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A414 Corridor Strategy

Habitats Regulations Assessment

Hertfordshire County Council

September 2019

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Quality information

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Revision History

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0	02/08/18	Issue for Natural England comment	JR	James Riley	Technical Director
1	15/11/18	Finalised	JR	James Riley	Technical Director
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1. Introduction

Background to the Project

1.1 AECOM was commissioned by Hertfordshire County Council to produce a technical report to inform an assessment of likely significant effects on European sites arising from the A414 Corridor Strategy. The objective of the Strategy is to:

- Foster joined up decision making among authorities along the corridor to support better integration and alignment of strategic spatial planning and investment priorities;
- Consider the corridor as a system of transport links and to clarify the role and hierarchy of key links between and within towns;
- Clarify infrastructure requirements along the corridor, including those generated by cumulative impacts of growth;
- Identify and co-ordinate funding mechanisms and opportunities and to set out a route to delivery for packages of interventions; and
- Support development along the corridor and help manage and improve inter-urban movement

1.2 Natural England were consulted on this report during August 2018 but made no comment. Following public consultation, the A414 Strategy has been updated. This HRA has therefore also been updated to ensure that it covers the latest version of the Strategy.

1.3 During the public consultation on the Strategy a single representor commented on the HRA. That representor made two points regarding the Hertford bypass option(s):

- Firstly, it was asserted that the HRA should discuss all alternatives. However, by law, the HRA only has to assess what the plan is proposing to do, it does not need to assess options the plan has rejected, provided the chosen option will not adversely affect the integrity of European sites.
- Secondly, it was argued that the 2018 HRA took account of a protective 'buffer' between the chosen bypass option and European sites when making the determination of likely significant effects. The representor implied that this constituted mitigation, which case law has confirmed can only be taken into account in an appropriate assessment (the next stage of HRA which was not undertaken for this strategy). The reference to a 'buffer' is presumably a reference to the 200m distance from the road within which a road can have likely significant effects on local air quality. It does not constitute a 'buffer' (i.e. a setback zone) that was introduced to the scheme to ensure such effects do not arise. The fact the scheme is located over 200m from any European sites is a matter of chance. All bypass options were located more than 200m from any European sites. No 'buffers' were discussed, or introduced to protect European sites, in the 2018 HRA or the Strategy.

1.4 In any event, the 2019 final A414 Corridor Strategy that is the subject of this updated assessment does not commit to a bypass but simply identifies an action to review the need for a strategic intervention, such as a bypass.

Legislation

1.5 The need for Appropriate Assessment is set out within Article 6 of the EC Habitats Directive 1992 and interpreted into British law by the Conservation of Habitats and Species Regulations 2017 (as amended). The ultimate aim of the Directive is to "maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest" (Habitats Directive, Article 2(2)). This aim relates to habitats and species, not the European sites themselves, although the sites have a significant role in delivering favourable conservation status.

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1.6 The Habitats Directive applies the 'Precautionary Principle'[1] to European sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. Plans and projects with predicted adverse impacts on European sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

1.7 In order to ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

Box 1: The legislative basis for Appropriate Assessment

Habitats Directive 1992

Article 6 (3) states that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives."

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

"*A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site … shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives… The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site*".

1.8 Over time the phrase 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Habitats Directive from screening through to Imperative Reasons of Overriding Public Interest (IROPI). This has arisen in order to distinguish the process from the individual stage described in the law as an 'Appropriate Assessment'. Throughout this report we use the term Habitats Regulations Assessment for the overall process and restrict the use of Appropriate Assessment to the specific stage of that name.

This Report

1.9 Chapter 2 of this report explains the process by which the HRA has been carried out. Chapter 3 explores the relevant pathways of impact resulting from the scheme options of the A414 Corridor Strategy and their potential to lead to likely significant effects on European designated sites. Chapter 4 discusses the screening exercise undertaken. The key findings are summarised in Chapter 5.

[1] The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: *"When human activities may lead to morally unacceptable harm* [to the environment] *that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis".*

2. Methodology

Introduction

2.1 The HRA has been carried out in the continuing absence of formal central Government guidance, although general EC guidance on HRA does exist. The Ministry of Housing, Communities and Local Government (MHCLG) released a consultation paper on the Appropriate Assessment of Plans in 2006 (hereafter referred to as guidance). This was followed by brief general guidance on HRA in July 2019[2]. Natural England has produced its own internal guidance as has the RSPB[3]. Both of these have been referred to alongside the guidance outlined in paragraph 1.5 and 1.6 in undertaking this HRA.

2.2 Figure 1 below outlines the stages of HRA according to current draft MHCLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

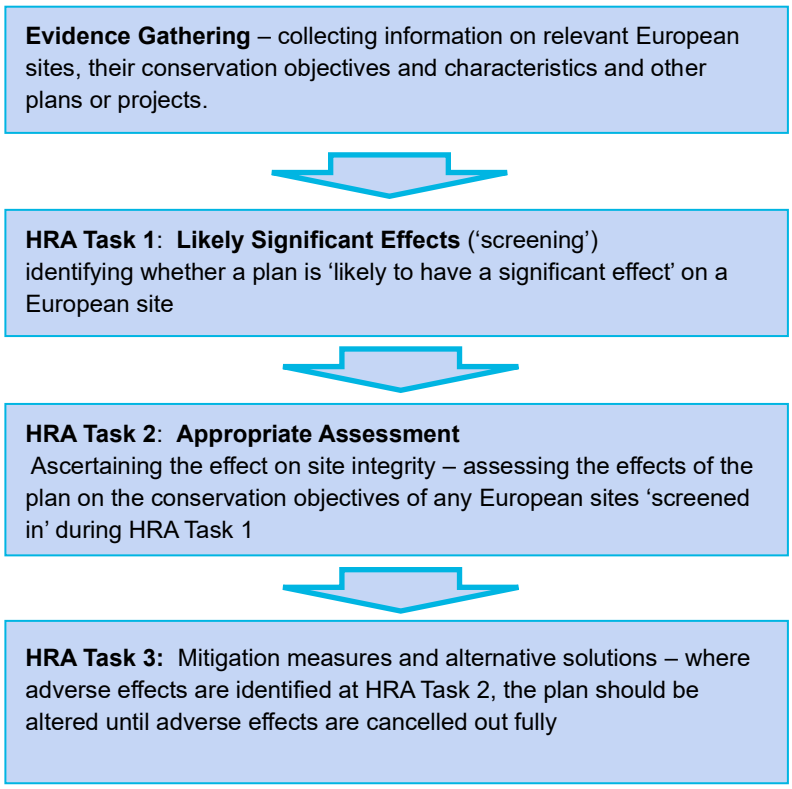

Figure 1: Four Stage Approach to Habitats Regulations Assessment. Source CLG, 2006.

