LAA/8/A

APP/L2250/V/10/2131934 & APP/L2250/V/10/2131936

SECTION 77 TOWN AND COUNTRY PLANNING ACT 1990 – REFERENCE OF APPLICATIONS TO THE SECRETARY OF STATE FOR COMMUNITIES AND LOCAL GOVERNMENT

TOWN AND COUNTRY PLANNING (INQUIRIES PROCEDURE) (ENGLAND) RULES 2000

PROOF OF EVIDENCE OF
DR. BETHAN TUCKETT-JONES PhD CEnv MIAQM

AIR QUALITY

In respect of:

Planning Application Reference:	Y06/1647/SH (New Terminal Building)
Planning Application Reference:	Y06/1648/SH (Runway Extension)

relating to land at London Ashford Airport, Lydd, Romney Marsh, Kent, TN29 9QL

PB 125 YEARS

LYDD London Ashford Airport

This Proof of Evidence is presented in the following documents:

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1 INTRODUCTION

1.1 Qualifications and Experience

1.1.1 My name is Bethan Tuckett-Jones. I am a Chartered Environmentalist and a Member of the Institute of Air Quality Management. I have a Doctorate in Meteorology from the University of Reading and Bachelor of Science Degree in Physics from the University of Edinburgh, obtained in 1992 and 1988 respectively. I have had over 20 years' experience of assessing the dispersion and impacts of pollution in the environment. I am the Head of Air Quality in the Environment Group of Parsons Brinckerhoff Ltd.

1.1.2 I have worked on all stages of environmental assessment of transport schemes, from scheme and site identification through to construction environmental management planning. I have been responsible for the monitoring, modelling and assessment of the effects of the schemes on air quality.

1.1.3 I have regulatory experience in the field of air quality having worked for the Environment Agency's Air Quality Modelling and Assessment Unit, where my principal role involved the auditing of air quality impact assessments submitted to the Environment Agency for permitting purposes. I have also been involved with a number of local authorities, including supporting Devon County Council, Cornwall County Council, Darlington Borough Council, Newport City Council, and Restormel Borough Council with their air quality duties and planning application reviews. I presented expert evidence in respect of air quality on behalf of Devon County Council at the public inquiry for the A380 South Devon Link Road (Kingskerswell Bypass) and am representing Covanta Energy Limited at the public inquiry for the construction and operation of an Energy from Waste facility at Middlewich, Cheshire.

1.2 Scope of Evidence

1.2.1 My evidence covers air quality matters in connection with the construction and operation of the proposed runway extension and terminal building for the

Airport (the Applications). The proposed developments and the Airport Site are described in the Airport's Statement of Case [CD1.55].

1.2.2 I have had responsibility within Parsons Brinckerhoff Ltd for the air quality assessment of the Applications since May 2005 when Parsons Brinckerhoff Ltd were requested by London Ashford Airport to undertake environmental impact assessments for the phased expansion of the airport. Environmental Statements for the runway extension and the terminal building were published in October 2006 [CD1.14 - CD1.19].

1.2.3 Since the publication of the Environmental Statements, I have been responsible for ongoing updates to the air quality assessment for the proposals, resulting from, *inter alia*, revisions to the national datasets published by the Department for Environment, Food and Rural Affairs (Defra), Highways Agency, Department for Transport and Air Pollution Information Service, and requests for clarification from the local planning authority.

1.2.4 Table 1 in Appendix A of my proof outlines the updated air quality assessments and supplementary information that were submitted to Shepway District Council (the Council) between September 2007 and January 2010.

1.2.5 I reported on the potential impacts of the Applications on air quality and their potential human health effects in detail in the Environmental Statements [ES, CD1.14 – CD 1.19, 2006]. Shepway District Council's consultation exercise on the ES included a review of the air quality assessments and modelling by specialists in Bureau Veritas [CD2.8] and I provided supplementary air quality information in response to the subsequent comments in 2007 [CD1.23d - CD1.23f]. I demonstrated that the potential impacts of the Applications on health are negligible and that the modelling undertaken for the air quality assessments was robust.

1.2.6 Since that time, the focus of the updates to, and clarification of, the air quality assessments has been the evaluation of impacts on designated nature conservation sites. The latest revision to the modelling was undertaken in December 2009 [CD1.45]. The modelling was again reviewed by Bureau Veritas and by other Consultees including Natural England and Kent Wildlife

Trust. I provided a response to their comments in January 2010 [CD1.51] and the modelling and report conclusions were again demonstrated to be robust.

1.2.7 Subsequent to receiving this supplementary information, Shepway District Council carried out Appropriate Assessment of the impacts of the Applications on the nature conservation sites [CD1.53] and considered any air quality impacts to be insignificant or minor. Furthermore, the Council concluded that the proposals "*are not considered to adversely affect the integrity of international and national sites"* [para 9.1, CD1.53] and that "*the proposals are in accordance with the development plan for the area"* [para 9.1, CD1.53].

1.2.8 Following the decision by the Secretary of state to call-in the Applications, Natural England submitted a Statement of Case which outlined objections to the Applications. Natural England stated their intention to present air quality evidence on the modelling data and assumptions relating to nitrogen deposition in particular, and the likely impact of the proposals' effects on the air quality of the designated sites. In order to assist Natural England in the preparation of their evidence, I provided detailed information comprising all modelling assumptions used in the December 2009 submission [CD1.45], together with all relevant model input and output data files, to their air quality experts.

1.2.9 Subsequent to Natural England's examination of the supplied model data, detailed discussions were held in November 2010 between all air quality experts for Natural England and the airport, and a supplementary statement of common ground on air quality matters is now in preparation. In a letter to Pinsent Masons, dated 10th December 2010 [Appendix E], Natural England has confirmed that they consider that this statement of common ground will avoid the need for them to call witness evidence at the inquiry to deal with the assumptions on which the modelling was based. Furthermore, Natural England has confirmed that they no longer intend to call evidence in relation to the air quality effects on vegetation communities in the nature conservation sites in the vicinity of the airport.

1.2.10 In their Statement of Case, the Royal Society for the Protection of Birds (RSPB) asserted that they considered that it had not been adequately demonstrated that the Applications would not have an adverse effect on the integrity of the Dungeness SAC due to nitrogen deposition. However, they stated that they did not intend to submit evidence regarding this matter but supported the position of Natural England on this issue.

1.2.11 Kent Wildlife Trust put forward stated objections to the Applications in their Statement of Case, which referred to the potential for impacts from increased nitrogen deposition, but it is unknown whether they propose to submit evidence on this topic.

1.2.12 No objections to the Applications have been raised in relation to human health effects resulting from air quality impacts.

1.2.13 Therefore, taking into account the above and Natural England's recent confirmation that they are not calling any evidence on this topic and the proposed withdrawal of that objection by them, my evidence focuses on the assessment of the effects of the Applications on nitrogen oxides concentrations and nitrogen deposition levels in the context of the potential consequences of these changes on ecological receptors in the vicinity of the airport.

1.2.14 If there are any detailed or additional comments raised by Rule 6 Parties, these will be dealt with in rebuttal evidence as required.

1.3 Structure of Evidence

1.3.1 In my evidence I will:

a) set out the relevant policy and regulatory frameworks for ambient air quality in the UK (Chapter 2);

b) summarise the methodology used to assess the potential effects of emissions from the expansion of the airport (Chapter 3);

c) describe the current air quality climate in the vicinity of the Airport (Chapter 4);

d) summarise the results of the assessment of impact of emissions to air from the Applications with reference to the relevant policy frameworks and, where applicable, the air quality objectives and assessment levels above which potential effects may occur (Chapter 5);

e) describe the mitigation strategy for the potential air quality impacts of the Applications (Chapter 6);

f) assess the impacts of the Applications in relation to the concerns of Objectors (Chapter 7); and

g) provide a summary and conclusions (Chapter 8).

1.3.2 Further Tables, Figures and Appendices relating to Air Quality are also presented in support of this Proof of Evidence in LAA/8/C.

1.4 Summary

1.4.1 My evidence focuses on the assessment of the potential effects of the Applications on nitrogen oxides concentrations and nitrogen deposition levels in relation to impacts on sites designated for nature conservation at national and international level.

1.4.2 No objections to the Applications have been raised in relation to human health effects. Such effects were considered in detail in the Environmental Statements for the Applications, but it is not considered necessary to address them further in my Proof as no issue has been raised.

1.4.3 Shepway District Council and their consultants fully considered the Applications and, as the competent authority, undertook their own Appropriate Assessment of their potential impacts on nature conservation sites. They concluded that the expansion of the airport would not have an adverse effect on the integrity of the designated sites in the vicinity of the airport.

1.4.4 Natural England were consulted on the Applications and initially took the view that the proposals were likely to have significant effects on the interest features of the designated sites. In their Statement of Case, Natural England asserted concerns relating to the air quality modelling undertaken by the Applicants and the impacts of the airport's expansion on the vegetated shingle. However, by letter dated 10th December 2010, Natural England has stated that further to and subject to the conclusion of discussions between the air quality experts, they no longer intended to call evidence in relation to nitrogen deposition arising as a result of the proposals and they expect that any potential effects of the airport's expansion on the vegetated shingle in the designated sites could be addressed by way of condition.

1.4.5 Notwithstanding this, other Consultees to the Applications including Kent Wildlife Trust, did also assert concerns about the potential effects of increased nitrogen deposition on the designated sites. In my evidence, I therefore response to those asserted concerns and clearly demonstrate that they are not justified and no significant adverse effects are expected from the Applications relating to air quality and there would, in any event, be no adverse impact on the integrity of any European protected site.

