

Hastings Borough Council: Ashdown Forest Air Quality Impact Assessment 2018

Traffic-Related Effects on Ashdown Forest SAC

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1 Introduction and methodology

1.1 Introduction

- 1.1.1 Ashdown Forest is an extensive area of common land lying between East Grinstead and Crowborough entirely within Wealden District. The soils are derived from the predominantly sandy Hastings Beds. It is one of the largest single continuous blocks of heath, semi-natural woodland and valley bog in south-east England, and it supports several uncommon plants, a rich invertebrate fauna, and important populations of heath and woodland birds. It is both a Special Area of Conservation (SAC) and Special Protection Area (SPA), underpinned by designation as a Site of Special Scientific Interest (SSSI). However, the interest features of the SSSI are broader than those of the SAC and SPA.
- 1.1.2 The SPA is designated for its populations of breeding Dartford Warbler *Sylvia undata* and Nightjar *Caprimulgus europaeus*. The SAC is designated for its Annex I habitats, namely Northern Atlantic wet heaths with *Erica tetralix* and European dry heaths; as well as for its Annex II species, namely Great Crested Newts.
- 1.1.3 Vehicle exhaust emissions are capable of adversely affecting the protected heathland found in Ashdown Forest. In April 2018 AECOM undertook an air quality impact assessment for Lewes District Council, South Downs National Park Authority, Tunbridge Wells Borough Council and Sevenoaks District Council, which modelled forecast traffic growth on key roads within 200m of Ashdown Forest SAC over the period 2017 to 2033. This included traffic expected due to the quantum and distribution of growth in the adopted Lewes Joint Core Strategy and the South Downs, Tunbridge Wells and Sevenoaks Local Plans. It also included growth in other authorities (such as Mid-Sussex District and Wealden District). The methodology used in that analysis is compliant with the requirement of the Conservation of Habitats and Species Regulations 2017 to consider whether an adverse effect on the integrity of a European site will result either alone, or in combination with other plans and projects.
- 1.1.4 Since that modelling was undertaken, Hastings Borough Council commissioned AECOM to advise them on the likely significant effects of housing and employment growth in Hastings Borough on Ashdown Forest SAC and SPA over the period from 2017 to 2033. That is the subject of this report.
- 1.1.5 AECOM was also asked to consider the air quality implications of growth in Hastings Borough for Pevensey Levels SAC and Ramsar site and for Lewes Downs SAC. However, it is not considered that further modelling is required to assess these sites:
- Pevensey Levels SAC/Ramsar site - The UK Air Pollution Information System provides detailed evidence concerning critical loads for particular SACs and makes it clear that there is no nitrogen critical load, NO_x critical level or ammonia critical level applicable to the interest feature of the SAC (*Anisus vorticulus*). Natural England's Site Improvement Plan for the SAC also provides no indication that air quality is a concern for this site. Given the specific nature of the interest features of the SAC and associated Ramsar site (namely the rare wetland plant and insect communities associated with the ditches on site) it is considered that the most important macronutrient to control to protect these interest features will be phosphorus from agriculture and treated sewage effluent discharge, rather than nitrogen. This is the case for most freshwater sites. Phosphorus is not derived from vehicle emissions, further underlining the lack of sensitivity of the SAC to vehicle emissions.
 - Lewes Downs SAC – Hastings Borough Council provided estimated traffic flow data for the A27 and A26 in the vicinity of Lewes Downs SAC attributable to growth in their authority to 2033. The A27 can be discounted as it lies more than 200m from the SAC and thus beyond the area that could be affected by local road emissions. AECOM has previously modelled the 'in combination' flows on the A26 past Lewes Downs SAC for South Downs National Park Authority and Lewes District Council. This modelling forecast that NO_x concentrations and nitrogen deposition rates would fall below the critical level (for NO_x) and critical load (for nitrogen deposition to calcareous grassland) by 2030 at the nearest areas of calcareous grassland, situated c. 50m from the A26. On this link, the total contribution to additional nitrogen deposition of all forecast traffic growth is 0.14 kgN/ha/yr at the closest area of

calcareous grassland. The total forecast nitrogen deposition rate at this location is 14.39 kgN/ha/yr and the critical load is 15kgN/ha/yr. Therefore, nitrogen deposition due to additional traffic beyond that modelled (from whatever source) would need to be four times that currently expected from all traffic growth in order for the critical load to be exceeded at this location.

- 1.1.6 Therefore, this report focusses on Ashdown Forest SAC and SPA. Natural England has been consulted on this report and the document has been updated in line with their comments. Natural England has confirmed that they ‘...fully support the conclusions that expected growth in Hastings to 2033, including the Local Plan, existing permissions and the emerging Area Action Plan will not result in an adverse effect on the integrity of Ashdown Forest either alone or in combination with other plans or projects’.

1.2 Methodology

- 1.2.1 The methodology for the air quality modelling in this analysis is identical to that for the wider modelling undertaken collectively for South Downs National Park, Lewes District Council, Sevenoaks District Council and Tunbridge Wells Borough and reported separately¹. However, both that modelling and its conclusions are summarised in this document as they form the basis for this analysis. Most recently, the model was updated to allow for additional flows attributable to a Civic Development in Royal Tunbridge Wells (April 2018). It is that iteration of the modelling that is used as the basis for this analysis. The modelling reported in this document involves taking the previous model and re-running it to allow for the additional flows attributable to Hastings development in the Do Something scenario.
- 1.2.2 Vehicle exhaust emissions generally only have a local effect within a narrow band along the roadside, within 200m of the centreline of the road. Beyond 200m emissions are considered to have dispersed sufficiently that atmospheric concentrations are essentially background levels. The rate of decline is steeply curved rather than linear. In other words concentrations will decline rapidly as one begins to move away from the roadside, slackening to a more gradual decline over the rest of the distance up to 200m.
- 1.2.3 There are two measures of particular relevance regarding air quality impacts from vehicle exhausts and which are modelled using standard forecasting. The first is the concentration of oxides of nitrogen (known as NO_x) in the atmosphere. In extreme cases NO_x can be directly toxic to vegetation but its main importance is as a source of nitrogen, which is then deposited on adjacent habitats. The guideline atmospheric concentration advocated by Government for the protection of vegetation is 30 micrograms per cubic metre (µg^m⁻³), known as the Critical Level, as this concentration relates to the growth effects of nitrogen derived from NO_x on vegetation.
- 1.2.4 The second important metric is a measure of the rate of the resulting nitrogen deposition. The addition of nitrogen is a form of fertilization, which can have a negative effect on heathland and other habitats over time by encouraging more competitive plant species that can force out the less competitive species that are more characteristic. Unlike NO_x in atmosphere, the nitrogen deposition rate below which we are confident effects would not arise is different for each habitat. The rate (known as the Critical Load) is provided on the UK Air Pollution Information System (APIS) website (www.apis.ac.uk) and is expressed as a quantity (kilograms) of nitrogen over a given area (hectare) per year (kgNha⁻¹yr⁻¹).
- 1.2.5 A third pollutant included in this assessment is ammonia emissions from traffic. In ecological terms ammonia differs from NO_x in that it is not only a source of nitrogen but can also be directly toxic to vegetation in relatively low concentrations. Using the process set out in Design Manual for Roads and Bridges, ammonia emissions for traffic are not normally calculated. However, for completeness, and in response to representations made by Wealden District Council to the first iteration of modelling undertaken for the South Downs Local Plan, they have been included in subsequent iterations of AECOM’s modelling, both in terms of atmospheric concentrations and as a source of nitrogen.
- 1.2.6 Using these scenarios and information on total traffic flow, average vehicle speeds and percentage Heavy Duty Vehicles (which influence the emissions profile), AECOM air quality specialists calculated expected NO_x concentrations, nitrogen deposition rates, ammonia concentrations and acid deposition rates at receptor points along each modelled road link. The

¹ The most recent published analyses are ‘Tunbridge Wells Local Plan: Ashdown Forest Air Quality Impact Assessment: Traffic-Related Effects on Ashdown Forest SAC’ dated March 2018 and South Downs Local Plan and Lewes Joint Core Strategy: Habitat Regulations Assessment Addendum: Traffic-Related Effects on Ashdown Forest SAC – April 2018’. Both these reports present the same modelling results.

predictions for NO_x and nitrogen deposition are based on the assessment methodology presented in Annex F of the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 1 (HA207/07)² for the assessment of impacts on sensitive designated ecosystems due to highways works³. Background data for NO_x and NO₂ were sourced from the Department of Environment, Food and Rural Affairs (Defra) background maps⁴. Background data for ammonia was sourced from monitoring undertaken at Ashdown Forest⁵.