HRA Task 1 – Likely Significant Effects (LSE)

2.3 Following evidence gathering, the first stage of any Habitat Regulations Assessment is a Likely Significant Effect (LSE) test - essentially a risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

2.4 "*Is the Plan, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"*

2.5 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction with European sites.

[2] https://www.gov.uk/guidance/appropriate-assessment
[3] Dodd A.M., Cleary B.E., Dawkins J.S., Byron H.J., Palframan L.J. and Williams G.M. (2007). The Appropriate Assessment of Spatial Plans in England: a guide to why, when and how to do it. The RSPB, Sandy.

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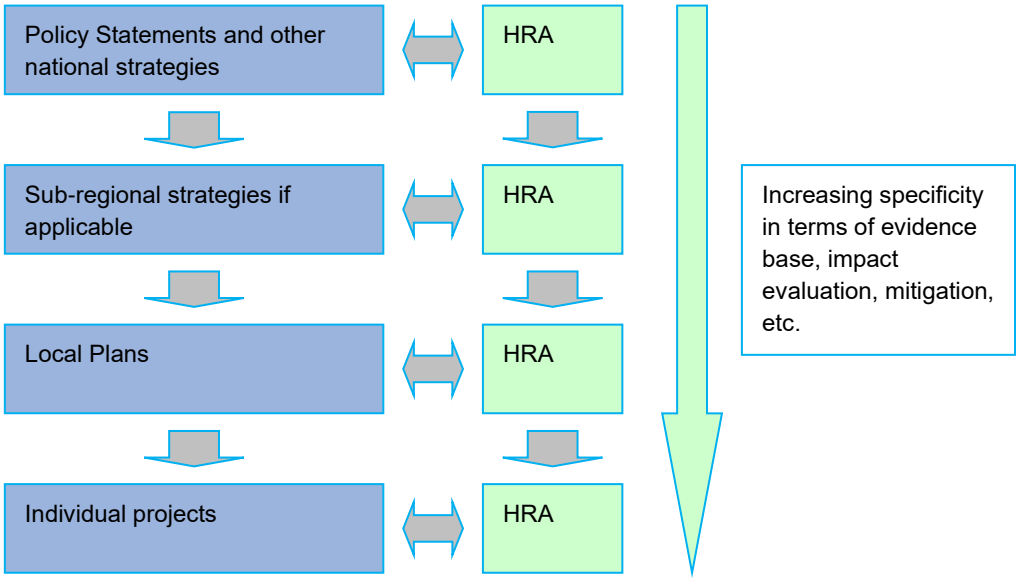
2.6 In evaluating significance, AECOM have relied on our professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the European sites considered within this assessment.

2.7 The level of detail in land use plans concerning developments that will be permitted under the plans will never be sufficient to make a detailed quantification of adverse effects. Therefore, we have again taken a precautionary approach (in the absence of more precise data) assuming as the default position that if an adverse effect cannot be confidently ruled out, avoidance or mitigation measures must be provided. This is in line with the former Department of Communities and Local Government guidance and Court rulings that the level of detail of the assessment, whilst meeting the relevant requirements of the Conservation Regulations, should be 'appropriate' to the level of plan or project that it addresses. This 'tiering' of assessment is summarised in Box 2.

Box 2. Tiering in HRA



2.8 In some cases initiatives are mentioned in the A414 Corridor Strategy as a single line statement but no further information is available at this plan level. In these cases the role of tiering in HRA has been carefully considered. For most if not all such initiatives an initial reference in the A414 Corridor Strategy will be followed by the development of a project to be delivered by a planning permission or other consenting regime. In these instances it would be inappropriate, and often impossible, to assess the impacts in detail at this level.

Other Plans and Projects That May Act 'In Combination'

2.9 It is neither practical nor necessary to assess the 'in combination' effects of the Plan within the context of all other plans and projects within Hertfordshire and the neighbouring local authorities. In practice therefore, in combination assessment is of greatest relevance when the plan would otherwise by screened out because its individual contribution is inconsequential. For the purposes of this assessment we have determined that, due to the nature of the identified impacts, the key other plans and projects relate to additional vehicle movements (and the subsequent contribution to air quality impacts).

2.10 The Minerals and Waste Development Framework for Hertfordshire may well contribute to increased vehicle movements on the road network within East Herts (and thereby contribute to air quality impacts). In addition, the Hertfordshire Local Transport Plan will be important in determining vehicle movements on the highways network in the short term. The East Herts, Harlow, Broxbourne, and Epping Forest district Local Plans are also of relevance to 'in combination' assessment for the same reasons.

