System), and has published a Local Flood Risk Management Strategy. The impacts of climate change will mean greater surface runoff and so pressures on drains. Any future road schemes will need to take this into consideration.
To reduce contamination, and safeguard soil quality and quantity	X	New road building will result in loss of soil (soil capping).	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	X	Any new road infrastructure will provide additional capacity on the network and so will have a detrimental effect on air quality and noise pollution from vehicles using that infrastructure. The schemes proposed would be within growth areas and so could have cumulative impacts over time.

One of the proposed schemes is to install more electric vehicle infrastructure, in the short term this will not have a positive impact on air and noise issues, but may possibly in the long term as more and more people use electric cars. | Ensure that any lighting infrastructure installed considers light pollution.

Consider noise minimisation in any new schemes.

Ensure that any new schemes do not contribute to any existing Air Quality Management Areas (AQMAs). |

SEA Analysis Table	Highways Package		
		Better interactive signing for on-street parking in urban areas would have a slight positive impact on air quality as it may stop vehicles circulating looking for spaces.	
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	X	By providing new road infrastructure such as bypasses, relief roads, motorway junction improvements this will encourage the use of the car and not more sustainable modes. In some select areas there could be beneficial impacts to passenger transport accessibility (i.e. relief roads).	Passenger transport infrastructure should be considered in all scheme proposals. For the non-motorway proposals walking and cycling should also be considered.
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	U	The county will experience more regular flash flooding incidents, the design of new roads and infrastructure will need to consider drainage, and construction materials that can cope with hotter summers and colder winters.	HCC is now the Lead Local Flood Authority responsible for SuDS and produced a Local Flood Risk Management Strategy.
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	X	This package is mainly about new road building to create capacity, connectivity and accessibility, which will benefit motor vehicles. This will create additional greenhouse gases. Implementing more infrastructure for electric vehicles will only help reduce greenhouse gases if the uptake of electric vehicles grows in the Vision period.	

SEA Analysis Table	Highways Package		
To ensure the sustainable supply and use of energy	P-	Smart motorways and other ITS associated with new infrastructure, and lighting, will require an energy supply.	Consider using solar energy, especially with lit road signs.
SEA Topic - Historic Environment and landscape			
To protect and enhance the character of landscape, townscape and green spaces	U	Any new major infrastructure will impact on the landscape and green spaces.	All major projects are required to have an EIA which would mitigate any negative impacts i.e screening, tree planting. Ensure that any urban projects do not create unnecessary street clutter i.e Variable Message Signs.
To conserve and enhance the historic environment, heritage assets and their settings	P+	The A120 Little Hadham Bypass will bypass protected listed buildings, reducing external pollution on the buildings and damage from vibrations.	
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+/P-	The majority of the projects are associated with cars and HGVs and so would not improve access for those who are socially excluded. However schemes that reduce congestion could provide improvements for other more sustainable modes. New employment opportunities as a result of the schemes may be difficult to access by modes other than the private car.	

SEA Analysis Table	Highways Package		
To empower all sections of the community to participate in decision making and local action	P+	All new schemes are subject to public consultation, empowering local people to have their say on what happens in their local area.	
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	✓	New road infrastructure and congestion relief schemes will aid employment and the local economy by keeping traffic moving and improving access for businesses. Most of the schemes will provide improved accessibility, connectivity, capacity and resilience.	The needs of HGVs should be considered in all schemes i.e. lorry parking.
To spread economic growth more evenly to benefit deprived areas	P+	A number of the most deprived areas of the county are in the growth areas highlighted in this option. Improving transport access within these growth areas would hopefully attract new businesses to the county and so create more jobs.	
To maintain the vitality and viability of existing centres	U	The majority of the schemes within this option are interurban improvements and would not improve the vitality of existing centres other than helping reduce congestion in & out of a number of towns.	

Significant Positive Effects:
The main positive impact of this Highway Option will be the benefits to local growth and the economy. The proposed projects will improve journey times along major routes in the county on the primary route network. Reduced congestion will then hopefully attract new businesses into the county and so create jobs and ultimately less deprivation.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, HIGHWAYS PACKAGE

Significant Negative Effects:
New infrastructure will require large amounts of raw resources and will create large amounts of construction waste. All major projects have significant impacts on biodiversity and habitats, but EIAs mitigate such impacts. By providing additional road capacity and accessibility this will have a negative impact on air quality and noise pollution, as the majority of schemes proposed are motor vehicle based and do not encourage the use of more sustainable modes. The same applies to greenhouse gases which contribute to climate change.

Timescale:
The proposed projects are for the short, medium and long term, up to 2050.

Temporary or Permanent: The construction phase would be mainly temporary, but the rest of the impact would be permanent.

Likelihood of effects or impacts identified occurring:
The likelihood of the above impacts occurring is dependent on the amount of funding that the County Council receives to deliver major projects up to 2050.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
EIAs will mitigate all major projects. As the schemes proposed are all road based then noise and light pollution issues will need to be mitigated to protect human health and local biodiversity. The major projects proposed are mainly road based and should also consider other road users (i.e. more sustainable modes), this would bring more benefits to all. The construction of new road infrastructure will require raw resources and create construction waste, the use of recycled materials and recycling waste should always be considered. All new schemes should consider future resilience to climate change and should not impact on existing Air Quality Management Areas. The needs of HGVs are often not considered in road schemes as Hertfordshire is not seen as having that many HGV issues, however they should not be ignored.

Data Issues:
There are noise and light pollution maps nationally but it is difficult to find such data at a county level, the districts collect some noise data but it is dependent on the public reporting issues. Previous biodiversity data collected and reported through the HEF Quality of Life Report no longer seems to be collected or reported. Climate change data particularly around carbon emissions have not been reported for Hertfordshire since 2012. A previous performance indicator for construction waste recycled is no longer reported. The County Council has only recently become the lead flood authority and so there is currently minimal flooding data. It should be investigated the number of businesses that have relocated out of the county in recent years.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, HIGHWAYS PACKAGE

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

SEA Analysis Table	Public Transport Package		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** (including mitigating negative effects and improving positive effects)
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+/P-	Increasing modes of rail transport could have a beneficial effect on biodiversity, fauna and flora if it leads to fewer car trips. The air is likely to be cleaner but it is unclear if there will be any change in noise pollution. However there may be the same number of vehicles on semi-rural and rural roads where there are fewer opportunities to access rail services. County-wide integrated ticketing could encourage people who live in the appropriate localities to leave the car at home which would lead to less impact on biodiversity. Increasing the track capacity in the Lea Valley area will have a negative effect on the natural flora and fauna of the local area. Development would be concentrated around existing routes and hubs limiting	Major rail schemes will need to have EIA's undertaken before any decisions are taken, which will offer protection to designated environmental sites and habitats. There is no mention of carriage of freight – will the new infrastructure be for commuting alone? The HRA Assessment recommends that further HRA screening is undertaken on any major schemes/projects taken forward in the South East of

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

SEA Analysis Table	Public Transport Package		
		land acquisition and allow retention of the greenbelt.	Hertfordshire.
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	Expansion of capacity and availability of rail and passenger transport will go towards increasing opportunities for people to get out and about and improve physical and mental health. However the cost, particularly of rail transport, can be prohibitive for many groups which would have an adverse effect on reducing health inequalities.	There should be promotion of discounted fares and special deals such as advance tickets, Plusbus and disabled/older persons concessions. There could be an opportunity to create new cycle and pedestrian routes alongside new rail infrastructure (as in Cambridge Guided Busway), this will encourage physical activity.
To reduce crime and create safe environments	P+	By increasing rail transport availability there may be transference of mode use from car to rail. This would in turn reduce car accidents. Crime on passenger transport would still need to be monitored and security methods put in place. . Crimes on trains could reduce as more people are around to create deter offenders.	Continue to monitor safety statistics from the British Transport Police and address incidents of crime on transport through crime enforcement, CCTV, designing out crime initiatives etc.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

SEA Analysis Table	Public Transport Package		
SEA Topic - Water and soil			
To improve the sustainable use of resources	X	The suggested LRT, BRT and new rail infrastructure schemes will use significant amounts of resources.	The schemes should use recycled materials wherever possible ideally from a local source.
To move away from waste disposal to minimisation, reuse, recycling and recovery	X	The rail infrastructure schemes will produce waste materials – these should be recycled where possible.	The schemes should recycle materials wherever feasible. Negative effects should be mitigated as much as possible by recycling and reducing the amount of mileage involved sourcing and disposing of material.
To ensure the efficient use of water, and safeguard water resources	U	Safeguarding water is important, especially in this part of the country where there is pressure on water resources and where there is a chalk aquifer used for potable water. All construction plans should include safeguarding water supplies.	For major rail projects there must be mitigation measures in place (i.e. EIAs, consultation with Environment Agency, water companies, local flood authorities and use of Sustainable Drainage systems (SUDS). The HRA assessment recommends further HRA screening for any schemes/projects in the South East of the county near the Lee Valley SPA.

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SEA Analysis Table	Public Transport Package		
To reduce contamination, and safeguard soil quality and quantity	U	This will depend on scheme design and whether or not infrastructure is delivered within the current highway boundary, or will require new land take.	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+	The rail transport schemes in this package will have a positive impact on local air quality, as they will be powered by electricity and not 'at source' fossil fuels. Some of the rail schemes could lead to less noise pollution coming from conventional internal combustion engine (ICE) technology in urban areas, provided there is a mode shift from car to rail and bus transport. However it depends on the type of rail technology being used.	
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	P+	The schemes in this option will definitely improve the choice of sustainable modes and reduce the need to travel by car.	Promoting the use of the modes of transport in this option is vital, as is helping those who are on low incomes to be able to afford them. Therefore discounted and concessionary fares all need to be targeted to all those who would benefit.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

SEA Analysis Table	Public Transport Package		
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	U	This depends on how the schemes are implemented.	Suggest that as schemes are being developed, local flood management plans are consulted in the planning stage to ensure that future flooding problems are avoided. New systems should also be able to cope with hotter climates and the wetter months.
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Sustainable transport schemes in this option will reduce the emission tonnage of greenhouse gases including carbon dioxide, provided there is mode shift from the car to rail and bus as numbers of single occupancy cars diminish.	
To ensure the sustainable supply and use of energy	P+	The sustainable transport schemes in this option will reduce the use of fossil fuels provided there is a shift from car to passenger transport.	
SEA Topic - Historic Environment and landscape			
To protect and enhance the character of landscape, townscape and green spaces	P+	Rail schemes in this option may increase the amount of travellers transferring from car use to train or bus, this will lead to fewer vehicles having a detrimental effect on the landscape, townscape and green spaces in Hertfordshire.	