- 1.2.7 The DMRB does not provide a method for forecasting ammonia emissions from traffic. A method has therefore been devised for this modelling. The methodology for this is presented in detail in Appendix B. The research undertaken in Ashdown Forest indicates that beyond 20m from the roadside ammonia contributions are expected to tend towards background and so the contribution of road sources would be limited beyond this point.
- 1.2.8 Given that the assessment year (2033) is a considerable distance into the future, it is important for the air quality calculations to take account of improvements in background air quality and vehicle emissions that are expected nationally over the plan period. Making an allowance for a realistic improvement in background concentrations and deposition rates is in line with the Institute of Air Quality Management (IAQM) position⁶ as well as that of central government⁷. Background nitrogen deposition rates were sourced from the Air Pollution Information System (APIS) website⁸. Although in recent years improvements have not kept pace with predictions, the general long-term trend for NO_x has been one of improvement (particularly since 1990) despite an increase in vehicles on the roads⁹. There is also an improving trend for nitrogen deposition, although the rate of improvement has been much lower than for NO_x¹⁰. The current DMRB guidance for ecological assessment suggests reducing nitrogen deposition rates by 2% each year between the base year and assessment year. However, due to some uncertainty as to the rate with which projected future vehicle emission rates and background pollution concentrations are improving, the precautionary assumption has been made in this assessment that not all improvements projected by DMRB (for nitrogen deposition) or Defra (for NO_x concentrations) will occur. With regards to background ammonia concentrations; as there is greater uncertainty associated with rates of improvement over time, background concentrations have been kept the same through all assessment years.
- 1.2.9 Therefore, the air quality calculations assume that conditions in 2023 (an approximate midpoint between the base year and the year of assessment) are representative of conditions in 2033 (the year of assessment). The effect on the 2033 data is equivalent to assuming a 0.75% per annum improvement in background NO_x concentrations and nitrogen deposition rates between 2017 and 2033. The approach of not assuming all projected improvements occur (known as Gap Analysis) is accepted within the professional air quality community and accounts for known recent improvements in vehicle technologies (new standard Euro 6/VI vehicles), whilst excluding the more distant and therefore more uncertain projections on the evolution of the vehicle fleet. No discussion is made in this analysis of the UK Government's recent decision to ban the sale of new petrol and diesel vehicles from 2040 since it would not affect the time period under consideration, but that announcement illustrates the general long-term direction of travel for roadside air quality in the UK and underlines that allowing for improvements in both vehicle emissions factors and background rates of deposition over long timescales is both appropriate and realistic.
- 1.2.10 Annual mean concentrations of NO_x were calculated at varied intervals back from each road link up to a maximum of 200m, with the closest distance being the closest point of the designated site to the road. Predictions were made using the latest version of ADMS-Roads using emission rates

² Design Manual for Roads and Bridges, HA207/07, Highways Agency

³ DMRB advocates a nitrogen deposition velocity of 0.1 cms⁻¹ for non-woodland vegetation and that velocity is therefore used in AECOMs modelling.

⁴ Air Quality Archive Background Maps. Available from: <http://iaqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

⁵ Ashdown Forest SAC, Air Quality Monitoring and Modelling, October 2017

⁶ http://www.iaqm.co.uk/text/position_statements/vehicle_NOx_emission_factors.pdf

⁷ For example, The UK Government's recent national Air Quality Plan also shows expected improvements over the relevant time period (up to 2030) <https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017>

⁸ Air Pollution Information System (APIS) www.apis.ac.uk

⁹ Emissions of nitrogen oxides fell by 69% between 1970 and 2015. Source: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/579200/Emissions_airpollutants_statistical_release_2016_final.pdf [accessed 08/06/17]

¹⁰ Total nitrogen deposition (i.e. taking account of both reduced and oxidised nitrogen, ammonia and NO_x) decreased by 13% between 1988 and 2010. This is an improvement of 0.59% per annum on average.

derived from the Defra Emission Factor Toolkit (latest version) which utilises traffic data in the form of 24-hour Annual Average Daily Traffic (AADT), %HDV and average speed.

- 1.2.11 To assist in the verification of the latest AECOM model (first produced December 2017) AECOM were provided with a partially redacted version of a report prepared for Wealden District Council by Air Quality Consultants ('AQC') (Ashdown Forest SAC, Air Quality Monitoring and Modelling, December 2017). This report provided grid references, distance to road (m) and NO₂/NO_x concentrations for a number of measurement locations. The measurement height of these diffusion tubes was not recorded in the AQC report and this has been taken as 2m to match the stated height of the Ammonia ALPHA samplers, which are also included within this report.
- 1.2.12 Using these diffusion tube data AECOM was able to model the latest version of the Ashdown Forest model (December 2017) which uses 2017 backgrounds based on the base year 2015 and the NO_x to NO₂ Calculator v6.1 for 2017 using All non-urban UK traffic for the local authority of Wealden.
- 1.2.13 This verification process calculated a model adjustment factor of 2.7311 with an RMSE of 4.2. The RMSE should ideally be within 10% of the relevant air quality criterion, but is acceptable where it is within 25% of the relevant air quality criterion, as is the case here¹².

Modelling Hastings growth

- 1.2.14 The adopted Hastings Local Plan has an end date of 2028. In addition Hastings Borough Council is working on a Hastings Town Centre & Bohemia Area Action Plan (AAP) which is likely to have an end date of 2033. Hastings Borough Council therefore made a precautionary judgment regarding the total amount of new housing and employment development expected within Hastings Borough to 2033, as this reflects the 'worst case' contribution of growth in Hastings on Ashdown Forest SAC from the adopted Local Plan, outstanding planning permissions and the AAP combined. Hastings Borough Council then commissioned traffic modellers (Mott MacDonald) to generate a 24hr Annual Average Daily Traffic (AADT) forecast for 2033 attributable to this growth, on the A22, A26 and A275 through Ashdown Forest, these being the links with the greatest expected flows.
- 1.2.15 For the purposes of air quality assessment for South Downs National Park Authority, Lewes District, Tunbridge Wells Borough and Sevenoaks District AECOM has already created a traffic and air quality model for Ashdown Forest that forecasts traffic total flows in 24hr AADT by 2033 taking account of total housing and employment growth, not only in these four authorities but also in other authorities surrounding Ashdown Forest, including Wealden District, Mid-Sussex District, and Tandridge District (the three other authorities most likely to influence average daily traffic flows through the SAC). That scenario (termed the Do Something scenario in AECOM's modelling) therefore presents the forecast 2033 roadside ammonia concentrations, NO_x concentrations and nitrogen deposition rates. For the modelling reports published by South Downs National Park Authority and Tunbridge Wells Borough Council the 2033 Do Something air quality was compared with the 2017 baseline air quality to determine whether adverse effects on integrity would arise. It was concluded that no adverse effect on integrity was expected from all growth 'in combination'.
- 1.2.16 The additional traffic growth attributable to Hastings Borough was modelled to be minimal, even though a generous allowance was made for growth:
 - a maximum of 97 AADT on the A22, which has 2017 base flows of c. 12,000 AADT;
 - a maximum of 22 AADT on the A26, which has 2017 base flows of more than 16,000 AADT; and
 - Zero AADT forecast for the A275.
- 1.2.17 This is almost certainly due to distance (Hastings is a minimum of 33km from Ashdown Forest as the crow flies) meaning that locations on the far side of Ashdown Forest play a small part in journeys to work for residents of Hastings Borough even when considerable housing and employment growth is planned for that authority. Very small changes to 24hr AADT flows through, or adjacent to, Ashdown Forest SAC are very unlikely to materially alter any air quality modelling results (and thus ecological effects) for three reasons:

¹¹ This adjustment factor (2.73) is higher than the main factors produced by AQC in their report. The modelling approach taken by AQC includes canyoning effects, time-varying emission profiles, CURED emission rates, terrain data and incorporates the effects of road gradient on NO_x emissions all of which may increase concentrations within close proximity to the road source where the verification diffusion tubes are located. It is also noted that the tube height of 2m is an assumption which would affect the overall factor if the tubes are at a different height.

¹² Defra (2016), Local Air Quality Management Technical Guidance (TG16)

- Firstly, daily traffic flows are not fixed numerals but fluctuate from day to day. The AADT for a given road is an annual average (specifically, the total volume of traffic for a year, divided by 365 days). It is this average number that is used in air quality modelling, but the 'true' flows on a given day will vary around this average figure. Small changes in average flow will lie well within the normal variation (known as the standard deviation or variance) and would not make a statistically significant difference in the total AADT.
- Secondly, when converted into NO_x concentrations, ammonia concentrations or nitrogen deposition rates, such small changes in AADT would only affect the second or third decimal place (depending on the actual AADT forecast). The third decimal place is never reported in air quality modelling to avoid false precision. For this reason, nitrogen deposition is generally not reported to more than 2 decimal places at most (0.01kgN/ha/yr). Anything smaller is simply reported as less than 0.01 (< 0.01) i.e. probably more than zero but too small to model with precision.
- Thirdly, ecological interpretation of the air quality implications of any change in flows is required. Research has identified that heathland vegetation parameters such as species richness or percentage grass cover are not sensitive to extremely small changes in nitrogen dose. Natural England Commissioned Report 210¹³ reports the nitrogen dose required to achieve particular changes in heathland vegetation at a range of background deposition rates. It is clear from this report that extremely small fluctuations in nitrogen deposition, such as would result from small changes in AADT, would not materially affect the vegetation response of a given dose.

1.2.18 Since no actual change in AADT was forecast for the A275 no air quality modelling was required.

1.2.19 It was determined that the simplest approach to determine the air quality effect of Hastings growth, taking account of the small change in AADT forecast, was to re-run the Do Something scenario for the existing AECOM Ashdown Forest traffic model but this time with Hastings AADT included in the Do Something scenario. The conclusion of AECOM's existing traffic and air quality model was one of no adverse effect on integrity from all forecast traffic growth in combination (a conclusion Natural England has accepted). Therefore, comparison between the air quality results from the new model run with the results of the previous Do Something scenario would reveal the role of Hastings growth and a conclusion could be drawn as to whether the change to the DS scenario was negligible.

¹³ CAPORN, S., FIELD, C., PAYNE, R., DISE, N., BRITTON, A., EMMETT, B., JONES, L., PHOENIX, G., S POWER, S., SHEPPARD, L. & STEVENS, C. 2016. Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. Natural England Commissioned Reports, Number 210.