2 LEGISLATION, POLICY AND REGULATION

2.1 Overview

2.1.1 In this section I will summarise national policy and regulatory frameworks of relevance to the air quality impact assessment for the Applications.

2.1.2 Planning Policy Statement 23: Planning and Pollution Control (PPS23, CD 6.12) provides the national policy context for addressing air quality in England. It contains advice on when air quality should be a material consideration in development control decisions. Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9, CD6.5) provides the national policy context for the protection of biodiversity through the planning system. It contains advice on the appropriate approaches to take in relation to planning applications in the context of potential impacts on the environment, including ambient air.

2.1.3 The role of the planning system in relation to air quality is to ensure that the proposed location of any development which may affect air quality, either directly or indirectly, is appropriate. It has a significant part to play in meeting the Government's international commitments and domestic policies for habitats, species and ecosystems.

2.2 Planning Policy and Air Quality

2.2.1 The following advice is contained within Appendix A to PPS23 [CD 6.12] relating to what may be material in the consideration of individual planning applications where air quality considerations arise. Matters to be considered include:

"*the possible impact of potentially polluting development (both direct and indirect) on land use, including effects on health, the natural environment or general amenity;"*

"the potential sensitivity of the area to adverse effects from pollution, in particular reflected in … nature conservation (including Sites of Special

Scientific Interest (SSSIs)… Special Areas of Conservation (SACs), Special Protection Areas (SPAs) … and the need to protect natural resources;"

"the existing, and likely future, air quality in an area, including any Air Quality Management Areas (AQMAs) or other areas where air quality is likely to be poor (including the consideration of cumulative impacts of a number of small developments on air quality, and the impact of development proposals in rural areas with low existing levels of background air pollution)."

"*the need for compliance with any statutory environmental air quality standards or objectives …*"

2.2.2 PPS9 [CD6.5] states that the Government's objectives for planning in relation to nature conservation are to conserve, enhance and restore the diversity of England's wildlife by sustaining, and where possible improving, the quality and extent of natural habitat sites and the populations of naturally occurring species which they support. The aim of planning decisions should be to prevent harm to biodiversity.

2.2.3 PPS9 emphasises the requirement that planning decisions should be based upon up-to-date information about the environmental characteristics of the area and that local planning authorities should ensure that appropriate weight is attached to designated sites of international, national and local importance.

2.2.4 The designated sites accorded the greatest significance in PPS9 are those identified through international conventions and European directives. These are afforded statutory protection through the Conservation of Habitats and Species Regulations 2010 [CD5.15], which are discussed in section 2.3 of this Proof of Evidence.

2.2.5 PPS9 states that SSSIs that are not also designated as sites of international importance, or features of those sites not covered by the international designation, should be given a high degree of protection through the planning system. Where a proposed development is likely to have an adverse effect on a SSSI, planning permission should not normally be granted. However, local authorities are able to use conditions and/or planning obligations to

mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site's biodiversity.

2.2.6 The Government recognises there are occasions when the precautionary principle, as outlined in PPS23, should be applied, i.e. when:

i. There is good reason to believe that harmful effects may occur to human, animal or plant health, or to the environment; and

ii. The level of scientific uncertainty about the consequences of likelihood of the risk is such that best available scientific advice cannot assess the risk with sufficient confidence to inform decision-making (para 6, PPS23).

2.2.7 The decision on whether to apply the precautionary principle should make the best use of available knowledge and expert judgements of complex processes. In my Proof, I will demonstrate that the precautionary principle does not apply in the consideration of the Applications since there is no good reason to believe that harmful effects may occur to human health or the environment and there is a sufficient degree of scientific certainty in relation to the impacts, but even if the precautionary principles is applied there will be no likely significant adverse effects and no adverse impacts on the integrity of any protected site. I will provide evidence to illustrate that the predicted impacts of the Applications, both direct and indirect, are only a fraction of the standards and objectives set by national and international expert groups for the concentration of pollutants in ambient air and their deposition onto the ground and vegetation. This is now a position that is agreed by Natural England and would not be material.

2.3 The Conservation of Habitats and Species Regulations 2010

2.3.1 The Conservation of Habitats and Species Regulations 2010 [CD5.15] provide for a high level of protection of internationally designated sites (European Sites). The 2010 regulations replaced the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) that were in force at the time of previous

submissions relating to the Applications, including the Environmental Statements.

2.3.2 In relation to the assessment of air quality impacts of the Applications, the new 2010 Regulations do not make any substantive changes to the 1994 regulations or existing policies and procedures.

2.3.3 Prior to giving consent for a development not directly connected with or necessary to the management of a European site, the competent authority must first determine whether that development is likely to have a significant effect on a European site. Should a significant effect be identified, the competent authority must then make an appropriate assessment of the implications for the designated site in view of the site's conservation objectives. The regulations place a requirement on the person applying for any development permission to provide such information as the competent authority may reasonably require for the purposes of the assessment.

2.3.4 The purpose of the appropriate assessment (where it is required) is to ensure that protection of the integrity of European sites is a part of the planning process by assessing the impacts of a development against the conservation objectives of a site designated for the protection of habitats. In undertaking an appropriate assessment (where one is required), the competent authority must gather the opinion of the appropriate nature conservation body as to whether the development is likely to have a significant effect on a European site.

2.3.5 In the light of the conclusions of the appropriate assessment (where one is required), the competent authority may approve the development "only after having ascertained that it will not adversely affect the integrity of the site".

2.3.6 The Government Circular on Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System [CD5.23] defines the 'integrity' of a site to be the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. It further states that a development may be authorised only if

a competent authority has made certain that the planned development will not adversely affect the integrity of the site, which will be the case where no reasonable scientific doubt remains as to the absence of such effects.

2.4 Local Plans

2.4.1 The Shepway District Local Plan [CD7.5] has been prepared by Shepway District Council in accordance with national planning policy as set out in Planning Policy Guidance Notes (PPGs). The plan is based on the principle of sustainable development.

2.4.2 Specifically, Policy SD1 of the plan states that whilst all developments should take account of the broad aim of sustainable development, this involves "meeting economic and social objectives and helping people meet their personal aspirations through accommodating the district's need for commercial and industrial development… whilst respecting the following environmental criteria: …"

"protect and enhance designated or proposal sites of international, national, countrywide and local wildlife importance and plant or animal life protected by law…."

"maintain the District's overall stock of nature conservation resources."

2.5 Ambient Air Quality Policy

2.5.1 The Expert Panel on Air Quality Standards (EPAQS) was set up by the Secretary of State for the Environment in 1991 to advise the Government on air quality standards. The recommendations of EPAQS, together with those of the World Health Organisation (WHO) and European Union Air Quality Directives provided the basis for the development of an Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland. The Strategy was first published in 1997 as a requirement of Part IV of the Environment Act 1995, and underwent its first revision in 2000. In 2007, subsequent to the publication of the ES, the strategy was further updated in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007 [CD 5.31].

2.5.2 The AQS sets objectives for ten pollutants. They are policy targets, expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedences, within a specified timescale. The objectives have been derived from standards which represent minimum or zero risk levels. The standards are set purely with regard to scientific and medical evidence on the effects of the pollutants on health and or impacts on vegetation. The objectives take into account the costs, benefits, feasibility and practicality of achieving the standards, generally by imposing a time limit for achieving the standard.

2.5.3 The objectives for 7 of the pollutants considered in the AQS are set down in UK legislation in the Air Quality (England) Regulations 2000 [CD5.29] and the Air Quality (England) (Amendment) Regulations 2002 [CD5.30]. EU Directives on air quality are transcribed into UK legislation in the Air Quality Standards Regulations 2010 [CD5.17] ("The Standards Regulations"). The Standards Regulations were not in force at the time of publication of the Environmental Statement.

2.5.4 The AQS and The Standards Regulations set out objectives and critical levels for oxides of nitrogen (and sulphur dioxide) for the protection of ecosystems and vegetation. The AQS objectives and Standards Regulations' critical levels are numerically identical, and clearly define the locations at which compliance with the critical levels should be assessed, namely, assessment locations should be

- more than 20km away from an agglomeration;
- more than 5km away from built-up areas, industrial installations or motorways/major roads with traffic counts of more than 50,000 vehicles per day; and
- representative of air quality in a surrounding area of at least 1000km^2.

2.5.5 Using these criteria, areas in the immediate vicinity of the runway or terminal of the Airport could be discounted as being not relevant to the assessment of critical levels, since they are not representative of a surrounding area of

1000km^2. Nevertheless, the air quality objectives and critical levels for the protection of vegetation and ecosystems are considered to apply at all points within the Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Sites of Special Scientific Interest (SSSI) in the vicinity of the Airport.

2.5.6 The critical levels described above refer to concentrations of pollutants in ambient air. The deposition of pollutants to soils and vegetation is not included in The Standards Regulations but is commonly assessed with reference to critical loads. The critical load is a quantitative estimate of the amount of a pollutant that can be deposited to an ecosystem below which significant effects on specific sensitive elements of the environment do not occur according to present knowledge. They are both habitat and location specific.

2.5.7 Critical loads have been set with a view to linking emissions controls, particularly the long-range transport of acidifying pollutants such as nitrogen and sulphur, with environmental benefits. The development of methods for mapping critical loads and levels at the European scale has been driven by a series of workshops held by the United Nations Economic Committee for Europe (UNECE) [CD12.9]. Within the UK, the National Focal Centre for critical loads modelling and mapping activities is the Centre for Ecology and Hydrology (CEH). CEH is responsible for co-ordinating the critical loads mapping activities in the UK and compiling national critical loads datasets and maps from data supplied by UK experts. The methods used by CEH are consistent with the approach of UNECE.

