Bournemouth Airport, Ecological Study to Support Appropriate Assessment

Working Final Report

Prepared for Christchurch Borough Council
by
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1. INTRODUCTION

1.1. Land Use Consultants was appointed in January 2008 by Christchurch Borough Council to draw together an evidence base relating to potential ecological impacts and mitigation options associated with the expansion of Bournemouth Airport. Given the long term view of this assessment, consideration is given to relatively well defined options for development and infrastructure, as well as proposals of a more indicative nature. The current proposals broadly comprise (detailed in **Section 5**):

- expansion of terminal and airport facilities to meet projected growth in air passenger numbers;
- development of employment land in the northern business park within the airport boundary;
- associated transport infrastructure improvements associated with the above proposals;
- associated drainage and sewerage infrastructure.

1.2. Relevant plans and projects that may influence future proposals are also taken into account.

1.3. A Scoping Report was produced and circulated in May - June 2008 to the study Steering Group and members of the Airport Advisory Group to ensure an accurate baseline for the study, and for the methodology to be agreed. Following this, the assessment of the proposals and development of potential mitigation options was progressed.

1.4. This report presents the findings of the study and comprises the following chapters:

- **Section 2** presents the assessment methodology including scoping and consultation exercises;
- **Section 3** the relevant statue and planning policies;
- **Section 4** details the baseline ecological information;
- **Section 5** summarises the airport expansion proposals;
- **Section 6** summarises other relevant plans and policies;
- **Section 7** provides the assessment of potential impacts on the ecological receptors which have been identified;
- **Section 8** presents the conclusions of the study;
- Full references are provided as footnotes throughout.

PURPOSE OF THE STUDY

1.5. The project brief required an assessment of the likely ecological impacts and identification of mitigation options of airport expansion proposals at Bournemouth Airport. The study is to include:

- internationally designated sites (Natura 2000 sites comprising Special Areas of Conservation and Special Protection Areas, and Ramsar sites);
- nationally designated Sites of Special Scientific Interest;
- county-level Sites of Nature Conservation Importance;
- European Protected Species;
- habitats and species of principal importance for biodiversity (UK and Regional/local Biodiversity Action Plan Priorities).

1.6. The main purpose of this study is to provide a sufficient evidence base to fulfil requirements for Appropriate Assessment under the Habitats Regulations 1994 of the Christchurch Core Strategy and inform the Issues and Options stage of this document and the Bournemouth Airport Area Action Plan. However, this will also inform other policy requirements of the Council in relation to airport expansion, including:

- the duty to conserve and enhance SSSIs and the contribution this makes to achieving national targets of maintaining 95% of SSSI in favourable or recovering condition by 2010;
- the conservation of species protected by law either within or adjoining statutory sites in the vicinity of the airport;
- national policy that local authorities should take steps to further the conservation of habitats and species of principal importance (e.g. priority BAP habitats and species), which are which are within or adjoining the airport.

2. METHODOLOGY

OVERVIEW

2.1. The ecological study closely follows the methodology developed by Land Use Consultants during the Appropriate Assessments of regional and local level development plans and projects. This follows recent guidance (including from Department for Communities and Local Government[1], Natural England[2], the Royal Society for the Protection of Birds[3], and Land Use Consultants[4]) to identify and assess the significance of impacts upon Natura 2000 sites (Special Protection Areas, Special Areas of Conservation and Ramsar sites).

2.2. In line with the project brief, this method will be extended to include the identification of wider nature conservation interest (or ecological receptors) in the area and assessment of potential impacts of possible airport expansion proposals on these. Those additional features (or receptors) included within the study will include:

- Sites of Special Scientific Interest (SSSI - this will include those which form part of the Natura 2000 sites);
- Sites of Nature Conservation Importance (SNCI - locally designated sites);
- European Protected Species (EPS);
- Other habitats and species of principle importance for biodiversity (UK and South West Biodiversity Action Plan priority habitats and species).

2.3. A key aspect of the methodology is to provide a robust approach deriving transparent data, thus facilitating comprehensive yet candid assessment.

2.4. AA itself is required under the Habitats Regulations and aims to conclude whether or not a plan, policy or proposal would adversely affect the integrity of the Natura 2000 sites in question. This is judged in terms of the implications of the plan on the Site's *conservation objectives*. AA relies on rigorous application of the precautionary principle and therefore requires evidence that the plan or project will not have a significant impact on these conservation objectives. Where uncertainty remains, an adverse impact should be assumed. This approach is also extended to the other ecological receptors, with principles of Ecological Impact Assessment incorporated.

2.5. This section provides a brief summary of the methodology followed during the ecological study, with further information provided where relevant (for example relating to document sources) in the following sections of the report.

[1] DCLG (2006) *Planning for the protection of European Sites: Appropriate Assessment. Guidance for Regional Spatial Strategies and Local Development Documents*
[2] Natural England (2007) *The Habitats Regulations Assessment of Regional Spatial Strategies and Sub-regional Strategies*
[3] RSPB (2007) *The Appropriate Assessment of Spatial Plans in England. A guide to why, when and how to do it*
[4] Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants (2006) *Step-by-Step Guide to Appropriate Assessment of Plans*

TASK 1: INCEPTION MEETING

2.6. An Inception Meeting was held with the Steering Group on 3 April 2008, including representatives from Christchurch Borough Council, Dorset County Council and Land Use Consultants. This involved confirmation of the background and scope of the study, and issues such as the key sources of information. Detailed meeting notes are presented in **Appendix II**.

2.7. Following on from this, on the 23 April 2008 members of the LUC team undertook a familiarisation visit of the airport and its surrounds. Notes of this are provided in **Appendix III**.

TASK 2: REVIEW OF LEGISLATIVE AND POLICY CONTEXT

2.8. To provide a background to the study, the relevant legislative and policy context was reviewed. This included relevant European and UK legislation (for example, Habitats Directive and Regulations, Wildlife and Countryside Act 1981, Countryside and Rights of Way Act 2000, Natural Environment and Rural Communities Act 2006) and National, Regional and Local policy documents.