2 Results

2.1 Summary of conclusions of existing AECOM model for Ashdown Forest

- 2.1.1 The development of nitrogen dose-response relationships for various habitats clarifies the rate of additional nitrogen deposition required to achieve a measurable effect on heathland vegetation. It is therefore possible to use these relationships to determine that a plan or collection of plans will not have an adverse effect. Such a plan would be one in which one could say with confidence that a) there would not be a significant difference in the vegetation whether or not that plan proceeded and b) there would not be a significant effect on the vegetation (and thus protection conveyed to the European site) whether or not the contribution of that plan was 'mitigated' (i.e. reduced to such an extent that it did not appear in the model at all). It would clearly be unreasonable to claim that such a plan caused an adverse effect 'in combination' or that it should be mitigated. The contribution of the South Downs Local Plan and Lewes JCS falls within those parameters.
- 2.1.2 The existing AECOM model for Ashdown Forest concluded that:
- Ammonia concentrations at the nearest areas of heathland are not forecast to exceed the most stringent critical level of $1 \mu\text{g m}^{-3}$, while NO_x concentrations and nitrogen deposition in 2033 is forecast to be significantly better than in 2017 notwithstanding the precautionary assumptions made about both growth and improvements in vehicle NO₂ emission factors;
 - No significant in combination retardation of vegetation improvement at the closest and most affected areas of heathland is expected. Maximum additional 'in combination' nitrogen deposition of 0.3 kgN/ha/yr is forecast at the closest areas of heathland due to traffic growth to 2033. Following consultation of published nitrogen dose-response relationship data for heathland it was concluded that this would not materially retard any vegetation recovery that may occur due to the aforementioned net improvement in nitrogen deposition rates; and
 - Since no adverse effect on integrity is forecast, no mitigation would be required.
- 2.1.3 It should be noted that the assessment undertaken to inform this conclusion was precautionary. For example:
- The Design Manual for Roads and Bridges and Defra guidance recommend making a 2% reduction per annum in background emissions/deposition rates throughout the period from base year to assessment year in order to allow for improvements such as the introduction of Euro6 standard vehicles. AECOM took a considerably more cautious approach in this modelling which could therefore prove to underestimate improvements in background nitrogen deposition.
 - Rather than simply model the rates of growth set out in adopted or submitted Core Strategies and Local Plans, the AECOM model increased the housing delivery rates for those authorities immediately surrounding Ashdown Forest SAC (Wealden District, Mid-Sussex District and Tandridge District) to allow for additional growth in line with the most-recently expressed Objectively Assessed Need as of June 2017. In some cases (e.g. Mid-Sussex) this substantially increased the amount of housing allowed for over the period to 2033. In practice, therefore, growth around Ashdown Forest SAC may have been over-estimated. For example, the recent Government consultation on Objectively Assessed Need (OAN) proposes a significantly lower OAN for Wealden District than was allowed for in the AECOM model.
- 2.1.4 This is therefore the context for the modelling of growth in Hastings Borough.

2.2 Ashdown Forest traffic modelling results for Hastings Borough

2.2.1 The change in flows on the A275, A22 and A26 and attributable to Hastings Borough are provided in Table 1 below. These were provided by Hastings Council's traffic modelling consultants (Mott MacDonald).

Table 1. AADT that would occur as a result of anticipated growth in Hastings Borough by 2033

Road	2033 additional daily vehicle trips (AADT)
A275	0
A22	97 (83.3 AADT attributable to the Local Plan and 13.3 AADT due to the new Area Action Plan)
A26	22 (17.63 AADT attributable to the Local Plan and 3.99 AADT attributable to the new AAP).

2.2.2 The data indicate that the A275 can be disregarded based on flow data alone since a change of 0 AADT is forecast. The flows attributable to the development on the A22 and A26 are very small but have been modelled for completeness. These flow data were therefore added into the Do Something (i.e. all expected traffic growth) scenario for these links and the previous air quality model re-run.

2.3 Air quality results

2.3.1 Appendix A presents the 2033 air quality (ammonia concentrations, NO_x concentrations and nitrogen deposition rates) that was previously forecast within 200m of various transects on the A22 and A26. It then also presents the 2033 air quality (identical parameters) forecast in the re-run model. The difference reflects the contribution of Hastings growth (Local Plan, plus AAP, plus outstanding planning permissions). The closest area of heathland (the SAC habitat) along each link is identified with **bold** text.

2.3.2 The A275 is not included in the modelling for reasons already discussed. The following transects were modelled, and are reported in Appendix A since they do include areas of SAC, but are not discussed in this section because there is no actual SAC habitat (heathland) within 200m:

- Transect 34: A22 at Nutley;
- Transect 6b_37_33: junction of A22 and A275; and
- Transect 6aNE: A22 at Royal Ashdown Forest Golf Course.

2.3.3 For ammonia it can be seen that Hastings growth makes no difference at all to the modelled air quality data for the closest areas of heathland to any link except for the A22 at Royal Ashdown Forest Golf Course (Receptor 6aSW) where it contributes a negligible 0.01µg_m⁻³ (rounded up to the 2 decimal places). This means that Hastings growth barely registers in the model and is only marginally greater than zero. The total Do Something ammonia concentration at the closest area of heathland to the A22 at this location (c. 10m from the road) is not forecast to exceed the most stringent critical level for ammonia (1 µg_m⁻³) and will remain well below the critical level applicable to vegetation generally (3 µg_m⁻³).

2.3.4 For NO_x (which is primarily of relevance as a source of nitrogen) it can be seen that Hastings growth makes a negligible contribution to concentrations at the closest areas of heathland, the greatest contribution (0.08 µg_m⁻³) being at the A22 near Royal Ashdown Forest Golf Course (Receptor 6aSW) and Wych Cross (Receptor 33). Even at this location such a small change in NO_x results in a negligible change in nitrogen deposition (0.01 kgN/ha/yr, rounded up to 2 decimal places). In other words, the NO_x concentrations and nitrogen deposition rates on even

the most affected link (the A22) are essentially the same as forecast in the previous modelling. On all other transects, the contribution of Hastings growth at the nearest area of heathland is too small to show in the air quality calculations.

3 Conclusion

- 3.1.1 Expected growth in Hastings to 2033 (the adopted Local Plan, the emerging AAP and existing planning permissions) makes virtually no contribution to changes in ammonia concentrations, NOx concentrations or nitrogen deposition at the closest areas of heathland to the modelled links. With the exception of the A22 at Royal Ashdown Forest Golf Course and Wych Cross (where the contribution of Hastings growth is very small but just large enough to be visible in the results) the contribution is sufficiently small as to not show in the modelled results at all.
- 3.1.2 The previous modelling exercise undertaken for Tunbridge Wells Borough Council, South Downs National Park Authority, Sevenoaks District Council and Lewes District Council concluded that there would be no adverse effect on the integrity of Ashdown Forest SAC from traffic growth on modelled links by 2033 because:
- A net reduction in NOx concentrations and nitrogen deposition rates was forecast, even allowing for traffic growth, due to expected improvements in vehicle emissions factors and background concentrations/rates over the same timescale; and
 - The 'in combination' retardation of that improvement was too small to result in any retardation of vegetation recovery that might otherwise occur.
- 3.1.3 It is considered that the inclusion of Hastings growth does not change the modelled results and therefore the conclusions reached previously remain valid. It is therefore concluded that growth in Hastings Borough will not result in an adverse effect on the integrity of Ashdown Forest SAC either on its own or 'in combination' with other plans and projects.

Appendix A. Comparison of 2033 Do Something results including the Hastings Local Plan and AAP with the previous Do Something results

Rows in bold indicate the closest location of heathland to the road. If no row is in bold it means that there is no heathland on the transect.

Ammonia Concentrations

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
Receptor 38: the A26 at Poundgate				
	0	2.59	2.60	0.01
	5	1.76	1.76	0
	10	1.42	1.42	0
	15	1.24	1.24	0
	20	1.12	1.12	0
	30	0.98	0.98	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	40	0.90	0.90	0
	50	0.84	0.84	0
	60	0.81	0.81	0
	70	0.78	0.78	0
	80	0.76	0.76	0
	90	0.74	0.74	0
	100	0.73	0.73	0
	125	0.70	0.70	0
	150	0.68	0.68	0
	175	0.67	0.67	0
	200	0.66	0.66	0
Receptor 34 – A22 at Nutley				
	0	1.81	1.82	0.01

