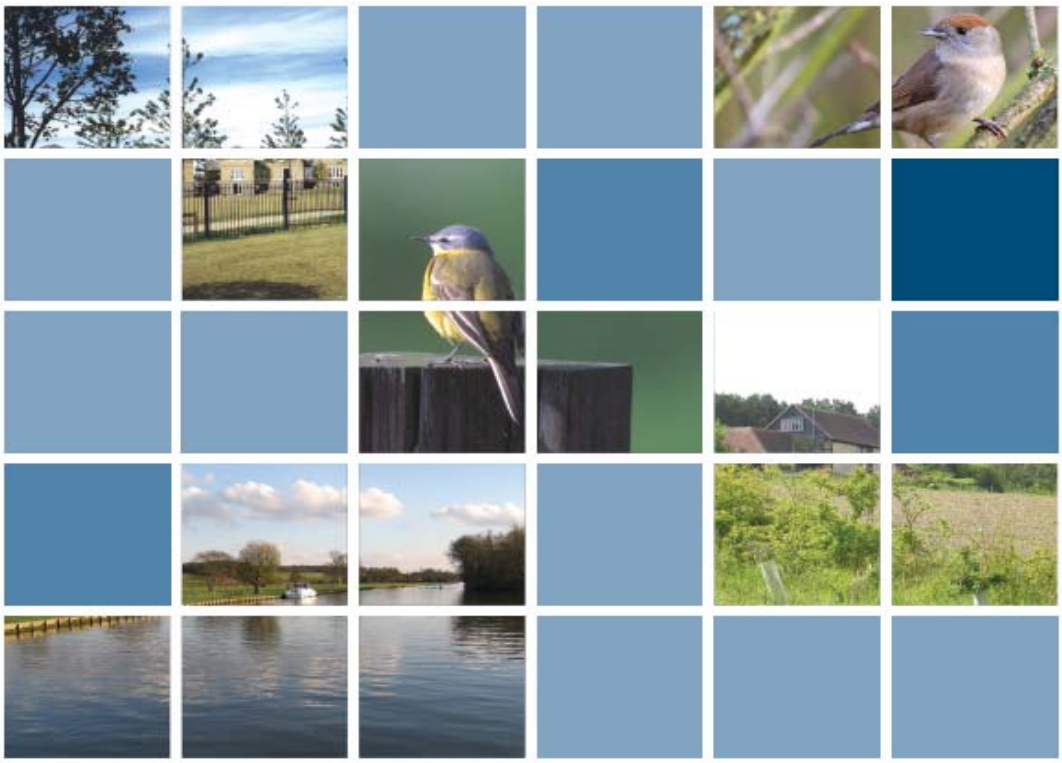
Appropriate Assessment and Air Quality Local to the Pevensey Levels Ramsar Site

A Report to Support the Appropriate Assessment for Rother, Wealden, Hastings and Eastbourne Core Strategies

June 2009



Revision Schedule

APPROPRIATE ASSESSMENT AND AIR QUALITY LOCAL TO THE PEVENSEY LEVELS RAMSAR SITE

June 2009

Rev	Date	Details	Prepared by	Reviewed by	Approved by
02	27 May 2009	Final Report	**Dr. James Riley** Senior Ecological Consultant	**Dr Jo Hughes** Technical Director	**Dr Jo Hughes** Technical Director
03	30 June 2009	Final Report amended	**Dr. James Riley** Senior Ecological Consultant	**Dr Jo Hughes** Technical Director	**Dr Jo Hughes** Technical Director

Scott Wilson
6 – 8 Greencoat Place
London
SW1P 1PL

Tel 020 7798 5000
Fax 020 7798 5001

www.scottwilson.com

Table of Contents

1 Executive Summary

1.1.1 Several Sussex planning authorities (Rother, Eastbourne, Wealden and Hastings) are intending to address the issue of local air quality within the Pevensey Levels Ramsar site, particularly within 200m of the A259 which traverses the Levels, and the adverse changes that may occur as a result of the increase in the vehicle fleet associated with the delivery of 25,600 dwellings across the districts and boroughs to 2026.

1.1.2 The Pevensey Levels are designated as a Ramsar site because they support an outstanding assemblage of wetland plants and invertebrates including many British Red Data Book species. Moreover, the site supports 68% of vascular plant species in Great Britain that can be described as aquatic. It is probably the best site in Britain for freshwater molluscs, one of the five best sites for aquatic beetles and supports an outstanding assemblage of dragonflies. One of Britain's largest and rarest spiders, the fen raft spider *Dolomides plantarius* has its stronghold at Pevensey. The site also supports a notable assemblage of breeding and wintering wildfowl including wintering lapwing and snipe and breeding sedge warblers and reed warblers which nest in the scrub and reeds in the ditches respectively.