3. Pathways of Impact

Air Quality and European Sites

3.1 The main sources and effects of air pollutants on habitats and species are set out below.

Table 1.Main sources and effects of air pollutants on habitats and species

Pollutant	Source	Effects on habitats and species
Acid deposition	SO_2, NOx and ammonia all contribute to acid deposition. Although future trends in SO_2 emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased NOx emissions may cancel out any gains produced by reduced SO_2 levels.	Can affect habitats and species through both wet (acid rain) and dry deposition. Some sites will be more at risk than others depending on soil type, bed rock geology, weathering rate and buffering capacity.
Ammonia (NH_3)	Ammonia is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but levels have increased considerably with expansion in numbers of agricultural livestock. Ammonia reacts with acid pollutants such as the products of SO_2 and NO_X emissions to produce fine ammonium (NH_4+)- containing aerosol which may be transferred much longer distances (can therefore be a significant trans-boundary issue.) Catalytic converters on vehicles are also a significant and increasing source of ammonia and are now calculated to amount to about 10% of UK emissions, although this can rise to 70-80% of the total NH_3 in urban centres. With regard to the effects on habitats and species, recent research[4] has shown that, because of its high deposition velocity, NH_3 can contribute around half of the total N deposition within the first few metres of busy roadsides.	Adverse effects are as a result of nitrogen deposition leading to eutrophication. As emissions mostly occur at ground level in the rural environment and NH_3 is rapidly deposited, some of the most acute problems of NH_3 deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides NO_x	Nitrogen oxides are mostly produced in combustion processes. About one quarter of the UK's emissions are from power stations, one-half from motor vehicles, and the rest from other industrial and domestic combustion processes.	Deposition of nitrogen compounds (nitrates (NO_3), nitrogen dioxide (NO_2) and nitric acid (HNO_3)) can lead to both soil and freshwater acidification. In addition, NO_x can cause eutrophication of soils and water. This alters the species composition of plant communities and can eliminate sensitive species.
Nitrogen (N) deposition	The pollutants that contribute to nitrogen deposition derive mainly from NO_X and NH_3 emissions. These pollutants cause acidification (see also acid deposition) as well as eutrophication.	Species-rich plant communities with relatively high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication, due to its promotion of competitive and invasive species which can respond readily to elevated levels of N. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O_3)	A secondary pollutant generated by photochemical reactions from NO_x and volatile organic compounds (VOCs). These are mainly released by the combustion of fossil fuels. The increase in combustion of fossil fuels in the UK has led to a large increase in background ozone concentration, leading to an increased number of days when levels across the region are above 40ppb. Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O_3 above 40 ppb can be toxic to humans and wildlife, and can affect buildings. Increased ozone concentrations may lead to a reduction in growth of agricultural crops, decreased forest production and altered species composition in semi-natural plant communities.
Sulphur Dioxide SO_2	Main sources of SO_2 emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO_2 emissions have decreased substantially in the UK since the 1980s.	Wet and dry deposition of SO_2 acidifies soils and freshwater, and alters the species composition of plant and associated animal communities. The significance of impacts depends on levels of deposition and the buffering capacity of soils.

[4] J.N. Cape, et al. 2004. Concentrations of ammonia and nitrogen dioxide at roadside verges, and their contribution to nitrogen deposition. Environmental Pollution 132 (2004) 469–478

3.2 According to the World Health Organisation, the critical NOx concentration (critical threshold) for the protection of vegetation is 30 μgm^{-3}; the threshold for sulphur dioxide is 20 μgm^{-3}. In addition, ecological studies have determined 'critical loads'[5] of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH_3) for key habitats within the European sites considered within this assessment.

3.3 Throughout the HRA it is assumed that an increase in rail usage means the potential for a decrease in cars and HGV's and is therefore a positive step for air quality. The Department of Transport have made the following comment on air quality issues as they relate to the transfer of freight movements from road to rail, which supports the approach we intend to take: "*It should be noted that in terms of total transport emissions, rail transport accounts for less than 1% of the total. Therefore, even with the most rail orientated transport options, perhaps doubling the rail kilometres, the potential for any significant impact on emissions will lie mainly with the saving in emissions from road transport brought about by modal transfer, rather than those generated by rail. Hence, it is suggested that emissions from rail sources can be scoped out in most cases*"[6].

Local Air Pollution

3.4 According to the Department of Transport's Transport Analysis Guidance, "Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant"[7].

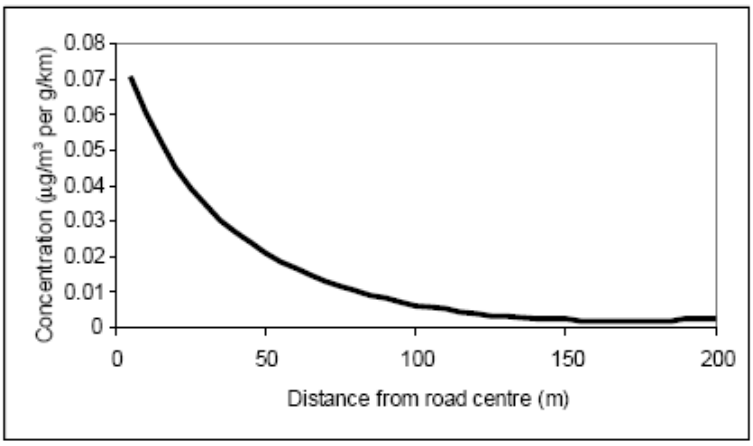


Figure 2. Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT)

3.5 This is therefore the distance that we have used throughout the HRA in order to determine whether European sites are likely to be significantly affected by road development under the A414 Corridor Strategy.

3.6 The following European sites lie within 200m of the major roads covered under the A414 Corridor Strategy:

- Lee Valley SPA and Ramsar site and;
- Wormley-Hoddesdonpark Woods SAC.

Noise/lighting and European sites

3.7 Increased traffic can be accompanied by increased noise impacts, although a 25% increase in traffic flows is required to achieve a 1 decibel increase in noise even at the roadside, while a 100% increase (i.e. a doubling) is required to achieve a 3 dB increase at the roadside[8]. For most sensitive terrestrial wildlife (e.g. birds, which have similar hearing threshold to humans) a decibel change of 3 dB is perceptible but is very

[5] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

[6] Department of Transport (2004). Transport Analysis Guidance: Regional Air Pollution. www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf

[8] Design Manual for Roads and Bridges. November 2011. Volume 11 (Environmental assessment), Section 3 (Environmental Assessment Techniques), Part 7 (Noise and Vibration), Page A1/3

unlikely to be disturbing. As such, noise from traffic only poses a risk of a likely significant effect if it will result in at least a doubling of vehicle flows on a road that lies very close to a European site.

3.8 Lighting is only likely to be an issue if the A414 Corridor Scheme results in the introduction of street lighting to roads within close proximity of European sites and which are currently unlit. This potentially applies to one European site within proximity to the scheme:

- Lee Valley SPA & Ramsar site

3.9 However, there are no proposals to introduce lighting on the stretch of the A414 past Lee Valley SPA and Ramsar site as part of the A414 Corridor Strategy.