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	5	1.32	1.33	0.01
	10	1.11	1.11	0
	15	0.99	0.99	0
	20	0.92	0.92	0
	30	0.83	0.83	0
	40	0.78	0.78	0
	50	0.75	0.75	0
	60	0.73	0.73	0
	70	0.71	0.71	0
	80	0.70	0.70	0
	90	0.69	0.69	0
	100	0.68	0.68	0
	125	0.66	0.66	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	150	0.65	0.65	0
	175	0.65	0.65	0
	200	0.64	0.64	0
Receptor 33 – A22 at Wych Cross				
	0	1.43	1.44	0.01
	5	1.09	1.09	0
	10	0.94	0.95	0
	15	0.87	0.87	0
	20	0.82	0.82	0
	30	0.76	0.76	0
	40	0.73	0.73	0
	50	0.71	0.71	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	60	0.69	0.69	0
	70	0.68	0.68	0
	80	0.67	0.67	0
	90	0.67	0.67	0
	100	0.66	0.66	0
	125	0.65	0.65	0
	150	0.64	0.64	0
	175	0.64	0.64	0
	200	0.63	0.63	0
Receptor 6b_37_33 – Junction of A22 and A275				
	0	1.51	1.51	0
	5	1.34	1.34	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	10	1.24	1.24	0
	15	1.17	1.17	0
	20	1.12	1.12	0
	30	1.05	1.05	0
	40	0.99	0.99	0
	50	0.94	0.94	0
	60	0.90	0.90	0
	70	0.87	0.87	0
	80	0.85	0.85	0
	90	0.83	0.83	0
	100	0.81	0.81	0
	125	0.77	0.77	0
	150	0.74	0.74	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	175	0.72	0.72	0
	200	0.71	0.71	0
Receptor 6b - A22 at Royal Ashdown Forest Golf Course				
	3	1.25	1.26	0.01
	8	1.03	1.03	0
	13	0.92	0.92	0
	18	0.86	0.86	0
	23	0.82	0.82	0
	33	0.76	0.76	0
	43	0.73	0.73	0
	53	0.71	0.71	0
	63	0.69	0.69	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	73	0.68	0.68	0
	83	0.67	0.67	0
	93	0.67	0.67	0
	103	0.66	0.66	0
	128	0.65	0.65	0
	153	0.64	0.64	0
	178	0.64	0.64	0
	203	0.63	0.63	0
Receptor 6aSW – A22 at Royal Ashdown Forest Golf Course				
	0	1.67	1.68	0.01
	5	1.17	1.18	0.01
	10	0.99	1.00	0.01

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	15	0.90	0.90	0
	20	0.84	0.84	0
	30	0.77	0.77	0
	40	0.73	0.73	0
	50	0.71	0.71	0
	60	0.69	0.69	0
	70	0.68	0.68	0
	80	0.67	0.67	0
	90	0.66	0.66	0
	100	0.66	0.66	0
	125	0.65	0.65	0
	150	0.64	0.64	0
	175	0.63	0.63	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	200	0.63	0.63	0
Receptor 6aSE – A22 at Royal Ashdown Forest Golf Course				
	0	1.92	1.93	0.01
	5	1.33	1.33	0
	10	1.11	1.11	0
	15	0.99	0.99	0
	20	0.92	0.92	0
	30	0.84	0.84	0
	40	0.79	0.79	0
	50	0.76	0.76	0
	60	0.74	0.74	0
	70	0.73	0.73	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	80	0.71	0.71	0
	90	0.71	0.71	0
	100	0.70	0.70	0
	125	0.68	0.69	0
	150	0.68	0.68	0
	175	0.67	0.67	0
	200	0.66	0.66	0
Receptor 6aNE – A22 at Royal Ashdown Forest Golf Course				
	0	1.63	1.64	0.01
	5	1.20	1.20	0
	10	1.02	1.02	0
	15	0.93	0.93	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	20	0.87	0.87	0
	30	0.80	0.80	0
	40	0.76	0.76	0
	50	0.73	0.73	0
	60	0.71	0.71	0
	70	0.70	0.70	0
	80	0.69	0.69	0
	90	0.68	0.68	0
	100	0.67	0.67	0
	125	0.66	0.66	0
	150	0.65	0.65	0
	175	0.64	0.64	0
	200	0.64	0.64	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
Receptor 33N – A22 at Wych Cross				
	0	1.39	1.39	0
	5	1.05	1.05	0
	10	0.92	0.92	0
	15	0.85	0.85	0
	20	0.80	0.80	0
	30	0.75	0.75	0
	40	0.72	0.72	0
	50	0.70	0.70	0
	60	0.68	0.69	0
	70	0.67	0.67	0
	80	0.67	0.67	0

Link	Distance From Road (m)	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference <i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>
	90	0.66	0.66	0
	100	0.65	0.65	0
	125	0.64	0.64	0
	150	0.64	0.64	0
	175	0.63	0.63	0
	200	0.63	0.63	0

NOx concentrations and nitrogen deposition

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>			<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>		
		2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference
Receptor 38: the A26 at Poundgate							
	0	54.01	54.06	0.05	17.80	17.80	0
	5	34.64	34.67	0.03	15.20	15.20	0
	10	26.58	26.60	0.02	14.10	14.10	0
	15	22.31	22.33	0.02	13.51	13.51	0
	20	19.59	19.60	0.01	13.13	13.13	0
	30	16.35	16.36	0.01	12.68	12.68	0
	40	14.51	14.52	0.01	12.42	12.42	0
	50	13.29	13.30	0.01	12.24	12.24	0
	60	12.42	12.43	0.01	12.12	12.12	0
	70	11.78	11.79	0.01	12.03	12.03	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	80	11.28	11.29	0.01	11.96	11.96	0
	90	10.87	10.88	0.01	11.90	11.90	0
	100	10.54	10.56	0.02	11.85	11.85	0
	125	9.95	9.95	0	11.77	11.77	0
	150	9.53	9.53	0	11.71	11.71	0
	175	9.22	9.22	0	11.67	11.67	0
	200	8.99	8.99	0	11.63	11.63	0
Receptor 34 – A22 at Nutley							
	0	36.27	36.37	0.1	16.39	16.42	0.03
	5	24.90	25.03	0.13	14.84	14.86	0.02
	10	19.91	20.00	0.09	14.15	14.17	0.02

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	15	17.21	17.28	0.07	13.77	13.78	0.01
	20	15.52	15.56	0.04	13.53	13.54	0.01
	30	13.48	13.52	0.04	13.25	13.26	0.01
	40	12.36	12.39	0.03	13.09	13.10	0.01
	50	11.62	11.64	0.02	12.99	12.99	0
	60	11.08	11.10	0.02	12.91	12.91	0
	70	10.69	10.71	0.02	12.86	12.86	0
	80	10.39	10.41	0.02	12.81	12.81	0
	90	10.14	10.16	0.02	12.78	12.78	0
	100	9.95	9.97	0.02	12.75	12.75	0
	125	9.59	9.60	0.01	12.70	12.70	0
	150	9.33	9.35	0.02	12.66	12.66	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference
	175	9.15	9.16	0.01	12.64	12.64	0
	200	9.01	9.02	0.01	12.62	12.62	0
Receptor 33 – A22 at Wych Cross							
	0	27.78	27.92	0.14	14.98	15.00	0.02
	5	19.71	19.79	0.08	13.86	13.87	0.01
	10	16.36	16.42	0.06	13.39	13.40	0.01
	15	14.58	14.63	0.05	13.14	13.15	0.01
	20	13.45	13.49	0.04	12.98	12.99	0.01
	30	12.11	12.14	0.03	12.80	12.80	0
	40	11.34	11.36	0.02	12.69	12.69	0
	50	10.83	10.85	0.02	12.62	12.62	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do Something (including Hastings Local Plan and AAP)	Difference
	60	10.40	10.42	0.02	12.57	12.57	0
	70	10.21	10.23	0.02	12.53	12.53	0
	80	10.00	10.01	0.01	12.50	12.50	0
	90	9.83	9.84	0.01	12.48	12.48	0
	100	9.69	9.70	0.01	12.46	12.46	0
	125	9.43	9.44	0.01	12.42	12.42	0
	150	9.26	9.27	0.01	12.40	12.40	0
	175	9.13	9.13	0	12.38	12.38	0
	200	9.02	9.02	0	12.37	12.37	0
Receptor 6b_37_33 – Junction of A22 and A275							

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	0	30.25	30.34	0.09	15.25	15.27	0.02
	5	25.77	25.83	0.06	14.67	14.68	0.01
	10	23.29	23.35	0.06	14.35	14.36	0.01
	15	21.71	21.77	0.06	14.13	14.14	0.01
	20	20.50	20.55	0.05	13.97	13.98	0.01
	30	18.67	18.72	0.05	13.72	13.73	0.01
	40	17.26	17.30	0.04	13.52	13.53	0.01
	50	16.15	16.19	0.04	13.36	13.37	0.01
	60	15.27	15.31	0.04	13.24	13.25	0.01
	70	14.59	14.62	0.03	13.15	13.15	0
	80	14.01	14.04	0.03	13.06	13.06	0
	90	13.51	13.54	0.03	13.00	13.00	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	100	13.10	13.13	0.03	12.94	12.94	0
	125	12.23	12.26	0.03	12.82	12.82	0
	150	11.60	11.63	0.03	12.73	12.73	0
	175	11.14	11.15	0.01	12.66	12.66	0
	200	10.75	10.76	0.01	12.60	12.60	0
Receptor 6b - A22 at Royal Ashdown Forest Golf Course							
	3	23.68	23.79	0.11	14.37	14.39	0.02
	8	18.59	18.65	0.06	13.68	13.69	0.01
	13	16.08	16.13	0.05	13.31	13.32	0.01
	18	14.58	14.62	0.04	13.10	13.11	0.01