TASK 3: IDENTIFICATION OF AIRPORT EXPANSION PROPOSALS, PLANS AND PROJECTS

2.9. Initially the airport expansion proposals were identified and summarised to enable the identification of potential implications for ecological receptors in the area. This included information provided by the Steering Group, through consultation with the Bournemouth Airport Advisory Group during scoping, as well as a review of relevant documents, such as:

- Economic Study of Development Land at Bournemouth Airport 2008[5]
- Bournemouth International Airport Business Park Spatial Strategy to Guide Redevelopment 2007[6]
- Bournemouth Airport Masterplan 2007[7]
- Northern Development Zone development feasibility and masterplan 2003[8]
- Reports of associated transport infrastructure projects[9]
- Planning Application documents associated with new terminal facilities[10]

[5] Nathaniel Litchfield and Partners (2008). Economic Study of Development Land at Bournemouth Airport.
[6] RPS Burks Green (2007). Bournemouth International Airport Business Park Spatial Strategy to Guide Redevelopment.
[7] Bournemouth Airport (2007) *The Master Plan*
[8] EDAW, DTZ Pieda Consulting, Peter Brett and Associates, and Davis Langdon and Everest (2003) *Northern Development Zone at Bournemouth Airport: Development Feasibility and Masterplan draft final report*
[9] Dorset Engineering Consultancy (2007) *Bournemouth Aviation Park: Highway Corridor Options*; and DEC (2008) *A338 Widening: Feasibility Study*.
[10] Planning Application 8/07/0065 associated documents including Bournemouth Airport (2007) *Passenger Terminal Extension and Refurbishment Environmental Statement*; *Section 106 Agreement dated June 2007*

2.10. In addition, and in line with AA guidance, other strategic plans were reviewed to enable the identification of potential in-combination effects upon the receptor sites. Further detail is provided in **Section 6**. Again, this was further informed by the Steering Group and the Bournemouth Airport Advisory Group.

TASK 4: COLLECTING BASELINE ECOLOGICAL INFORMATION

2.11. Ecological baseline information was collated from a number of the sources, including Natural England and the Dorset Environmental Records Centre. Data (receptors) was mapped using a Geographical Information System approach, including:

- Boundaries of Natura 2000 sites and SSSIs (from Natural England);
- SNCI site boundaries (available from Local Authority);
- European Protected Species records (available from DERC);
- Biodiversity Action Plan priority habitats and species (DERC).

2.12. The receptors identified for inclusion in the study (and the approach to their selection) is further detailed in **Section 4**.

2.13. Ecological receptors were classified by their value in terms of specific 'biodiversity benefits' that they provide to the environment, people or wider society. These benefits can include the conservation of genetic diversity, people's enjoyment or understanding of biodiversity, and the health benefits of biodiversity. A summary of LUC's definitions of ecological value are presented in **Table 2.1**, which uses a combination of statutory measures (legally protected sites and species) and non-statutory but widely accepted measures.

Table 2.1: The LUC approach to valuing ecological receptors in England

Level of Value	Examples
International	An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site, Biogenetic Reserve) or an area which Natural England has determined meets the published selection criteria for such designations, irrespective of whether or not it has yet been notified. A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat essential to maintain the viability of that ecological resource. Any regularly occurring population of an internationally important species, i.e. those listed in Annex I, II or IV of the EC Habitats Directive, or Annex I of the EC Birds Directive.
National	A nationally designated site (SSSIs, NNRs, Marine Nature Reserve) or a discrete area which Natural England has determined meets the published selection criteria for national designation irrespective of whether or not it has yet been notified. A viable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat which are essential to maintain the viability of that ecological resource. A regularly occurring population of a nationally important species e.g. a priority species listed in the UK BAP and/or Schedules 1, 5 (S9 (1, 4a, 4b)) and 8 of the Wildlife and Countryside Act, or breeding birds listed on the Red or Amber List of species of conservation concern.

Level of Value	Examples
County / Metropolitan	Viable areas of key habitat identified in County/Metropolitan LBAPs and/or Natural Area Profile or smaller areas of such habitats essential to maintain the viability of that ecological resource. Any regularly occurring, locally significant population of a species listed as being nationally scarce (occurring in 16-100 10 km squares in the UK) or in a County/Metropolitan BAP on account of its rarity or localisation. Non-statutory designated wildlife sites (e.g. SNCIs, SINCs, WHSs and BHSs).
District / Borough	District/Borough sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, e.g. Local Nature Reserves. Sites/features that are scarce within the district/borough or which appreciably enrich the district/borough habitat resource.
Neighbourhood	Commonplace and widespread semi-natural habitats.
Less than neighbourhood	Habitats of little or no ecological value, e.g. amenity grassland or hard standing.

2.14. In addition to location, the following data was collated in relation to the sites and species (from published information where possible, and also from specialist ecological knowledge and consultation with relevant local organisations such as Natural England). This also included the use of information collected as part of the AA of the Draft South West Regional Spatial Strategy (this information was updated).

Receptor
Qualifying features / reasons for designation.
Conservation Objectives (Natura 2000 sites)
The conservation status of the sites and species (favourable or otherwise).
Key attributes and characteristics of habitats or species (including seasonal influences, physical and chemical composition, dynamics of species and habitats).
Those aspects of the receptor that are judged to be vulnerable to change (key vulnerabilities).
Key structural and functional relationships that contribute to, and maintain the integrity of the site or populations.
Other conservation issues and trends relevant to the integrity receptor.

TASK 5: SCOPING EXERCISE

2.15. The above information was presented as a scoping paper to the Steering Group as well as the Bournemouth Airport Advisory Group.

2.16. The purpose of this consultation was to verify the data collected in terms of the sites, habitats and species to be included within the study, and in relation to airport expansion proposals / options. This also enabled input to the assumptions and methodology employed during the study.