1.1.3 The first stage of any HRA is a Likely Significant Effect (LSE) test - essentially a risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. In this case the local authorities all undertook the LSE test 'in house'. This document presents the Appropriate Assessment section of the Habitat Regulations Assessments for Rother, Hastings, Eastbourne and Wealden as it applies to air quality impacts on the Pevensey Levels Ramsar site. Following a meeting with Natural England on 17/12/09, it was agreed that an approach that made the best use of existing data was acceptable and appropriate and that Natural England had no requirement at this strategic level for the authorities to carry out air quality modelling. As such, use was made of the atmospheric nitrogen sensitivity and deposition data provided by the UK Air Pollution Information System (APIS) and existing traffic modelling predictions for future vehicle flows on the A259 supplied by East Sussex County Council.

1.1.4 The steps that were followed for undertaking this assessment with regard to air quality issues were as follows:

- Determine what proportion of the Ramsar site is within 200m of the A259 and any minor roads that the authorities have reason to believe are likely to experience a substantial increase in traffic as a result of the planned development
- Interrogate the UK Air Pollution Information System (APIS) to determine whether the current background NOx concentration is beyond the critical level for the key habitats within the Ramsar site (i.e. those habitats on which the invertebrates and birds rely and for which the site was designated).
- Estimate the relative increase in traffic generation along the A259 by the end of the plan period.
- Use the percentage increase in traffic to determine the likely increase in nitrogen deposition.

1.1.5 It was established from APIS that background levels of nitrogen deposition and NOx concentrations within the Pevensey Levels for 2026 are predicted to be well below the critical load and critical level. By 2026, a 140% increase in NOx and 61% increase in nitrogen deposition would be necessary to exceed the critical load and critical level.

1.1.6 Traffic modelling from East Sussex County Council predicted a 49% increase in vehicles using the A259 by the end of the plan period. It was determined that this increase in traffic flows would relate to a probable NOx concentration 61% below the levels at which damage can be expected to result to the habitats and vegetation of value to the interest features of this site and a probable nitrogen deposition rate 54% lower than the critical load for the habitats on the Pevensey Levels Ramsar site.

1.1.7 Using this simple appraisal, it seems unlikely that the additional housing to be delivered across the four districts will, even when considered 'in combination' with each-other and the other contributors to a predicted increase in vehicle movements on the A259 (such as the emerging East Sussex Waste & Minerals Development Framework) result in exceedence of the critical level or critical load for the Pevensey Levels Ramsar site, particularly when one considers the increase vehicle flows within the context of current national predictions that exhaust emissions are likely to improve over the plan period. No measures to either avoid or mitigate effects will therefore be required because the predicted increase in traffic is unlikely to cause either NOx concentrations or rates of nitrogen deposition to exceed the critical level or critical load.

1.1.8 Natural England have been consulted on this report and commented that they: '*would concur with the conclusion that while there is likely to be an increase in nitrogen deposition and NOx concentrations these will still be below the Critical Levels applicable to Pevensey Levels and therefore there is unlikely to be a significant effect on the Ramsar site from the proposed levels of housing from these pollutants*'.

2 Introduction

2.1.1 In October 2005, the European Court of Justice ruled that the UK had failed to correctly transpose the provisions of Articles 6(3) and (4) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora – the Habitats Directive – into national law. Specifically, the UK had failed to ensure that land use plans are subject to Appropriate Assessment where they might have a significant effect on a Natura 2000 site (Special Areas of Conservation, SACs and Special Protection Areas, SPAs). It is Government policy (as described in Planning Policy Statement 9: Biodiversity & Geological Conservation) for sites designated under the Convention on Wetlands of International Importance (Ramsar sites) to be treated as having equivalent status to Natura 2000 sites. As such, Appropriate Assessments should also cover these sites.

2.1.2 Over the past few years, the term 'Habitat Regulations Assessment' (HRA) has come into usage in order to distinguish the entire process required to comply with the Conservation (Natural Habitats &c) Regulations and the specific stage referred to in Regulation 48 as an 'appropriate assessment'.

2.1.3 The need for HRA is set out within Article 6 of the EC Habitats Directive 1992, and interpreted into British law by Regulation 48 of the Conservation (Natural Habitats &c) Regulations 1994 (as amended in 2007). 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.

2.1.4 The Habitats Directive applies the precautionary principle to protected areas; plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. This is in contrast to the SEA Directive which does not prescribe how plan or programme proponents should respond to the findings of an environmental assessment; it simply says that the assessment findings (as documented in the 'environmental report') should be 'taken into account' during preparation of the plan or programme. In the case of the Habitats Directive, plans and projects 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.

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

Box 1. The legislative basis for Habitat Regulations 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 (Natural Habitats &c. Regulations) 1994 (as amended)

Regulation 48 states 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*".