2.5.8 Whilst the critical loads themselves are not transcribed in regulations, the UK has adopted the use of critical loads thresholds, where appropriate, for the appraisal of conservation objectives under the Conservations of Habitats and Species Regulations 2010 [CD 5.15].

2.6 Summary

2.6.1 Planning Policy Statement 23: Planning and Pollution Control and Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9, CD6.5)

provide the national policy context for the consideration of air quality and the protection of biodiversity through the planning system.

2.6.2 The role of the planning system in relation to potential sources of air pollution is to ensure that the proposed location of any development which may give rise to pollution, either directly or indirectly, is appropriate. The local planning authority should ensure that the effects of existing sources of pollution, including background pollution, are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable.

2.6.3 In relation to effects on nature conservation sites, the overall aims of the UK Government are to ensure that harm to biodiversity is prevented and to conserve, and where possible, enhance and restore the diversity of England's wildlife by sustaining the quality of natural habitat sites.

2.6.4 Under the Conservations of Habitats and Species Regulations 2010, prior to giving consent for a development, the competent authority must first determine whether that development is likely to have a significant effect on a nature conservation site. Should a significant effect be identified, the competent authority must then make an Appropriate Assessment of the implications for the designated site in view of the site's conservation objectives i.e. assess the impacts of the development on the integrity of the site.

2.6.5 In relation to air quality, impacts could arise through direct exposure to pollutants in air, or through indirect exposure following the deposition of pollutants onto vegetation or soil. The former are assessed against statutory air quality standards and objectives set out in UK Regulations and European Directives. The latter are assessed against non-statutory indirect exposure criteria (critical loads) which, although not transcribed in regulations, have been adopted in the UK for use as thresholds for the appraisal of conservation objectives under the Conservations of Habitats and Species Regulations 2010.

3 METHODOLOGY

3.1 Construction

3.1.1 Pollutant emissions from construction traffic have the potential to cause adverse impacts on local air quality. However, there are no likely significant effects due to the relatively low number of additional vehicle movements expected as a consequence of construction activity. Therefore, potential impacts due to emissions from construction vehicles have not been assessed.

3.1.2 The potential for the construction of the Applications to cause a dust nuisance or impact on sensitive vegetation has been assessed qualitatively. To cause a nuisance, dust must be generated, become airborne and reach a potentially sensitive receptor. The dust assessment methodology has therefore involved the identification of those construction activities which have the potential to generate dust, the location of these activities and the location of sensitive receptors.

3.1.3 Research has shown that, whilst small particles (<10µm) can travel distances in excess of 1km, the majority of large dust particles (greater than 30µm) are deposited within 100m of sources; intermediate sized particles (10-30µm) are likely to travel up to 200-500m. However, as the particles are transported downwind, their concentration reduces rapidly due to the action of atmospheric dispersion. Therefore, it is considered that the potential for dust to cause impacts is likely to be limited to around 100m from construction works with dust generation potential.

3.2 Baseline Air Quality

3.2.1 The assessment of baseline air quality has used a combination of ambient air monitoring data and information provided by the National Air Quality Information Archive (NAQIA) and the Air Pollution Information Service (APIS).

3.2.2 The monitoring data were collected by local authorities, including Shepway District Council, under the requirements of the local air quality management regime, and by Parsons Brinckerhoff on and around the Airport in 2006.

3.2.3 Future baseline and background concentrations have been assessed on the basis of the long-term trends in pollutant concentrations at the nearest representative continuous monitoring station, Lullington Heath. This approach is described in the Air Quality Statement of Common Ground.

3.2.4 In line with the requirement of PPS9 to base planning decisions on up-to-date information, the most recent NAQIA mapped data on current and future baseline and background concentrations are reported in my Proof. These data were updated in June 2010, subsequent to the latest air quality assessments submitted in support of the planning applications.

3.3 Modelling of Airport Emissions

3.3.1 The approach taken to assess the air quality impacts of the proposed expansion of the airport was to compare, using computer dispersion modelling, current local air quality with that anticipated in the future if the terminal is constructed and that anticipated if the terminal is not constructed. Emissions sources explicitly considered in the study included:

a) aircraft-related emissions, e.g. landing and take-off, auxiliary power units;

b) airside vehicle emissions, e.g. ground support vehicle exhausts;

c) landside vehicle emissions, e.g. local roads, airport car-parks; and

d) heating plant.

3.3.2 The dispersion model used in the most recent assessment was ADMS-Airport (v2.3, interface build 2.29). Further details of the modelling methodology and input parameters are provided in the air quality impact assessment, submitted in December 2009 [CD1.45].

3.3.3 The assessment considered the staged expansion of the airport to 500,000ppa in 2014, by assessing future air quality in relation to both current air quality and future do-nothing scenarios in which airport activity levels remain at their current levels. The following scenarios were considered:

a) Baseline 2005;

b) Future year (2012) without airport expansion;

c) Future year (2012) with expansion of the airport to 300,000ppa;

d) Future year (2014) without airport expansion; and

e) Future year (2014) with expansion of the airport to 500,000ppa.

3.3.4 The future year scenarios with the expansion of the airport represent a near instantaneous growth of the airport to full capacity. This is, of course, highly unlikely to occur in practice. In my Proof I have, therefore, also considered the air quality impacts of the airport under the more realistic growth assumptions set out in the 'Lower Growth' scenario as described in Louise Congdon's proof of evidence in relation to socio economic matters. The realistic growth scenario also takes into account revised assumptions relating to aircraft types and occupancy rates. Table 2 of Appendix A of my proof provides details of the assumed aircraft movements in the original and revised growth scenarios.

3.3.5 The study area for the air quality impact is shown in Figure 1 of Appendix B of my proof. It includes the main settlements in the region, namely Greatstone-on-Sea, New Romney and Lydd, together with isolated farm and rural properties.

3.3.6 There are two internationally designated sites for the protection of habitats in the vicinity of the Airport, namely Dungeness Special Area of Conservation (SAC) and Dungeness to Pett Level Special Protection Area (SPA). In addition, there is one nationally designated site, Dungeness, Romney Marsh and Rye Bay SSSI. Further details of these sites are provided in the Ecology Proof of Evidence. The area considered in the dispersion modelling of the potential impacts on the designated sites is shown in Figure 1 of Appendix B of my proof.

3.3.7 The pollutants considered in the assessment of the potential impacts of the Applications on the designated sites are nitrogen oxides and nitrogen

deposition. Nitrogen dioxide is also relevant insofar as it is an intermediate on the way to contributing to nitrogen deposition.

3.3.8 It is widely acknowledged that in the immediate vicinity of emission sources of nitrogen oxides, wet deposition of nitrogen from the source is negligible in comparison to the dry deposition and that only the latter need be modelled explicitly [Appendix C, part 1]. The dry deposition of nitrogen has been modelled using a deposition velocity approach applied to predicted concentrations of nitrogen dioxide assuming a deposition velocity of 1mm/s.

3.3.9 The total emissions of nitrogen oxides from the local airport sources will primarily be in the form of nitric oxide, with only a small proportion present as nitrogen dioxide. Once in the atmosphere, the nitric oxide will be converted to nitrogen dioxide through chemical processes in the atmosphere, typically via reaction with ozone. This conversion was modelled using a single ultimate nitrogen dioxide to nitrogen oxides factor of 0.8. This is a worst-case assumption, as a much smaller proportion of fresh emissions will be present as nitrogen dioxide. It means that the nitrogen dioxide concentrations will have been overestimated and thus the nitrogen deposition due to the Airport development will also have been overestimated.

3.4 Assessment Levels

3.4.1 The acceptability of the impacts of the Applications on air quality is considered by comparing the predicted impacts to appropriate limits for the concentration of pollutants in ambient air and the deposition of those pollutants to the ground or plant surfaces.

Critical Levels

3.4.2 The concentration of nitrogen oxides in ambient air is assessed in relation to the objective for nitrogen oxides, set for the protection of vegetation and ecosystems i.e. 30µg/m^3 as an annual mean.

Critical Loads

3.4.3 The Dungeness SAC has been declared as a result of the presence of the following habitats [CD14.5]:

a) annual vegetation of drift lines, and

b) perennial vegetation of stony banks

3.4.4 The former occurs at the shoreline and is not relevant to the assessment of the potential air quality impacts of the Applications, which are greatest in the immediate vicinity of the airport and runway. The relevant habitat for the air quality assessment has, therefore, been identified as the perennial vegetation of stony banks. Similarly, vegetated shingle is listed as a reason for the notification of the Dungeness, Romney Marsh and Rye Bay SSSI [CD14.1]

3.4.5 At the time of writing this proof, a critical load range of 10 – 20 kgN/ha/yr is the site-specific critical load for perennial vegetation of stony banks provided by APIS for the Dungeness SAC [Appendix C, part 2]. This is currently the nationally and internationally accepted critical load range for this habitat.

3.4.6 The site-specific data provided on APIS were derived by CEH in 2007 on behalf of the Scotland and Northern Ireland Forum for Environmental Research, Environment Agency, Environment and Heritage Service, and Scottish Environment Protection Agency. In their 2007 report on site relevant critical loads, the CEH assigned critical loads to individual designated sites according to local conditions. This approach goes beyond the straightforward use of national UK mapped critical loads values to take into account the details of the individual sites.