TASK 6: IDENTIFICATION OF POTENTIAL ECOLOGICAL IMPACTS AND ASSESSMENT OF SIGNIFICANCE

2.17. This stage will be strongly based on the methodology employed by LUC for AA, enabling the relevant analysis to be extracted and used to inform the Appropriate Assessment of the Core Strategy and Bournemouth Airport Area Action Plan. However, given the wider focus of this study, it will also make use of Environmental Impact Assessment methodologies used for the assessment of significance of impacts in relation to other ecological receptors.

Incorporation of requirements under Appropriate Assessment within the Environmental Impact Assessment approach

This study combines Appropriate Assessment with Environmental Impact Methodologies to enable the assessment of effects of the Proposals on receptors of varying values (from County to International), whilst ensuring that the level of detail is sufficient to inform Appropriate Assessment.

In Appropriate Assessment, the Screening Stage involves the identification of those plans or projects, either alone or in combination with other plans or projects, which are **likely to have a significant effect on a Natura 2000 site**.

If a significant effect is judged likely or possible (in line with the precautionary principle) a full Appropriate Assessment will be required to determine whether that effect will **impact upon the integrity of the designated interest feature in terms of the site's Conservation Objectives**. At this stage avoidance and mitigation options would be identified to ensure no adverse impact upon integrity.

Tasks 6A, 6B and 6C advance the assessment to a sufficient level of detail to inform requirements for Screening and full Appropriate Assessment. Hereon during this report, the term **impact**, as used for EIA, is used to refer to **effect**, as used for Appropriate Assessment.

2.18. A risk based approach involving the application of the precautionary principle will be adopted to the assessment, in particular given the outline nature of the expansion proposals. As such, proposals will only be judged to have no, or an insignificant, impact where a clear judgement could be made, based on current knowledge and information available, that the proposals would not have a significant impact on the integrity of the ecological receptors.

Task 6A: Identification of Potential Impacts

2.19. To assess the likelihood of significant impacts it is first necessary to understand the potential effects that may result from the construction and operation of the expanded airport and employment facilities. **Table 2.2** sets out the potential impacts arising from the three broad components of the proposals. Heathland habitats in particular are susceptible suite of direct and indirect impacts arising from urban development in close vicinity. For example, great visitor numbers may mean increased instances of disturbance of fauna. Heaths in proximity to urban centres experience a range of 'urban effects' which include greater instance of arson, damage

by off road vehicles, fly tipping, disturbance, erosion and persecution from site users, and predation by pets.

Table 2.2: Potential impacts of airport expansion proposals on ecological receptors

Categories of vulnerabilities and impacts on ecological receptors
Physical loss of habitat
Removal (including offsite impacts, e.g. foraging habitat)
Physical damage to habitat
Sedimentation / silting
Prevention of natural processes
Erosion
Trampling*
Fragmentation / severance
Edge impacts
Burning, tipping, off road vehicles etc.*
Non-physical disturbance
Noise and vibration*
Human presence*
Light pollution
Changes to hydrology
Ground water level and stability
Surface water flow
Toxic contamination
Water pollution
Soil contamination
Air pollution
Non-toxic contamination
Nutrient enrichment (e.g. of soils and water)
Changes in salinity
Changes in turbidity
Biological disturbance
Direct mortality
Out-competition by non-native species*
Predation*
Persecution by people*

*** Urban effects**

Task 6B: Determination of Impact Magnitude

2.20. Following on from this, the **magnitude** of the identified impacts will be determined. Magnitude refers to changes in the extent and integrity of an ecological receptor (**Table 2.3**). Ecological integrity is used in accordance with the definition given in

the ODPM circular 06/2006 on Biodiversity and Geological Conservation, meaning, for designated sites, '*the coherence of its ecological structure and function across its* [the site or population] *whole area, that enables it to sustain the habitat, complex of habitats and/or the level of populations of species for which it was classified'*. For non-designated sites, this can be amended to: '*the coherence of ecological structure and function, that enables the feature to be maintained in its present condition*'.

2.21. Specifically in relation to AA, integrity of a Natura 2000 site depends on the site being able to sustain its *qualifying features* (both habitats and species) and ensure their continued viability. A high degree of integrity is considered to exist where the potential to meet a Site's Conservation Objectives is realised and where the site is capable of self repair and renewal with a minimum of external management support.

Table 2.3: Criteria for describing impact magnitude

Impact magnitude	Description
High	There is a large-scale permanent change in the ecological receptor and changes in its overall integrity.
Medium	There is a permanent change in the ecological receptor but no permanent change in its overall integrity.
Low	There is a small-scale permanent change or mid-term temporary change in the ecological receptor but its overall integrity is not permanently affected.
Neutral	There is no change in the ecological receptor.

Task 6C: Determination of Impact Significance

2.22. Combining ecological value and magnitude gives impact significance (see **Table 2.4**). In accordance with standard approaches to EIA, impacts of proposed developments with a significance level of moderate or major are considered as requiring some form of mitigation or compensation in order to reduce the potential impact. With respect to sites that support protected species, there may also be a legal obligation to provide such mitigation.

Table 2.4: Matrix for determining significance of ecological impacts

Impact Significance Level		Magnitude of Impact			
		High	Medium	Low	Neutral
Value of Ecological Receptor	International	**major**	**major**	**moderate**	no impact
	National	**major**	**moderate**	**moderate**	no impact
	County	**moderate**	**moderate**	**minor**	no impact
	District	**moderate**	**minor**	**minor**	no impact
	Neighbourhood	**minor**	**minor**	negligible	no impact
	Less than Neighbourhood	negligible	negligible	negligible	no impact

Task 6D: Identification of potential in-combination / cumulative impacts

2.23. The review in **Section 6** has identified those plans/projects which may also have an impact on the ecological receptors within the vicinity. By referring to the impacts associated with the airport expansion proposals, and the vulnerabilities of the ecological receptors, it will be possible to identify those plans which may exacerbate or add to potential impacts on the integrity of the ecological receptors. This will further inform potential mitigation options.