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

SEA Analysis Table	Public Transport Package		
To conserve and enhance the historic environment, heritage assets and their settings	P+	Fewer vehicles would have a beneficial effect on historic buildings; less pollution causing building deterioration and fewer vibrations from cars, Impacts could be site specific.	
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	The option will increase accessibility which will have a beneficial impact on people who are on low incomes. This will help them to access educational and employment opportunities which can help overcome poverty by potentially increasing earnings. Other equalities groups could also benefit including disabled and BME groups. The focus on existing urban areas could give a greater 'sense of place', supporting regeneration and enhancing quality of life.	There needs to be continued offering of discounted fares for concessionary and disabled travellers. This needs to be promoted widely.
To empower all sections of the community to participate in decision making and local action	P+	As above, this option has the potential of empowering groups, who would otherwise not have access to transport, to enable them to participate in decision making and local action.	Discounts for low income groups for usage of some of the suggested schemes would be particularly beneficial.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

SEA Analysis Table	Public Transport Package		
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	✓	New rail infrastructure will help to reduce current congestion issues in the county. This package of schemes will help to improve the local economy by improving access for businesses and their employees. Most of the schemes will provide improved accessibility, connectivity, capacity and resilience.	
To spread economic growth more evenly to benefit deprived areas	✓	A number of the most deprived areas of the county (e.g. South Oxhey, Waltham Cross) will benefit from the schemes in this package, improving transport access to groups on low incomes in these areas will benefit businesses in that they will have increased access to a greater labour market and create jobs for those who need them.	Discounts for low income groups for usage of some of the suggested schemes would be particularly beneficial.
To maintain the vitality and viability of existing centres	✓	This option will have beneficial impact on the vitality and viability of Hertfordshire's urban centres, places will be improved (e.g. Watford Junction); it should also lead to fewer fossil fuelled vehicles on urban roads. .	Evidence has shown that pedestrianised shopping areas can fare better economically if designed well; improving the public realm should be an integral part of this option.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

Significant Positive Effects:

If all these schemes are implemented, this package will have a beneficial effect across the county provided semi-rural and rural areas sustainable connectivity to the rail interchanges is implemented e.g. buses, demand responsive transport and safe cycling routes. County-wide integrated ticketing could encourage people to leave the car at home, particularly if there are financial incentives to do so.

Effects on biodiversity - Fewer car trips will lead to cleaner air which will improve air quality, and possibly reduce noise pollution, depending on whether freight carriage by road increases or not.

Effects on population and human health: Less usage of the car would have a positive impact on people's physical and mental health. Train and bus use would involve more physical activity which is proven to improve health and wellbeing and there would also be improved air quality from less road emissions, which are proven to contribute to poor health outcomes.

By increasing rail capacity and frequency of trains, people will be encouraged to use the train more often, which is likely to reduce the number of vehicle collisions and people killed or seriously injured. Crimes on trains could reduce as more people are around to deter offenders.

Effects on the environment: Sustainable transport schemes in this option will reduce the emission tonnage of greenhouse gases including carbon dioxide, provided there is a large percentage mode shift from car to rail and bus and numbers of single occupancy cars diminish.

Effects on the historic environment and landscape: Improved rail schemes may increase the amount of travellers transferring from car use to train/ bus, this will lead to fewer vehicles having a detrimental effect on the landscape, townscape and green spaces in Hertfordshire. Fewer vehicles would also have a beneficial effect on many of the county's historic buildings; less pollution causing building deterioration and less vibrations from cars.

Equalities impact: The option will increase accessibility which will have a beneficial impact on people who are on low incomes. This will help them to access educational and employment opportunities which can help overcome poverty by potentially increasing earnings. Other equalities groups could also benefit including disabled and BME groups.   There is an increased potential of empowering groups, who would otherwise not have access to transport, to enable them to participate in decision making and local action.

Promoting the use of the modes of transport in this option is vital, as is helping those who are on low incomes to be able to afford them. Therefore discounted and concessionary fares all need to be targeted to all those who would benefit.

Effects on economic development: New rail infrastructure will help to reduce current congestion issues in the county. This package of schemes will help to improve the local economy by improving access for businesses and their employees. Most of the schemes will provide improved accessibility, connectivity, capacity and resilience.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

A number of the most deprived areas of the county (e.g. South Oxhey and Waltham Cross) will benefit from the schemes in this package, improving transport access to groups on low incomes in these areas will benefit businesses in that they will have increased access to a greater labour market and create jobs for those who need them.
This option will have beneficial impact on the vitality and viability of Hertfordshire's urban centres, places will be improved (e.g. Watford Junction)

Significant Negative Effects:

There are no significant negative effects apart from the fact that new infrastructure will use significant amount of resources and there will be waste materials. Both negative effects should be mitigated as much as possible by recycling and reducing the amount of mileage involved sourcing and disposing of material.

Timescale: medium to long term for the infrastructure.

Temporary or Permanent: Permanent from the infrastructure, however the human behaviour side of this could be temporary if economic or sociological changes impact on the modal shift to a different direction, for example increases in costs would push people back to using their cars.

Likelihood of effects or impacts identified occurring: fairly likely if many of the schemes are implemented and people's travel behaviour changes over time.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- For major rail projects there must be flooding mitigation measures in place (i.e. Environmental Impact Assessments, consultation with Environment Agency, water companies, local flood authorities and use of Sustainable Drainage systems (SUDS). We suggest that as schemes are being developed, local flood management plans are consulted in the planning stage to ensure that future flooding problems are avoided.   New systems should also be able to cope with hotter climates and wetter weather.
- Increasing track capacity in the Lea Valley area may have a negative impact on the European Natura sites to the east of the railway line, therefore this issue must be addressed at an early planning stage, and the HRA Assessment recommends that further HRA screening is undertaken as the project is developed.
- Incorporate freight carriage on trains into the Vision.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, PUBLIC TRANSPORT PACKAGE

- There should be promotion of discounted fares and special deals such as advance tickets, Plusbus and disabled/older persons concessions.
- There could be an opportunity to create new cycle and pedestrian routes alongside new rail infrastructure (as in Cambridge Guided Busway), this will encourage physical activity.
- Continue to monitor safety statistics from the British Transport Police and address incidents of crime on transport through crime enforcement, CCTV, designing out crime initiatives etc.
- Evidence has shown that pedestrianised shopping areas can fare better economically if designed well; improving the public realm should be an integral part of this option

Data Issues: More data is needed on flooding and SUDS. Hertfordshire has only recently become the lead flood authority therefore baseline data is minimal at this stage.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, SUSTAINABLE TRAVEL & DEMAND MANAGEMENT

SEA Analysis Table	Sustainable Travel and Demand Management.		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** (including mitigating negative effects and improving positive effects)
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+/P-	Lessening the growth of modes of transport based on the internal combustion engine (ICE) in urban areas is likely to have a beneficial effect on biodiversity, fauna and flora in those areas. E.g. the air is likely to be cleaner and there will be less urban noise pollution from vehicles in the town centres. However there may still be the same number of vehicles on semi-rural and rural roads which would have an negative impact on biodiversity, and road kill would remain a problem.	Any scheme should consider saving established vegetation and existing habitats. Embankments to be considered to mitigate noise pollution.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, SUSTAINABLE TRAVEL & DEMAND MANAGEMENT

SEA Analysis Table	Sustainable Travel and Demand Management.		
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	✓	This packaged option encourages more sustainable travel behaviours in the short and medium term, particularly in the urban areas. This in turn will have a potentially positive impact on local and county-wide air quality and public health objectives. More use of electric vehicles will also reduce poor air quality and improve health outcomes. The Demand Management schemes (VMS and high occupancy schemes) will not have much impact on increasing physical and mental health of the population.	Sustainable connectivity from urban to rural areas needs to be considered and wherever possible built in to schemes to extend the beneficial impacts to semi-rural and rural parts of the county.
To reduce crime and create safe environments	✓	Generally this option should lead to fewer vehicles on urban roads, meaning more people will be walking and cycling instead of using cars for short journeys. Greater numbers of people interacting within the urban realm should, (according to theory - Gehl etc.) lead to safer environments, less fear of crime, and less vehicle collisions. There has been some concern that electric vehicles are quieter which could potentially lead to an increase in injuries between pedestrians/cyclists and electric vehicles.	The potential conflict between cyclists and pedestrians needs to be carefully managed. The cycle hire schemes will lead to cyclists and pedestrians often sharing the same route and there may be pedestrian / cyclist collisions. Signage and separate lanes can overcome potential problems.

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SEA Analysis Table	Sustainable Travel and Demand Management.		
		High occupancy lanes will not lead to fewer car accidents.	Presumably the issue that electric cars are too quiet and will lead to increased collision injuries is being addressed by EV manufacturers.
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	It depends on how the infrastructure is implemented. Any building of EV infrastructure needs to adhere to the latest technology.	Any routes need to be built sustainably, if possible, using recycled materials. EV charging infrastructure should use the latest EU standards to avoid short term obsolescence and wastage.
To move away from waste disposal to minimisation, reuse, recycling and recovery	U	It depends on how the infrastructure is implemented. Any building of EV infrastructure needs to adhere to the latest technology.	Any routes need to be built sustainably, if possible, using recycled materials. EV charging infrastructure should use the latest EU standards to avoid short term obsolescence and wastage.
To ensure the efficient use of water, and safeguard water resources	U	Safeguarding water is important, especially in this part of the county where there is pressure on water resources and where there are aquifers used for potable water. All construction plans should include safeguarding water.	The lead flood authority needs to be consulted about the larger schemes; Sustainable drainage systems need used where appropriate to safeguard

SEA Analysis Table	Sustainable Travel and Demand Management.		
			water supplies.
To reduce contamination, and safeguard soil quality and quantity	U	Impacts on the soil will depend on whether or not any new infrastructure is built within the existing highway boundary.	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+	This option will have a positive impact on local and county-wide air quality and public health objectives. It will also lead to less noise pollution coming from conventional internal combustion engine (ICE) technology. More use of electric vehicles will reduce poor air quality and noise pollution. This option also identifies high occupancy lanes on the A10, A414, M1 and A1(M) which could concentrate air quality issues and noise pollution in corridors close to the urban areas; it depends on how the scheme is taken up by car users.	Sustainable connectivity from urban to rural areas needs to be considered and wherever possible built in to schemes to extend the beneficial impacts to semi-rural and rural parts of the county.
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	This option encourages more sustainable travel behaviours in the short and medium term, particularly in the urban areas.	Sustainable connectivity from urban to rural areas needs to be considered and wherever possible built in to schemes to extend the beneficial impacts to semi-rural and rural parts of the county.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, SUSTAINABLE TRAVEL & DEMAND MANAGEMENT

SEA Analysis Table	Sustainable Travel and Demand Management.		
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	U	This depends on how the schemes are implemented.	Suggest that when schemes such as EV infrastructure, DRT and cycle hire are implemented, local flood management plans are used in the planning stage to ensure that future flooding problems are avoided. SUDS used wherever feasible.
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Sustainable transport schemes in this option will reduce greenhouse gases including carbon dioxide.	
To ensure the sustainable supply and use of energy	P+	Sustainable transport schemes in this option will reduce the use of fossil fuels. EV technology may or may not use green electricity, it depends on the supplier.	Check whether the suppliers of the electricity for the EV charging infrastructure are or intend to use green electricity sourced by renewable technology.
SEA Topic - Historic Environment and landscape			
To protect and enhance the character of landscape, townscape and green spaces	P+	This option has a potentially beneficial impact on townscape and urban green spaces. The benefit may not extend into the semi-rural areas if scheme implementation is to be concentrated in Hertfordshire's urban areas.	