3.4.7 For perennial vegetation of stony banks, there were no empirical data available from the UNECE workshops [CD12.9] and the site-relevant critical loads for Dungeness were, therefore, based on the expert judgement of the contributors to the study who, in addition to CEH, included the Joint Nature Conservation Committee, English Nature and the Environment Agency.

3.4.8 In June 2010, subsequent to the publication of all air quality impact assessments accompanying the Applications, a workshop on the review and

revision of empirical critical loads and dose response relationships was held in Noordwijkerhout, the Netherlands. The objective of the workshop was to review the critical loads for nitrogen deposition on natural ecosystems published by UNECE in 2003 [CD12.9] on the basis of additional scientific information available for the period 2002 – 2010 [CD12.24, CD12.25].

3.4.9 Vegetated shingle or perennial vegetation of stony banks was not explicitly considered in the workshop and, therefore, any revision to the critical load for Dungeness must be based on using expert judgement and a relevant habitat as a proxy.

3.4.10 In their letter of 10th December 2010 [Appendix E], Natural England stated that "*the recent review of the critical load benchmark used in APIS for the vegetated shingle at Dungeness did lead to a change, it was revised from a range of 10-20kgN/ha/yr to a level of 10kgN/ha/yr*" (para 5).

3.4.11 There is evidence to suggest that nitrogen deposition levels over Dungeness SAC have exceeded the 10kgN/ha/yr critical load over the last few decases (APIS). Taking this into account, the presence of long-established lichen communities within the Dungeness SAC and SSSI suggests that existing terricolous lichen communities are able to tolerate nitrogen deposition levels in excess of 10kgN/.ha/yr and that this revised assessment of the critical load for the vegetated shingle is considered to be overly conservative and thus affords a high degree of protection for the habitat.

3.4.12 Nevertheless, in my evidence, I have considered the assessment of nitrogen deposition against a critical load of 10kgN/ha/yr. In addition, I have compared the future deposition levels to the existing levels and the higher levels over past 5-10 years, since these are concluded, on the basis of the observed presence of long-established lichen-rich shingle heath, to be deposition levels at which the integrity of the site can be preserved.

3.5 Significance of Impacts

3.5.1 The quantitative air quality assessment criteria used in this study are based on the air quality objectives or critical loads; the judgement of the significance of the impacts is made on a pollutant specific basis, taking into account:

I. the level of background concentration or deposition in relation to the appropriate objective or criteria;

II. the Process Contribution (PC) as a percentage of the relevant objective or criteria i.e. the contribution of the Airport alone; and

III. the Predicted Environment Concentration (PEC) as a percentage of the relevant objective or criteria i.e. the total concentration in ambient air or deposition, taking into account the process contribution and the background concentrations/ deposition.

3.5.2 Where the Airport contribution is less than 1% of the relevant standard, the significance of the impact of the Airport emission source is considered to be negligible. This follows Environment Agency guidance [Appendix C, part 3] and applies whether background concentrations or deposition levels exceed the standard or not. However, it should not be inferred from this statement that an impact of more than 1% of the relevant standard is necessarily significant. The 1% criterion is the level at which an impact can be considered insignificant without the need for a detailed assessment. It is not intended to provide a test of significance of impacts.

3.5.3 Furthermore, the concept of the integrity of the site is concerned with impacts at the species population level rather than at a single point. The assessment of the significance of the impacts on the integrity of the site must consider:

I. whether the impact will effect a change in the nature, extent, structure and function of the sensitive species/habitats;

II. the effect on the average population size and viability of component species;

III. whether any site/ecosystem processes will be removed or changed;

IV. whether the ecosystem can absorb any change in pollution/deposition before the fundamental ability of the site to support the species population is compromised.

3.5.4 Taking these factors into account, the potential air quality impacts on the site integrity are considered by examining:

I. the likely future pollution and deposition levels in relation to current levels;

II. the area of the designated sites affected by pollution or deposition levels above the assessment criteria;

III. the area of the designated sites affected by a change in pollution above 1% of the assessment level;

IV. the area of the sensitive species/habitats affected by a change in pollution above 1% of the assessment level.

3.6 Summary

3.6.1 The assessment of the potential impacts of the Applications on air quality was undertaken using a dispersion modelling approach. The methodology sought to compare current air quality with that anticipated in the future if the Applications proceed and that anticipated if the Applications do not proceed.

3.6.2 Modelling of impacts was undertaken using the ADMS-Airports detailed dispersion model, taking into account nitrogen oxides and nitrogen deposition. The total pollutant concentration or deposition at any location has two components: a local contribution from nearby sources and a background contribution resulting from the transport of pollutants from more distant sources.

3.6.3 Background concentrations of nitrogen dioxide and nitrogen oxides have been derived from a monitoring survey undertaken by Parsons Brinckerhoff in 2006, projected forwards in time on the basis of long-term trends at local rural

monitoring stations. Background nitrogen depositions have been derived from the mapped data provided by the Air Pollution Information Service (APIS, www.apis.ac.uk), projected forwards in time on the basis of the advice set out in the Design Manual for Roads and Bridges.

3.6.4 The potential for the Applications' construction to affect nature conservation sites has been assessed qualitatively. The methodology involved the identification of those construction activities which have the potential to generate dust and the location of sensitive receptors.

3.6.5 The significance of the impacts of the Applications has been assessed by considering, in relation to the appropriate objective or critical load, the level of background concentration or deposition, the potential contribution of the airport sources to that level and the total ambient concentration or deposition at individual locations.

3.6.6 The integrity of the site relates to the protection of the site as a whole and, consequently, the assessment of impacts on the integrity of the site has considered the area of the sites potentially affected by the expansion and the location of sensitive ecosystems or vegetation within the sites in relation to the impacts.

4 BASELINE AIR QUALITY

4.1 Overview

4.1.1 Within the study area, baseline pollutant concentrations are within their air quality objectives for all pollutants. Consequently, no Air Quality Management Areas have been declared by Shepway District Council.

4.1.2 Background pollutant concentrations in the baseline year and future assessment years are derived from monitored baseline pollutant concentrations in the study area, with projections forwards in time based on the trends seen in the nearest representative long-established continuous monitoring stations.

4.1.3 Background deposition levels are taken from the mapped data provided by the APIS website.

4.2 Ambient Air Quality

Local Air Quality Management

4.2.1 Under the Environment Act 1995, local authorities are responsible for reviewing the air quality within their area in relation to achieving the national air quality objectives for the protection of human health and for reporting, on an annual basis, on the findings of their review. Where any objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as air quality management areas (AQMAs) and prepare an Action Plan to work towards meeting the objectives. The objectives set out in the Air Quality Strategy for the protection of vegetation are not included within the local air quality management regime.

4.2.2 The Airport is located within Shepway District Council's administrative area. The latest report available from the Council was their 2009 Updating and Screening Assessment [CD7.10]. Shepway District Council has not declared any Air Quality Management Areas, either within their district or within the air quality study area itself. Road transport is identified as the primary local

source of pollution in the district, primarily on the M20, A20, A259, A260 and A2034. Of these, only the A259 has the potential to directly influence air quality within the study area, although all roads in the district will contribute to background pollutant levels.

4.2.3 The Council monitors air quality at various locations within their district, the closest monitoring sites of which are roadside sites on the A20 and A259, 15km to the north-east of the Airport. Annual mean nitrogen dioxide concentrations in 2008 were, at 31µg/m^3 and 28µg/m^3 respectively, well within the air quality objective of 40µg/m^3, set for the protection of health.

4.2.4 It is expected that air quality will improve over time, largely as a result of steadily improving emissions control technology on road transport, which is expected to offset more greatly the effects of generally increasing traffic levels. Whilst the monitoring data available to date do not show a strong trend in nitrogen dioxide over recent years (2006 to 2008, as presented in the USA), it is reasonable to conclude that some improvement will be seen in the future, particularly at the roadside as newer, cleaner light and heavy duty vehicles enter the fleet.

Parsons Brinckerhoff Monitoring

4.2.5 In 2006, Parsons Brinckerhoff undertook a six month monitoring survey of nitrogen dioxide, hydrocarbons and ammonia using diffusion tubes in the vicinity of the Airport, at the locations shown in Figure 1 of Appendix B of my proof.

4.2.6 The results of the monitoring of nitrogen dioxide are provided in Table 3 of Appendix B. Period mean and annualised nitrogen dioxide concentrations were well below the air quality objective for health protection for nitrogen dioxide at all locations, consistent with the conclusions of Shepway District Council's LAQM reporting.

4.2.7 Roadside pollutant concentrations off airport, at Hammonds Corner, Footway Farm and Greatstone-on-Sea, were higher than concentrations monitored on

the airport. In Greatstone-on-Sea, the highest concentration was monitored within the car park.

4.2.8 The following data analysis and future projections to 2014 are as agreed for the Air Quality Statement of Common Ground between the Airport and Natural England.

4.2.9 The monitoring sites at the anemometer (3), localiser (8), railway (7), runway extension (9-11) and the end of the runway (12) are considered representative of background air quality at the Airport, with a mean concentration of 20.1µg/m^3 calculated for 2006. The impact of the existing airport ground activities is then estimated, on the basis of the difference between this background concentration and the maximum monitored concentrations on the airport (the car park, 12), to be of the order of 2µg/m^3 NO_2. This is consistent with the results of the modelling of the existing airport activities which I will describe in Section 5 of my proof. The nitrogen oxides concentration in the 2006 baseline year was calculated on the basis of the ratio of nitrogen oxides to nitrogen dioxide measured at Lullington Heath.