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	23	13.59	13.63	0.04	12.96	12.97	0.01
	33	12.38	12.40	0.02	12.79	12.79	0
	43	11.64	11.65	0.01	12.69	12.69	0
	53	11.14	11.15	0.01	12.61	12.61	0
	63	10.79	10.80	0.01	12.57	12.57	0
	73	10.53	10.54	0.01	12.53	12.53	0
	83	10.32	10.33	0.01	12.50	12.50	0
	93	10.15	10.16	0.01	12.48	12.48	0
	103	10.02	10.03	0.01	12.46	12.46	0
	128	9.77	9.78	0.01	12.42	12.42	0
	153	9.59	9.60	0.01	12.40	12.40	0
	178	9.46	9.47	0.01	12.38	12.38	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference
	203	9.36	9.37	0.01	12.36	12.36	0
Receptor 6aSW – A22 at Royal Ashdown Forest Golf Course							
	0	37.35	37.56	0.21	15.91	15.94	0.03
	5	24.06	24.17	0.11	14.24	14.26	0.02
	10	19.16	19.24	0.08	13.62	13.63	0.01
	15	16.61	16.67	0.06	13.29	13.30	0.01
	20	15.03	15.07	0.04	13.09	13.10	0.01
	30	13.20	13.24	0.04	12.85	12.86	0.01
	40	12.19	12.21	0.02	12.72	12.73	0.01
	50	11.53	11.55	0.02	12.64	12.64	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	60	11.07	11.08	0.01	12.58	12.58	0
	70	10.74	10.75	0.01	12.53	12.53	0
	80	10.48	10.49	0.01	12.50	12.50	0
	90	10.28	10.29	0.01	12.47	12.47	0
	100	10.11	10.12	0.01	12.45	12.45	0
	125	9.81	9.82	0.01	12.42	12.42	0
	150	9.61	9.62	0.01	12.39	12.39	0
	175	9.47	9.47	0	12.37	12.37	0
	200	9.36	9.36	0	12.36	12.36	0
Receptor 6aSE – A22 at Royal Ashdown Forest Golf Course							

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	0	44.25	44.51	0.26	16.76	16.79	0.03
	5	28.10	28.25	0.15	14.75	14.78	0.03
	10	22.18	22.28	0.10	14.00	14.02	0.02
	15	19.10	19.18	0.08	13.61	13.62	0.01
	20	17.19	17.25	0.06	13.37	13.38	0.01
	30	14.95	14.99	0.04	13.08	13.09	0.01
	40	13.70	13.73	0.03	12.92	12.93	0.01
	50	12.90	12.93	0.03	12.81	12.82	0.01
	60	12.35	12.38	0.03	12.74	12.75	0.01
	70	11.97	11.98	0.01	12.69	12.70	0.01
	80	11.64	11.66	0.02	12.65	12.66	0.01
	90	11.42	11.44	0.02	12.62	12.63	0.01

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference
	100	11.22	11.24	0.02	12.60	12.60	0
	125	10.86	10.88	0.02	12.55	12.55	0
	150	10.61	10.62	0.01	12.52	12.52	0
	175	10.42	10.42	0	12.49	12.49	0
	200	10.26	10.26	0	12.47	12.47	0
Receptor 6aNE – A22 at Royal Ashdown Forest Golf Course							
	0	36.31	36.44	0.13	15.81	15.83	0.02
	5	24.52	24.64	0.12	14.32	14.34	0.02
	10	19.80	19.88	0.08	13.73	13.74	0.01
	15	17.27	17.33	0.06	13.40	13.41	0.01

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	20	15.67	15.73	0.06	13.20	13.21	0.01
	30	13.76	13.81	0.05	12.95	12.96	0.01
	40	12.67	12.70	0.03	12.81	12.82	0.01
	50	11.93	11.96	0.03	12.72	12.72	0
	60	11.44	11.45	0.01	12.65	12.65	0
	70	11.05	11.06	0.01	12.60	12.60	0
	80	10.75	10.76	0.01	12.56	12.56	0
	90	10.51	10.52	0.01	12.53	12.53	0
	100	10.31	10.32	0.01	12.51	12.51	0
	125	9.95	9.96	0.01	12.46	12.46	0
	150	9.70	9.71	0.01	12.43	12.43	0
	175	9.52	9.53	0.01	12.40	12.40	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference	2033 Do Something (excluding Hastings Local Plan and AAP)	2033 Do Something (including Hastings Local Plan and AAP)	Difference
	200	9.38	9.39	0.01	12.38	12.38	0
Receptor 33N – A22 at Wych Cross							
	0	26.74	26.86	0.12	14.82	14.84	0.02
	5	18.99	19.07	0.08	13.74	13.76	0.02
	10	15.86	15.91	0.05	13.31	13.32	0.01
	15	14.20	14.23	0.03	13.07	13.08	0.01
	20	13.13	13.16	0.03	12.92	12.93	0.01
	30	11.88	11.91	0.03	12.75	12.75	0
	40	11.17	11.19	0.02	12.65	12.65	0
	50	10.70	10.72	0.02	12.58	12.58	0
	60	10.38	10.39	0.01	12.53	12.53	0

Link	Distance From Road (m)	NOx			Nitrogen deposition		
		<i>(note that all data are rounded to 2 decimal places to avoid false precision. Therefore 0.01 is the smallest reportable change and may in fact mean less than 0.01 but greater than 0.004)</i>					
		2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference	2033 Something (excluding Hastings Local Plan and AAP)	Do 2033 Something (including Hastings Local Plan and AAP)	Difference
	70	10.13	10.14	0.01	12.50	12.50	0
	80	9.94	9.95	0.01	12.47	12.47	0
	90	9.79	9.80	0.01	12.45	12.45	0
	100	9.67	9.68	0.01	12.44	12.44	0
	125	9.44	9.45	0.01	12.40	12.40	0
	150	9.29	9.30	0.01	12.38	12.38	0
	175	9.18	9.18	0	12.37	12.37	0
	200	9.09	9.09	0	12.35	12.35	0

Appendix B. Modelling ammonia emissions from traffic

Data Sources

The ammonia modelling has used 2015 road transport emission factors from the National Atmospheric Emissions Inventory website (NAEI, latest available data). This document produces average ammonia emission factors for various types of transport and environments in grams per kilometre (g/km). The NAEI road transport emission factors include average speed throughout the UK and the speeds used to derive these g/km emission rates may be different to the speeds used in the air quality model but this is a known limitation of the ammonia modelling.

Concentration data for the ammonia modelling from AQC transects has been made available in the partially redacted report however the coordinates of the monitoring locations have not been provided. All of the images and data relating the transects and location of the NH₃ sensors has been redacted save for the NO₂ monitored data maps (Figures A1.35 and A1.36 on pages 242/243 of AQC report). This NO₂ monitoring map has been used this to identify the location of the transects as both NO₂ and NH₃ were monitored on the transects. The transects have been identified from the following information:

- Transect 4 ends in monitoring location T18 and is near one of the AECOM modelled roads although NH₃ was not measured on this transect;
- Transect 1 is the only transect extending west as stated on page 14 of the AQC report;
- Transect 2 is opposite transect one as on page 88 it states “*The pattern of fall-off is much steeper for Transect 1 than for Transect 2, which may reflect the influence of prevailing wind direction on roadside concentrations*”; and
- Transect 3 has “*relatively lower traffic volumes than the roads beside the other transects*” so must be located in isolation away from the other transects.

The AECOM model does not have a modelled link next to transect 3 therefore only transects 1 and 2 have been used to verify NH₃ predictions.

The coordinates for the NH₃ monitoring locations on transect 1 and 2 have been approximated as the specific coordinates for the monitored locations have been redacted. The approximate locations have been confirmed in Google Earth as the measurements sites are visible. These have been informed by the angle from the road in the NO₂ monitoring figure, distance from the road in the AQC report and given a height of 2m as the AQC report states that all ALPHA NH₃ models were at 2m.

A background concentration of 0.6 ug/m³ has been used from the NH₃ DELTA samplers in the AQC report which states that these were background locations.

The NH₃ measurement data in transects 1 and 2 as used in the verification are presented in Table 2.

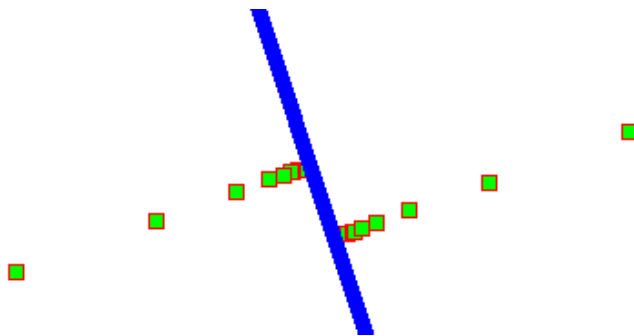
Table 2. Ammonia Monitoring

Transect	Distance from Road (m)	Measured Concentration (µg/m ³)
Transect 1	1.7	1.7
	2.5	1.3
	5.0	0.9

	10	0.9
	22	0.7
	100	0.6
Transect 2	1.7	1.4
	2.5	1.3
	5.0	1.0
	10	0.9
	22	0.7
	100	0.8

Source: AQC report- Ashdown Forest SAC, Air Quality Monitoring and Modelling, October 2017

Transects 1 and 2 are represented in the ADMS-Roads model as follows, with Transect 1 to the west, upwind of the road, and Transect 2 to the east, down wind of the road.



If the road was a notable source of ammonia it would be anticipated that Transect 2, as the downwind transect, would have higher concentrations than Transect 1. Whereas the measurement data shows the opposite trend at the closest points, with slightly higher ammonia concentrations upwind and identical concentrations at 5m.