TASK 7: IDENTIFICATION OF POTENTIAL FOR AVOIDANCE (INCLUDING POTENTIAL ALTERNATIVES) MITIGATION AND COMPENSATION

2.24. The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensation – see below[11]. First, the plan should aim to avoid impacts on Natura 2000 sites or, second, apply mitigation measures to the point where no significant impacts on the site(s) remain. If the plan is still likely to result in significant adverse effects, and no further practicable mitigation is possible, then compensation measures are required for any remaining adverse effects, but they are permitted only if the plan is required for imperative reasons of overriding public interest (the 'IROPI test'). The requirements associated with IROPI, and the difficulty in actually achieving satisfactory compensation makes this an extremely onerous route. It is likely to involve approval from central government and possibly from the EU. The requirement that in most cases the compensation scheme should be fully implemented before the plan (or project) proceeds makes this an extremely difficult option to carry forward and should if at all possible be avoided.

Avoidance

Try to prevent impacts on European sites from happening in the first place, e.g.

- Move development to different location within the authority (e.g. outside river catchment)
- Change the type of development proposed

Mitigation

Reduce the impact to the point where it no longer has significant effects, e.g.

- Vegetation buffer zones to prevent / reduce disturbance to sensitive species
- Creation of new recreational areas to reduce recreational impacts on site (e.g. Thames Basin Heaths)

Compensation

If a significant impact will occur, and there is no alternative, and the plan is necessary, put in offsite offsetting, e.g.

- Habitat creation near the Felixstowe Docks; Bathside Bay;
- 3:1 compensation for loss of habitats (e.g. Humber Estuary Flood Management Plan)

2.25. This hierarchical approach will be followed in this study to suggest options to address potential impacts. Given the scope of the study and the outline nature of many of the proposals, options for avoidance, mitigation or compensation are provided in a

[11] Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants (2006) *Step-by-Step Guide to Appropriate Assessment of Plans*

relatively broad sense. In particular, in terms of avoidance this could include the investigation of alternative sites. However, this would largely be outside the scope of this study unless locations were available within the study area itself.

2.26. This task will include the identification of any proposals / sites where development may not proceed given the severity of the ecological constraints and in line with the legislative and planning review (Task 2).

3. REVIEW OF LEGISLATION AND POLICY CONTEXT

LEGISLATION

International

3.1. **The Conservation (Natural Habitats, etc,) Regulations 1994** (Habitats Regulations) transposes the **EC Birds Directive**[12] and the **EU Habitats Directives**[13] into UK Law. The provisions of both Directives require EU Member States to introduce a range of measures to further the protection of species and habitats listed in the various Annexes.

3.2. The EC Habitats Directive requires EU member states to designate **Special Areas of Conservation (SAC)** for habitats and species listed on Annexes I and II (respectively) which are of European wide conservation interest. Annex IV to the EU Habitats Directive contains further measures for the strict protection of certain species (i.e. protection against capturing, killing, disturbance, or trade), wherever these species occur. Species listed in Annexes II and IV are collectively referred to as **European Protected Species**.

3.3. The EU Birds Directive requires EU Member states to designate **Special Protection Areas (SPA)** which are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species. Collectively SAC and SPA are referred to as **Natura 2000**[14] sites.

3.4. The UK government is also a signatory to the Convention on Wetlands (1971), signed in Ramsar, Iran (the **Ramsar Convention**). If a nature conservation site meets one or more of nine Ramsar Criteria set out in the Convention, it can be designated as a **Ramsar site**. The initial emphasis in designating Ramsar sites was on selecting sites of importance to waterbirds within the UK, and consequently many Ramsar sites are also Special Protection Areas (SPAs) classified under the Birds Directive. However, greater attention is now being directed towards the selection of Ramsar sites on account of non-bird features. According to Planning Policy Statement 9 (see below) Ramsar sites should be afforded the same planning status as Natura 2000 sites.

The requirement to undertake a Habitat Regulations Assessment (HRA)

3.5. The requirement to undertake HRA of development plans was confirmed by a letter (9 March 2006) from the Office of the Deputy Prime Minister to all planning authorities (including Regional Planning Bodies). This followed a European Court of Justice ruling confirming that development plans must be subject to 'appropriate assessment' under the Habitat Regulations in order to demonstrate that their

[12] Council Directive 79/409/EEC on the conservation of wild birds
[13] Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora; HMSO (1994). *The Conservation (Natural Habitats, &C.) Regulations, 1994*. HMSO
[14] This is often abbreviated to the acronym 'N2K'

implementation would not adversely affect Natura 2000 sites. The Habitat Regulations as amended came in to force in 2007.[15]

3.6. The Habitats Regulations Assessment refers to the assessment of the potential effects of a plan or project (not associated with the management of the conservation interest) on one or more Natura 2000 sites. The Government also expects potential SPAs (pSPAs), and Ramsar sites to be included within the assessment[16]. **Key to the HRA process is that a conclusion should be drawn whether or not a proposal or policy in a development plan would adversely affect the integrity of the site in question.** This is judged in terms of the implications of the plan for a site's 'qualifying features' (i.e. those Annex I habitats, Annex II species, and Annex I bird populations for which it has been designated). Significantly, HRA is based on a rigorous application of the precautionary principle and therefore requires those undertaking the exercise to prove that the plan will **not** have a significant impact on these conservation objectives. Where uncertainty or doubt remains, an adverse impact should be assumed.

3.7. The HRA should be undertaken by the 'competent authority'; in this case Christchurch Borough Council. However, the process requires ecological expertise in order to make judgements about the implications for sites' integrity. It also requires close working with Natural England (NE) in order to obtain the necessary information, agree the process, outcomes and mitigation proposals.