2.1.6 Following the European Court ruling, the former Office of the Deputy Prime Minister (ODPM; now CLG) indicated that the regulations implementing the Habitats Directive in the UK would be amended to ensure that HRA explicitly applies to land use plans. Planning Policy Statement (PPS) 9 states that Ramsar sites (wetlands of international importance) should receive the same protection as designated SACs and SPAs.

2.1.7 This document presents the Appropriate Assessment section of the Habitat Regulations Assessments for Rother, Hastings, Eastbourne and Wealden as it applies to air quality impacts on the Pevensey Levels Ramsar site.

2.2 Background

2.2.1 Current levels of understanding of air quality effects on semi-natural habitats are not adequate to allow a rigorous assessment of the likelihood of significant effects on the integrity of key European sites.

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

Pollutant	Source	Effects on habitats and species
Acid deposition	SO_2, NO_x and ammonia all contribute to acid deposition. Although future trends in sulphur emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased nitrogen emissions may cancel out any gains produced by reduced sulphur 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.

Pollutant	Source	Effects on habitats and species
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).	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.

2.2.2 The main pollutants of concern for European sites are oxides of nitrogen (NO_x), ammonia (NH_3) and sulphur dioxide (SO_2). NO_x can have a directly toxic effect upon vegetation. In addition,

greater NO_x or ammonia concentrations within the atmosphere will lead to greater rates of nitrogen deposition to soils. An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats. Sulphur dioxide deposition can lead to acidification of calcareous or mesotrophic habitats and thus a change in their species composition away from calcicolous plant species and towards those which are more typical of acidic habitats.

2.2.3 Sulphur dioxide emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil. Ammonia emissions are dominated by agriculture, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO_2 or NH_3 emissions will be associated with new housing development. NO_x emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). Within a 'typical' housing development, by far the largest contribution to NO_x (92%) will be made by the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison[1]. Emissions of NO_x could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the Core Strategy development.

2.2.4 According to the World Health Organisation, the critical NO_x concentration (critical level) for the protection of vegetation is 30 μgm^{-3} while the level for sulphur dioxide is 20 μgm^{-3}. In addition, ecological studies have determined 'critical loads'[2] of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH_3).

2.2.5 The National Expert Group on Transboundary Air Pollution (2001)[3] concluded that:

- In 1997, critical loads for acidification were exceeded in 71% of UK ecosystems. This was expected to decline to 47% by 2010.
- Reductions in SO_2 concentrations over the last three decades have virtually eliminated the direct impact of sulphur on vegetation.
- By 2010, deposited nitrogen was expected to be the major contributor to acidification, replacing the reductions in SO_2.
- Current nitrogen deposition is probably already changing species composition in many nutrient-poor habitats, and these changes may not readily be reversed.
- The effects of nitrogen deposition are likely to remain significant beyond 2010.
- Current ozone concentrations threaten crops and forest production nationally. The effects of ozone deposition are likely to remain significant beyond 2010.
- Reduced inputs of acidity and nitrogen from the atmosphere may provide the conditions in which chemical and biological recovery from previous air pollution impacts can begin, but

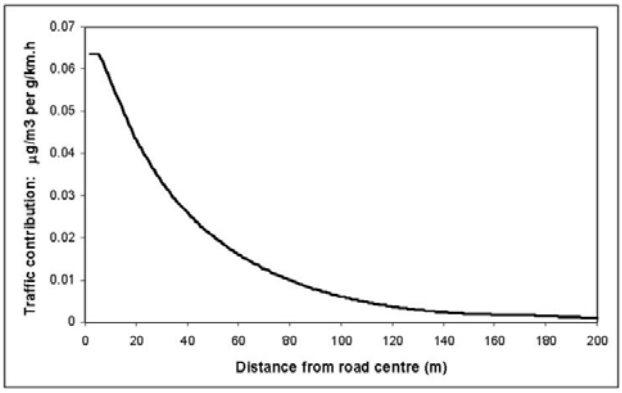
[1] Proportions calculated based upon data presented in Dore CJ *et al* (2005). *UK Emissions of Air Pollutants 1970 – 2003*. UK National Atmospheric Emissions Inventory [online] available at: http://www.airquality.co.uk/archive/index.php (accessed 12 August 2008).
[2] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur
[3] National Expert Group on Transboundary Air Pollution (2001). *Transboundary Air Pollution: Acidification, Eutrophication and Ground-Level Ozone in the UK* [online] available at: http://www.maposda.net/negtap/finalreport.htm (accessed 13 August 2008).

the timescales of these processes are very long relative to the timescales of reductions in emissions.