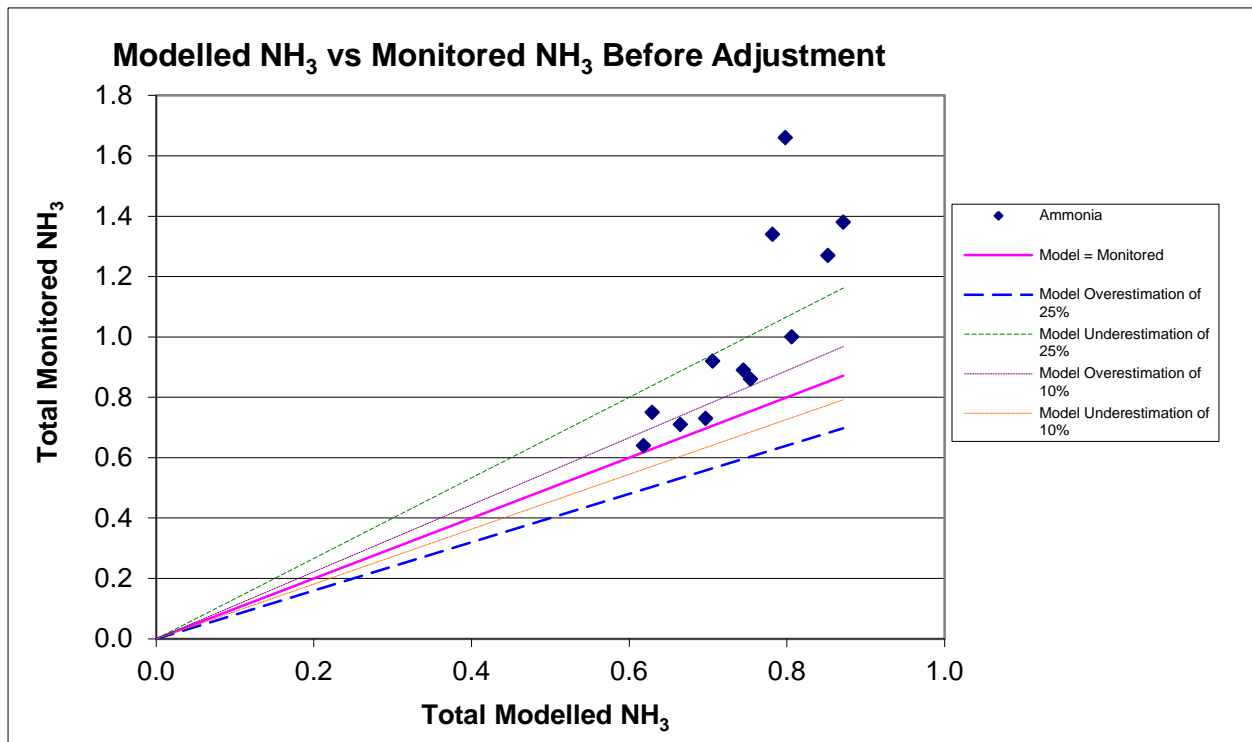
It can also be seen that concentrations of ammonia are very similar to measured background ammonia concentrations of $0.6 \mu\text{g}/\text{m}^3$ beyond 20m from the road. Any ammonia emissions due to the road are therefore considered to be observable in the measured data, but the patterns are less clear than would be expected from key road traffic pollutants (i.e. NO_x), even at the measurement points within 5m of the road and they are largely imperceptible beyond 20m.

The monitoring also shows an increase in ammonia concentrations at 100m on Transect 2, compared to closer points. This indicates that there is likely to be another source of ammonia in the vicinity of the monitoring and shows that other sources of ammonia may be more important locally than the road network.

Verification

Ammonia emissions were input based on a representative vehicle split for rural England in 2015 using data on vehicle fleet from the Emission Factor Toolkit published by Defra, and maintaining the light duty vehicle/heavy duty vehicle (LDV/HDV) split in the traffic data provided, using hot exhaust emission factors only from the NAEI 2015 road transport emission factors.

Plotting monitored vs modelled total NH₃ concentrations before any correction showed two clear patterns of behaviour with four points notably out of agreement with the rest of the dataset. These four points are the two closest points of each transect (at 1.7 and 2.5m) where concentrations are notably higher along with higher adjustment factors.



Using these input data an adjustment factor of **2.94** was calculated, with an RMSE of 0.2.

The adjustment of the ammonia model highlights that the ammonia model is less accurate close to the road source (e.g. at 1.7-2.5m from the road source). This supports the above observations of the measured ammonia concentrations that concentrations are most notably higher than background concentrations very close to the roads, as there is a larger under prediction at these verification locations closer to the road source. This under prediction doesn't appear to be due to canyoning effects as it is fairly open at this location. The resultant verification factor, if applied elsewhere, is therefore conservative as these closest points are included within the overall factor derived above.

Therefore, any ammonia predictions beyond this distance are likely to overestimate ammonia contributions, and beyond 20m, unless the road source is a much larger road than here, ammonia road contributions may not in reality be discernible at the ecosystem compared to normal ammonia background concentrations.

Assessment

Modelling has also been carried out to predict concentrations of ammonia and the influence of ammonia on nitrogen deposition rates using the methodology outlined above with the following assumptions for the assessment year:

- 2033 with and without the local plan traffic flows;
- 2023 traffic fleet mix (in keeping with NO_x predictions);
- 2015 ammonia emission rates (as projected rates are not available from the NAEI); and
- Measured background concentration of 0.6 µg/m³ (as projected concentrations are not available).

The contribution of ammonia to total nitrogen deposition was calculated using a deposition rate for ammonia of 0.02 m/s, taken from the CERC ADMS-Roads User Guide.

Even with the addition of ammonia as another source of nitrogen within the nitrogen deposition calculations, small rates of deposition are still predicted with a maximum change in deposition rate of 0.2 becoming 0.3 kg N ha⁻¹ yr⁻¹ at the edge of the road.

Appendix C. Mott MacDonald Traffic Modelling Report



Ashdown Forest Traffic Flows

22 May 2018

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Ashdown Forest Traffic Flows

22 May 2018

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1 Introduction

Mott MacDonald were commissioned by Hastings Borough Council to calculate expected 24hour Annual Average Daily Traffic (AADT) flows arising from journeys to work on roads through or adjacent to Ashdown Forest, Lewes Downs and the Pevensey Levels Special Areas of Conservation (SAC) and from existing and future planned development in Hastings up to 2028.

For each of the three SACs the affected A roads were identified and agreed with Hastings Borough Council. The traffic impact on B roads and other minor roads has not been considered. The table below confirms the affected roads agreed.

Table 1: Affected A roads for each Special Area of Conservation

Special Area of Conservation	A roads affected
Ashdown Forest	A22, A275 and A26
Pevensey Levels	A259
Lewes Downs	A26 and A27

The traffic impact was assessed for two scenarios, namely the Hastings Local Plan housing assumptions between 2011 and 2028 and the additional housing associated with the Hastings Town Centre and Bohemia Area Action Plan, due to be completed by 2033.

Finally, previous traffic data collected for the funding bid assessment of the Bexhill Hastings Link Road was analysed to see if it could provide any additional observed data on travel patterns of commercial vehicles through and adjacent to the SACs.

2 Commuting traffic

2.1 Methodology

2.1.1 Step 1 – Identify origins and destinations of trips on affected roads

2011 Census journey to work data was analysed for Hastings at a Middle Super Output Level (MSOA) with the destinations of travel to work journeys by car analysed for each MSOA within Hastings. Figure 1 shows a pictorial summary, taken from www.datashine.commute.org.uk of the travel to work data used for one of the Hastings MSOAs. The complete dataset of journeys to work from Hastings taken from Nomis table “WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)” was used for the analysis.

For each combination of origin within Hastings, and destinations close to or beyond the three SACs, typical routes between the pair were identified using GoogleMaps. Each pair of origins and destinations for which any of the suggested routes within GoogleMaps routed along one of the affected roads was then recorded, together with the affected road it used. No routes were found to travel along the A275 for Ashdown Forest.

In reality, not all trips would route along the affected roads identified. Without the use of a traffic model to apportion trips to the different possible routings, this methodology provides a worst-case result for the number of trips through or adjacent to the SACs.