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, SUSTAINABLE TRAVEL & DEMAND MANAGEMENT

SEA Analysis Table	Sustainable Travel and Demand Management.		
To conserve and enhance the historic environment, heritage assets and their settings	P+	This option has a potentially beneficial impact on the historic environment of Hertfordshire, in terms of less vibration of historic buildings from cars and less deterioration of building materials by air pollution. However the benefit may not extend into the semi-rural and rural areas if scheme implementation is concentrated in Hertfordshire's urban areas. Any impacts could be site specific.	
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	Increasing the opportunity to access destinations by for example facilitating cycle hire, electric car clubs, demand responsive transport and integrated ticketing (leading to potentially lower fares) will have a beneficial impact on people who are on low incomes. This will help them to access educational and employment opportunities which can help people on low incomes by potentially increasing earnings. Other equalities groups could also benefit including disabled and BME groups. The demand management schemes (VMS and high occupancy schemes) will have little impact (either positive or negative) on poverty and social exclusion. The focus on existing urban areas will contribute to a greater 'sense of place', supporting	Discounts for low income groups for usage of some of the suggested schemes would be particularly beneficial. This could include cycle hire, DRT and electric car clubs.

SEA Analysis Table	Sustainable Travel and Demand Management.		
		regeneration and enhancing quality of life.	
To empower all sections of the community to participate in decision making and local action	P+	As above, this option has the potential of empowering groups, who would otherwise not have access to transport, to enable them to participate in decision making and local action.	Discounts for low income groups for usage of some of the suggested schemes would be particularly beneficial. This could include cycle hire, DRT and electric car clubs.
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	Increasing the opportunity to access destinations by for example facilitating cycle hire, DRT, electric car clubs and integrated ticketing will have a beneficial impact on people who are on low incomes. This will help employers access a greater and varied labour market.	
To spread economic growth more evenly to benefit deprived areas	P+	Increasing the opportunity to access destinations by for example facilitating cycle hire, DRT, electric car clubs and integrated ticketing will have a beneficial impact on people who are on low incomes. This will help them to access educational and employment opportunities which help overcome poverty. Other equalities groups could also benefit including disabled and BME groups.	This would have a beneficial impact on residents in urban areas, but people living in rural and semi-rural areas would not be able to take advantage unless thought was given on how to extend some of the suggested schemes out of the more densified areas.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, SUSTAINABLE TRAVEL & DEMAND MANAGEMENT

SEA Analysis Table	Sustainable Travel and Demand Management.		
To maintain the vitality and viability of existing centres	✓	This option will have beneficial impact on the vitality and viability of Hertfordshire's urban centres, places will be improved (e.g. Watford Junction); it should also lead to fewer fossil fuelled vehicles on urban roads, and more people using active travel for short journeys. Greater numbers of people interacting within the urban realm should, (according to theory -Gehl etc.) lead to safer environments, more community cohesion and more footfall in local shopping centres.	Evidence has shown that pedestrianised shopping areas can fare better economically if designed well; improving the public realm should be an integral part of this option.

Significant Positive Effects:
This option encourages more sustainable travel behaviours in the short and medium term, particularly in the urban areas.   This in turn will have a potentially positive impact on local and county-wide air quality and public health objectives.
Effects on biodiversity: Fewer car trips will lead to cleaner air which will improve air quality, and possibly reduce noise pollution, depending on whether freight carriage by road increases or not. More use of electric vehicles will reduce poor air quality. However there may still be the same number of vehicles on semi-rural and rural roads which would have an negative impact on biodiversity, and road kill would remain a problem.
Effects on population and human health: Less usage of the car in urban areas would have a positive impact on people's physical and mental health. Train and bus use would involve more physical activity which is proven to improve health and wellbeing. There would also be improved air quality from less road emissions, which are proven to contribute to poor health outcomes.   More use of electric vehicles will reduce poor air quality and improve health outcomes.
Greater numbers of people interacting within the urban realm should, (according to theory -Gehl etc.) lead to safer environments and less fear of crime. Additionally there should be fewer road traffic accidents, more community cohesion and more footfall in local shopping centres if the public realm is designed not to be car centric as it is in some urban areas.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, SUSTAINABLE TRAVEL & DEMAND MANAGEMENT

Effects on the environment: Sustainable transport schemes in this option will reduce the emission tonnage of greenhouse gases including carbon dioxide, provided there is a high percentage mode shift from car to rail and bus. The current negative effects of using cars on carbon emissions will remain with high occupancy lanes, although somewhat mitigated by encouraging car share.

Effects on the historic environment and landscape: Availability of sustainable transport schemes may increase the amount of travellers leaving the car at home; this will lead to fewer vehicles having a detrimental effect on the landscape, townscape and green spaces in Hertfordshire. Fewer vehicles would also have a beneficial effect on many of the county's historic buildings; less pollution causing building deterioration and less vibrations damaging historic buildings. However these effects will only be felt in the urban areas where these schemes are concentrated.

Equalities impact: Increasing the opportunity to access destinations by for example facilitating cycle hire, electric car clubs, demand responsive transport and integrated ticketing (leading to potentially lower fares) will have a beneficial impact on people who are on low incomes. This will help them to access educational and employment opportunities which can help people on low incomes by potentially increasing earnings. Other equalities groups could also benefit including disabled and BME groups.

The demand management schemes (VMS and high occupancy schemes) will have little impact (either positive or negative) on poverty and social exclusion. Promoting the use of the modes of transport in this option is vital, as is helping those who are on low incomes to be able to afford them.

Effects on economic development: Increasing the opportunity to access destinations by for example facilitating cycle hire, Demand responsive transport, electric car clubs and integrated ticketing will have a beneficial impact on people who are on low incomes, provided they can afford the costs. . This will help employers access a greater and varied labour market.

This option will have beneficial impact on the vitality and viability of some of Hertfordshire's urban centres, (e.g. Watford Junction); it should also lead to fewer fossil fuelled vehicles on urban roads, and more people using active travel for short journeys. Greater numbers of people interacting within the urban realm should, (according to theory -Gehl etc.) lead to safer environments, more community cohesion and a less car-centric environment according to evidence from TfL lead to more footfall in local shopping centres.

Significant Negative Effects:
There are none; however this assessment on the Sustainable Travel and Demand Management option notes that the beneficial effects are unlikely to extend out to the semi-rural /rural areas of the county, as the schemes are concentrated in the urban areas.

Timescale: Mainly short to medium term.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, SUSTAINABLE TRAVEL & DEMAND MANAGEMENT

Temporary or Permanent: Permanent for the infrastructure point of view, any behavioural changes would be temporary if the socio-economic situation changes, or if demographic changes force the older population to rethink their travel behaviour.

Likelihood of effects or impacts identified occurring: depends on the number and extent of schemes being delivered, if all delivered the likelihood could have the desired effect.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- Any scheme should consider saving established vegetation and existing habitats.
- Sustainable connectivity from urban to rural areas also needs to be considered and wherever possible built in to schemes to extend the beneficial impacts to semi- rural and rural parts of the county.
- The potential conflict between cyclists and pedestrians needs to be carefully managed. For example in some schemes cyclists and pedestrians may share routes leading to pedestrian / cyclist collisions. Signage and separate lanes can overcome potential problems.
- Presumably the issue that electric cars are too quiet and will lead to increased collision injuries is being addressed by EV manufacturers.
- Any new cycle / pedestrian routes need to be built sustainably, if possible, using recycled materials.
- EV charging infrastructure should use the latest EU standards to avoid short term obsolescence and wastage.
- It is suggested that when schemes such as EV infrastructure, DRT and cycle hire are implemented, local flood mitigation plans are used in the planning stage to ensure that future flooding problems are avoided.
- Check whether the suppliers of the electricity for the EV charging infrastructure are or intend to use green electricity sourced by renewable technology.
- Discounts for low income groups for usage of some of the suggested schemes would be particularly beneficial. This could include discounts for cycle hire, DRT and electric car clubs.
- This option would have a beneficial impact on residents in urban areas, thought needs to be given on how to extend some of the suggested schemes out of the more densified areas.

Data Issues: it would be wise to monitor usage of the schemes by the residents.
It is unclear at the present whether the national grid can cope with large numbers of people charging EVs at the same time. Data on this is not available.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

SEA Analysis Table	Blended Transport Package		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** (including mitigating negative effects and improving positive effects)
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+/P-	Reducing the growth of modes of transport based on the internal combustion engine (ICE) in urban areas is likely to have a beneficial effect on biodiversity, fauna and flora in those areas. For example the air is likely to be cleaner and there will be less urban noise pollution. However there will still be the same number of vehicles on semi-rural and rural roads meaning that road kill will remain a negative impact as will negative impacts of noise, light and vehicle emissions on biodiversity in rural areas.	Any scheme should consider saving established vegetation and existing habitats.

SEA Analysis Table	Blended Transport Package	
SEA Topic - Population and human health		
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	**P+** This option encourages sustainable travel behaviours in the urban areas. This in turn will have a potentially positive impact on local and county-wide air quality and public health objectives. More use of electric vehicles will reduce poor air quality, improve health outcomes, and reduce health inequalities. The 3 large road schemes in this package, although not contributing to a positive impact on this SEA objective, neither lead to a significant negative impact as they will relieve congestion and in the case of A602 improve safety. .	
To reduce crime and create safe environments	**P+** This option may lead to fewer vehicles in urban areas and fewer vehicle collisions, meaning more people will be physically active instead of using cars for short journeys leading to safer environments. In the A1(M) corridor and A10/M11 corridor 3 major road schemes are listed, they each will have or have been assessed for safety as part of their EIA. There has been some concern that electric vehicles are quieter which could potentially lead to an increase in injuries between pedestrians/cyclists and electric vehicles.	The potential conflict between cyclists and pedestrians needs to be carefully managed in some of the schemes. For example cyclists and pedestrians may share routes leading to pedestrian / cyclist collisions. Signage and separate lanes can overcome potential problems. Presumably the issue that electric cars are too quiet and will lead to increased

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

SEA Analysis Table	Blended Transport Package		
			collision injuries is being addressed by EV manufacturers.
SEA Topic - Water and soil			
To improve the sustainable use of resources	P-	It depends on the extent to which new infrastructure is implemented. Any building of EV infrastructure needs to adhere to the latest technology. The road and rail schemes will use significant amounts of resources.	EV charging infrastructure should use the latest EU standards to avoid short term obsolescence and wastage. The road schemes should use recycled materials wherever possible ideally from a local source. This also applies to the rail schemes.
To move away from waste disposal to minimisation, reuse, recycling and recovery	P-	It depends on the extent to which new infrastructure is implemented. Any building of EV infrastructure needs to adhere to the latest technology. The road and rail schemes will produce waste materials – these should be recycled where possible.	Any new routes need to be built sustainably, if possible, using recycled materials from a local source. EV charging infrastructure should use the latest EU standards to avoid short term obsolescence and wastage. The road schemes should use recycled materials wherever possible ideally from a local source. This also applies to the rail schemes.