National

3.8. The key legislation for the protection of nature conservation and biodiversity in the UK is set out under the **Wildlife and Countryside Act (1981, as amended)**.[17] This Act provides the basis for most of the UK's wildlife protection measures. Further details are provided later in this report where relevant. The Act was significantly strengthened by the **Countryside and Rights of Way Act (2000)**[18] (the CRoW Act), which also introduced a statutory duty for government to promote steps to further the conservation of priority habitats and species listed on the UK Biodiversity Action Plan (see below).

3.9. **Natural Environment and Rural Communities Act (2006)** established Natural England as a single organisation with the responsibility for enhancing biodiversity and landscape, and promoting access and recreation. This was achieved by merging the Countryside Agency, English Nature and Rural Development Service. The Act also introduced 'the Biodiversity Duty' (Section 40 of the NERC Act) which introduces a 'duty to conserve biodiversity' which stipulates that *every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.*

[15] The Conservation (Natural Habitats, &c.) (Amendment) Regulations 1997 (Statutory Instrument 1997 No. 3055).
[16] Planning Policy Statement 9: Biodiversity and Geological Conservation. OPDM, 2005.
[17] HMSO (1981). *The Wildlife and Countryside Act, 1981*. HMSO
[18] HMSO (2000). *The countryside and rights of way act*. HMSO

POLICY

National

3.10. **Planning Policy Statement 9: Biodiversity and Geological Conservation** was published by the Office of the Deputy Prime Minister in 2005, replacing PPG9. It details national policies regarding how biodiversity and geological features of conservation interest are to be protected through the planning system. One of the key principles of PPS9 is that all plan policies and planning decisions should aim to maintain and enhance, restore or add to biodiversity and geological conservation interests, with the intention that harm to these resources must be prevented.

3.11. This includes the protection of international and nationally designated sites, and legally protected species. Additional emphasis is placed on habitats and species not subject to specific legal protection. These include:

- Biodiversity Action Plan priority species and habitats;
- landscape features of importance for wildlife as corridors or stepping stones for movement;
- local wildlife sites.

Regional

3.12. The **Draft Regional Spatial Strategy for the South West 2006-2026** contains a number of policies relevant to the scope of this study:

- **Policy ENV1** states the need to enhance the natural environment and also that development should be resisted where it will affect these features. It continues that in instances where damage is unavoidable, local authorities should seek to mitigate or compensate for any losses incurred. It also details that priority will be given to enhancing and preserving sites of international or national interest.
- **Policy ENV4** states that distinctive habitats and species of the South West will be maintained in line with national targets and the South West Biodiversity Action Plan. It notes that local authorities should take account of Nature Map areas and support proposals which seek to link habitats or make habitats more resilient to climate change.
- **Policy RE8** states that local authorities should support the implementation of the Regional Woodland and Forestry Framework (RWFF) and that woodland areas should be maintained at least at 2005 levels.
- **Policy TR9** states that the increasing demand for air travel from the region should be met within the region, with Bournemouth named as one of the three principal airports to meet such growth. The supporting transport infrastructure is proposed to be met by agencies including local authorities and airport operators in line with the overarching strategies for the urban areas.

3.13. **Bournemouth, Dorset and Poole Structure Plan (2000)** contains **Environment Policies A, B** and **C** which state that development which would adversely affect Natura 2000 sites, priority habitats/species, NNRs/SSSIs, and sites of nature conservation interest should not be permitted. **Environment Policy D** aims to prevent development which might cause harm to a specially protected species or habitat. Finally, **Environment Policy E,** details the need to re-establish 500 ha of lowland heathland and to ensure the replacement of appropriate habitats in situations where (through development) damage or loss occurs.

Local

3.14. **Chapter 3** of the **Borough of Christchurch Local Plan (adopted 2001, modified 2007)** specifically relates to conservation of the natural environment. Within this document the following saved policies are of relevance to this study:

- **Policy ENV 11** notes that proposals for development affecting a SSSI will not be permitted *"unless the reasons for development...outweigh the nature conservation or scientific interest of the site"*. This policy states that where development is permitted which affects a SSSI, planning conditions or obligations will be sought to protect and enhance the features of interest of the site.

- **Policy ENV 14** states that development likely to have an adverse effect on a site of nature conservation interest will only be permitted if the nature conservation value (including nature conservation features) can be protected by mitigating measures.

- **Policy ENV 15** states that areas marked on the proposals map as 'Green Corridors' are to be retained for wildlife movement and public enjoyment.

- **Policy ENV 21** relates to proposals for new development or redevelopment. It details that the Council will give high priority to associated landscaping which provides for quality with respect to wildlife and amenity functions.

Biodiversity Action Plans

3.15. The **UK Biodiversity Action Plan (UK BAP)** was produced by the UK Government in response to becoming signatory to the Convention on Biological Diversity 1992. Biodiversity Action Plans (BAPs) are strategies containing targeted and costed conservation actions for certain Priority Habitats and Priority Species[19]. The UK BAP was originally published in 1996 but has recently been updated (2008) to include BAPs for 1149 priority species and 65 priority habitats.

3.16. On a Regional level, the **South West Biodiversity Action Plan** was prepared in 1997 by the South West Biodiversity Partnership. This includes 19 Habitat Action Plans (nine Priority Habitats, eight Broad Habitats[20] and two Local Habitats[21]) and 11

[19] Priority Habitats/Species are classified by the UK BAP on the basis of four factors: 1) International threat; 2) Importance of UK population on an international scale; 3) Evidence of a marked decline; and 4) Other important factors (e.g. the need for scientific research to establish population data).
[20] Broad habitats = habitats listed in the UK BAP for which a nature conservation statement exists but not a specific action plan. Broad habitats can be disaggregated into numerous Priority Habitat types.