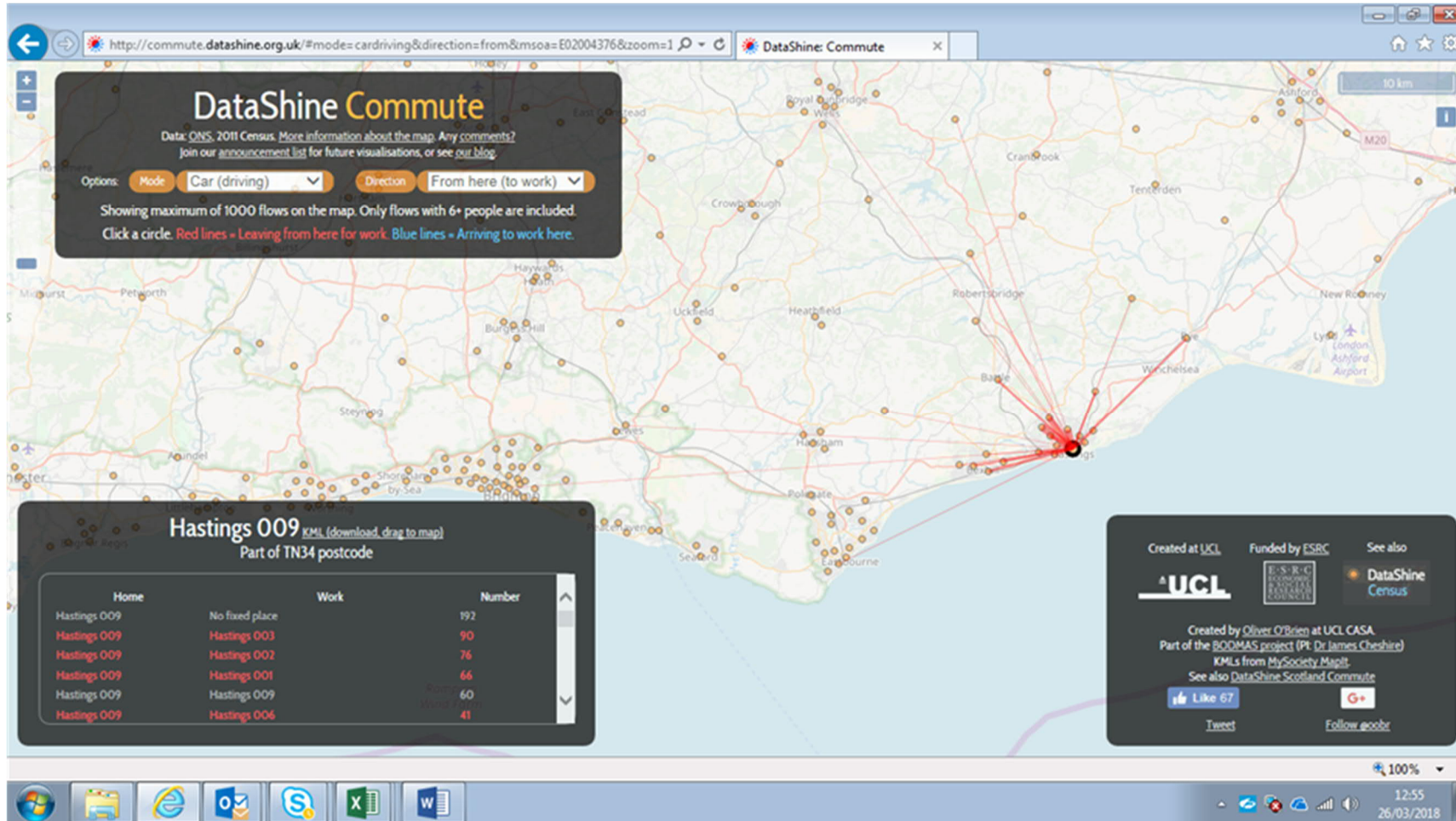
2.1.2 Step 2 – Calculate proportions of trips on affected roads by Hastings MSOA

The number of journeys to work by car for the identified origin/destination combinations was extracted from the census data and a total calculated across all identified origin/destination combinations for each Hastings MSOA. Dividing the total numbers of commuting trips per MSOA on roads through or adjacent to each SAC by the total number of all commuting trips from each MSOA resulted in a proportion of commuting trips from each MSOA that would pass through or adjacent to each SAC. Table 2 below details the results obtained for Ashdown Forest

Table 2: Proportions of trips through Ashdown Forest by Hastings MSOA

Hastings MSOA	Total journeys to work	Journeys to work via affected roads			Proportion of trips via affected roads			Total
		A22	A26	A22 / B2026	A22	A26	A22 / B2026	
Hastings 001	2,317	27	0	0	1.2%	0.0%	0.0%	1.2%
Hastings 002	2,383	38	11	0	1.6%	0.5%	0.0%	2.1%
Hastings 003	1,426	28	14	0	2.0%	1.0%	0.0%	2.9%
Hastings 004	1,626	17	0	0	1.0%	0.0%	0.0%	1.0%
Hastings 005	1,077	4	0	0	0.4%	0.0%	0.0%	0.4%
Hastings 006	1,897	37	0	0	2.0%	0.0%	0.0%	2.0%
Hastings 007	1,427	23	3	5	1.6%	0.2%	0.4%	2.2%
Hastings 008	1,490	15	12	5	1.0%	0.8%	0.3%	2.1%
Hastings 009	889	13	2	3	1.5%	0.2%	0.3%	2.0%
Hastings 010	2,622	41	13	17	1.6%	0.5%	0.6%	2.7%
Hastings 011	1,260	33	5	9	2.6%	0.4%	0.7%	3.7%

Figure 1: Commuting destinations from Hasting 009 MSOA



Source: commute.datashine.org.uk

2.1.3 Step 3 – Calculate numbers of AADT commuting trips by household

TEMPRO7.2 planning data was used to provide household numbers for each Hastings MSOA from 2011. Commuting trip productions by car drivers from 2011 was also extracted for weekday AM peak period, weekday interpeak period, weekday PM peak period, weekday off-peak, Saturdays and Sundays and combined to give an annual average daily number of car commuting trips generated by each Hastings MSOA in 2011. Dividing the commuting trips by the total number of households provided an annual average daily number of car commuting trips generated per household. These were then doubled to provide a two-way number of trips per household within each MSOA.

Table 3 below details the calculation of the number of commuting trips per household for each Hastings MSOA. This averages out at 1.21 trips per household.

2.1.4 Step 4 – Allocate housing provisions to MSOAs

Housing numbers for the Hasting Local Plan period from 2011 to 2028 were provided by ward, but were required by MSOA to combine with the commuting data calculated in the previous steps. Conversion of housing numbers by ward to MSOA was undertaken by comparing ward and MSOA boundaries with the following numbers of houses resulting per MSOA between 2011 and 2028:

- Hastings 001 – 356 houses
- Hastings 002 – 460 houses
- Hastings 003 – 199 houses
- Hastings 004 – 202 houses
- Hastings 005 – 321 houses
- Hastings 006 – 212 houses
- Hastings 007 – 107 houses
- Hastings 008 – 355 houses
- Hastings 009 – 310 houses
- Hastings 010 – 1026 houses
- Hastings 011 – 184 houses

This gives a total of 3,732 additional houses in Hastings over the Local Plan period.

630 additional houses are assumed to be delivered within the Hastings Town Centre and Bohemia Area Action Plan between 2017 and 2033 and have been divided equally between Hastings 008 and Hastings 011 MSOAs.

Table 3: Commuting trips per household

Hastings MSOA	Total households	Commuting trips (production)							Commuting trips per household	
		Weekday AM	Weekday IP	Weekday PM	Weekday OP	Saturday	Sunday	Total	AADT one- way	AADT two- way
Hastings 001	3,245	1,241	283	112	272	611	388	2,907	0.90	1.79
Hastings 002	4,198	1,240	297	114	267	604	383	2,905	0.69	1.38
Hastings 003	3,218	769	201	77	173	387	249	1,856	0.58	1.15
Hastings 004	3,002	794	182	81	190	417	269	1,933	0.64	1.29
Hastings 005	2,798	521	127	58	130	283	184	1,303	0.47	0.93
Hastings 006	3,633	991	227	95	228	500	318	2,359	0.65	1.30
Hastings 007	3,528	850	201	91	210	460	298	2,110	0.60	1.20
Hastings 008	3,973	942	224	100	234	515	335	2,350	0.59	1.18
Hastings 009	3,800	756	214	73	170	381	244	1,838	0.48	0.97
Hastings 010	4,475	1,372	310	134	325	714	458	3,313	0.74	1.48
Hastings 011	5,271	809	197	90	220	467	306	2,089	0.40	0.79

Source: TEMPRO7.2

2.1.5 Step 5 – Calculation of total commuting trips for new housing passing through or adjacent to SACs

Finally, the numbers of commuting trips per household for each MSOA from step 3 was combined with the number of new households in each MSOA and the proportions of trips on affected roads from step 2. The following tables detail the results for each of the three SACs and for the Local Plan housing and the additional Hastings Town Centre and Bohemia Area Action Plan (AAP) housing.

In each case the table includes the total number of trips generated by all the additional housing in Hastings between 2011 and 2028 or 2033. The proportions of trips from Hastings travelling through Ashdown Forest are around 2% of all commuting trips generated in Hastings. This increases for Pevensey Levels to under 9% and is less than 2% for Lewes Downs.

Consequently, the resulting Annual Average Daily Traffic flows generated by the Local Plan housing in Hastings is 100.93 trips through Ashdown Forest, 417.63 trips through Pevensey Levels and 85.18 trips through Lewes Downs.

The Hastings Town Centre and Bohemia Area Action Plan housing would generate an additional 17.32 AADT trips through Ashdown Forest, 59.47 AADT trips through Pevensey Levels and 9.37 AADT trips through Lewes Downs.