SEA Analysis Table	Blended Transport Package		
To ensure the efficient use of water, and safeguard water resources	U	Safeguarding water is important, especially in this part of the county where there is pressure on water resources and where there are aquifers used for potable water. All construction plans should include safeguarding water.	The lead flood authority needs to be consulted about the larger schemes; Sustainable drainage systems need used where appropriate to safeguard water supplies.
To reduce contamination, and safeguard soil quality and quantity	U	This depends on whether or not any new infrastructure is built within the existing highway boundary or would require new land take.	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+/P-	The sustainable transport schemes in this package will have a positive impact on local air quality and public health objectives. Some will also lead to less noise pollution coming from conventional internal combustion engine (ICE) technology in urban areas. More use of electric vehicles will reduce poor air quality and noise pollution. This option also identifies high occupancy lanes on the A10, A414, M1 and A1(M) which could exacerbate air quality issues and noise pollution in corridors close to the urban areas; it depends on how the scheme is taken up by car users.	The road and rail schemes should address noise pollution by mitigation techniques such as quieter road surfaces and building embankments along road sides in urban areas where appropriate.

SEA Analysis Table	Blended Transport Package		
		The 3 new road schemes could negatively impact on noise pollution, unless mitigation techniques are imposed. Air quality could also be negatively impacted upon if the faster flowing traffic is displaced further along the route; however each of the three schemes is being built to overcome congestion.	
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	P+	This option encourages more sustainable travel behaviours in the urban areas. It also includes 3 road schemes which do not, however the 6 named rail schemes would all go towards improving the choice of sustainable transport modes.	Suggest including much promotion as an integral part of the sustainable transport schemes. This is key to their use.
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	U	It depends on how the schemes are implemented.	Suggest that when smaller schemes such as EV infrastructure, DRT and cycle hire are implemented, local flood plans are used in the planning stage to ensure that future flooding problems are avoided. Major road schemes and rail schemes should all have this covered by the EIA's. The A120 bypass already includes a flood mitigation scheme which is part of the road construction.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

SEA Analysis Table	Blended Transport Package		
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Sustainable transport schemes in this option will reduce the emission tonnage of greenhouse gases including carbon dioxide, provided there is mode shift from the car. The 3 road schemes will have a small positive impact because they are all being built to address congestion which increases if the flow of traffic is very slow, as it frequently is in peak time.	
To ensure the sustainable supply and use of energy	P+	The sustainable transport schemes in this option will reduce the use of fossil fuels. EV technology and rail travel may or may not use green electricity, it depends on the supplier.	Check whether the suppliers of the electricity for the EV charging infrastructure are or intend to use green electricity sourced by renewable technology.
SEA Topic – Historic environment and landscape			
To protect and enhance the character of landscape, townscape and green spaces	P+	This option has a potentially beneficial impact on townscape and urban green spaces. The benefit will not extend into the semi-rural and rural areas.	Avoid unnecessary street clutter and additional signage.
To conserve and enhance the historic environment, heritage assets and their settings	P+	This option has a potentially beneficial impact on the historic environment of Hertfordshire, in terms of less vibration of historic buildings from cars and less deterioration of building materials by air pollution. However the benefit may not extend into the semi-rural and rural areas if scheme implementation is concentrated in Hertfordshire's urban areas.	

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

SEA Analysis Table	Blended Transport Package		
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	Facilitating cycle hire, electric car clubs, DRT and integrated ticketing (leading to potentially lower fares) will have a beneficial impact on people who are on low incomes and overall increase accessibility. Building new rail links will also have a beneficial effect, provided the vulnerable groups can afford the fares. This will help them to access educational and employment opportunities which can help overcome poverty by potentially increasing earnings. Other equalities groups could also benefit including disabled and BME groups.	Ensure that there will still be discounted rail fares for vulnerable groups such as disabled, younger and older people.
To empower all sections of the community to participate in decision making and local action	P+	As above, this option has the potential of empowering groups, who would otherwise not have access to transport, to enable them to participate in decision making and local action.	Discounts for low income groups for usage of some of the suggested schemes would be particularly beneficial.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

SEA Analysis Table	Blended Transport Package		
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	Increasing accessibility by for example facilitating cycle hire, DRT, electric car clubs and integrated ticketing will have a beneficial impact on people who are on low incomes. This will help them to access educational and employment opportunities which help overcome poverty. Other equalities groups could also benefit including disabled and BME groups. This will help employers access a greater and varied labour market.	
To spread economic growth more evenly to benefit deprived areas	P+	A number of the most deprived areas of the county (e.g. South Oxhey, Waltham Cross) will benefit from the schemes in this package, improving transport access to groups on low incomes in these areas will benefit businesses in that they will have increased access to a greater labour market and create jobs for those who need them.	Discounts for low income groups for usage of some of the suggested schemes would be particularly beneficial. Deprived areas should also be given access to sustainable transport opportunities.
To maintain the vitality and viability of existing centres	P+	This option will have beneficial impact on the vitality and viability of Hertfordshire's urban centres, places will be improved (e.g. Watford Junction); it should also lead to fewer fossil fuelled vehicles on urban roads, and more people walking and cycling instead of using cars for short journeys.	

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

Significant Positive Effects:

Effects on biodiversity: Reducing the growth of modes of transport based on the internal combustion engine (ICE) in urban areas is likely to have a beneficial effect on biodiversity, fauna and flora in those areas. For example the air is likely to be cleaner and there will be less urban noise pollution. However there will still be the same number of vehicles on semi-rural and rural roads meaning that road kill will remain a negative impact as will negative impacts of noise, light and vehicle emissions on biodiversity in rural areas.

Effects on population and human health: This option encourages sustainable travel behaviours in the urban areas . This in turn will have a potentially positive impact on local and county-wide air quality and public health objectives.

More use of electric vehicles will further reduce poor air quality, improve health outcomes, and reduce health inequalities.

By increasing rail capacity and frequency of trains, people will be encouraged to use the train more often, which is likely to reduce the number of vehicle collisions and people killed or seriously injured. Crimes on trains could reduce as more people are around to deter offenders.

The 3 large road schemes in this package, although not contributing to a positive impact on some of the SEA objectives, will relieve congestion and in the case of A602 improve safety.

There has been some concern in the past that electric vehicles are quieter which could potentially lead to an increase in injuries between pedestrians/cyclists and electric vehicles

Effects on the environment: Sustainable transport schemes in this option will reduce the emission tonnage of greenhouse gases including carbon dioxide, provided there is a large percentage mode shift from car to rail and bus and numbers of single occupancy cars diminish. This option also identifies high occupancy lanes on the A10, A414, M1 and A1(M) which could exacerbate air quality issues and noise pollution in corridors close to the urban areas; it depends on how the scheme is taken up by car users.

The 3 new road schemes could negatively impact on noise pollution, unless mitigation techniques are imposed. Air quality could also be negatively impacted upon if the faster flowing traffic is displaced further along the route; however each of the three schemes is being built to overcome congestion.

Effects on the historic environment and landscape: This option has a potentially beneficial impact on townscape and urban green spaces. The benefit will not extend into the semi-rural and rural areas. This option has a potentially beneficial impact on the historic environment of Hertfordshire, in terms of less vibration of historic buildings from cars and less deterioration of building materials by air pollution. However the benefit may not extend into the semi-rural and rural areas if scheme implementation is concentrated in Hertfordshire's urban areas.

Equalities impact: Facilitating cycle hire, electric car clubs, DRT and integrated ticketing (leading to potentially lower fares) will have a beneficial impact on people who are on low incomes and will overall increase accessibility.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

Building new rail links will also have a beneficial effect, provided the vulnerable groups can afford the fares and providing discounted fares continue to be available (e.g. advance tickets, disabled and concessionary fares).

Effects on economic development: This option will help employers access a greater and varied labour market. A number of the most deprived areas of the county (e.g. South Oxhey and Waltham Cross) will benefit from the schemes in this package, improving transport access to groups on low incomes in these areas will benefit businesses in that they will have increased access to a greater labour market and create jobs for those who need them.
This option will have beneficial impact on the vitality and viability of some of Hertfordshire's urban centres, places will be improved (e.g. Watford Junction)

Significant Negative Effects: None

Timescale: short to long term, depending on the type of infrastructure required.

Temporary or Permanent: Permanent for the infrastructure changes, but temporary for the human behaviour based schemes. For example demographic changes could lead people to think about changing their transport mode as they get older and less agile.

Likelihood of effects or impacts identified occurring: Likely if all schemes implemented over the long term period.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:

- Any scheme should consider saving established vegetation and existing habitats.
- The potential conflict between cyclists and pedestrians needs to be carefully managed in some of the schemes. For example cyclists and pedestrians may share routes leading to pedestrian / cyclist collisions. Signage and separate lanes can overcome potential problems.
- Presumably the issue that electric cars are too quiet and will lead to increased collision injuries is being addressed by EV manufacturers.
- EV charging infrastructure should use the latest EU standards to avoid short term obsolescence and wastage.
- The road schemes should use recycled materials wherever possible ideally from a local source. This also applies to the rail schemes.
- Hertfordshire as the lead flood authority needs to be consulted about the larger schemes; Sustainable drainage systems need to be used where appropriate, to safeguard water supplies.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

- The road and rail schemes should address noise pollution by mitigation techniques such as quieter road surfaces and building embankments along road sides in urban areas where appropriate.
- Suggest that when smaller schemes such as EV infrastructure, DRT and cycle hire are implemented, local flood plans are used in the planning stage to ensure that future flooding problems are avoided.
- Check whether the suppliers of the electricity for the EV charging infrastructure are or intend to use green electricity sourced by renewable technology.
- Avoid unnecessary street clutter and additional signage.
- Ensure that there will discounted rail fares and for usage of some of the other schemes such as DRT and cycle hire for vulnerable groups such as people on low incomes, disabled, younger and older people, these must be promoted well to the groups via the appropriate media.
- Deprived areas should also be given access to sustainable transport opportunities.

Data Issues: as before biodiversity and flooding information is not comprehensively available.