Construction Disturbance effects

3.10 There is the potential for disturbance to European designated sites during the construction of some of the options within the A414 Corridor Strategy. This would be primarily through noise disturbance from construction activities. The factors that influence a species response to a disturbance are numerous, but three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity.

3.11 The noisiest construction activities (e.g. percussive driven piling) could reasonably be expected to generate noise levels of c. 110 dB at 1m distance from source. Research indicates that noise levels in excess of 84 dB(A) cause a flight response in waterfowl, while levels below 55 dB have no effect[9]. These thresholds therefore define the two extremes. Research by the same authors recommends that '*Ambient construction noise levels should be restricted to below 70dBA* [at the bird]*; birds will habituate to regular noise below this level'*[10]. Atmospheric noise attenuates by 6 dB for every doubling of distance from source. Therefore, even when percussive driven piling is undertaken, noise levels will generally be below 70dB at 100m from source.

3.12 Therefore, for atmospheric noise, this HRA considers that a screening distance of 500m is adequately precautionary. A single European site designated for its animal interest falls within this distance:

- Lee Valley SPA & Ramsar site

European Sites Considered

3.13 Due to their proximity to the major roads covered under the A414 Corridor Strategy, the following two European sites were taken into consideration within this HRA assessment:

- Lee Valley SPA and Ramsar site; and
- Wormley-Hoddesdonpark Woods SAC.

3.14 No other European sites have been discussed within the assessment as no other schemes proposed within the A414 Corridor Strategy are within close proximity of any European sites. The A414 Corridor Strategy splits the corridor into 14 segments, numbered sequentially from west to east. This assessment has focussed on Segments 13 and 14 only, which broadly cover the A10 corridor through Broxbourne and the part of the A414 which connects the A10 with Harlow. One intervention within Segment 11 has been assessed due to its potential proximity to Wormley-Hoddesdonpark Woods SAC.

[9] Cutts N & Allan J. 1999. Avifaunal Disturbance Assessment. Flood Defence Works: Saltend. Report to Environment Agency)
[10] Cutts, N., Phelps, A. and Burdon, D. (2009) Construction and waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA, Institute of Estuarine and Coastal Studies, University of Hull

4. Likely Significant Effects

Introduction

4.1 The HRA screening exercise (determination of likely significant effects) has focussed on screening the A414 Corridor Strategy for Segments 13 and 14 only as these are the only segments that contain internationally important wildlife sites, and one intervention within Segment 11 that potentially passes close to Wormley-Hoddesdonpark Wood SAC. No other segments contain interventions that provide impact pathways to affect European designated sites and therefore the remaining interventions in Segments 1 to 12 can all be considered unlikely to result in significant effects on European sites alone or 'in combination'. The assessment considers the impact pathways discussed in Section 3: air quality and noise and visual disturbance during operation and construction. This is because no other linking impact pathways between the Strategy and European sites have been identified.

Screening

4.2 Table 2 below presents the HRA Screening for each scheme option in Segments 13 and 14, and a single scheme option within Segment 11.

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Table 2. HRA Screening (Likely Significant Effects) for each Option in Segments 13 and 14. Green shading indicated that there is no cause for concern, whilst orange shading indicates an HRA 'issue'

Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
11	40	Hertford bypass (South)	Hertford Southern Bypass	No HRA implications. The closest part of the proposed bypass route options pass approximately 380m north of Wormley-Hoddesdonpark Woods SAC. There are therefore no anticipated air pollution impacts on the designated site. Although the proposed route options pass within 500m of the designated site, the site is designated for habitats and therefore increased noise during construction will not adversely affect the features for which the site is designated.	Review the need for a strategic intervention around Hertford, for example a bypass, to facilitate the Mass Rapid Transit system and the sustainable travel interventions in Hertford. Once further work has been done to identify the preferred option and route for the MRT, more work is needed to determine whether a strategic highway intervention is needed in Hertford.	No Likely Significant Effect, since the 2019 Strategy simply identifies an action to review the need for a strategic intervention such as a bypass.
13	172	Designated Lorry Parks (M1 J8, A1M J4, A10 Cheshunt) and consolidation of laybys	Introduction of new lorry park with toilets, showers and refreshment facilities at key locations along the corridor to intercept north-south and east-west HGV movements, combined with a review and consolidation of laybys to reduce long term HGV parking along the route. (Might be more than one lorry park)	No HRA implications. These new lorry parks will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. The introduction of new lorry parks should not increase the number of lorries using the route as the aim is to reduce parking in laybys.	Not included in final strategy	N/A
13	255	Brookfield Development Area / A10 Turnford interchange	Includes new site accesses onto the A10 at the Turnford Interchange and the B156.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark	Not included in final strategy	N/A