Species Action Plan (six Priority Species and five Local Species as listed in **Section 5**). In 2004 an Implementation Plan was produced which lists Actions for the region in terms of the following Sectors:

- Farming and Food
- Water and Wetlands
- Woodland and Forestry
- Towns, Cities and Development
- Coastal and Marine Environment

3.17. At the local level, a **Dorset Biodiversity Strategy**[22] has been prepared. This similarly takes a habitat led approach, with Habitats Statements developed for habitats, grouped under the sector that most affects them:

- Forestry and Woodland Management
- Agriculture
- Freshwater Management
- Coastal and Marine Issues

3.18. As such there are no Species Action Plans within the Dorset BAP, with the rationale being that the protection and enhancement of habitats would in turn benefit species.

[21] Local Habitats/Species = Habitats/Species which are considered to be of importance to wildlife in a local context but are not listed on the UK BAP.
[22] Dorset Biodiversity Partnership (2003). *Dorset Biodiversity Strategy*

4. BASELINE ECOLOGICAL INFORMATION

INTRODUCTION

4.1. This Section presents baseline ecological information pertaining to nature conservation sites, habitats and species occurring in the vicinity of Bournemouth Airport. The Section also highlights any limitations of the data sets which are utilised and states any assumptions which have been made when including ecological data in the ecological study.

METHODOLOGY

4.2. GIS data available from Natural England[23] was reviewed for nature conservation sites within the vicinity of Bournemouth Airport. This included internationally designated Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites; nationally designated Sites of Special Scientific Interest (SSSI), National and Local Nature Reserves (NNR and LNR sites respectively).

4.3. Existing biological records were sought from Dorset Environmental Records Centre (DERC) in March 2008. The aim being to identify any locally designated sites and rare or protected species (including Biodiversity Action Plan [BAP] species). Records were sought for a 3 km radius around the approximate airport centre point, this distance being selected so as to include the area encompassing all airport expansion proposals and associated infrastructure to the east of the Airport.

GENERAL DESCRIPTION

4.4. The area surrounding the airport comprises of a mosaic of habitats including of acid heathland, wide river valleys and floodplains, broad-leaved woodlands, and beaches, sandy cliffs and salt-marshes. The Dorset heathlands once dominated the area, but are now largely fragmented by agriculture, conifer plantation and urban development. The area contains two European wildlife sites – the Dorset Heaths SAC and Dorset Heathlands SPA, as well as the Dorset Heathlands Ramsar Site and a number of SSSIs and SNCIs (**Figure 4.1 and 4.2**). These sites are subject to continued pressures resulting from the development and use of land, including fragmentation and a range of indirect effects such as declining air quality and reduced water levels.

NATURE CONSERVATION SITES

4.5. **Table 4.1** lists all nature conservation sites to be included in the study together with summary information of the qualifying features, key vulnerabilities and the condition of nature conservation features on each site. Further detail of these sites is also provided in **Appendix V**.

4.6. **Figure 4.1** indicates the locations of SAC, SPA and Ramsar sites within the vicinity of Bournemouth Airport. Nine such sites have been identified within 10 km of the site. This distance threshold is suggested in Natural England guidance for

[23] Source: www.naturalengland.org.uk

Appropriate Assessment (Natural England 2007). **Figure 4.2** illustrates SSSIs and SNCIs identified for inclusion in the study by the project Steering Group (Dorset County Council and Christchurch Borough Council).

Table 4.1: Summary of qualifying features, key vulnerabilities and condition of nature conservation features for nature conservation sites

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
NATURE CONSERVATION SITES OF INTERNATIONAL VALUE						
Special Protection Areas (SPAs)						
Avon Valley SPA	SU 142,984	February 1998	Gadwall (*Anas strepera*) Bewick's swan (*Cygnus columbianus bewickii*)	Physical damage to habitat Sedimentation/silting; Erosion Non-physical disturbance Noise and vibration Changes to hydrology Drying; Water level and stability ; Surface water flow (reduction) Toxic contamination Water pollution/contamination ; Soil contamination Non-toxic contamination Changes in salinity/thermal regime/turbidity Biological disturbance	Condition assessment for Avon Valley (Bickton-Christchurch) SSSI: **51.7% of site area meeting PSA target.** 9.66 % favourable condition; 42.0% un-favourable recovering; 27.3% unfavourable no-change; 21.0% unfavourable declining. (compiled 09 Apr 08). (compiled 09 Apr 08).	Primarily includes terrestrial habitat surrounding the River Avon. Overlap with the Avon Valley Ramsar site and the River Avon SAC. Includes the Avon Valley (Bickton-Christchurch) SSSI

[24] Grid reference = location within nature conservation site nearest to Bournemouth International Airport site boundary
[25] For SSSIs key vulnerabilities extracted from Natural England's SSSI 'Views About Management' document (www.naturalengland.org.uk). For all other sites vulnerabilities are based on LUCs typology of possible ecological effects presented in Section 2 of this report.
[26] Source: Natural England (2008). http://www.english-nature.org.uk/Special/sssi/. Figures rounded to 3 significant figures. Condition Assessments to be treated with caution dependent on whether they are compliant with Common Standards Monitoring.

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
				Introduction of new habitats/ species		
Dorset Heathlands SPA	SU 111,991	October 1998	Nightjar (*Caprimulgus europaeus*) Hen Harrier (*Circus cyaneus*) Merlin (*Falco columbarius*) Wood Lark *(Lullula arborea)* Dartford Warbler (*Sylvia undata)*	<u>Physical damage to habitat</u> Prevention of natural processes ; Fragmentation ; Edge effects <u>Non-physical disturbance</u> Noise and vibration; Human presence <u>Changes to hydrology</u> Drying ; Water level and stability <u>Toxic contamination</u> Water pollution/contamination ; Air pollution <u>Non-toxic contamination</u> Nutrient enrichment ; Air pollution (e.g. dust) <u>Biological disturbance</u> Direct mortality ; Natural succession	*See Hurn Common SSSI, Parley Common SSSI, Town Common SSSI and St. Leonards and St. Ives Heaths SSSI.*	Overlaps with the Ramsar site and Dorset Heaths SAC. Includes Hurn Common SSSI, Parley Common SSSI, Town Common SSSI and St. Leonards and St. Ives Heaths SSSI.
New Forest SPA	SU 184, 008	September 1993	Nightjar (*Caprimulgus europaeus*) Hen Harrier (*Circus cyaneus*)	<u>Physical damage to habitat</u> Fragmentation; Edge effects <u>Non-physical disturbance</u>	Condition assessment for The New Forest SSSI: **97.9% of site area meeting PSA target.**	Overlaps with The New Forest Ramsar site and SAC. Includes