4.2.10 Background nitrogen dioxide and nitrogen oxides concentrations have been projected forwards using the long-term trends (between 2000 and 2010 seen at Lullington Heath, which is 56km to the west-south-west of the airport. Lullington Heath is a rural monitoring station, which is broadly representative of conditions at the airport, and is the nearest site with a long record of high quality data. Figure 2 shows the annual mean nitrogen oxides and nitrogen dioxides concentrations at Lullington Heath since 1991; the downward trend in pollutant concentrations is self evident.

4.2.11 Figure 3 shows the estimated annual mean background concentrations of nitrogen dioxide and nitrogen oxides at the airport from 2005 to 2030. It would, of course, be unrealistic to assume continued improvement of air quality, indefinitely, at a constant rate. Therefore, we have assumed that beyond 2020, there is no significant trend in concentrations.

4.2.12 Background concentrations of nitrogen oxides are below the air quality objective for the protection of vegetation in all years. In 2010, the

concentration is around 24µg/m^3; by 2014, it is predicted to have declined further, and will lie well below the objective of 30µg/m^3. By 2020, the concentration is predicted to be 18.9µg/m^3.

National Air Quality Information Archive

4.2.13 The background concentrations of nitrogen dioxide and nitrogen oxides estimated from the monitoring survey are significantly higher than those estimated from the projections provided by the NAQIA 1km mapped data, by 40% on average.

4.2.14 This excludes the grid square in which the Airport is located, which has been confirmed in discussion with AEA, who are responsible for the national pollutant maps.

4.3 Air Pollution Information Service

4.3.1 Background nitrogen deposition data for the study were taken from APIS (www.apis.ac.uk), using their site-relevant search facility to obtain data for the Dungeness SAC (http://www.apis.ac.uk/cgi_bin/query_sitebased.pl). The APIS site-relevant data were derived in a 2007 study by NERC's Centre for Ecology and Hydrology (CEH), where the UK's National Focal Centre for critical loads modelling and mapping activities is based. CEH is acknowledged internationally to be a centre for excellence in relation to critical loads datasets and exceedences mapping.

4.3.2 Site-specific deposition data are available from APIS for a 2003-2005 average and 2010. In the study area, the site-specific APIS deposition rates were 11.5kgN/ha/yr in 2003-2005 and 9.8kgN/ha/yr in 2010, which represents a decrease of around 2.5% per annum.

4.3.3 For the purposes of this assessment, the 2003-2005 value was assumed to be representative of conditions in 2005, while deposition levels in 2012 and 2014 were extrapolated from the value for 2010 using a 2% decrease in deposition per annum from the 2010 level. The assumption of a 2% decrease per annum is consistent with the advice in the Highways Agency's Design Manual for Roads and Bridges (DMRB, HA207/07 CD8.5). This rate is less

than the recent 2.5% per annum decrease derived from the APIS website, but is considered more reasonable for future projections. It has been accepted by Natural England in the Air Quality Statement of Common Ground..

4.3.4 Figure 3 shows the background nitrogen deposition, assumed to apply across the whole of the study area, in each of the assessment years. In the assessment of impacts, the contribution of local sources is added to this APIS background value.

4.4 Air Pollution and Designated Sites

4.4.1 The lichen vegetation growing directly on the open shingle across most of the designated sites in the vicinity of the airport is still dominated by species typical of acidic and nutrient-poor substrata, [CD12.26, Table 1]. This is consistent with there being no widespread significant adverse impacts from atmospheric nitrogen deposition at current levels.

4.4.2 There is some evidence, however, for potential impacts of eutrophication at the micro-scale. Observations undertaken by the lichen expert, Dr. Holger Thüs [Appendix D], revealed that nitrophytic lichen species occur in high numbers to the north-east of the runway, but only on very localised patches characterised by disturbed open shingle. These areas lie close to arable fields and have a high density of rabbit holes and droppings, all of which may provide a nitrogen input to the surface. This vegetation type also occurs on an equally disturbed area of the disused runway of the airfield. Its location in a depression suggests that it receives additional nutrient rich sediments from nearby areas.

4.4.3 In contrast to earlier reports, the lichen vegetation which grows on the bark of shrubs and trees is dominated today by indicators of elevated deposition of nitrogen compounds and base rich bark [CD12.26, Table 2]. Further observations by Dr. Holger Thüs in December 2010, both on the airport and on additional sites towards Dungeness Nuclear Power Station have shown that exceptions to this do occur, but only in the interior of extensive Willow and Blackthorn thickets. Dr Thüs's comparison of the lichen communities in the immediate vicinity of arable fields and those more distant from the fields is

strongly indicative of an impact of nutrient rich dust impregnation, directly related to the agricultural activities rather than to the background levels of nitrogen deposition.

4.5 Summary

4.5.1 Baseline nitrogen oxides concentrations are within the air quality objective set for the protection of vegetation over the sites designated for nature conservation in the vicinity of the airport i.e. the Dungeness SAC and the Dungeness, Romney Marsh and Rye Bay SSSI. However, baseline deposition levels have recently exceeded the critical load set in APIS for the most sensitive, relevant habitat - the lichen-rich vegetated shingle.

4.5.2 The vegetated shingle habitat within the designated sites is generally typical of acidic and nutrient-poor substrata, which is consistent with there being no widespread significant adverse impacts from atmospheric nitrogen deposition at current levels. The communities of primary conservation interest appear long established, which, given that baseline deposition levels have exceeded the specified critical load in the past, implies that these lichens are more tolerant of atmospheric nitrogen input than would be inferred by reference to the critical load alone.

4.5.3 Pockets of nitrophytic lichen are present on disturbed shingle in the vicinity of arable fields. However, the eutrophication of these habitats is likely to be related to agricultural nitrogen inputs which will be unaffected by the expansion of the airport. There is also evidence for epiphytic lichens being affected by the impact of nutrient rich dust derived from agricultural sources.

5 EFFECTS OF THE PROPOSED DEVELOPMENTS

5.1 Operational Impacts

Baseline 2005

5.1.1 Figures 4 and 5 show the concentration of nitrogen oxides and nitrogen deposition over the study area with the airport operating at current activity levels and road traffic flows and emissions relevant to 2005. It is readily apparent that the local contribution to nitrogen oxides and nitrogen deposition is dominated by emissions from the local roads, with a lesser contribution from the airport sources.

5.1.2 Concentrations of nitrogen oxides in the 2005 baseline (Figure 4) were generally just below the air quality objective for the protection of vegetation (30µg/m^3). The contribution of the airport activities to concentrations of NO_X over the designated sites was low, at under 1µg/m^3 generally, but locally up to 3µg/m^3 over an area of improved grassland to the north-east of the existing carpark and airport gate activities, where concentrations exceeded 30 over a small area (<0.3ha) of the existing SSSI.

5.1.3 In the vicinity of the airport, deposition over both the Dungeness SAC and the SSSI, was in the range 11.5 to 11.7kgN/ha/yr in 2005. At the point of maximum deposition over the SSSI in the immediate vicinity of the airport, background nitrogen deposition contributed 11.5kgN/ha/yr, and the airport itself contributed less than 0.3kgN/ha/yr.

5.1.4 The baseline model results indicate that in the recent past, the vegetated shingle within the Dungeness designated sites is likely to have experienced deposition levels in excess of the critical load for nitrogen of 10kgN/ha/yr but levels of nitrogen oxides below the air quality objective of 30µg/m^3.

Expansion of Airport to 300K ppa in 2012

5.1.5 Figures 6 and 7 show the concentration of nitrogen oxides and nitrogen deposition over the study area with the airport continuing to operate at current

activity levels and with road traffic flows and emissions relevant to 2012. Figures 8 and 9 show the data for the scenario in which the airport operations are expanded to 300Kppa and the new runway is built. In both scenarios (with and without the development of the airport) traffic flows are assumed to grow from 2005 levels, although emissions per vehicle decrease, as vehicle technologies improve over time. The assessment scenario (300Kppa in 2012) is provided for the earliest potential operational year of 2012.

5.1.6 In the future (2012) baseline scenario, deposition over the Dungeness SAC and the SSSI within the study area is around 9.5kgN/ha/yr everywhere. This is lower than the 2005 baseline value of 11.5kgN/ha/yr and also below the critical load of 10kgN/ha/yr (Figure 7).

5.1.7 With the expansion of the airport to 300,000ppa in 2012, the predicted contribution of airport emissions to nitrogen deposition increases to a maximum of 1.5kgN/ha/yr over the designated sites. This would give rise to deposition rates in the range 9.5 to 11 kgN/ha/yr over the SSSI and 9.5 to 9.7kgN/ha/yr for the SAC.

5.1.8 Therefore, over both the SAC and the SSSI, deposition levels remain below 2005 baseline levels whether or not the runway extension proceeds. Significantly, over the SAC, deposition levels remain below the critical load in 2012 whether or not the runway extension proceeds.

5.1.9 Furthermore, the area of the SSSI over which the deposition exceeds the critical load is limited to the areas of improved grassland within the airport hardstanding. Deposition levels over the vegetated shingle within SSSI remain below the critical load, even with the extension of the runway and increase in passenger numbers.

5.1.10 A similar pattern is seen for nitrogen oxides under this scenario. The contribution of the airport sources increases to a maximum of 6µg/m^3 over the sensitive vegetation of the SSSI (i.e. excluding areas of improved grassland within the airport hardstanding) and 3µg/m^3 over the SAC with the expansion of the airport to 300,000ppa.