2.2.6 Research by AEA Technology suggests that background air quality throughout the UK will improve very significantly over the next 10-15 years, primarily as a result of tightening Euro emission standards for cars and lorries and cleaner energy generation[4]. However, the model used does not include the higher housing figures being proposed in various RSS's, nor recent government proposals for new power stations (for instance it assumes that the number of fossil fuel burning power stations will decrease from 23 in 2005 to 12 in 2010 and 5 in 2020). A recent Defra study[5] also suggests that assumptions about vehicle emissions should add 15% to Euro emission standards to take account of real-world effects such as poor maintenance, low tyre pressure, poor driving, and increasing use of air conditioning. Defra's Air Quality Expert Group (2007) "*recommends that local authorities, and any other users of the future-year adjustment factors, currently provided by Defra to adjust monitoring data, should exercise caution, as actual decreases in NO_2 concentrations at some sites may be considerably smaller than those calculated using these adjustment factors*"[6].

2.2.7 According to the Department for Transport's Transport Analysis Guidance, "*Beyond 200m* [from the centreline of the road]*, the contribution of vehicle emissions … to local pollution levels is not significant*"[7] (Figure 1).

Figure 1: Traffic contribution to pollution at different distances from the road centre[8]



[4] Grice, S. *et al* (2006). *Baseline projections of air quality in the UK for the 2006 review of the Air Quality Strategy*, report to Defra *et al* [online] available at: http://www.airquality.co.uk/archive/reports/cat16/0604041040_baselineprojectionsreport5.pdf (accessed 14 May 2008); and Grice, S. et al. (2007). *Updated projections of air quality in the UK for base case and additional measures for the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007*, report to Defra *et al* [online] available at: http://www.airquality.co.uk/archive/reports/cat17/0707171116_newbaselineandadditionalmeasuresreport_v6.pdf (accessed 14 May 2008).

[5] Defra (2007). *Passenger transport emissions factors: Methodology paper* [online] available at: http://www.defra.gov.uk/environment/business/envrp/pdf/passenger-transport.pdf (accessed 14 May 2008).

[6] Air Quality Expert Group (2007). *Trends in primary nitrogen dioxide in the UK* [online] available at: http://www.defra.gov.uk/environment/airquality/publications/primaryno2-trends/pdf/executive-summary.pdf (accessed 7 July 2008)

[7] Department for Transport (2003). *Transport Analysis Guidance (TAG) - The Local Air Quality Sub-objective*, TAG Unit 3.3.3 [online] available at: http://www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf (accessed 13 August 2008)

[8] Department for Transport (2007). *Design Manual for Roads and Bridges: Volume 11* – Environmental Assessment, Section 2, Part 1 Air Quality [online] available at: http://www.standardsforhighways.co.uk/dmrb/vol11/section3/ha20707.pdf (accessed 13 August 2008)

The Pevensey Levels Ramsar site

2.2.8 The Pevensey Levels are designated as a Ramsar site because they support an outstanding assemblage of wetland plants and invertebrates including many British Red Data Book species. Moreover, the site supports 68% of vascular plant species in Great Britain that can be described as aquatic. It is probably the best site in Britain for freshwater molluscs, one of the five best sites for aquatic beetles and supports an outstanding assemblage of dragonflies. One of Britain's largest and rarest spiders, the fen raft spider *Dolomides plantarius* has its stronghold at Pevensey. The site also supports a notable assemblage of breeding and wintering wildfowl including wintering lapwing and snipe and breeding sedge warblers and reed warblers which nest in the scrub and reeds in the ditches respectively.

2.2.9 The key environmental conditions of importance in sustaining the site integrity are:

- Unpolluted water
- Low levels of nutrient enrichment (primarily from surface runoff and hydrological pathways, but also from atmospheric deposition)
- Control of non-native species (e.g. pennywort and *Crassula* sp.)
- Maintenance of appropriate hydrological regime
- Control of recreational disturbance

2.3 Air quality and the Pevensey Levels

2.3.1 Several Sussex planning authorities (Rother, Eastbourne, Wealden and Hastings) are intending to address the issue of local air quality within the Pevensey Levels Ramsar site, particularly within 200m of the A259 which traverses the Levels, and the adverse changes that may occur as a result of the increase in the vehicle fleet associated with the delivery of 25,600 dwellings across the districts and boroughs to 2026.

2.3.2 Natural England (Rebecca Pearson) was briefly consulted at an initial stage and referred the Councils to the Design Manual for Roads and Bridges[9], Department for Transport Interim Advice Note 61/05 and the detailed method for modelling future changes in nitrogen deposition within 200m of the roadside, as it relates to designated sites.