APPENDIX 4A - APPRAISAL MATRIX FOR TRANSPORT VISION 2050 - OPTIONS ASSESSMENT, BLENDED

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

SEA Analysis Table	Corridor 1 – Aylesbury to Watford to London;		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** (including mitigating negative effects and improving positive effects)
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	U	PT link offers and greater speeds which could encourage modal shift. Take up of sustainable travel towns mitigate against noise/air pollution which impact negatively on biodiversity. Increasing capacity at Watford should encourage more sustainable journeys. Depends on take-up of modal shift and whether residents take up the full door to door sustainable journey concept. Also depends on strategic rail	.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

SEA Analysis Table	Corridor 1 – Aylesbury to Watford to London;		
		decisions at national level	
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	The major schemes in corridor 1 all have potential to increase active travel as part of the whole journey with the resultant beneficial effect on mental and physical health.	
To reduce crime and create safe environments	P+	More people out and about using sustainable transport will create safer environments.	Consider any suitable schemes which may be eligible for HE funding to ensure safe/effective active travel networks.
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
To move away from waste disposal to minimisation, reuse, recycling and recovery	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
To ensure the efficient use of water, and safeguard water resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

SEA Analysis Table	Corridor 1 – Aylesbury to Watford to London;		
To reduce contamination, and safeguard soil quality and quantity	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	✓	Take up of sustainable travel towns will mitigate against noise/air pollution, likewise with modal shift from fossil fuelled cars to passenger transport.	
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	The major schemes in corridor 1 all have potential to increase active travel and availability of sustainable transport which will reduce the need to travel by car.	
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	U	Many aspects of the schemes are still at concept stage, not enough detail to say	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

SEA Analysis Table	Corridor 1 – Aylesbury to Watford to London;		
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Take up of sustainable travel towns will reduce amount of greenhouse gases emitted from vehicles, likewise with modal shift from fossil fuelled cars to passenger transport.	Lobby for more passenger transport vehicles being Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
To ensure the sustainable supply and use of energy	P+	Take up of sustainable travel towns will reduce wastage of energy, likewise with modal shift from fossil fuelled cars to passenger transport.	This is dependent on passenger transport vehicles being Euro 6 or electric.
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	P+	Traffic congestion blights and has a negative impact on the landscape. More take up of active travel and passenger transport will reduce congestion and enhance Hertfordshire's landscape.	
To conserve and enhance the historic environment, heritage assets and their settings	P+	Traffic congestion blights and has a negative impact on the historic environment. More take up of active travel and passenger transport will reduce congestion and	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

SEA Analysis Table	Corridor 1 – Aylesbury to Watford to London;	
		enhance Hertfordshire's historic environment, impacts could be site specific.	
SEA Topic - Social inclusiveness		
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	The major schemes in corridor 1 all have potential to increase active travel and availability of sustainable transport which lead to improved access to services and community facilities.
To empower all sections of the community to participate in decision making and local action	P+	The major schemes in corridor 1 all have potential to increase active travel and availability of sustainable transport which can be an equaliser in the community.
SEA Topic - Economic development		
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	The major schemes in corridor 1 all have potential to increase active travel and availability of sustainable transport which lead to improved access to employment – beneficial

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

SEA Analysis Table	Corridor 1 – Aylesbury to Watford to London;		
		to employers, employees and the economy overall.	
To spread economic growth more evenly to benefit deprived areas	P+	The schemes will potentially increase active travel and availability of sustainable transport which lead to improved access to employment for the more deprived areas.	Ensure that the indices of multiple deprivation are considered as part of the evidence base as schemes are developed.
To maintain the vitality and viability of existing centres	P+	The schemes will potentially increase active travel and availability of sustainable transport which leads to better outcomes for retailers as evidenced with research.	Ensure the urban centres (Watford and Hemel) are developed based on the LTP4 transport hierarchy policy and the cycling propensity toolkit.

Significant Positive Effects: Overall the schemes will have a beneficial impact on biodiversity, human health, the environment and the economy. All the schemes aim to reduce car dependency. The rail scheme is still at an early stage but has great potential to improve modal shift.

Significant Negative Effects: None.

Timescale: medium to longterm.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

Temporary or Permanent: Impacts from any new road infrastructure would be permanent but positive impacts from behavioural change and modal shift could be temporary, as trends change over time.

Likelihood of effects or impacts identified occurring: likely if schemes fully implemented.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
Consider any suitable schemes which may be eligible for HE funding to ensure safe/effective active travel networks.
Lobby for more passenger transport vehicles being Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
Ensure that the indices of multiple deprivation are considered as part of the evidence base as schemes are developed.
Ensure the urban centres (Watford and Hemel) are developed based on the LTP4 transport hierarchy policy and the cycling propensity toolkit.

Data Issues: None.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 1 – AYLESBURY TO WATFORD TO LONDON

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 2 – LONDON – WATFORD – LUTON - MK

SEA Analysis Table	Corridor 2 – London – Watford – Luton - MK		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** **(including mitigating negative effects and improving positive effects)**
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	U	Take up of sustainable travel towns mitigate against noise/air pollution which impact negatively on biodiversity. Depends on take-up of modal shift and whether residents take up the full door to door sustainable journey concept. Also depends on long term strategic rail decisions.	.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 2 – LONDON – WATFORD – LUTON - MK

SEA Analysis Table	Corridor 2 – London – Watford – Luton - MK		
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	Sustainable travel towns have the potential to increase active travel as part of the whole journey with the resultant beneficial effect on mental and physical health.	
To reduce crime and create safe environments	P+	More people out and about using sustainable transport will create safer environments.	Consider any suitable schemes which may be eligible for HE funding to ensure safe/effective networks associated with the strategic road network.
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
To move away from waste disposal to minimisation, reuse, recycling and recovery	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
To ensure the efficient use of water, and safeguard water resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	

SEA Analysis Table	Corridor 2 – London – Watford – Luton - MK		
To reduce contamination, and safeguard soil quality and quantity	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+/P-	Take up of sustainable travel towns will mitigate against noise/air pollution. However some of the other schemes have potential to worsen air and noise pollution.	The Luton Airport access strategy should acknowledge the 2 AQMA's in North Herts, as vehicles travelling to/from this part of the road network to the airport may worsen the air quality. Find out if Luton airport is installing EV infrastructure – as is Stansted airport.
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	P+	The major schemes in corridor 2 all have potential to increase active travel and availability of sustainable transport which will reduce the need to travel by car.	
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	U	Many aspects of the schemes are still at concept stage, not enough detail to say	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 2 – LONDON – WATFORD – LUTON - MK

SEA Analysis Table	Corridor 2 – London – Watford – Luton - MK		
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Take up of sustainable travel towns will reduce amount of greenhouse gases emitted from vehicles, likewise with modal shift from fossil fuelled cars to passenger transport.	Lobby for more passenger transport vehicles on the network, ensuring they are Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
To ensure the sustainable supply and use of energy	P+	Take up of sustainable travel towns will reduce wastage of energy, likewise with modal shift from fossil fuelled cars to passenger transport.	
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	P+	Traffic congestion blights and has a negative impact on the landscape. More take up of active travel and passenger transport will reduce congestion and enhance Hertfordshire's landscape.	
To conserve and enhance the historic environment, heritage assets and their settings	P+	Traffic congestion blights and has a negative impact on the historic environment. More take up of active travel and passenger transport will reduce congestion and	

SEA Analysis Table	Corridor 2 – London – Watford – Luton - MK		
		enhance Hertfordshire's historic environment, impacts could be site specific.	
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	The major schemes in corridor 2 all have potential to increase active travel and availability of sustainable transport which will reduce the need to travel by car lead to improved access to services and community facilities.	Mention this in the LTP4 EqIA
To empower all sections of the community to participate in decision making and local action	P+	Better access for all, enables more empowerment for all sections of the community.	Mention this in the LTP4 EqIA
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	The major schemes in corridor 2 all have potential to increase active travel and availability of sustainable transport which improve access to employment – beneficial to employers, employees and the economy overall.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 2 – LONDON – WATFORD – LUTON - MK

SEA Analysis Table	Corridor 2 – London – Watford – Luton - MK		
To spread economic growth more evenly to benefit deprived areas	P+	The schemes will potentially increase active travel and availability of sustainable transport which lead to improved access to employment for the more deprived areas.	Ensure that the indices of multiple deprivation are considered as part of the evidence base as schemes are developed.
To maintain the vitality and viability of existing centres	P+	The schemes will potentially increase active travel and availability of sustainable transport which leads to better outcomes for retailers as evidenced with research.	Ensure the urban centres (Watford, Hemel and St Albans) are developed based on the LTP4 transport hierarchy policy and the cycling propensity toolkit.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 2 – LONDON – WATFORD – LUTON - MK

Significant Positive Effects: Depending on successful partnership working with HE, the rail operators and Luton Borough Council, the schemes can have a beneficial impact on biodiversity, human health, the environment and the economy. All the schemes aim to reduce car dependency. The extension of Thameslink is medium to long term but has great potential to offer an alternative to the car use and improve modal shift.

Significant Negative Effects: None.

Timescale: medium to long term.

Temporary or Permanent: Impacts from any new road infrastructure would be permanent but positive impacts from behavioural change and modal shift from example the Sustainable Travel Towns could be temporary, as trends change over time.

Likelihood of effects or impacts identified occurring: likely if schemes fully implemented and partnership working is successful.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- Consider any suitable schemes which may be eligible for HE funding to ensure safe/effective networks associated with the strategic road network.
- The Luton Airport access strategy should acknowledge the 2 AQMA's in North Herts, as vehicles travelling to/from the airport on this part of the road network may worsen the air quality. Find out if Luton airport is installing EV infrastructure – as is Stansted airport.
- Lobby for more passenger transport vehicles on the network, ensuring they are Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
- Use the assessment of the schemes in the LTP4 EqIA.
- Ensure that the indices of multiple deprivation are considered as part of the evidence base as schemes are developed. Ensure the urban centres (Watford, Hemel and St Albans) are developed based on the LTP4 transport hierarchy policy and the cycling propensity toolkit.

Data Issues: None.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 2 – LONDON – WATFORD – LUTON - MK

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 3 – LONDON - STEVENAGE - PETERBOROUGH

SEA Analysis Table	Corridor 3 - London - Stevenage - Peterborough		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** **(including mitigating negative effects and improving positive effects)**
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+	The majority of improvements would be to sustainable modes i.e. rail connectivity, walking/cycling links, sustainable travel towns, which would provide benefits to local flora and fauna by removing cars from the network.	
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	Promotion of sustainable modes through sustainable travel towns, and new walking/cycling links in the north Hertfordshire towns, this would provide health	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 3 – LONDON - STEVENAGE - PETERBOROUGH

SEA Analysis Table	Corridor 3 - London - Stevenage - Peterborough		
		benefits.	
To reduce crime and create safe environments	P+	Through rail interchange improvements on ECML and Stevenage Station, and sustainable travel town schemes, where there is more interaction between members of the public.	Any schemes for sustainable modes should be mindful of anti-social behaviour/hate crime.
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Depends on what types of schemes are implemented, exact detail unknown at time of assessment.	
To move away from waste disposal to minimisation, reuse, recycling and recovery	U		
To ensure the efficient use of water, and safeguard water resources	U		
To reduce contamination, and safeguard soil quality and quantity	U		
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+	Improvements to air and noise pollution would be achieved if sufficient modal shift is achieved through sustainable travel towns, improved rail connectivity, and bus connectivity.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 3 – LONDON - STEVENAGE - PETERBOROUGH

SEA Analysis Table	Corridor 3 - London - Stevenage - Peterborough		
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	Through rail connectivity and interchange accessibility, sustainable travel town schemes.	
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	P-	Work with planning authorities to discourage housing growth in floodplains.	
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	If sufficient modal shift is achieved through sustainable travel town projects, and rail travel is increased with improved connectivity.	
To ensure the sustainable supply and use of energy	P+	Reduction in fossil fuel use if modal shift is achieved through the sustainable travel towns. The A1(M) smart motorway will require an energy supply to power any information gantries.	
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	P+	By taking traffic out of the landscape and townscape and into buses, rail, and walking and cycling can only have a positive impact.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 3 – LONDON - STEVENAGE - PETERBOROUGH

SEA Analysis Table	Corridor 3 - London - Stevenage - Peterborough		
To conserve and enhance the historic environment, heritage assets and their settings	U	Depends on the location of any schemes in relation to historic buildings, monuments etc, as there could be positive and negative impacts, and impacts could be site specific. Unclear at this stage.	Consider a map of HCC historic assets when developing any schemes. Recommend that a mini EIA/checklist is developed (that include impacts on the historic environment) for smaller scale schemes.
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	U	Depends on schemes delivered through the sustainable travel towns in particular Hatfield and Stevenage.	
To empower all sections of the community to participate in decision making and local action	P+	Through public consultation with sustainable travel town schemes, improvements to access to sustainable modes should empower people to make better transport choices.	
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	✓	This is a strategic commuter corridor, with significant flows to London by road and rail, and local commuter flows in N Herts and between	

SEA Analysis Table	Corridor 3 - London - Stevenage - Peterborough		
		Stevenage/WGC and WGC/Hatfield.	
To spread economic growth more evenly to benefit deprived areas	P+	Schemes delivered through the sustainable travel towns could improve access to employment particularly in Stevenage and Hatfield which have known deprived areas.	
To maintain the vitality and viability of existing centres	P+	Potentially through sustainable travel town schemes, making it easier to access services and leisure in town centres.	