5.1.11 Over the SAC, total nitrogen oxides concentrations are predicted to remain lower than in the 2005 baseline and below the air quality objective. Total nitrogen oxides concentrations would exceed the air quality objective at a few locations in the SSSI. However, these locations lie between the areas of existing hardstanding and part of the runway and taxiways where only improved grassland vegetation is present.

Expansion of Airport to 500K ppa in 2014

5.1.12 Figures 10 and 11 show the concentration of nitrogen oxides and nitrogen deposition over the study area with the airport continuing to operate at current activity levels and road traffic flows and emissions relevant to 2014. Figures 12 and 13 show the model results for the scenario in which the airport operations are expanded to 500Kppa and the new terminal is built.

5.1.13 In the future (2014) baseline scenario, nitrogen deposition over the Dungeness SAC and the SSSI within the study area is predicted to be around 9.2kgN/ha/yr everywhere, lower than the 2005 baseline value of 11.5kgN/ha/yr.

5.1.14 Assuming the airport expands to 500,000ppa in 2014, then nitrogen deposition would increase in relation to the future (2014) baseline scenario by a maximum of 0.2kgN/ha/yr over the SAC and 1.0kgN/ha/yr over the SSSI (0.5kgN/ha/yr outside of the airport hardstanding) (Figure 14). The maximum total nitrogen deposition would be 9.3kgN/ha/yr over the SAC, which is below the critical load, and 9.5kgN/ha/yr over the sensitive vegetation in the SSSI.

5.1.15 Similarly, the contribution of the airport sources is a maximum of 9µg/m^3 over the SSSI (outside the airport hardstanding) and 3µg/m^3 over the SAC. Total nitrogen oxides concentrations remain lower than in the baseline, but in the immediate vicinity of new gate area, concentrations exceed the air quality objective with the expansion of the airport. However, this area is not vegetated shingle, but improved grassland.

Sensitivity to Revised Growth Scenarios

5.1.16 As noted in Section 3 of my proof, scenarios that assume the rapid growth of the airport from a few thousand to a few hundred thousand passengers per annum are not, in practice, realistic. Therefore, in this section, I describe the likely time evolution of the impact of the airport expansion on nitrogen oxides concentrations and nitrogen deposition over the SAC and SSSI, at the point of maximum impact within each designated site. Figures 15 and 16 illustrate the evolution of the maximum impacts over the SAC and Figures 17 and 18 illustrate the evolution of the impacts over the sensitive vegetation in the SSSI.

5.1.17 Over the SAC, maximum concentrations of nitrogen oxides are predicted to remain below 30 $\mu g/m^3$ in all years and scenarios considered in the assessment. Indeed, concentrations continue to decrease year on year to 2020, whether or not the airport is developed. After 2020, when no trend in the background concentrations is assumed, concentrations begin to increase again. However, by the time 500,000ppa is reached, just before 2030, the concentration of nitrogen oxides remains around 23 $\mu g/m^3$, well below the objective for the protection of ecosystems, and 5 $\mu g/m^3$ below the 2005 baseline concentration.

5.1.18 Levels of nitrogen deposition with and without the airport development are all but indistinguishable to 2023. After this time, nitrogen deposition levels in the with-airport development scenario increase by a maximum of 0.2kgN/ha/yr above the no development scenario levels, or 2% of the objective. Total deposition levels remain below levels seen in 2019, and more than 3kgN/ha/yr below the baseline levels when the airport reaches capacity. Furthermore, maximum deposition levels fall below 10kgN/ha/yr around 2010 and are predicted to remain below this level in future years whether or not the airport development proceeds.

5.1.19 Over the SSSI, where maximum impacts are slightly higher than over the SAC, the concentrations of nitrogen oxides are predicted to decrease to around 2020, after which time they slowly increase. However, the increase

with the expansion of airport to 500,000ppa merely returns concentration levels to those seen in 2011, well below concentrations experienced in the baseline year 2005. Similar trends are seen in the evolution of nitrogen deposition, with levels falling below 10kgN/ha/yr in 2010 and remaining below this level thoughout the expansion period of the airport. The maximum predicted increase in deposition over the SSSI is 0.4kgN/ha/yr, or 4% of the critical load.

5.2 Cumulative Impacts

5.2.1 There are no current or proposed developments in the region of the airport which are considered likely to result in significant cumulative impacts on air quality in combination with the Applications.

5.2.2 In their Consolidated Appropriate Assessment for the Applications [CD1.53], Shepway District Council identified potentially relevant projects to be the decommissioning of Dungeness Power Station, Little Cheyne Court Windfarm, Mineral Extraction plans and the Lydd Golf Club Hotel development. The Council also considered it unlikely that any in-combination impacts would result from these developments.

5.3 Construction

5.3.1 Dust emissions during construction of both the runway extension and the terminal building could give rise to increased dust deposition and elevated fine particulate matter concentrations. The potential effects that arise from these emissions are:

a) dust soiling of surface, vehicles *etc*.;

b) damage to vegetation from deposited dust;

c) damage to crops or commercial operations from deposited dust; and

d) heath effects from exposure to PM_{10}.

5.3.2 In the context of my proof, I am principally concerned with any harm to vegetation caused by the construction activities.

5.3.3 Dust deposition impacts are likely to be limited to properties or ecosystems within 200m of construction activities with dust generation potential. Whilst there are no residential properties within 200m of proposed works, the designated SSSI and SAC lie within 200m of the potentially dust generating activities.

5.3.4 The potential for dust nuisance at properties and potentially harmful effects of dust on ecosystem sensitive habitats will depend on a wide range of factors including prevailing meteorological conditions, the nature of materials and the type and duration of the activities.

5.3.5 The potential for dust generation and its transport to sensitive receptors is highest during dry, windy conditions. In general, construction activities associated with the greatest potential for dust generation are:

a) earthworks including excavation of topsoil, handling on site and deposition;

b) handling and storage of materials (including loading and unloading);

c) haulage roads and unsealed site surfaces (especially vehicles travelling along them);

d) wind blow across disturbed site surfaces and materials; and

e) mechanical operations such as crushing, drilling, concrete mixing and cutting.

5.3.6 It is currently anticipated that the Applications will not generate any significant surplus of excavated material during construction, and it is envisaged that the majority of material can be used on site with little requirement for offsite disposal.

5.3.7 The employment of Best Practicable Means (BPM) would minimise the risk of adverse effects from construction dust and avoid causing Statutory Nuisance or damage to vegetation. Specific control measures for construction would be

applied through the implementation of a Construction Environmental Management Plan (CEMP).

5.3.8 The site manager would have responsibility on a day to day basis for determining if either the nature of the activities on site or weather conditions would be likely to result in the transfer of dust off site. Were this to be the case, remedial action would be taken to minimise emissions, including the application of appropriate control measures, or if necessary, the temporary suspension of works. Examples of appropriate control measures are provided in the following section.

5.3.9 Exhaust emissions from construction traffic and plant have the potential to create adverse impacts on local air quality. As for dust control, the employment of BPM will minimise the risk of adverse impacts. However, due to the temporary nature of construction activities at any one location, it is considered unlikely that these effects will be significant.

5.4 Consideration and Assessment

5.4.1 Having presented the predicted impacts of the airport expansion in terms of the absolute change in pollutant concentration or deposition, here I will discuss the effects of the airport expansion in the context of the significance of the impacts and the integrity of the national and international designated sites.

5.4.2 The following observations are material to the consideration of significance of the air quality impacts.

a. In their rolling programme of site conditions assessments, Natural England observed in 2010 that 99.90% of the Dungeness, Romney Marsh and Rye Bay SSSI was meeting its conservation objectives, with 64.45% of the site in a favourable condition.

b. Mapped nitrogen deposition provided by the APIS website for Dungeness SAC, indicates that 2005 baseline nitrogen deposition at the site was of the order of 11.5kgN/ha/yr. This level exceeded the assessment standard of a 10kgN/ha/yr critical load.

Furthermore, ***under realistic growth scenarios***:

c. nitrogen deposition and nitrogen oxides concentrations over the SSSI and the Dungeness SAC are predicted to be lower in the future than both baseline 2005 and current 2010 levels, whether or not the airport expansion proceeds;

d. over the sensitive vegetation, nitrogen oxides concentrations are predicted to be below the 30µg/m^3 objective for the protection of vegetation in all future years, whether or not the airport expansion proceeds;

e. over the sensitive vegetation, nitrogen deposition is predicted to remain below the critical load of 10kgN/ha/yr in the future whether or not the airport expansion proceeds;

f. the maximum likely impact of the expansion of the airport on nitrogen deposition is less than 0.2kgN/ha/yr (2% of 10kgN/ha/yr) over the Dungeness SAC and 0.4kgN/ha/yr (4% of 10kgN/ha/yr) over the SSSI; and

g. with expansion of the airport to 500,000ppa, the maximum area of the SAC affected by a change in deposition above 0.1kgN/ha/yr (1% of 10kgN/ha/yr) is 28ha, which is less than 1% of the area of the site; the area of the SSSI affected by a change in deposition above 0.1kgN/ha/yr is 109ha, which is less than 1.2% of the area of the SSSI, and furthermore, a significant fraction of the 100ha of the SSSI is improved grassland or arable land.

5.4.3 Points d. and e. above clearly indicate that no significant impacts on the designated nature conservation sites are expected as a result of changes in air quality ensuing from the Applications.

5.4.4 The air quality objective is set for the ***protection*** of vegetation and, therefore, concentrations of nitrogen oxides in air which are below the objective are unlikely to result in material impacts on vegetation. Similarly, the critical load

is defined as a quantitative estimate of an exposure to one or more pollutants below which ***harmful effects*** on specified sensitive elements of the environment ***do not occur*** according to present knowledge.