2.3.3 It remains exceptionally difficult to quantify the effect of atmospheric nitrogen deposition on vegetation in a non-experimental context. While there is considerable experimental research indicating that nitrogen deposition is a problem for vegetation, predicting the actual effects on the ground in uncontrolled 'normal' conditions (particularly with regard to wetland habitats) is very challenging. As a result, the critical loads for nitrogen deposition and critical levels for NOx, as available on the website www.apis.ac.uk, are generally used as a surrogate standard against which to evaluate adverse effects – exceedence of the critical level/load is assumed to mean a

[9] Various. 2007. Design Manual for Roads & Bridges: Volume 1, Section 3, Part 1. Annex F: Assessment of Designated Sites

deleterious effect on the ecological resource[10]. The conclusion of adverse effect is thus hypothetical - it is always possible that subsequent vegetation monitoring would reveal no perceptible adverse effects of increased nitrogen deposition because these are dwarfed by the changes in vegetation caused by the weather or by relatively subtle shifts in management.

Is detailed modeling appropriate at this level?

2.3.4 The Assessment Procedure outlined in the Design Manual for Roads & Bridges provides a detailed step-by-step process for modelling future nitrogen deposition local to sites designated for their nature conservation interest. However, the detailed methodology was developed with specific highways projects in mind. It is our contention that such detailed air quality modeling would be appropriate for an EIA or project-level Appropriate Assessment, but is inappropriate for Appropriate Assessment at the strategic planning level since it exceeds the requirements of government guidance. The CLG guidance[11] on Appropriate Assessment of land use plans makes it clear that:

2.3.5 "*The comprehensiveness of the* [Appropriate] *assessment work undertaken should be proportionate to the geographical scope of the option and the nature and extent of any effects identified. An AA need not be done in any more detail, or using more resources, than is useful for its purpose. It would be inappropriate and impracticable to assess the effects* [of a strategic land use plan] *in the degree of detail that would normally be required for the Environmental Impact Assessment (EIA) of a project*."

2.3.6 A similar view of the appropriateness of detailed modelling at the strategic planning level (although not expressed within the context of Appropriate Assessment) is set out within 'Air Quality: Planning for Action' (pg. 21)[12] which states that '… *an assessment prior to implementation should … include the costs of implementation and the other impacts (positive and negative) which may occur, without the need, at this stage, to carry out complex modelling*'.

2.3.7 Following a meeting with Natural England on 17/12/09, it was agreed that our approach was acceptable and that Natural England had no requirement at this strategic level for the authorities to carry out air quality modelling.

[10] In addition, the Department for Transport have defined 2 μgm^{-3} as representing a degree of increase in NOx concentration due to traffic that would give cause for concern
[11] CLG (2006) *Planning for the Protection of European Sites: Appropriate Assessment*, Consultation Paper
[12] http://www.environmental-protection.org.uk/assets/library/documents/AQActionPlansLAGuide.pdf

3 Methodology

3.1 Process

3.1.1 The HRA has been carried out in the absence of formal Government guidance. Communities and Local Government released a consultation paper on Appropriate Assessment of Plans in 2006[13]. As yet, no further formal guidance has emerged.

3.1.2 Figure 2 below outlines the stages of HRA according to current draft CLG 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.

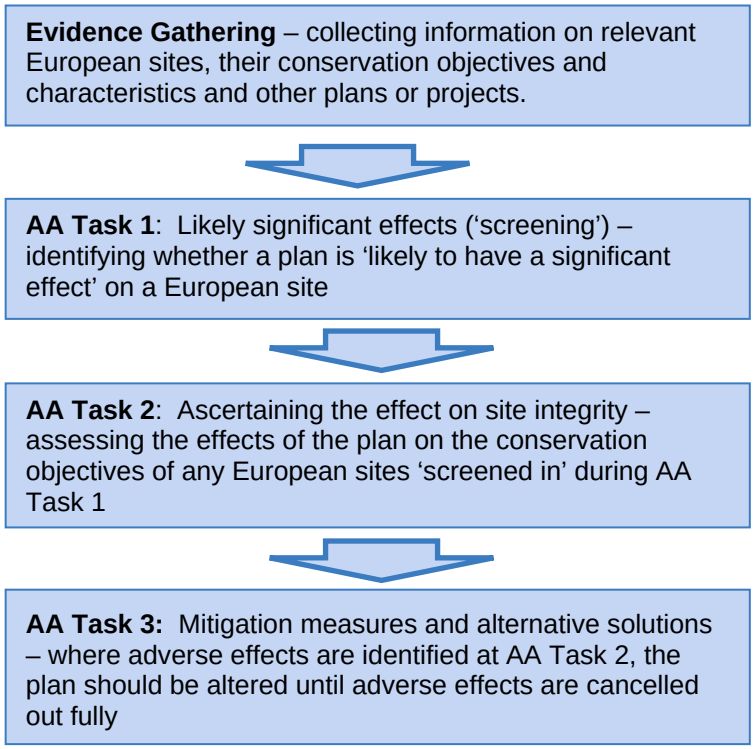


Figure 2 - Four-Stage Approach to Habitat Regulations Assessment
Source: CLG, 2006

[13] CLG (2006) *Planning for the Protection of European Sites*, Consultation Paper

3.2 Likely Significant Effects (LSE)

3.2.1 The first stage of any HRA 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:

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

3.2.3 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.