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				Woods SAC.		
13	277	Crossrail 2	New rail link connecting Broxbourne, Cheshunt and Waltham Cross stations to Surrey via an underground tunnel through London.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. A new rail link should decrease the number of cars on the road, reducing air pollution.	Not included in final strategy	N/A
13	278	West Anglia Main Line 4 Tracking	Four tracking of existing two track stretch between Coppermill Junction (just south of Tottenham Hale) and Broxbourne Junction. Would be required as part of Crossrail 2 but could be delivered independently in advance.	Potential HRA implications. This section of the track is approximately 450m from the Lee Valley SPA/Ramsar site. Based on the scoping distances identified in the preceding section, construction noise associated with increasing the number of tracks therefore requires further investigation before forming a conclusion on whether they would affect the wildfowl for which the site is designated. This is therefore discussed further in this report, before a conclusion on Likely Significant Effects is reached.	Not included in final strategy	N/A
13	384	High Leigh to Broxbourne bus service	Provide a new bus service running every 30 minutes between High Leigh and Broxbourne Station via Hoddesdon Town Centre.	No HRA implications. A new bus route should reduce the number of cars on the road, reducing air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	385	Waltham Cross Station to Brookfield bus service	Provide a new bus service running every 20 minutes between Waltham Cross Station and Brookfield via Cheshunt Station, Delamare Road and Hertford Regional College.	No HRA implications. A new bus route should reduce the number of cars on the road, reducing air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
13	386	Park Plaza to Waltham Cross Station bus service	Provide a new bus service running every 15 minutes between Park Plaza and Waltham Cross Station via Waltham Cross Town Centre.	No HRA implications. A new bus route should reduce the number of cars on the road, reducing air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	387	Re-routing of the 242 bus	Re-route the existing 242 bus service between Potters Bar and Waltham Cross into the Rosedale Park North development site to provide a service every 30 minutes.	No HRA implications. Re-routing a bus service to provide a service in an additional area should reduce the number of cars on the road, reducing air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	388	Turnford railway station	New station at Turnford	No HRA implications. Providing a new station would increase the number of people using the train, and would therefore reduce the number of cars on the road. This would in turn reduce air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	389	Park Plaza railway station	New station at Park Plaza West	No HRA implications. Providing a new station would increase the number of people using the train, and would therefore reduce the number of cars on the road. This would in turn reduce air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	390	Broxbourne bus stop upgrades	Provide new and upgraded bus stops across the Borough including shelters, seating, lighting, raised kerbs, and timetables	No HRA implications. Providing new and upgraded bus stops would increase the number of people using the bus, or improve facilities for those already travelling using this method. This would reduce the number of cars on the road and in turn reduce air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
13	391	Selective Vehicle Detection systems	Introduce Selective Vehicle Detection systems to provide priority for buses along the old A10 at (i) Junction of Station Road / High Road, Broxbourne, (ii) Vancouver Road / A1170, Turnford, (iii) Church Lane / Turners Hill, Cheshunt, and (iv) Old Pond, Cheshunt.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. Improving bus services should reduce the number of cars on the road and in turn reduce air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	392	Waltham Cross bus station shelters	Provision of new and improved bus shelters at Waltham Cross Train station to be served by extension of existing services from Waltham Cross Bus Station.	No HRA implications. Providing new and upgraded bus stops would increase the number of people using the bus, or improve facilities for those already travelling using this method. This would reduce the number of cars on the road and in turn reduce air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	393	Broxbourne Station access improvements	Junction improvements on Station Road to improve access/egress into Broxbourne Station.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. Improving a junction should help to reduce idling vehicles and therefore air pollution.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	394	Real time bus information	Provide real time information displays at bus stops on all commercial routes.	No HRA implications. This is an upgrade to bus stops and will not negatively affect European designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	395	Real time bus information	Provide real time information	No HRA implications.	Included in the final Strategy	No Likely Significant Effect

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
			displays in areas which generate a large number of trips (i.e. doctors' surgeries, shopping centres and train stations).	This is an upgrade to the information provided on local bus services and will not negatively affect European designated sites.		for the same reason given in 2018
13	396	Broxbourne integrated ticketing	Promotion of the existing Intalink mobile app (an electronic ticket for use on buses across the County)	No HRA implications. This is an upgrade to the payment methods on local bus services and will not negatively affect European designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	397	Broxbourne integrated ticketing	Development of an integrated BUSnet ticket for Broxbourne, allowing passengers to purchase one ticket for unlimited travel on all services within a given zone, improving the ease of interchange and reducing the cost of bus travel.	No HRA implications. This is an upgrade to the payment methods on local bus services and will not negatively affect European designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	398	Dinant Link Road/Essex Road roundabout improvements	Signalised crossing on western arm of Dinant Link Road / Essex Road roundabout.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	399	Charlton Way footpath improvements	Footpath along western side of Charlton Way between Haslewood Avenue and Dinant Link Road.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	400	Dinant Link Road/Amwell	At grade signalised crossing of	No HRA implications.	Included in the final Strategy	No Likely Significant Effect

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
		Street junction improvements	Dinant Link Road at junction with Amwell Street.	This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts.		for the same reason given in 2018
13	401	Lord Street widened footway	Treatment of Lord Street to widen footway and remove conflicts with parked cars along its length	No HRA implications. Most of this scheme will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. Lord Street does run immediately north of Wormley Hoddesdonpark Woods SAC; however, this section is rural such that there is a reduced need for such a footway and if any footway were needed it would not involve landtake from the SAC or excavation below the tree canopy that overhangs the road. This scheme would not have negative air quality impacts.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	402	Cheshunt Station bus stop route improvements	Improve pedestrian links between Cheshunt Station and bus stops being provided as part of the Delamare Road development.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
13	403	Old Pond junction improvements	Old Pond: Reconfiguration of Old Pond junction to provide signalised junction and crossing points for pedestrians.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	404	Broxbourne cycle network improvements	Improve facilities on the existing cycle network and provide new routes to create a more connected and coherent network.	No HRA implications. All the identified cycle scheme options will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	405	Boxbourne signage upgrades	Provide appropriate signage across the cycle network.	No HRA implications. This option will provide appropriate signage within the cycling network and will not negatively affect European designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	406	Broxbourne routing improvements	Introduce measures to encourage more walking and cycling along the old A10 including raised tables, widening of footways, and a review of speed limits.	No HRA implications. The identified locations for these measures will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				negative air quality impacts as it aims to encourage more non-motorised vehicle use of the route.		
13	407	School safety scheme	Create School Safety Zones outside every school within the Borough, to prioritise pedestrians and other vulnerable road users over general traffic.	No HRA implications. This option will improve safety outside schools, and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	408	Level crossing closures	Level crossing closures at Trinity Lane, Cadmore Lane and Slipe Lane.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	409	Park Lane bridge	Provide a pedestrian / cycle bridge at Park Lane to cross the railway line and allow access into Park Plaza North.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	410	Park Plaza bridge	Provide a pedestrian / cycle bridge over the A10 between Park Plaza North and Park Plaza West.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				Woods SAC. This scheme would not have negative air quality impacts on designated sites.		
13	411	Broxbourne crossing improvements	Provide dropped kerbs with tactile paving at all pedestrian crossing points within the Borough.	No HRA implications. This option will improve pedestrian crossing points, and will not negatively affect European designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	412	Broxbourne cycle parking	Provide significant increases in the volume of cycle parking at key trip generators within Broxbourne.	No HRA implications. This option will improve cycling facilities with the aim of reducing traffic volumes, and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	413	Area wide travel plans	Develop, implement and monitor a series of Area Wide Travel Plans with employers in Hoddesdon, Waltham Cross, Brookfield and Park Plaza. Raise awareness of travel choices, and encourage the take up of alternatives to car. Workplace, School, Residential and Station Travel Plans help to provide a detailed understanding of the travel patterns and issues associated with specific sites and identify a series of measures through which individuals can benefit from broader travel choice, particularly in terms of sustainable travel.	No HRA implications. This option will encourage modes of transport other than cars, with the aim of reducing traffic volumes and therefore air pollution, and will not negatively affect European designated sites.	Not included in final strategy	N/A