5.4.5 With nitrogen oxides concentrations and nitrogen deposition over the sensitive vegetation predicted to be below the objective and critical load respectively, in all future years, whether or not the airport expansion proceeds, it is reasonable to conclude that no significant air quality impacts are predicted as a result of the Applications.

5.4.6 The maximum increase in nitrogen deposition is just a small fraction of the critical load, and over the vast majority of both the SAC and SSSI is imperceptibly small (<1% of the critical load) (Points f and g above). This is further confirmation of a likely negligible impact on the nature conservation sites.

5.4.7 The lichen colonies on raised sections of vegetated shingle in the vicinity of the airport and on the airfield itself are generally in good condition at present and apparently have not undergone significant changes over the last two decades [CD12.6, CD12.26]. Lichen species that are typical of high nutrient environments are largely absent from the lichen heath, except particular patches of limited extent linked to the transport of fertilizers, pesticides and nutrient rich soil particles from the surrounding arable land. With both concentrations of nitrogen oxides and nitrogen deposition having fallen in recent decades, these observations provide evidence that the standards used in the assessment are robust.

5.4.8 It is my opinion not only that there are no likely significant effects, but that I have been able to demonstrate beyond reasonable scientific doubt in any event that the Applications will not affect the designated nature conservation sites, on either a local scale or on the integrity of the sites as a whole. I am confident in this conclusion since I have, at all key stages in the assessment, made conservative assumptions relating to model inputs and data analysis, whilst being aware of the need to provide a robust assessment of a realistic development strategy for the airport.

5.4.9 For example, the following is a list of conservative (tending to overestimate) assumptions in the modelling:

a) in modelling the emissions from aircraft, we have assumed that take-off uses 100% thrust at all times; this is unlikely to be true for all aircraft;

b) where necessary, we have selected the highest emitting engine-aircraft combinations for assessment;

c) the NO_X to NO_2 conversion ratio in the modelling is 0.8; close to the runway where predicted impacts are greatest, this ratio is likely to be much lower;

d) the dispersion modelling has used meteorological data from Herstmonceaux, an inland site, which is likely to have lower mean wind speeds and poorer dispersion rates than the wind climate on the exposed air field; and

e) no reductions in background concentrations have been assumed beyond 2020, which is unlikely to occur in practice.

5.4.10 In relation to the future projection of background pollution levels and deposition rates, it is also worth noting that the projected background levels do not represent the lowest future background concentrations that could have reasonably been used. Indeed, I have not employed the official guidance on the future projection of air pollution levels, which would have used data from the NAQIA and the methodology outlined in Defra guidance document LAQM.TG(09) [CD12.4]. This methodology would have led to lower background levels than those described in my Proof and I have, instead, based my projections on monitored trends at nearby stations.

5.5 Summary

5.5.1 The model results for the 2005 baseline nitrogen oxides concentrations and nitrogen deposition illustrate that road transport is currently the dominant pollution source within the study area and that, in 2005, there was widespread exceedence of the critical load for nitrogen deposition over the designated

sites. Baseline activity levels at the airport have a negligible impact on nitrogen deposition levels over the designated sites. Nitrogen oxides concentrations were within the air quality objective set for the protection of vegetation over the designated sites in the study area.

5.5.2 Over the areas of vegetated shingle in the SSSI and the SAC, the future concentrations of nitrogen oxides and nitrogen deposition levels are predicted to decrease with respect to current levels, whether or not the airport expansion proceeds. Furthermore, nitrogen deposition levels are predicted to decrease to be within the critical load, whether or not the airport expansion proceeds.

5.5.3 In the absence of exceedence of either the critical load for nitrogen deposition or the critical level for nitrogen oxides concentrations, and no worsening of air quality in relation to the 2005 (or 2010) baseline, the expansion of the airport is considered unlikely to have a significant impact on the conservation relevant species within the designated sites. This is also the view of Natural England.

5.5.4 Over the Dungeness SAC, the expansion of the airport to cater for 500,000ppa results in a maximum increase of 0.2kgN/ha/yr in relation to future baseline scenarios with no development of the airport. This equates to just 2% of the critical load for vegetated shingle of 10kgN/ha/yr. The area of the SAC over which deposition increases by more than 1% of the critical load is less than 1% of the area of the SAC and it is concluded that the impact of the expansion of the airport on the integrity of the designated sites will be negligible. This was also the conclusion reached in the assessment carried out by Shepway District Council.

5.5.5 Overall, taking into consideration the robust nature of the model techniques and model inputs, and the numerous conservative assumptions employed in the study, it is concluded that the impact of the expansion of LAA on nitrogen oxides concentrations and nitrogen deposition over the designated sites will be negligible.

6 MITIGATION

6.1 Construction Effects Mitigation

6.1.1 A Draft Construction Environment Management Plan (CEMP) has been drafted by Parsons Brinckerhoff, and was published in August 2008. No works shall be undertaken in respect of either the runway extension or the terminal building until the CEMP has been agreed with the Local Planning Authority. In relation to air quality impacts, it contains the following proposals for the management of emissions to air during construction.

Site Management

6.1.2 Good site management practices during the construction works will help to prevent the generation of airborne dust. It will be the responsibility of the nominated contractor and site manager to ensure through the CEMP that sufficient precautionary measures to limit dust generation and local air quality impacts are undertaken.

6.1.3 To ensure that atmospheric dust, contaminants or dust deposits generated by the construction work do not exceed levels which could constitute a nuisance to local residents or damage to ecosystems, or site equipment, it is proposed that visual inspections of dust, odours and exhaust emissions be undertaken along airport approach roads and along the boundary of the construction works. A trained and competent person will carry out monitoring on a weekly basis. However, if dry windy weather prevails, then the rate of dust monitoring will initially be increased to daily, and then 4 times per day if levels remain high.

6.1.4 The mitigation measures described below will be implemented as necessary. If, despite the implementation of best practicable means of dust/odour mitigation, levels of dust soiling, odours or visible exhaust smoke remain unacceptable, the site manager will ensure the cessation of the relevant generating construction activities.

6.1.5 In ecologically sensitive areas such as Dungeness, it is important that working methods and operations pay due attention to the protection of the integrity of the adjacent SSSIs and SAC.

Site Clearance

6.1.6 The prolonged storage of debris on site, in temporary stockpiles will be avoided. Vehicles removing demolition or site clearance materials will have their loads effectively sheeted on all sides. Crushing of material for reuse, transportation or disposal will be undertaken as far away as possible from sensitive receptors. Burning of waste material will be avoided if possible. Excavation faces, when not being worked, will be sheeted.

Handling and Storage of Materials

6.1.7 The number of handling operations will be minimised, ensuring that dusty material is not moved or handled unnecessarily. Fine material will be delivered to site in bags. Drop height will be kept to a minimum.

6.1.8 Stockpiles will be located as far away as practicable from potential receptors, with slopes at angles less than the natural angle of repose of the material. Stockpiles will be sheeted, contained within wind barriers or potentially damped down. If long term stockpiles are required, consideration will be given to the use of chemical bonding agents.

Site Roads and Haulage Routes

6.1.9 Hardstanding areas for vehicles entering, parking and leaving the site will be provided, with wheel washing facilities at access points. Site roads will be cleaned regularly, and damped down if necessary. Site vehicle movements will be kept to a minimum and, where possible, restricted to paved haulage routes. Vehicle speeds will be limited to 20 km/h or less on surfaced roads, and 10 km/h on unpaved surfaces. The idling of vehicles will be kept to a minimum.

6.1.10 If required, cleaning of public roads used for transport of materials will be undertaken.

Mechanical Operations

6.1.11 Static and mobile plant will be well maintained, regularly serviced and located as far away as practicable for sensitive receptors. Spillages will be minimised and removed promptly.

6.2 Operational Effects Mitigation

6.2.1 Whilst the air quality impacts of the operation of the airport are considered to be acceptable, the following draft planning condition is proposed in relation to both the runway extension and the terminal building. No flight movements using the runway extension, or passenger movements through the terminal shall be permitted until the air quality management strategy has been approved by the Local Planning Authority. The current Strategy sets out the following measures:

(i) Measures to minimise emissions from gate activities including:

a. Encouraging aircraft to reduce the amount of time spent on Auxiliary Power Units
b. Using low emission ground support equipment
c. Reducing idling time for ground support vehicles
d. Planning use of air support vehicles to improve efficiency
e. Minimising spillages and fugitive losses from re-fuelling operations

(ii) Measures to minimise emissions from landside vehicles by

a. Implementing Green Travel Plans for employees
b. Provision of low emission shuttle buses for in-airport transfers
c. Providing advice to customers on minimising impacts of travel to airport

(iii) Measures to minimise emissions from Energy Centre (terminal construction only) including:

a. Use of low NOx plant
b. Proactive maintenance of plant

(iv) An Air Quality Monitoring and Action Plan Strategy including:

a. Operation of an air quality monitoring network for nitrogen oxides and nitrogen dioxide consisting of:

   (i) a continuous monitor, at a location to be agreed with the Local Planning Authority (in consultation with Natural England) adjacent to the area of the runway in the SAC, such continuous monitor to comply with the standards set out in regulations in England for assessing compliance with air quality objectives, and to include required maintenance including a six monthly comprehensive service including call-out provision; and

   (ii) a minimum of 20 diffusion tube sites comprising tubes within the airport boundary and the SAC, 4 tubes at the roadside on routes approaching the airport and tubes at locations in the SAC remote from the airport.