Table 4: Local Plan AADT traffic flows through Ashdown Forest

Hastings MSOA	Proportion of trips through Ashdown Forest		Local Plan Households	2-way commuting trips per household	2-way commuting trips	
	via A22	via A26			via A22	via A26
Hastings 001	1.2%	0.0%	356	1.79	7.43	0.00
Hastings 002	1.6%	0.5%	460	1.38	10.16	2.94
Hastings 003	2.0%	1.0%	199	1.15	4.51	2.25
Hastings 004	1.0%	0.0%	202	1.29	2.72	0.00
Hastings 005	0.4%	0.0%	321	0.93	1.11	0.00
Hastings 006	2.0%	0.0%	212	1.30	5.37	0.00
Hastings 007	2.0%	0.2%	107	1.20	2.51	0.27
Hastings 008	1.3%	0.8%	355	1.18	5.64	3.38
Hastings 009	1.8%	0.2%	310	0.97	5.40	0.67
Hastings 010	2.2%	0.5%	1026	1.48	33.60	7.53
Hastings 011	3.3%	0.4%	184	0.79	4.86	0.58
TOTAL (by 2028)					83.30	17.63

Table 5: AAP AADT traffic flows through Ashdown Forest

Hastings MSOA	Proportion of trips through Ashdown Forest		AAP Households	2-way commuting trips per household	2way commuting trips	
	via A22	via A26			via A22	via A26
Hastings 001	1.2%	0.0%	0	1.79	0.00	0.00
Hastings 002	1.6%	0.5%	0	1.38	0.00	0.00
Hastings 003	2.0%	1.0%	0	1.15	0.00	0.00
Hastings 004	1.0%	0.0%	0	1.29	0.00	0.00
Hastings 005	0.4%	0.0%	0	0.93	0.00	0.00
Hastings 006	2.0%	0.0%	0	1.30	0.00	0.00
Hastings 007	2.0%	0.2%	0	1.20	0.00	0.00
Hastings 008	1.3%	0.8%	315	1.18	5.00	3.00
Hastings 009	1.8%	0.2%	0	0.97	0.00	0.00
Hastings 010	2.2%	0.5%	0	1.48	0.00	0.00
Hastings 011	3.3%	0.4%	315	0.79	8.32	0.99
TOTAL (by 2033)					13.32	3.99

Table 6: Local Plan AADT traffic flows through Pevensey Levels

Hastings MSOA	Proportion of trips through Pevensey Levels	Local Plan Households	2-way commuting trips per household	2way commuting trips
Hastings 001	7.6%	356	1.79	48.43
Hastings 002	9.1%	460	1.38	57.74
Hastings 003	8.8%	199	1.15	20.13
Hastings 004	7.4%	202	1.29	19.36
Hastings 005	6.2%	321	0.93	18.62
Hastings 006	9.1%	212	1.30	24.95
Hastings 007	8.4%	107	1.20	10.76
Hastings 008	9.0%	355	1.18	37.76
Hastings 009	8.0%	310	0.97	23.95
Hastings 010	9.3%	1026	1.48	140.79
Hastings 011	10.4%	184	0.79	15.16
TOTAL (by 2028)				417.63

Table 7: AAP AADT traffic flows through Pevensey Levels

Hastings MSOA	Proportion of trips through Pevensey Levels	AAP Households	2-way commuting trips per household	2way commuting trips
Hastings 001	7.6%	0	1.79	0.00
Hastings 002	9.1%	0	1.38	0.00
Hastings 003	8.8%	0	1.15	0.00
Hastings 004	7.4%	0	1.29	0.00
Hastings 005	6.2%	0	0.93	0.00
Hastings 006	9.1%	0	1.30	0.00
Hastings 007	8.4%	0	1.20	0.00
Hastings 008	9.0%	315	1.18	33.51
Hastings 009	8.0%	0	0.97	0.00
Hastings 010	9.3%	0	1.48	0.00
Hastings 011	10.4%	315	0.79	25.96
TOTAL (by 2033)				59.47

Table 8: Local Plan AADT traffic flows through Lewes Downs

Hastings MSOA	Proportion of trips through Lewes Downs	Local Plan Households	2-way commuting trips per household	2way commuting trips
Hastings 001	1.8%	356	1.79	11.28
Hastings 002	1.7%	460	1.38	10.69
Hastings 003	1.3%	199	1.15	3.06
Hastings 004	1.5%	202	1.29	3.84
Hastings 005	2.2%	321	0.93	6.67
Hastings 006	2.3%	212	1.30	6.24
Hastings 007	1.8%	107	1.20	2.24
Hastings 008	1.6%	355	1.18	6.76
Hastings 009	2.7%	310	0.97	8.10
Hastings 010	1.6%	1026	1.48	24.33
Hastings 011	1.3%	184	0.79	1.97
TOTAL (by 2028)				85.18

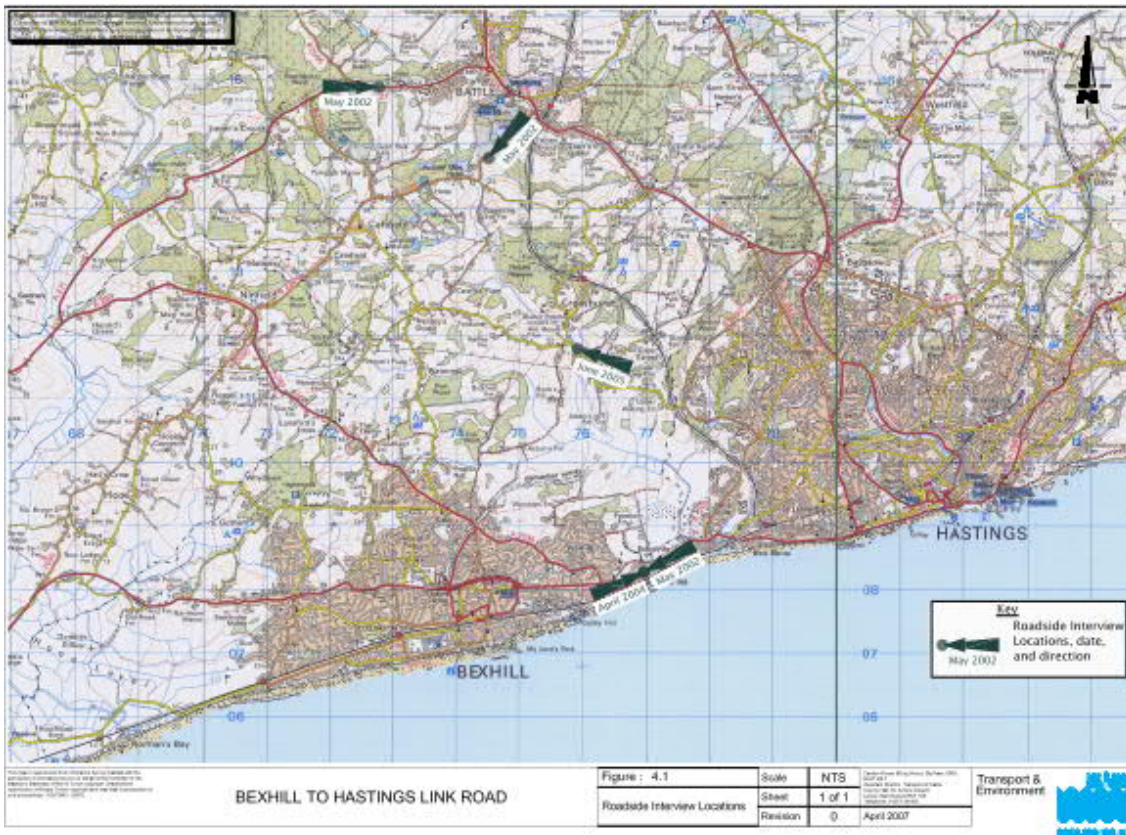
Table 9: AAP AADT traffic flows through Lewes Downs

Hastings MSOA	Proportion of trips through Lewes Downs	AAP Households	2-way commuting trips per household	2way commuting trips
Hastings 001	1.8%	0	1.79	0.00
Hastings 002	1.7%	0	1.38	0.00
Hastings 003	1.3%	0	1.15	0.00
Hastings 004	1.5%	0	1.29	0.00
Hastings 005	2.2%	0	0.93	0.00
Hastings 006	2.3%	0	1.30	0.00
Hastings 007	1.8%	0	1.20	0.00
Hastings 008	1.6%	315	1.18	6.00
Hastings 009	2.7%	0	0.97	0.00
Hastings 010	1.6%	0	1.48	0.00
Hastings 011	1.3%	315	0.79	3.37
TOTAL (by 2033)				9.37

3 Commercial traffic

Roadside Interview Survey data used to build the matrices for the Bexhill Hastings Link Road traffic model provide some observed data on LGV and HGV movements on roads between Hastings and Bexhill. The sites used created a north-south screenline between Bexhill and Hastings through Glyne Gap with each site surveyed on a single day. Three of the sites were London Area Transport Survey (LATS) data, and the remaining two undertaken by East Sussex County Council. Figure 2 shows the location of each of the sites.

Figure 2: Roadside Interview Locations



Source: BHLR BAFFB Traffic Survey Report Fig 4.1

Surveys at the three LATS sites were undertaken in May 2002. The A271 site was surveyed in the eastbound direction and the B2096 and A259 Glyne Gap sites were surveyed in the westbound direction. The A271 and B2096 sites were surveyed using postcards whereas the Glyne Gap surveys were interview surveys. The surveys were undertaken between 06:00 and 22:00.

East Sussex undertook an additional RSI at Glyne Gap in April 2004 in the eastbound direction and also surveyed Crowhurst Road in June 2005 in the westbound direction. Both of these surveys were interview surveys. The surveys were undertaken between 07:00 and 19:00.

All vehicle types were surveyed at all site locations. Records show that around 18% of all LGVs and 14% of all HGVs were surveyed with their trip origins and destinations recorded.

Analysis of the surveyed data has been undertaken to provide an indication of proportions of LGV and HGV trips from Hastings which travel across the screenline between Bexhill and Hastings which then subsequently travel through or adjacent to the SACs.

Table 10: AM Peak trips from Hastings

Destination SAC	% of LGV trips	% of HGV trips
Ashdown Forest	7.80%	0.00%
Pevensey Levels	9.54%	3.94%
Lewes Downs	0.87%	3.94%

Source: BHLR RSI data

Table 11: PM Peak trips to Hastings

Destination SAC	% of LGV trips	% of HGV trips
Ashdown Forest	11.02%	1.41%
Pevensey Levels	16.74%	3.64%
Lewes Downs	2.52%	2.03%

Source: BHLR RSI data

Observed data for Hastings LGV and HGV trips which travel either north or east from Hastings is not available, so we have been unable to calculate proportions of total Hastings LGV and HGV trips which affect the Special Areas of Conservation.



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