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
13	414	Station travel plans	Develop, implement and monitor Station Travel Plans at Broxbourne, Cheshunt and Waltham Cross Stations. Raise awareness of travel choices, and encourage the take up of alternatives to car. Workplace, School, Residential and Station Travel Plans help to provide a detailed understanding of the travel patterns and issues associated with specific sites and identify a series of measures through which individuals can benefit from broader travel choice, particularly in terms of sustainable travel.	No HRA implications. This option will encourage modes of transport other than cars, with the aim of reducing traffic volumes and therefore air pollution, and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	415	School travel plans	Develop, implement and monitor Travel Plans at all schools across the Borough through which to raise awareness of travel choices, and encourage the take up of alternatives to car. Investment in access and safety measures in areas surrounding schools should be driven by the details within a School Travel Plan and an active role for both school and local authority in monitoring and evaluating their success.	No HRA implications. This option will encourage modes of transport other than cars, with the aim of reducing traffic volumes and therefore air pollution, and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	416	Journey planning	Undertake a programme of Personalised Journey Planning with target groups. Provision of high quality, bespoke and accessible information on sustainable travel through personalised journey planning, real time information displays and the use of smartphone based technology to enable individuals to make more informed	No HRA implications. This option will encourage modes of transport other than cars, with the aim of reducing traffic volumes and therefore air pollution and will not negatively affect European designated sites.	Not included in final strategy	N/A

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
			travel choices.			
13	417	Strategy communication	Produce and implement a Communications Strategy associated with all measures to be delivered through the Strategy. Provision of high quality, bespoke and accessible information on sustainable travel through personalised journey planning, real time information displays and the use of smartphone based technology to enable individuals to make more informed travel choices.	No HRA implications. This option will encourage modes of transport other than cars, with the aim of reducing traffic volumes and therefore air pollution and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	418	Car sharing	Develop and promote car share schemes. The development and management of a car club or car sharing scheme helps to provide access to car based travel for those with limited income. It addresses social exclusion issues, whilst also ensuring more effective use of road space through increasing car occupancy and therefore reducing the potential number of vehicles on the network.	No HRA implications. This option will encourage car sharing, with the aim of reducing traffic volumes and therefore air pollution and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	419	Broxbourne charging points	Provide a network of charging points across the Borough for electric vehicles. By greening car use through providing a network of electric charging points for vehicles for example, it contributes towards a move away from petrol or diesel based vehicles which are the cause of many air quality and other environmental concerns.	No HRA implications. This option will encourage the use of electric vehicles, with the aim of reducing air pollution from conventional vehicles on the road and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	420	Parking charges at stations	Introduce on street parking charges in areas around Stations to tackle	No HRA implications.	Not included in final strategy	N/A

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
			long stay commuter parking related problems.	This option relates to parking charges and will not negatively affect European designated sites.		
13	421	Residents parking permit	Introduce residents parking permit schemes in areas of high parking demand.	No HRA implications. This option relates to parking in residential areas and will not negatively affect European designated sites.	Not included in final strategy	N/A
13	422	M25 junction 25 improvements	M25: Capacity improvement at M25 J25, through the provision of a dedicated left turn lane for northbound traffic off the M25 and the widening of the A10 southbound on its approach to the junction.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	423	A10 Park Plaza junction improvements	A10: Modify existing 3-arm junction on A10 to provide an at-grade 4-arm junction for access into Park Plaza North & West.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
13	424	A10/A121 junction improvements	A10: Provide a 'hamburger' style signalised junction with N/S priority at the intersection of the A10 junction with the A121 Monarch's Way and B198 Lieutenant Ellis Way (Park Plaza junction).	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	425	Lieutenant Ellis Way junction	Lieutenant Ellis Way: New 4-arm junction on Lieutenant Ellis Way to the north of Park Plaza.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	426	College Road / A10 junction improvements	College Road: At grade improvement at College Road / A10 junction, providing additional northbound and southbound lanes at the junction and increased length of northbound left filter into College Road, and banning all right turns.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				flows.		
13	427	Church Lane / A10 junction improvements	Church Lane: At grade highway capacity improvement at Church Lane / A10 junction, providing an additional north-south lane through the junction and banning all right turns and left turns onto the A10.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	428	Church Lane / High Street, Cheshunt roundabout improvements	Church Lane: Reconfiguration of Church Lane / High Street, Cheshunt roundabout to provide signalised junction and crossing points for pedestrians.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	429	Church Lane / Flamstead End Road roundabout improvements	Church Lane: Reconfiguration of Church Lane / Flamstead End Road roundabout to provide signalised junction and crossing points for pedestrians.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				reduce congestion by improving flows.		
13	430	Turnford Link Road	Brookfield (Turnford Link Road): Construction of a Halfhide Lane to Turnford Interchange Link Road, together with provision of a new western arm at the A10 Turnford Interchange	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	431	Halfhide Lane Link Road	Brookfield (Halfhide Lane Link Road): Construction of new link road immediately to the west of the A10 providing a link from Halfhide Lane north to Hells Wood, where it turns westwards to connect to the Turnford Link Road via a new roundabout, and south to 'The Links' to provide access to Tesco and from the A10 off-slip.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	432	Garden Village Distributor Road	Brookfield (Garden Village Distributor Road): Provision of new distributor road to serve the new Brookfield development.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				designated sites, as its aim is to reduce congestion by improving flows.		
13	433	Brookfield junction improvements	Brookfield: Reconfiguration of the 4-arm signlaised junction on Halfhide Lane at junction with The Links and the access road into Brookfield Retail Park, by removing access to/from The Links and allowing only movements into (and not out of) the Retail Park.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	434	Marriott roundabout improvements	Brookfield: Provision of additional capacity at Marriott Roundabout	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	435	Goffs Lane Reconfiguration	Goffs Lane: Reconfiguration of Newgatestreet Road / Cuffley Hill / Goffs Lane junction give way to provide signalised junction with crossing points for pedestrians.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.		
13	436	New Roundabout on Dinant Link Road	Dinant Link Road: New "dumb-bell" roundabout on Dinant Link Road to permit access into High Leigh development.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	437	Dinant Link Road/Ware Road roundabout improvements	Dinant Link Road: Sun roundabout improvements (junction of Dinant Link Road and Ware Road) to provide additional lane on eastbound arm of roundabout.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	438	Hertford Road/Ware Road roundabout improvements	Hertford Road: Hertford Road / Ware Road roundabout improvements to provide additional eastbound and southbound lanes at respective arms of the junction.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
				This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.		
13	439	New Essex Road bridge	Essex Road: Provision of new Essex Road Bridge.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	440	Essex Road junction improvements	Essex Road: Improvements to roundabout at junction with Dinant Link Road.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	441	Update Network Signage	Update the network signage across the Borough to reflect the new access arrangements on/off the A10 at Church Lane.	No HRA implications. This option is to update existing signage across the Borough, and will not negatively impact European designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	442	New A10 Secondary School	Provision of a new access into the secondary school site from the A10	No HRA implications.	Included in the final Strategy	No Likely Significant Effect for the same reason given in