Significant Positive Effects:
Through the delivery of sustainable travel towns, improved walking and cycling links and inter-urban bus connectivity, this will improve the choice of sustainable modes for people, particularly for accessing employment as this is a significant commuter corridor (both into London and locally).

Significant Negative Effects:
This corridor approach particular mentions supporting the sustainable delivery of housing growth, care should be made to not allow any further growth in floodplains.

Timescale:
Short to medium term up to 2031.

Temporary or Permanent: Impacts from any new road infrastructure would be permanent but positive impacts from behavioural change and modal shift from example the Sustainable Travel Towns could be temporary, as trends change over time.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 3 – LONDON - STEVENAGE - PETERBOROUGH

Likelihood of effects or impacts identified occurring:
Depends on the type of schemes, and their locations.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- Any schemes for sustainable modes should be mindful of anti-social behaviour/hate crime.
- Consider a map of HCC historic assets when developing any schemes.
- Consider developing a mini EIA/Checklist (including impacts on the historic env) for smaller scale schemes.

Data Issues:
None.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 4 – LONDON – HARLOW – STANSTED - CAMBRIDGE

SEA Analysis Table	Corridor 4 – London – Harlow – Stansted - Cambridge		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** **(including mitigating negative effects and improving positive effects)**
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	U	Sustainable travel towns will help biodiversity, however there are uncertainties around four tracking and Crossrail 2, as these schemes may impact on Natura sites in the Lee Valley. New station proposals and additional transport works to serve the growth of Harlow North. Projects involving construction on areas of habitat could have a negative impact on local flora and fauna.	The rail improvements may have negative impacts on the RAMSAR site in the Lee Valley, this is beyond the remit of the council, however be aware of the implications.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 4 – LONDON – HARLOW – STANSTED - CAMBRIDGE

SEA Analysis Table	Corridor 4 – London – Harlow – Stansted - Cambridge		
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	All schemes have potential to increase active travel as part of the whole journey with the resultant beneficial effect on mental and physical health.	Consider if there are active travel schemes which could be funded by the HE if they involve the M11.
To reduce crime and create safe environments	P+	Improving rail capacity, service and accessibility will increase numbers of people using facilities reducing fear of solitude using facilities and opportunities to commit crime.	Projects to improve rail usage and sustainable travel should consider ways to reduce crime and fear of crime whilst using the services
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
To move away from waste disposal to minimisation, reuse, recycling and recovery	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
To ensure the efficient use of water, and safeguard water resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 4 – LONDON – HARLOW – STANSTED - CAMBRIDGE

SEA Analysis Table	Corridor 4 – London – Harlow – Stansted - Cambridge		
To reduce contamination, and safeguard soil quality and quantity	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	✓	Take up of sustainable travel towns and the increase in rail use will mitigate against noise/air pollution, likewise with modal shift from fossil fuelled cars to passenger transport.	
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	The major schemes in corridor 4 all have the potential to increase active travel and increase rail journeys which will reduce the need to travel by car.	Ensure there are bus connections between the stations and the new developments.
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	P-	Any schemes requiring new construction works may be in areas of future flooding or increase surface water run-off.	Sites for any new facilities will need to consider flooding issues and ideally not be sited on floodplains. Where necessary consideration should be given to opportunities and requirements to reduce surface water run-off and

SEA Analysis Table	Corridor 4 – London – Harlow – Stansted - Cambridge		
			included where possible when any contracts for works are drafted.
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Take up of sustainable travel towns will reduce amount of greenhouse gases emitted from vehicles, likewise with modal shift from fossil fuelled cars to rail transport.	Lobby for more passenger transport vehicles being Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
To ensure the sustainable supply and use of energy	P+	Take up of sustainable travel towns will reduce wastage of energy, likewise with modal shift from fossil fuelled cars to passenger transport.	This is dependent on passenger transport vehicles being Euro 6 or electric.
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	U	Any new construction projects to increase rail capacity, create new stations and improve sustainable travel opportunities may be in areas of historic interest or involved heritage assets and their settings. This has the potential to be negative but also positive if the project leads to their	Where necessary consideration should be given to opportunities and requirements to reduce impact on or enhance the historic environment, heritage assets and their settings and included where possible when any contracts for works are drafted.

SEA Analysis Table	Corridor 4 – London – Harlow – Stansted - Cambridge		
		conservation and enhancement or access to them.	
To conserve and enhance the historic environment, heritage assets and their settings	P+	Traffic congestion blights and has a negative impact on the historic environment. More take up of active travel and passenger transport will reduce congestion and enhance Hertfordshire's historic environment, however impacts could be site specific.	
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	The major schemes in corridor 4 all have potential to increase active travel and availability of sustainable transport which lead to improved access to services and community facilities.	
To empower all sections of the community to participate in decision making and local action	P+	The major schemes in corridor 4 all have potential to increase availability of sustainable transport which can be an equaliser in the community.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 4 – LONDON – HARLOW – STANSTED - CAMBRIDGE

SEA Analysis Table	Corridor 4 – London – Harlow – Stansted - Cambridge		
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	The major schemes in corridor 4 all have potential to increase active travel and availability of sustainable transport which lead to improved access to employment – beneficial to employers, employees and the economy overall.	
To spread economic growth more evenly to benefit deprived areas	P+	The schemes will potentially increase active travel and availability of sustainable transport which lead to improved access to employment for the more deprived areas.	Ensure that the indices of multiple deprivation are considered as part of the evidence base as schemes are developed.
To maintain the vitality and viability of existing centres	P+	The schemes will increase active travel and availability of sustainable transport which leads to better outcomes for retailers as evidenced with research.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 4 – LONDON – HARLOW – STANSTED - CAMBRIDGE

Significant Positive Effects: The rail schemes developments are still at an early stage but have great potential to improve modal shift. Sustainable travel towns are also good for the environment, people and society in general.

Significant Negative Effects: Rail schemes could impact on Natura sites, but this is not within the council's remit, there will be environmental impact assessments for these schemes later in the development process.

Timescale: medium to long-term.

Temporary or Permanent: Impacts from any new road/rail infrastructure would be permanent but positive impacts from behavioural change and modal shift from example the Sustainable Travel Towns could be temporary, as trends change over time.

Likelihood of effects or impacts identified occurring: likely if schemes fully implemented.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- The rail improvements may have negative impacts on the RAMSAR site in the Lee Valley, this is beyond the remit of the council, however be aware of the implications.
- Consider if there are active travel schemes which could be funded by the HE if they involve the M11.
- Ensure there are bus connections between the stations and the new and existing housing developments.
- Lobby for more passenger transport vehicles being Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
- Ensure that the indices of multiple deprivation are considered as part of the evidence base as schemes are developed.
- Projects to improve rail usage and sustainable travel should consider ways to reduce crime and fear of crime whilst using the services.
- Sites for any new facilities will need to consider flooding issues and ideally not be sited on floodplains.
- Where necessary consideration should be given to opportunities and requirements to reduce surface water run-off and included where possible when any contracts for works are drafted.
- Where necessary consideration should be given to opportunities and requirements to reduce impact on or enhance the historic environment, heritage assets and their settings and included where possible when any contracts for works are drafted.

Data Issues: None.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 4 – LONDON – HARLOW – STANSTED - CAMBRIDGE

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

SEA Analysis Table	Corridor 5 – Hemel Hempstead & Watford – St Albans - Harlow		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** (including mitigating negative effects and improving positive effects)
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+	PT link offers greater speed than single occupancy vehicles which could encourage modal shift. Take up of sustainable travel towns mitigate against noise/air pollution which impact negatively on biodiversity.	.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

SEA Analysis Table	Corridor 5 – Hemel Hempstead & Watford – St Albans - Harlow		
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	Schemes have potential to increase active travel as part of the whole journey with the resultant beneficial effect on mental and physical health.	
To reduce crime and create safe environments	P+	More people out and about using sustainable transport will create safer environments.	
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	Highway improvements need to adhere to the latest TIAMP recommendations on sustainable use of resources.
To move away from waste disposal to minimisation, reuse, recycling and recovery	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	As above
To ensure the efficient use of water, and safeguard water resources	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	SUDS guidance to be used when any schemes, especially highways improvements are being delivered.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

SEA Analysis Table	Corridor 5 – Hemel Hempstead & Watford – St Albans - Harlow		
To reduce contamination, and safeguard soil quality and quantity	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	SUDS guidance to be used when any schemes, especially highways improvements are being delivered.
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	✓	Take up of sustainable travel towns will mitigate against noise/air pollution, likewise with modal shift from fossil fuelled cars to passenger transport.	Retrofitted, Euro 6 or ULEV buses must be negotiated with the bus operators.
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	all the schemes have the potential to increase active travel and availability of shared mobility schemes which will reduce the need to travel by car.	
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	U	Many aspects of the schemes are still at concept stage, not enough detail to say.	SUDS guidance to be used when any schemes, especially highways improvements are being delivered.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

SEA Analysis Table	Corridor 5 – Hemel Hempstead & Watford – St Albans - Harlow		
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Take up of sustainable travel towns will reduce amount of greenhouse gases emitted from vehicles, likewise with modal shift from fossil fuelled cars to passenger transport.	Lobby for more passenger transport vehicles being Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
To ensure the sustainable supply and use of energy	P+	Take up of sustainable travel towns will reduce wastage of energy, likewise with modal shift from fossil fuelled cars to passenger transport.	This is dependent on passenger transport vehicles being ULEV
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	P+	Traffic congestion has a negative impact on the landscape. More take up of active travel and passenger transport will reduce congestion and enhance Hertfordshire's landscape.	
To conserve and enhance the historic environment, heritage assets and their settings	P+	Traffic congestion blights and has a negative impact on the historic environment. More take up of active travel and passenger transport will reduce congestion and	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

SEA Analysis Table	Corridor 5 – Hemel Hempstead & Watford – St Albans - Harlow		
		enhance Hertfordshire's historic environment, however impacts could be site specific.	
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	The schemes have potential to increase active travel and availability of passenger transport which lead to improved access to services and community facilities.	Use this for EqIA for LTP4
To empower all sections of the community to participate in decision making and local action	P+	all schemes have potential to increase active travel and availability of sustainable transport which can be an equaliser in the community.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

SEA Analysis Table	Corridor 5 – Hemel Hempstead & Watford – St Albans - Harlow		
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	The schemes have potential to increase active travel and availability of sustainable transport which lead to improved access to employment – beneficial to employers, employees and the economy overall.	
To spread economic growth more evenly to benefit deprived areas	P+	The schemes will potentially increase active travel and availability of sustainable transport which lead to improved access to employment for the more deprived areas.	Ensure that the indices of multiple deprivation are considered as part of the evidence base as schemes are developed.
To maintain the vitality and viability of existing centres	P+	The schemes will potentially increase active travel and availability of sustainable transport which leads to better outcomes for retailers as evidenced with research.	Ensure any sustainable travel towns and links between urban centres (eg Hertford) are developed based on the LTP4 transport hierarchy policy and the cycling propensity toolkit.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

Significant Positive Effects: Overall the schemes will have a beneficial impact on biodiversity, human health, the environment and the economy. All the schemes aim to reduce car dependency, although there is some element of highway improvements, to reduce congestion for vehicles.