3.2.4 In this case, each of the authorities carried out screening exercises and these in consultation with Natural England led to the conclusion that adverse air quality effects from the four Core Strategies on the Pevensey Levels Ramsar site could not be screened out and therefore required Appropriate Assessment. The authorities took the decision to work collaboratively on this project which was met with approval from Natural England.

3.3 Appropriate assessment

3.3.1 When a plan cannot be 'screened out' as being unlikely to lead to significant effects on European sites, it is necessary to progress to the later 'Appropriate Assessment' stage to explore the potential adverse effects and if necessary devise mitigation.

3.3.2 The steps that were followed for undertaking this assessment with regard to air quality issues are as follows:

- Determine what proportion of the Ramsar site is within 200m of the A259 and any minor roads that the authorities have reason to believe are likely to experience a substantial increase in traffic as a result of the planned development
- Interrogate the UK Air Pollution Information System (APIS) to determine whether the current background NOx concentration is beyond the critical level for the key habitats within the Ramsar site (i.e. those habitats on which the invertebrates and birds rely and for which the site was designated).
- Estimate the relative increase in traffic generation along the A259 by the end of the plan period.
- Use the percentage increase in traffic to determine the likely increase in nitrogen deposition.

3.3.3 In evaluating significance, Scott Wilson has relied on our professional judgement as well as stakeholder consultation. We believe that we are in an excellent position to provide such judgement given our previous experience in undertaking HRA of plans in the East of England, South East and North West at RSS, LDF and Area Action Plan levels.

3.3.4 The level of detail concerning developments that will be permitted under land use 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 CLG guidance that the level of detail of the assessment, whilst meeting the relevant requirements of the Habitats Regulations, should be 'appropriate' to the level of plan or project that it addresses.

3.4 Confirming other plans and projects that may act in combination

3.4.1 It is neither practical nor necessary to assess the 'in combination' effects of the Core Strategies within the context of all other plans and projects within Sussex. Following advice from Natural England it was determined that the principal approach to 'in combination' assessment should be to not only appraise the housing and commercial development to be delivered under a single Core Strategy but for those to be delivered by the Core Strategies for Eastbourne, Hastings, Rother and Wealden to be considered 'in combination'. In addition to the four Core Strategies, an increase in vehicles on the A259 may also be expected to arise from the East Sussex Minerals & Waste Development Framework.

4 Appropriate Assessment

4.1 Background air quality for the Ramsar site

4.1.1 Using a grid reference of TQ660060, the situation in 2000 according to www.apis.ac.uk (to a resolution of 5km)[14] is depicted in the table below. In order to take account of the fact that the data are historic, Department for Transport Interim Advice Note 61/05 states that "*the total average deposition rates obtained from the Air Pollution Information System for 2000 should be reduced by 2% per year to estimate* [background] *deposition rates for the assessment years* [without the project or plan]"[15]. If one works on the conservative assumption that improvements will level off after 2010 (the last year for which the 2% reduction has been modelled), this means that the baseline at the time the Core Strategy allocations are complete and operational (i.e. the time when the effects of the four Core Strategies will be strongest) will be 20% lower than the 2000 data.

Year	**Habitat**	**Minimum critical load for Nitrogen deposition**	**Modelled nitrogen deposition**	**Critical level of NOx (as NO_2)[16]**	**Modelled NOx concentration (as NO_2)**
2000	*Grazing marsh*[17]	20 $kgNha^{-1}yr^{-1}$	15.5 $kgNha^{-1}yr^{-1}$	30 μgm^{-3}	15.6 μgm^{-3}
2026 (assuming the 2% p.a. improvements described in IAN 61/05 level off after 2010)	*Grazing Marsh*	20 $kgNha^{-1}yr^{-1}$	12.4 $kgNha^{-1}yr^{-1}$	30 μgm^{-3}	12.48 μgm^{-3}

4.1.2 It can be seen that both background levels of nitrogen deposition and NOx concentrations are well below the critical load and critical level respectively. In 2000, a 92% (14.4 μgm^{-3}) increase in NOx and 29% (4.5 $kgNha^{-1}yr^{-1}$) increase in nitrogen deposition would be needed in order to exceed the critical level/load. By 2026, a 140% increase in NOx and 61% increase in nitrogen deposition would be necessary.