b. Establishing a vegetation monitoring programme through permanent quadrats. This will involve comparison between vegetation quality within a number of test quadrats within the SAC and SSSI designated sites, including areas close to/on the airport and remote from the airport, with co-location with air quality monitoring sites wherever practicable.

c. Annual reporting of air quality and vegetation monitoring to the Local Planning Authority (with a copy to Natural England) which shall be publicly available.

d. Within six months of submission to the Local Planning Authority and Natural England of such annual monitoring report, submission to the Local Planning Authority (with a copy to Natural England) of an annual Air Quality Action Plan including details of measures to be implemented by the airport operator to avoid or prevent any significant adverse effects arising from the Development (which in the case of impact on the SAC shall be to avoid or prevent any adverse impact on the integrity of the SAC) should (i) any exceedences of the UK's Air Quality Objectives be identified and (ii) evidence from the results of monitoring indicates a need for such measures to avoid or prevent such effects, in each case

taking into account the need to maintain reasonable Airport operations

6.3 Summary

6.3.1 During construction of both the runway and terminal building, control of atmospheric dust, contaminants and dust deposition will be managed through adherence to the mitigation methods set out in a Construction Environmental Management Plan (CEMP). This will be the responsibility of the nominated contractor and site manager. No construction works can begin until the CEMP has been agreed with the local planning authority. Visual inspections by competent personnel will be key to ensuring that appropriate mitigation methods are being employed at all times and that the working methods and operations pay due attention to the protection of the adjacent SSSI and SAC.

6.3.2 Whilst the impacts of the operation of the airport at increased passenger levels is not considered to have a significant effect on the designated sites, an air quality management strategy is currently being agreed through planning conditions. The strategy includes methods to minimise emissions from airside activities (primarily within the gate area) and landside activities (through travel planning and use of low emissions vehicles). It also includes methods to monitor the impacts of the airport on the designated sites including both ambient air monitoring and vegetation conditions mapping. No aircraft may use the runway extension or passengers use the terminal building until the air quality management strategy has been agreed with the local planning authority.

7 RESPONSE TO RULE 6 PARTIES' OBJECTIONS

7.1 Introduction

7.1.1 In this Chapter I provide a response to specific asserted concerns of Rule 6 Parties in relation to air quality.

7.2 Objectors

Alleged Flaws in the Flight Path Assumptions and Modal Split (Lydd Airport Action Group)

7.2.1 LAAG alleges that there are flaws in the air pollution assessment relating to flight paths, the modal split and baseline movements, and that new flight procedures have been ignored.

7.2.2 Flight paths are dealt with in more detail in the evidence of airport operations on behalf of the Airport. But in any event, the air dispersion model results are not sensitive to the details of the flight paths themselves and turning movements in the air need not be considered in detail in the model inputs. The model results are sensitive to the assumptions made with respect to the choice of runway (03 or 21) and emissions from the aircraft whilst they are on the ground, but not once in the air. The runway split was assessed on the advice on Mr Tim Maskins of London Ashford Airport and is considered robust in the context of an air quality impact assessment.

7.2.3 In relation to the modal split and baseline movements, the latter have little bearing on the outcome of the air quality assessment since the impact of the airport at current activity levels is minimal. The modal splits used in the Environmental Statement and subsequent air quality submissions have been assessed in my Proof, together with revised estimates of the future growth of the airport and aircraft movements forecasts. These are described in the Socio-Economic Proof of Evidence of Louise Congdon.

Nitrogen Deposition Impacts on SAC [Royal Society for the Protection of Birds]

7.2.4 The RSPB appears to be asserting that the applicant has failed to demonstrate, beyond reasonable scientific doubt, that there will not be an adverse effect on the integrity of the SAC due to nitrogen deposition.

7.2.5 In my proof of evidence, I have set out the process of assessment, and that first of all there are no likely significant adverse effects which would therefore require an Appropriate Assessment, and that in any event the evidence demonstrates that the integrity of the site will not be adversely affected by additional nitrogen deposition following the expansion of the airport. The site is currently in a largely favourable condition and the best available information suggests that current deposition levels have, up until recently, exceeded the published critical loads for the qualifying habitats features of interest. This suggests that the perennial vegetation of stony banks at Dungeness is less sensitive to nitrogen deposition or nitrogen oxides in air than previously assumed. Furthermore, only a very small improvement in local air quality is required to offset completely the effects of airport expansion in terms of maintaining or improving existing air quality and it is considered highly unlikely that there will be no improvement in background pollution levels in the short to medium term.

7.2.6 I consider the assessment of the air quality impacts demonstrates that there are not likely to be any significant adverse effects and so no Appropriate Assessment is required. But in any event I have proved beyond reasonable scientific doubt that there will not be an adverse effect on the integrity of the SAC, because the effects have been demonstrated to be insignificant on two levels. Firstly, the contribution of the airport to local air quality over the designated sites is only a small fraction of the relevant assessment criteria – the maximum impact on the nitrogen deposition over the SAC is less than 2% of the relevant critical load. Secondly, using the 1% level as a test of potential significance of impacts, the area of the SAC affected at a level above the 1% insignificance criteria is only a small fraction, less than 1%, of the site.

Impacts on Invertebrates [Kent Wildlife Trust]

7.2.7 I have assessed the impacts of the potential increase in nitrogen deposition on what I consider to be the most sensitive habitat present on Dungeness, namely the lichen communities of the vegetated shingle. It is my conclusion that these communities will not be affected by the airport expansion and that any potential secondary impacts such as impacts, either direct or indirect, on invertebrates will be similarly negligible.

7.3 Summary

7.3.1 I have addressed the overarching concerns of objectors in the body of my Proof of Evidence, namely:

a) The assumptions on which the modelling of the expansion of the airport has been based are robust. They have been examined by numerous experts over the past four years, including experts appointed by Natural England and Shepway District Council and no significant shortcomings have been identified.
b) The assumptions on which the assessment of impacts of expansion of the airport has been based are also robust. The critical level for nitrogen oxides has been set by European Directives and has not been subject to any objections. The critical load of 10kgN/ha/yr has been agreed with Natural England as an appropriate assessment level, based on the latest available data and literature reviews, and I have provided evidence to demonstrate that it is conservative i.e. providing a high degree of protection, for terricolous lichen communities within Dungeness.

8 CONCLUSIONS

8.1 Local Air Quality

8.1.1 My proof of evidence has provided an overview of the air quality impacts of the Applications. The Applications are expected to increase emissions to air in the vicinity of the airport as activity levels increase. However, the impact of the increase in emissions is not considered to be significant.

8.1.2 The Applications are not predicted to result in a deterioration in air quality in comparison to existing air quality over sensitive vegetation within the designated nature conservation sites. Furthermore, whether or not the expansion of the airport proceeds, future nitrogen deposition levels are predicted to be below the critical load for the most sensitive habitat in the sites, namely vegetated shingle, and nitrogen oxides concentrations are predicted to be below the air quality objective set for the protection of vegetation.

8.2 Construction

8.2.1 Any effect of construction vehicle emissions on local air quality will be negligible. Other construction works, such as earthworks, do, however, have the potential to create dust and during construction it will be necessary to apply a package of mitigation measures to minimise dust emissions and to monitor the effectiveness of the mitigation measures.

8.3 Discussion

8.3.1 I have examined the air quality impacts associated with the Applications in relation to national and local policies. It is my view that the Applications are not contrary to any of these policies.

8.3.2 Planning Policy Statement 23 [CD 6.12] requires consideration of:

a) the possible impact of potentially polluting development on the natural environment;

b) the potential sensitivity of the area to adverse effects from pollution;

c) existing and future air quality in an area; and

d) the need for compliance with statutory environmental air quality standards or objectives.

8.3.3 The air quality assessment of the Applications has considered the potential future impacts on the most sensitive habitats in the vicinity of the airport, including the vegetated shingle within the Dungeness SAC and the Dungeness, Romney Marsh and Rye Bay SSSI. I have concluded that the impacts of the Applications on the conservation relevant habitats within the designated sites will be negligible because the future expansion of the airport is not predicted to result in exceedence of the statutory environmental objective for ambient concentrations of nitrogen oxides, nor is the expansion of the airport predicted to result in exceedence of the non-statutory standard for nitrogen deposition. I consider both the objective for nitrogen oxides and the critical load for nitrogen deposition to be protective of the health of the habitats.

8.3.4 PPS9 [CD6.5] requires that planning decisions should be made with the aim of preventing harm to biodiversity and to conserve, enhance and restore the diversity of England's wildlife by sustaining and where possible improving, the quality and extent of natural habitat sites. Since the Applications are not predicted to worsen existing levels of pollution and are not predicted to exceed protective standards for air quality, they cannot be considered to be contrary to this policy statement.

8.3.5 I have considered the impacts of the expansion of the airport at both a detailed local level, by considering the maximum impacts over sensitive habitats in the immediate vicinity of the airport, and on a whole-site level, by considering the area of the site affected by the Applications.

8.3.6 It is my view that the expansion of the airport will not result in significant impacts at the local level. Therefore, an Appropriate Assessment is not required. I have also concluded that the impacts of the expansion of the

airport on the integrity of the designated sites will be negligible. The areas of the SAC and SSSI likely to be affected by an increase in deposition above 1% of the critical load - an imperceptible change – are very small, at less than 1% of the area of the SAC and 1.2% of the area of the SSSI.

8.4 Summary

8.4.1 The air quality assessment of the Applications concludes that air quality is not a constraint to proceeding with the Applications.