Significant Negative Effects: None.

Timescale: medium to long term.

Temporary or Permanent: Impacts from any new road infrastructure would be permanent but positive impacts from behavioural change and modal shift from example the Sustainable Travel Towns could be temporary, as trends change over time.

Likelihood of effects or impacts identified occurring: likely if schemes fully implemented.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- Highway improvements need to adhere to the latest TIAMP recommendations on sustainable use of resources.
- SUDS guidance to be used when any schemes, especially highways improvements are being delivered.
- The use of retrofitted, Euro 6 or ULEV buses must be negotiated with the bus operators.
- Lobby for more passenger transport vehicles being Euro 6 or electric. Seek funding which may be available in late 2017 onwards.
- Use this assessment findings for EqIA for LTP4
- Ensure that the Indices of Multiple Deprivation are considered as part of the evidence base as schemes are developed.
- Ensure any sustainable travel towns and links between urban centres (e.g. Hertford) are developed using the LTP4 transport hierarchy policy and the cycling propensity toolkit.
- The rail scheme improvements will need continued partnership working between the rail team in SPEU and the Abbey Line CRP/ rail operators to ensure best outcomes for Hertfordshire's passengers.

Data Issues: None.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 5 – HEMEL HEMPSTEAD & WATFORD – ST ALBANS - HARLOW

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 6 – LUTON TO STEVENAGE

SEA Analysis Table	Corridor 6 - Luton to Stevenage		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** **(including mitigating negative effects and improving positive effects)**
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+	The main scheme priorities focus on improvements to interurban passenger transport and improved sustainable travel links. Preventing further increases in car use would prevent additional future negative impacts on local flora and fauns and any reductions in car use would benefit local flora and fauna.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 6 – LUTON TO STEVENAGE

SEA Analysis Table	Corridor 6 - Luton to Stevenage		
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	Improving passenger transport connectivity and sustainable travel links will improve access to leisure opportunities as well as culture and arts venues. Improving sustainable travel, in particular walking and cycling for work, school and/or leisure would provide health benefits.	Ensure that the growth and transport use the Cycling propensity tool to indicate where best to place cycling routes.
To reduce crime and create safe environments	P+	Improving passenger transport will increase numbers of people using facilities reducing fear of solitude using facilities and opportunities to commit crime.	Projects to improve passenger transport should consider ways to reduce crime and fear of crime whilst using the services
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where appropriate consideration should be given to opportunities and requirements for the sustainable use of resources and included where possible when any

SEA Analysis Table	Corridor 6 - Luton to Stevenage		
			contracts for works are drafted.
To move away from waste disposal to minimisation, reuse, recycling and recovery	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where appropriate consideration should be given to opportunities and requirements to minimise construction waste and recycle construction materials and included where possible when any contracts for works are drafted.
To ensure the efficient use of water, and safeguard water resources	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where necessary consideration should be given to opportunities and requirements for SUDS and to guard against contamination of ground water and water courses and included where possible when any contracts for works are drafted where necessary.
To reduce contamination, and safeguard soil quality and quantity	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where necessary consideration should be given to opportunities and requirements for the reduction of contamination and safeguarding of soil quality and quantity and

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 6 – LUTON TO STEVENAGE

SEA Analysis Table	Corridor 6 - Luton to Stevenage		
			included where possible when any contracts for works are drafted.
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+	Improvements to air quality and traffic noise pollution would be achieved if sufficient modal shift occurs through improvements to interurban passenger transport and sustainable travel links.	
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	Improving interurban passenger transport connectivity between Luton and Stevenage and sustainable travel links between Hitchin, Letchworth and Baldock will reduce the need for car travel, improve the choice of sustainable transport modes, encourage their use in this corridor.	Ensure that the cycling propensity toolkit is used to place cycle routes in the best places.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 6 – LUTON TO STEVENAGE

SEA Analysis Table	Corridor 6 - Luton to Stevenage		
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	P-	Any new construction projects to improve sustainable travel links may be in areas of future flooding or increase surface water run-off.	Sites for any new facilities will need to consider flooding issues and ideally not be sited on floodplains. Where necessary consideration should be given to opportunities and requirements to reduce surface water run off and included where possible when any contracts for works are drafted.
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Reduction of greenhouse gases emitted by car transport would be achieved if sufficient modal shift occurs through improvements to interurban passenger transport connectivity between Luton and Stevenage and sustainable travel links between Hitchin, Letchworth and Baldock.	

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SEA Analysis Table	Corridor 6 - Luton to Stevenage		
To ensure the sustainable supply and use of energy	P+	Reduction in fossil fuel use can be achieved if sufficient modal shift occurs through improving interurban passenger transport connectivity between Luton and Stevenage and sustainable travel links between Hitchin, Letchworth and Baldock	
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	U	Any new construction projects to improve sustainable travel links may be in areas of landscape or townscape interest.	Where necessary consideration should be given to opportunities and requirements to reduce impact on or enhance townscape, listed buildings and landscape and included where possible when any contracts for works are drafted.
To conserve and enhance the historic environment, heritage assets and their settings	U	Any new construction projects to improve interurban passenger transport connectivity between Luton and Stevenage and sustainable travel links between Hitchin,	Where necessary consideration should be given to opportunities and requirements to reduce impact on or enhance the historic environment, heritage assets and their settings and included where

SEA Analysis Table		Corridor 6 - Luton to Stevenage	
		Letchworth and Baldock may be in areas of historic interest or involved heritage assets and their settings, and so impacts could be site specific. This has the potential to be negative but also positive if the project leads to their conservation and enhancement or access to them.	possible when any contracts for works are drafted.
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	Improvements to passenger transport and sustainable travel links should increase social inclusion and accessibility to transport and therefore services however cost of travel may be potentially socially exclusive. Improvements to sustainable travel access particularly walking and cycling would help to address	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 6 – LUTON TO STEVENAGE

SEA Analysis Table	Corridor 6 - Luton to Stevenage		
		access to services and facilities for all.	
To empower all sections of the community to participate in decision making and local action	P+	Public consultation on improvements to station access and sustainable travel access should empower people to participate in decision making.	
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	Improvements to passenger transport and increasing travel options along this corridor will help maintain and potentially improve access to employment opportunities and to labour market. It can also improve access between services/businesses and consumers/clients. Improvements to links with Luton and Luton airport may increase opportunities to attract tourism including income and job creation from	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 6 – LUTON TO STEVENAGE

SEA Analysis Table	Corridor 6 - Luton to Stevenage		
		this sector. As a result, these improvements should contribute towards economic competitiveness and the creation of a vibrant economy	
To spread economic growth more evenly to benefit deprived areas	P+	Improving passenger transport and sustainable travel links access between areas will help spread economic growth both within and between communities and increase connectivity to areas of deprivation.	
To maintain the vitality and viability of existing centres	P+	Improvements to passenger transport and sustainable travel options at and between existing centres would contribute to maintaining their vitality and viability	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 6 – LUTON TO STEVENAGE

Significant Positive Effects:
Improving passenger transport and sustainable travel links will improve the choice of sustainable transport modes, encourage their use and reduce the need to travel by car. Improved links between Luton and Stevenage and improved sustainable travel options within and between Hitchin, Letchworth and Baldock will bring improvements to social inclusion and wellbeing, maintain and potentially enhance employment, business and tourism opportunities as well as environmental issues such as air quality.

Significant Negative Effects:
Any projects requiring construction of new or changes to existing facilities and transport links will need to consider the impact on landscape, townscape and the historic environment. Possible changes to surface water run-off or issues of flooding will need to be considered.

Timescale: Short, medium and term depending upon the project.

Temporary or Permanent: Impacts from any new road infrastructure would be permanent but positive impacts from behavioural change and modal shift could be temporary, as trends change over time.

Likelihood of effects or impacts identified occurring: Depends on the type of schemes and their locations.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- Projects to improve station access should consider ways to reduce crime and fear of crime through improved design
- Sites for any new facilities will need to consider flooding issues and ideally not be sited on floodplains.
- Ensure that the growth and transport plans use the cycling propensity tool to indicate where best to place cycling routes.
- Consideration should be given to opportunities for the following matters and included where possible when any contracts for works are drafted:
    - the sustainable use of resources
    - minimise construction waste and recycle construction materials
    - SUDS and to guard against contamination of ground water and water courses
    - reduction of surface water run off
- reduction of contamination and safeguarding of soil quality and quantity
    - reduction of impact on or enhance townscape, listed buildings and landscape
    - reduction of impact on or enhance the historic environment, heritage assets and their settings

Data Issues: None.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 7 – STEVENAGE TO CAMBRIDGE

SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** (including mitigating negative effects and improving positive effects)
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+	The main scheme priorities focus on sustainable travel by improving rail service levels and access via sustainable travel modes. Preventing further increases in car use and potentially decreasing the need to travel by car would prevent additional future negative impacts on local flora and fauns and any reductions in car use would benefit local flora and fauna.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 7 – STEVENAGE TO CAMBRIDGE

SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	Improving rail service levels and station access to increase opportunities to travel to Cambridge via rail will improve access to leisure opportunities as well as culture and arts venues. Working with adjacent authorities to improve sustainable travel access between the north of Hertfordshire and south of Cambridgeshire in particular walking and cycling for work, school and/or leisure would provide health benefits.	
To reduce crime and create safe environments	P+	Improving rail service levels and access will increase numbers of people using facilities reducing fear of solitude using facilities and opportunities to commit crime.	Projects to improve station access should consider ways to reduce crime and fear of crime through improved design

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SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where appropriate consideration should be given to opportunities and requirements for the sustainable use of resources and included where possible when any contracts for works are drafted.
To move away from waste disposal to minimisation, reuse, recycling and recovery	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where appropriate consideration should be given to opportunities and requirements to minimise construction waste and recycle construction materials and included where possible when any contracts for works are drafted.
To ensure the efficient use of water, and safeguard water resources	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where necessary consideration should be given to opportunities and requirements for SUDS and to guard against contamination of ground water and water courses and included where possible when any contracts for works are drafted.