[14] APIS data accurate as of 15/03/09
[15] Based on the results of trans-boundary deposition modelling for 1997 and 2010, deposition of reduced and oxidised nitrogen is expected to decrease on average across Britain by 1.5% and 2.6% per annum respectively due to increasingly stringent emission limits. As the deposition of oxidised nitrogen is expected to decrease faster than that of reduced nitrogen, the proportion of the total nitrogen deposited from reduced nitrogen will increase in the future. It is expected to have reached 60% by 2010. If reduced and oxidised nitrogen are assumed to contribute to total deposition in equal proportions, then the annual decrease in nitrogen deposition can be assumed to be 2% (estimated in a non cumulative manner, i.e. decrease over 5 years is 5 x 2% = 10%). The deposition changes will not be linear across the country but 2% should be indicative of the typical change
[16] NOx is referenced on APIS as if it was all in the form of NO_2. This is partly because the concentrations of NO_2 and NO in air are inextricably linked through their atmospheric chemistry and partly because little is known of the direct effects of NO alone. In rural air, away from sources of NO, most of the nitrogen oxides in the atmosphere are in the form of NO_2 in any case
[17] Grazing marsh has been selected since it is the habitat for which critical loads have been calculated that most closely corresponds to habitats within the Ramsar site. Note that critical loads have not yet been determined for open water habitats such as ditches and as such are not available on APIS

4.2 Estimate of increase in vehicle flows along the A259

4.2.1 According to data collated by National Statistics[18], 27% of households in Britain have no car, 44% of households have one car and 29% of households have two or more cars. If one applies these statistics to the current numbers of households in the four districts[19], this equates to 136,626 cars currently within the districts. If one applies the same statistics to the new housing figures for the four districts[20], there can be expected to be roughly 18,381 additional cars during the plan period, i.e. a 13.5% increase.

4.2.2 In order to enable us to be more precise in our assessment we have been able to obtain traffic modeling from East Sussex County Council for the increased volume of traffic predicted on the A259 between the junction with the A27 and the junction with the B2095 by 2025 (i.e. one year away from the end of the current plan period when vehicle levels will be at their highest)[21]. This corresponds with the stretch of the A259 that traverses the Pevensey Levels Ramsar site. The results of this traffic modeling are shown below.

Predicted flows for the A259 across the Pevensey Levels from Low/High intensity Smarter Choices measures scenarios (vehicles per hour)						
	Low Intensity			High Intensity		
	Morning peak (0700hrs-1000hrs)	Inter-peak period	Evening peak (1600hrs-1900hrs)	Morning peak (0700hrs-1000hrs)	Inter-peak period	Evening peak (1600hrs-1900hrs)
A259/A27 through to A259/B2095	2570	1997	2823	2552	1984	2805
Note: Comparison of flows from traffic model with on-street data shows predicted flows likely to be approx 11% low						

4.2.3 Assuming one uses the worst case scenario predictions (the Low Intensity figures) and allows for the likely 11% inaccuracy these data indicate that an average of 31,259 vehicles per day is predicted for 2025, which compares with a current baseline of approximately 21,000 vehicles per day[22] i.e. a 49% increase. It is reasonable to assume that a large proportion of this increase will be due to journeys arising from the new housing to be delivered across the four districts, with Eastbourne, Hastings, South western Rother (Bexhill) and southern Wealden (Hailsham) making the greatest contribution due to their greater proximity to this section of the A259. The increased traffic flow also includes increases in heavy vehicle movements over the same period, such as can be expected from the expansion in waste and minerals facilities under the East Sussex Minerals & Waste Development Framework.

[18] Office for National Statistics. Census 2001, General Register Office for Scotland. These data do include company cars or vans if used for private journeys
[19] Total housing stock across the four districts is as follows: 41,999 dwellings in Rother, 40,918 dwellings in Eastbourne, 63,439 dwellings in Wealden and 40,803 dwellings in Hastings = 187,159 in total
[20] 25,180 dwellings to 2026
[21] Note that the traffic predictions have not been adjusted to allow for the additional 3,000 homes to be delivered in Wealden district under the adopted South East Plan (May 2009) compared with the draft RSS (2006). The implications of this are discussed later.
[22] traffic measurements for this stretch of road identified flows as 21,000 vehicles per day (which by DfT air quality management classification puts it below the threshold for a 'busy' road). Source: A27/ A259/ A26 Emsworth to Hastings Route Management Strategy - Final Report

4.3 NOx concentrations

4.3.1 If one draws a rough equivalence between the estimated percentage increase in traffic flow and the percentage increase in NOx emissions[23], this means that NOx emissions from traffic on the A259 could also be expected to increase by 49%. If one makes the generous assumption that all NOx emitted will be deposited within the Ramsar site this will raise the modelled background NOx concentrations for 2026 to approximately 18.6 μgm^{-3}. This is likely to be an overestimate, since in reality a large proportion of the emitted NOx will be carried further afield and this does not take account of the improvements in vehicle exhaust emissions that can be expected after 2010. However, even this generous estimate would still leave the site with a NOx concentration 61% below the levels at which damage can be expected to result to the habitats and vegetation of value to the interest features of this site.