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			Hobby (*Falco subbuteo*) Wood Lark (*Lullula arborea*) Honey Buzzard (*Pernis apivorus*) Wood Warbler (*Phylloscopus sibilatrix*) Dartford Warbler (*Sylvia undata)*	Noise and vibration Changes to hydrology Water level and stability Toxic contamination Water pollution/contamination ; Soil contamination ; Air pollution Non-toxic contamination Nutrient enrichment ; Air pollution Biological disturbance Direct mortality ; Natural succession	33.0 % favourable condition; 64.9% un-favourable recovering; 0.43% unfavourable no-change; 1.64% unfavourable declining; 0.01% destroyed/part destroyed. (compiled 09 Apr 08). (compiled 09 Apr 08).	the New Forest SSSI.
Special Areas of Conservation (SACs)						
The Dorset Heaths SAC	SU 111,991	October, 1998	**Annex I habitats** **Primary** Northern Atlantic wet heaths with Erica tetralix European dry heaths Depressions on peat substrates of the Rhynchosporion **Non-primary** Molinia meadows on calcareous, peaty or clayey-	Physical damage to habitat Prevention of natural processes; Fragmentation ; Edge effects Non-physical disturbance Noise and vibration; Human presence Changes to hydrology Drying ; Water level and stability Toxic contamination	*See entries for Hurn Common SSSI, Parley Common SSSI, Town Common SSSI and St. Leonards and St. Ives Heaths SSSI.*	Overlaps with the Dorset Heathlands Ramsar site and SPA. Includes Hurn Common SSSI, Parley Common SSSI, Town Common SSSI and St. Leonards and St. Ives Heaths SSSI.

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			silt-laden soils (Molinion caeruleae) Calcareous fens with Cladium mariscus and species of the Caricion davallianae Alkaline fens Old acidophilous oak woods with Quercus robur on sandy plains **Annex II species** **Primary** Southern damselfly Coenagrion mercuriale **Non-primary** Great crested newt Triturus cristatus	Water pollution/contamination ; Air pollution Non-toxic contamination Nutrient enrichment ; Air pollution (e.g. dust) Biological disturbance Direct mortality ; Natural succession		
New Forest SAC	SU 175, 000	June, 1995	**Annex I Habitats:** **Primary** Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea	Physical damage to habitat Fragmentation ; Edge effects Non-physical disturbance Noise and vibration Changes to hydrology Water level and stability Toxic contamination Water	*See entry for New Forest SPA*	Overlaps with The New Forest Ramsar site and SAC. Includes the New Forest SSSI.

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			uniflorae and/or of the Isoëto-Nanojuncetea Northern Atlantic wet heaths with Erica tetralix European dry heaths Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) Depressions on peat substrates of the Rhynchosporion Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion) Asperulo-Fagetum beech forests Old acidophilous oak woods with Quercus robur on sandy plains Bog woodland * Priority feature Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	pollution/contamination ; Soil contamination ; Air pollution <u>Non-toxic contamination</u> Nutrient enrichment ; Air pollution <u>Biological disturbance</u> Direct mortality ; Natural succession		

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			* Priority feature **Non-primary** Transition mires and quaking bogs Alkaline fens **Annex II species** **Primary** Southern damselfly Coenagrion mercuriale Stag beetle Lucanus cervus **Non-primary** Great crested newt Triturus cristatus			
River Avon SAC	SU 142,984	March, 1998	**Annex I habitats:** **Primary** Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation **Annex II Species** **Primary** Desmoulin`s whorl snail (*Vertigo moulinsiana*)	Physical damage to habitat Sedimentation/silting ; Erosion Non-physical disturbance Noise and vibration Changes to hydrology Drying ; Water level and stability ; Surface water flow (reduction) Toxic contamination Water pollution/contamination ; Soil contamination	See entry for Avon Valley SPA	This site is comprises the River Avon itself and immediately contiguous riverine habitat.

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			Sea lamprey (*Petromyzon marinus)* Brook lamprey (*Lampetra planeri*) Atlantic salmon (*Salmo salar*) Bullhead (*Cottus gobio*)	Non-toxic contamination Changes in salinity/thermal regime/turbidity Biological disturbance Introduction of new habitats/ species Natural succession		
Ramsar sites						
Avon Valley Ramsar site	SU 142,984	February 1998	**Ramsar criterion 1** The site shows a greater range of habitats than any other chalk river in Britain, including fen, mire, lowland wet grassland and small areas of woodland. **Ramsar criterion 2** The site supports a diverse assemblage of wetland flora and fauna including several nationally-rare species. **Ramsar criterion 6 – species/populations occurring at levels of**	Physical damage to habitat Sedimentation/silting; Erosion Non-physical disturbance Noise and vibration ; Human presence Changes to hydrology Drying ; Water level and stability ; Surface water flow (reduction) Toxic contamination Water pollution/contamination ; Soil contamination Non-toxic contamination	*See entry for Avon Valley SPA*	Overlaps with the Avon Valley SPA and River Avon SAC.