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
		Access	spur road to the south.	This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites.		2018
13	443	New Church Lane Secondary School Access	Provision of a new access into the secondary school site from Church Lane to the north.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
13	446	A414 Bus Rapid Transit	A passenger transport link offering greater speeds and reliability than traditional bus services, linking Hemel Hempstead Rail Station in the west to Welwyn Garden City in the east, with potential future extensions to Hertford and Harlow.The service would be expected to operate relatively free from the impacts of traffic congestion using bus priority measures and segregation. The scheme seeks to remedy some of the current east west connectivity deficiencies in the county and enhance interurban connectivity. The scheme could potentially serve park and ride sites on the edges of	No HRA implications. This option is to provide a passenger transport link, separate from traditional bus services. This will not negatively impact European designated sites, and may reduce the number of vehicles on the road, in turn reducing air pollution.	Not included in final strategy	N/A

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
			the towns it serves.			
14	253	New and improved access roads and junctions to serve Gilston north of Harlow	New and improved access roads and junctions to serve the development, including a second highway crossing of the River Stort. A414 Strategy will consider additional requirements, including need for a full Harlow northern bypass linking the A414 with Junction 7a.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
14	262	Harlow A414 multiple junctions	Various A414 junction upgrades to support new development in Harlow	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Included in the final Strategy	No Likely Significant Effect for the same reason given in 2018
14	263	M11 J7	Junction upgrade scheme included in Highways England Road Investment Strategy 2015 -2020	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Not included in final strategy	N/A

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Segment	Option ID	Option	Option Description in Draft 2018 Strategy	Screening Conclusion for 2018 Strategy	Included in 2019 Strategy?	Revised Screening Conclusion
14	270	M11 J7A	New junction on the M11 to improve connections between Harlow and the M11, reduce congestion and provide development opportunities.	No HRA implications. This site will be more than 500m from the Lee Valley SPA/Ramsar site and Wormley-Hoddesdonpark Woods SAC. This scheme would not have negative air quality impacts on designated sites, as its aim is to reduce congestion by improving flows.	Not included in final strategy	N/A
14	446	A414 Bus Rapid Transit	A passenger transport link offering greater speeds and reliability than traditional bus services, linking Hemel Hempstead Rail Station in the west to Welwyn Garden City in the east, with potential future extensions to Hertford and Harlow.The service would be expected to operate relatively free from the impacts of traffic congestion using bus priority measures and segregation. The scheme seeks to remedy some of the current east west connectivity deficiencies in the county and enhance interurban connectivity. The scheme could potentially serve park and ride sites on the edges of the towns it serves.	No HRA implications. This option is to provide a passenger transport link, separate from traditional bus services. This will not negatively impact European designated sites, and may reduce the number of vehicles on the road, in turn reducing air pollution.	Not included in final strategy	N/A

Air Quality

4.3 Wormley-Hoddesdonpark Woods SAC lies within 200m of the A10 at grid reference 535600,208750. However, this applies to a very small part of the site (approximately 500m^2) much of which is a track/path/arable field boundary and which constitutes approximately 0.01% of the SAC. Moreover it is situated on the edge of the 200m zone, being no closer to the A10 than 190m at any point. As such, it is considered that increases in traffic movements on the A10 could not lead to a likely significant effect on the interest features of this SAC through changes in local air quality, due to the very small area of the SAC potentially affected and the negligible extent to which it is likely to be affected given it is 190m from the road. This was also the conclusion of the East Herts Local Plan Habitat Regulations Assessment (which considered the implications of increased traffic on this part of the A10 due to the delivery of new housing and employment).

4.4 Parts of the Lee Valley SPA and Ramsar site are sensitive to deterioration in air quality, as the supporting habitat consists of terrestrial features that can be degraded by excessive deposition of pollutants. The Ramsar site is partly designated for its aquatic plant life, specifically the whorled water milfoil, which is dependent on calcareous water (and thus susceptible to acidification of the aquatic environment). The only portion of the SPA/Ramsar site that that is located within 200m of a major road is Rye Meads SSSI located within 200m of the A414. In consultation over the East Herts Local Plan HRA Natural England confirmed that they were not concerned regarding traffic-related air quality on this road at this component of the SPA and Ramsar site. The only habitat within 100m of the A414 is semi-improved dry grassland and the only ecologically valuable habitat within the 100-200m zone (floodplain grazing marsh) has a high nitrogen tolerance.