4.3.2 The fact that the additional 3,000 homes to be delivered in Wealden under the adopted South East Plan (a 13% increase on the numbers across the four authorities in the draft South East Plan) were not incorporated into the traffic model means that traffic flows on the A259 by 2025 may have been underestimated. However, there is a sufficiently large margin for error between the predicted NOx concentration and the critical level that the overall conclusion of no adverse effect is likely to remain despite any underestimate.

4.4 Nitrogen deposition

4.4.1 IAN61/05 contains the following conversion factor[24] for calculating rates of nitrogen deposition from NOx (as NO_2):

$$1\mu g/m^3 \text{ of } NO_2 = 0.1 \text{ kg N ha/yr}$$

4.4.2 An increase of 6.1 μgm^{-3} of NOx as NO_2 would therefore result in an increase in nitrogen deposition of approximately 0.61 $kgNha^{-1}yr^{-1}$ which would result in an overall deposition rate of 13.01 kg N ha/yr which is still 54% lower than the critical load for the habitats on the Pevensey Levels Ramsar site.

4.5 Conclusion

4.5.1 Using this simple appraisal, it seems unlikely that the additional housing to be delivered across the four districts will, even when considered 'in combination' with each-other and the other contributors to a predicted increase in vehicle movements on the A259 (such as the emerging East Sussex Waste & Minerals Development Framework) result in exceedence of the critical level or critical load for the Pevensey Levels Ramsar site, particularly when one considers the increase vehicle flows within the context of current national predictions that exhaust emissions are likely to improve over the plan period. No measures to either avoid or mitigate effects will

[23] Department for Transport Interim Advice Note 61/05 states that "*The change in emissions from traffic can determined by the change in traffic flow, speed and proportion of heavy duty vehicles (HDV)*". Therefore, if one assumes that the speed and proportion of HDV's remain broadly the same, a 10% change in flow is likely to result in a 10% change in emissions.
[24] Based on a deposition velocity for NO_2 of 0.001 m/s

therefore be required because the predicted increase in traffic is unlikely to cause either NOx concentrations or rates of nitrogen deposition to exceed the critical level or critical load.

4.5.2 Natural England have been consulted on this report and commented that they: '*would concur with the conclusion that while there is likely to be an increase in nitrogen deposition and NOx concentrations these will still be below the Critical Levels applicable to Pevensey Levels and therefore there is unlikely to be a significant effect on the Ramsar site from the proposed levels of housing from these pollutants*'.

Holland, Sue

From: Ashdown, Marian (NE) [Marian.Ashdown@naturalengland.org.uk]
Sent: 20 December 2011 14:34
To: Holland, Sue
Subject: RE: Habitats Regulations Assessment

Hi Sue

Sorry I didn't manage to get back to you – I was out on site all day (in the rain – yuk!). Yes I agree that the Scott Wilson document is the HRA that you need and as long as the policies/housing numbers are not significantly different then this document could be used for your current core strategy.

Kind regards
Marian

From: Holland, Sue [mailto:Sue.Holland@eastbourne.gov.uk]
Sent: 20 December 2011 09:49
To: Ashdown, Marian (NE)
Cc: Cameron, Iona
Subject: Habitats Regulations Assessment

Good morning Marian

I have tried to contact you by telephone, but thought I would now email you, regarding the HRA.

Having looked further into the requirements, it has become apparent to me that the HRA is in effect an Appropriate Assessment. Eastbourne commissioned Scott Wilson to carry out an AA of the RAMSAR site at Pevensey Levels in 2009.

Comments from Nigel Jennings at NE on this report were made at the time, as follows: "Marian Ashdown and I have looked through the report and would concur with the conclusion that while there is likely to be an increase in the N Deposition and NOx concentrations these will still be below the Critical Levels applicable to Pevensey Levels and therefore there is unlikely to be a significant effect on the Ramsar site from the proposed levels of housing from these pollutants."

I have attached the AA and would be grateful if you can confirm whether or not this is adequate to cover this stage of the Core Strategy for us, bearing in mind proposals have not significantly changed from those put forward in 2009.

Many thanks

Sue

Sue Holland MRTPI, MA
PLANNING POLICY
1 Grove Road, Eastbourne, East Sussex, BN21 4TW
Tel: +44 (0)1323 41**5255** Fax: +44 (0)1323 641842 Minicom: +44 (0)1323 415111
Email: sue.holland@eastbourne.gov.uk
WWW: <http://www.eastbourne.gov.uk>