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SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
To reduce contamination, and safeguard soil quality and quantity	U	Depends on the projects implemented, exact detail unknown at time of assessment.	Where necessary consideration should be given to opportunities and requirements for the reduction of contamination and safeguarding of soil quality and quantity and included where possible when any contracts for works are drafted.
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+	Improvements to air quality and traffic noise pollution would be achieved if sufficient modal shift occurs through improvements to rail service levels and station access within the A1(M) corridor towns and improvements to sustainable travel access from Royston to Cambridge. Depending on the improvements made to rail service levels there may be some increase in noise pollution along rail routes.	

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SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	Improving rail service levels and station access within the A1 (M) corridor to Cambridge will reduce the need for car travel. Improvements to sustainable travel access between the Royston and Cambridgeshire will improve the choice of sustainable transport modes, encourage their use and reduce the need to travel by car in this locality.	
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	P-	Any new construction projects to improve access to stations within the A1 (M) corridor and improve sustainable travel access between Royston and Cambridgeshire may be in areas of future flooding or increase surface water run-off.	Sites for any new facilities will need to consider flooding issues and ideally not be sited on floodplains. Where necessary consideration should be given to opportunities and requirements to reduce surface water run off and included where possible when any contracts for works are drafted.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 7 – STEVENAGE TO CAMBRIDGE

SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	Reduction of greenhouse gases emitted by vehicular transport would be achieved if sufficient modal shift occurs through improvements to rail service levels and station access within the A1 (M) corridor towns and improvements to sustainable travel access from Royston to Cambridge.	
To ensure the sustainable supply and use of energy	P+	Reduction in fossil fuel use can be achieved if sufficient modal shift occurs through improvements to rail service levels and station access within the A1 (M) corridor towns and improvements to sustainable travel access from Royston to Cambridge.	

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SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	U	Any new construction projects to improve access to stations within the A1 (M) corridor and improve sustainable travel access between Royston and Cambridgeshire may be in areas of landscape or townscape interest.	Where necessary consideration should be given to opportunities and requirements to reduce impact on or enhance townscape, listed buildings and landscape and included where possible when any contracts for works are drafted.
To conserve and enhance the historic environment, heritage assets and their settings	U	Any new construction projects to improve access to stations within the A1 (M) corridor and improve sustainable travel access between Royston and Cambridgeshire may be in areas of historic interest or involved heritage assets and their settings, and so impacts could be site specific. This has the potential to be negative but also positive if the project leads to their conservation and enhancement or access	Where necessary consideration should be given to opportunities and requirements to reduce impact on or enhance the historic environment, heritage assets and their settings and included where possible when any contracts for works are drafted.

SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
		to them.	
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	P+	Improvements to station access should increase social inclusion and accessibility to transport and therefore services however cost of travel may be potentially socially exclusive. Improvements to sustainable travel access particularly walking and cycling would help to address access to services and facilities for all.	
To empower all sections of the community to participate in decision making and local action	P+	Public consultation on improvements to station access and sustainable travel access should empower people to participate in decision making.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 7 – STEVENAGE TO CAMBRIDGE

SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	Improvements to accessibility and increasing travel options along this corridor and to Cambridge will help maintain and potentially improve access to employment opportunities and to labour market. It can also improve access between services/businesses and consumers/clients. As a result, these improvements should contribute towards economic competitiveness and the creation of a vibrant economy	
To spread economic growth more evenly to benefit deprived areas	P+	Increasing rail service levels, increasing travel options and improvements to sustainable travel access between areas will help spread	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 7 – STEVENAGE TO CAMBRIDGE

SEA Analysis Table	Corridor 7 Stevenage – Cambridge		
		economic growth both within and between communities and increase connectivity to areas of deprivation.	
To maintain the vitality and viability of existing centres	P+	Improvements to station access, rail service levels and sustainable travel options at and between existing centres would contribute to maintaining their vitality and viability.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 7 – STEVENAGE TO CAMBRIDGE

Significant Positive Effects:
Improving rail service levels, station access and improvements to sustainable travel access will improve the choice of sustainable transport modes, encourage their use and reduce the need to travel by car. Improved links and sustainable travel options within and between the A1 (M) corridor towns and Cambridge will bring improvements to social inclusion and wellbeing, maintain and potentially enhance employment and business opportunities as well as environmental issues such as air quality.

Significant Negative Effects:
Any projects requiring construction of new or changes to existing facilities will need to consider the impact on landscape, townscape and the historic environment. Possible changes to surface water run-off or issues of flooding will need to be considered. Increased levels of rail service may need to consider a noise impact assessment.

Timescale:
Short to medium term up to 2031.

Temporary or Permanent: Impacts from any new road/rail infrastructure would be permanent but positive impacts from behavioural change and modal shift could be temporary, as trends change over time.
Likelihood of effects or impacts identified occurring:
Depends on the type of schemes and their locations.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- Projects to improve station access should consider ways to reduce crime and fear of crime through improved design
- Sites for any new facilities will need to consider flooding issues and ideally not be sited on floodplains.
- Consideration should be given to opportunities for the following matters and included where possible when any contracts for works are drafted:
  - the sustainable use of resources
  - minimise construction waste and recycle construction materials
  - SUDS and to guard against contamination of ground water and water courses
  - reduction of surface water run off
  - reduction of contamination and safeguarding of soil quality and quantity
  - reduction of impact on or enhance townscape, listed buildings and landscape
  - reduction of impact on or enhance the historic environment, heritage assets and their settings

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 7 – STEVENAGE TO CAMBRIDGE

Data Issues:
None.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 8 – STEVENAGE TO STANSTED

SEA Analysis Table	Corridor 8 – Stevenage to Stansted		
SEA Objective	**Assessment of Effect** ✓ Positive impact P+ Potentially positive impact O No relationship/ link U Uncertain/ Depends on implementation P- Potentially negative impact X Negative impact	**Justification:** • **Likelihood of effect occurring** • **Permanence of effect** • **Geographic scale of effect** • **Cumulative effects** • **Current env. Social & economic trends of affected area** • **Likelihood of affecting particularly sensitive locations**	**Recommendations** **(including mitigating negative effects and improving positive effects)**
SEA Topic – Biodiversity, fauna and flora			
To protect and enhance biodiversity	P+	The majority of improvements would be to sustainable modes i.e. rail connectivity, sustainable travel towns, which would provide benefits to local flora and fauna by removing cars from the network.	
SEA Topic - Population and human health			
To maximise the opportunities for leisure and a healthy lifestyle for all, and to improve the physical and mental health of the population, and reduce health inequalities	P+	Schemes would improve connectivity between Stevenage and Hertford opening up access to leisure opportunities. Promotion of sustainable modes and in particular	

SEA Analysis Table	Corridor 8 – Stevenage to Stansted		
		walking and cycling for work, school, leisure, this would provide health benefits.	
To reduce crime and create safe environments	P+	Through rail interchange improvements, park and ride, and sustainable travel town schemes, where there is more interaction between members of the public.	Any schemes for sustainable modes should be mindful of anti-social behaviour/hate crime.
SEA Topic - Water and soil			
To improve the sustainable use of resources	U	Depends on what types of schemes are implemented, exact detail unknown at time of assessment.	
To move away from waste disposal to minimisation, reuse, recycling and recovery	U		
To ensure the efficient use of water, and safeguard water resources	U	Depends on the location and design of any new park and ride schemes. Issues of flooding from local water courses and local drainage would need to be considered.	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 8 – STEVENAGE TO STANSTED

SEA Analysis Table	Corridor 8 – Stevenage to Stansted		
To reduce contamination, and safeguard soil quality and quantity	U	Depends on the location of any new park and ride schemes, and whether brown field sites are used.	
SEA Topic - Air			
To protect and enhance air quality and minimise noise pollution	P+	Improvements to air and noise pollution would be achieved if sufficient modal shift is achieved through sustainable travel towns, improved rail connectivity, and congestion schemes on the A602, A120 and A10.	
To improve the choice of sustainable transport modes, encourage their use, and reduce the need to travel by car	✓	Through rail connectivity (Stevenage to Hertford) and interchange accessibility, sustainable travel town schemes, Stansted surface access strategy	
SEA Topic - Climatic factors			
To adapt to the impacts of climate change such as flooding	P-	Any new park and ride sites will need to consider flooding issues and ideally not be sited on floodplains.	

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SEA Analysis Table	Corridor 8 – Stevenage to Stansted		
To reduce greenhouse gases including carbon dioxide, emitted by vehicular transport	P+	If sufficient modal shift is achieved through sustainable travel town projects, and rail travel is increased with improved connectivity.	
To ensure the sustainable supply and use of energy	P+	Reduction in fossil fuel use if modal shift is achieved through the sustainable travel towns.	
SEA Topic - Historic Environment and Landscape			
To protect and enhance the character of landscape, townscape and green spaces	P-	The location of park and ride sites will need careful consideration so that they have minimal impact on landscape/townscape.	
To conserve and enhance the historic environment, heritage assets and their settings	U	Depends on the location of any schemes in relation to historic buildings, monuments etc, as there could be positive and negative impacts, and impacts could be site specific.	Consider a map of HCC historic assets when developing any schemes. Consider the development with Highways a mini EIA/Checklist for smaller scale schemes (that would include impacts on the historic env.

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 8 – STEVENAGE TO STANSTED

SEA Analysis Table	Corridor 8 – Stevenage to Stansted		
SEA Topic - Social inclusiveness			
To tackle the causes of poverty and social exclusion by improving access to services and community facilities for all	U	Depends on schemes delivered through the sustainable travel towns in particular Stevenage.	
To empower all sections of the community to participate in decision making and local action	P+	Through public consultation with sustainable travel town schemes, improvements to access to sustainable modes should empower people to make better transport choices.	
SEA Topic - Economic development			
To maintain employment, improve economic competitiveness (consistent with environmental constraints) and create a vibrant economy	P+	Improvements along this corridor will have minimal economic impacts a there are limited movements along the whole corridor, but it would support economic growth at locations i.e. Stevenage.	
To spread economic growth more evenly to benefit deprived areas	P+	Schemes delivered through the sustainable travel towns could improve access to employment particularly in Stevenage which has a number of deprived	

APPENDIX 4A - APPRAISAL MATRIX: CORRIDOR 8 – STEVENAGE TO STANSTED

SEA Analysis Table	Corridor 8 – Stevenage to Stansted		
		areas.	
To maintain the vitality and viability of existing centres	P+	Potentially through sustainable travel town schemes improving accessibility at interchanges, and park and ride schemes.	

Significant Positive Effects:
Improved rail connectivity between Stevenage and Hertford, and schemes delivered through sustainable travel towns would provide benefits to personal health, improvements to local air quality, and reductions in carbon emissions. It would improve the choice of sustainable modes and so benefit those in deprived areas with no access to a car.

Significant Negative Effects:
Any park and ride schemes taken forward will need to carefully consider locations, as there are issues of flooding and the impact on landscape and townscape to consider.

Timescale: Short to medium term up to 2031.

Temporary or Permanent: Impacts from any new road infrastructure would be permanent but positive impacts from behavioural change and modal shift could be temporary, as trends change over time.

Likelihood of effects or impacts identified occurring:
Depends on the type of schemes and their locations.

Recommendation for mitigation for adverse effects and/or enhancement or positive effects:
- Any schemes for sustainable modes should be mindful of anti-social behaviour/hate crime.
- Consider a map of HCC historic assets when developing any schemes.

Data Issues: None.