4.5 Moreover, none of the interventions within Segments 13 and 14 should increase the number of vehicles on the road, and therefore air pollution. Many of the scheme options involve improving rail and bus services, which as outlined in Paragraph 3.3 should result in a decrease in cars and HGV's. Therefore, this is a positive step for air quality. Junction improvements throughout Segments 13 and 14 are similarly aimed at reducing congestion thus improving traffic flows and reducing emissions. This is particularly the case when considered alongside the expected improvements in NOx emission factors that will result from the further deployment of Euro6/VI standard vehicles into the British vehicle fleet, meaning that a given volume and composition of traffic in 2030 (for example) can be expected to emit significantly less NO_2 than the same volume and composition of traffic moving at the same average speed does in 2019.

Disturbance during Construction

4.6 The majority of scheme options are outside of the 500m screening distance threshold for atmospheric noise. One scheme option in the 2018 Strategy - West Anglia Main Line 4 Tracking - is 450m from the Lee Valley SPA/Ramsar site. However, that scheme has not been take forward to the final 2019 Strategy and as outlined in Paragraph 3.10, even if it was revived in the future ambient construction noise levels can be expected to fall below 70dBA at the SPA given the distance from the works and the physics of noise attenuation, even if noisy piling works were involved. Therefore, construction noise within the railway, approximately 450m from the SPA/Ramsar site, would not cause a flight response in the waterfowl within the SPA/Ramsar site.

In Combination Effects

4.7 The schemes outlined in the A414 Corridor Strategy will occur coincidentally with an increase in housing and employment developments within authorities across the study area, including East Herts, Broxbourne, Harlow and Epping Forest Districts. The increase in housing and employment sites in these areas is likely to result in an increase in traffic on the road network. The A414 Corridor Strategy aims to improve capacity on this road network.

4.8 The A414 aims to improve non-car transport routes and methods, and improve junction capacity, in turn reducing congestion and queueing. The reduction in congestion may increase actual flows on the A414 due to fewer vehicles diverting to other routes. However, the reduction in congestion and queueing is likely to have a positive air quality effect that would outweigh any associated increase in flows.

4.9 The consideration of traffic-related air quality implications across the road network associated with housing and employment growth should be considered within each relevant district's Local Plan.

5. HRA Conclusions

5.1 The majority of initiatives aim to improve rail and bus services, which as outlined in Paragraph 3.3 should result in a decrease in cars and HGV's. Therefore, this is a positive step for air quality. None of the initiatives within Segments 13 and 14, or the single initiative assessed within Segment 11 should increase the number of vehicles on the road, and therefore result in deteriorating air quality. None of the initiatives taken forward for inclusion in the final strategy will result in construction or operational disturbance of European sites, since they are all beyond the 500m screening distance threshold for atmospheric noise. No other impact pathways linking the Strategy to European sites was identified.

5.2 It is therefore possible to conclude that no likely significant effects will arise from the final A414 Corridor Strategy either alone or in combination with other plans and projects.

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Appendix A Figure depicting original initiatives assessed in 2018

Appendix B Background to Internationally Designated Sites

Lee Valley SPA and Ramsar Site

Introduction

The Lee Valley comprises a series of embanked water supply reservoirs, sewage treatment lagoons and former gravel pits along approximately 24 km of the valley. These waterbodies support internationally important numbers of wintering gadwall and shoveler, while the reedbeds support a small but internationally important population of bittern. In addition to the ornithological interest, the site also qualifies as a Ramsar site on account on rare and scarce plants and invertebrates present.

The Lee Valley SPA/Ramsar consists of four Sites of Special Scientific Interest, of which Turnford and Cheshunt Pits SSSI, Rye Meads SSSI and Amwell Quarry SSSI all lie on the Hertfordshire/Essex border. Walthamstow Reservoirs SSSI lies within London Borough of Waltham Forest. The Special Protection Area is managed by the Lee Valley Regional Park Authority and by Thames Water.

Reasons for Designation

The Lee Valley site is designated as an SPA[11]: for its Birds Directive Annex I and Ramsar site under criterion 6[12] for species that over-winter, and these are:

- Bittern *Botaurus stellaris;*
- Gadwall *Anas strepera;*
- Shoveler *Anas clypeata.*

In addition, the site qualifies as a Ramsar under criterion 2[13], by supporting the nationally scarce plant species whorled water-milfoil *Myriophyllum verticillatum* and the rare or vulnerable invertebrate *Micronecta minutissima* (a water-boatman).

Current Pressures and Threats[14]

- Water pollution
- Hydrological changes
- Public disturbance
- Inappropriate scrub control
- Fishing
- Air pollution
- Inappropriate cutting and mowing
- Invasive species

Conservation Objectives[15]

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features

[11] http://jncc.defra.gov.uk/page-2047-theme=default [accessed 11/05/2018]
[12] http://jncc.defra.gov.uk/pdf/RIS/UK11034.pdf [accessed 11/05/2018]
[13] Ibid
[14] http://publications.naturalengland.org.uk/file/5788502547496960 [accessed 11/05/2018]
[15] http://publications.naturalengland.org.uk/file/5168095937167360 [accessed 11/05/2018]

- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

Wormley-Hoddesdonpark Woods SAC

Introduction

This SAC consists of two SSSIs – Wormley-Hoddesdonpark Woods North and Wormley-Hoddesdonpark Woods South and is situated on the southern border of East Herts, with part of the SAC in Broxbourne. The semi-natural woodland is of national importance as an example of lowland south-east sessile oak/hornbeam type with the pedunculate oak/hornbeam variant also present. Additionally, small ponds and streams are important habitats for bryophytes.

Reasons for Designation[16]

Wormley-Hoddesdonpark Woods qualifies as a SAC through its habitats, containing the Habitats Directive Annex I habitat:

- Oak-hornbeam forests – this is one of only two outstanding locations for such habitat in the UK.

Current Pressures and Threats[17]

- Disease
- Invasive species
- Air pollution
- Deer
- Illicit vehicle
- Woodland/ forestry management
- Recreation

Conservation Objectives[18]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which qualifying natural habitats rely

[16] http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013696 [accessed 11/05/2018]
[17] http://publications.naturalengland.org.uk/file/6541134543192064 [accessed 11/05/2018]
[18] http://publications.naturalengland.org.uk/file/6475250191564800 [accessed 11/05/2018]

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