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			<u>international importance</u>. Qualifying Species/populations (as identified at designation): Species with peak counts in winter: Gadwall , *Anas strepera strepera*, NW Europe 537 individuals, representing an average of 3.1% of the GB population (5 year peak mean 1998/9-2002/3) *Species/populations identified subsequent to designation for possible future consideration under criterion 6.* *Species with peak counts in winter:* *Northern pintail , Anas acuta, NW Europe 715 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)* *Black-tailed godwit , Limosa limosa islandica, Iceland/W Europe* *1142 individuals, representing an average of 3.2% of the population (5 year peak mean*	Changes in salinity/thermal regime/ turbidity <u>Biological disturbance</u> Introduction of new habitats/ species		

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			1998/9-2002/3)			
Dorset Heathlands Ramsar site	SU 099,986	October 1998	**Ramsar criterion 1** Contains particularly good examples of (i) northern Atlantic wet heaths with cross-leaved heath *Erica tetralix* and (ii) acid mire with Rhynchosporion. Contains largest example in Britain of southern Atlantic wet heaths with Dorset heath *Erica ciliaris* and cross-leaved heath *Erica tetralix*. **Ramsar criterion 2** Supports 1 nationally rare and 13 nationally scarce wetland plant species, and at least 28 nationally rare wetland invertebrate species. **Ramsar criterion 3** Has a high species richness and high ecological diversity of wetland habitat types and transitions, and lies in one of the most biologically-rich wetland areas of lowland Britain, being continuous with	Physical damage to habitat Prevention of natural processes; Fragmentation; Edge effects Non-physical disturbance Noise and vibration; Human presence Changes to hydrology Drying; Water level and stability Toxic contamination Water pollution/contamination; Air pollution Non-toxic contamination Nutrient enrichment; Air pollution (e.g. dust) Biological disturbance Direct mortality; Natural succession	*See entries for Parley Common SSSI, Town Common SSSI and St. Leonards and St. Ives Heaths SSSI*	Overlaps with the Dorset Heathlands SPA and Dorset Heaths SAC. Includes Parley Common SSSI, Town Common SSSI and St. Leonards and St. Ives Heaths SSSI (does not include Hurn Common SSSI)

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			three other Ramsar sites: Poole Harbour, Avon Valley and The New Forest.			
The New Forest Ramsar site	SU 184,008	September 1993	**Ramsar criterion 1** Valley mires and wet heaths are found throughout the site and are of outstanding scientific interest. The mires and heaths are within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. This is the largest concentration of intact valley mires of their type in Britain. **Ramsar criterion 2** The site supports a diverse assemblage of wetland plants and animals including several nationally rare species. Seven species of nationally rare plant are found on the site, as are at least 65 British Red Data Book species of invertebrate.	Physical damage to habitat Fragmentation; Edge effects Non-physical disturbance Noise and vibration Changes to hydrology Water level and stability Toxic contamination Water pollution/contamination; Soil contamination; Air pollution Non-toxic contamination Nutrient enrichment; Air pollution Biological disturbance Direct mortality; Natural succession	*See entry for the New Forest SPA*	This site is coincident with the New Forest SPA and SAC.

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			<u>Ramsar criterion 3</u> The mire habitats are of high ecological quality and diversity and have undisturbed transition zones. The invertebrate fauna of the site is important due to the concentration of rare and scare wetland species. The whole site complex, with its examples of semi-natural habitats is essential to the genetic and ecological diversity of southern England.			

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
NATURE CONSERVATION SITES OF NATIONAL VALUE						
SSSIs						
Hurn Common SSSI	SZ 112,990	1986	One of the largest expanses of heathland in Dorset. This site is noted for its wet and dry heathland habitats and acid grassland. Notable vertebrates (EPSs) and invertebrates (e.g. Orthoptera and Odonata) are associated with these habitats. This site forms an important link between the heathlands of the New Forest and those of South East Dorset.	*See entry for Dorset Heathlands SPA and Dorset Heaths SAC* <u>Summary of Natural England's 'Views about management' (applies to Hurn Common, Parley Common, Town Common and St. Leonards and St. Ives Heaths SSSIs):</u> The conservation interest of lowland heathland sites is associated with the open character of heathland habitat. Key vulnerabilities include scrub encroachment, nutrient enrichment and human disturbance. Appropriate low intensity grazing and controlled mechanical management and/or burning of vegetation are required to maintain the mosaic of heath, scrub, woodland edge, acid grassland habitats and bare sandy ground.	**98.9% of site area meeting PSA target.** 90.8 % favourable condition; 8.08% unfavourable recovering; 1.15% unfavourable declining (compiled 09 Apr 08).	This site forms part of the Dorset Heathlands SPA and the Dorset Heaths SAC
Parley Common SSSI	SZ 091,993	1983	Although a remnant of a much larger heathland complex this SSSI contains outstanding nature conservation interest in terms of rare vertebrate (bird and herptile) and invertebrate fauna (e.g. 147 species of spider are recorded).		**8.21% of site area meeting PSA target.** 8.2 % favourable condition; 73.1% unfavourable no-change; 18.2% unfavourable declining; 0.42% destroyed/part destroyed. (compiled 09 Apr 08).	

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
Town Common SSSI	SZ 142,960	1985	This site is especially valued for its wide assemblage of bird, reptile, dragonfly and other invertebrate species. It also contains a varied mosaic of vegetations types exhibiting a full range of successional stages. Its location in relation to Hurn Common SSSI, Avon Valley SSSI and Moors River SSSI make it an important site from the point of view of ecological connectivity.	A management agreement is in place between Manchester Airport and Natural England for Hurn Common SSSI.	**11.6% of site area meeting PSA target.** 1.33% favourable condition; 10.2% unfavourable recovering; 73.1% unfavourable no-change; 15.3% unfavourable declining.	This site contains St. Catherine's Hill Geological Conservation Review site.
St Leonards & St Ives Heaths SSSI	SU 127,031	1986	This site is notified for acidic grassland, dry and wet heath, and mire vegetation types. It also contains a range of rare plant and animal (vertebrate and invertebrate) species.		**59.6% of the site area meeting PSA target.** 1.14% favourable condition; 58.5% unfavourable recovering; 23.1% unfavourable no-change; 17.3% unfavourable declining.	
Moors River System SSSI	SZ 111,995	1986	Notified as an example of a lowland river supporting an exceptional diversity of aquatic and wetland plants. The river also supports several fish, birds and aquatic	Summary of Natural England's 'Views about management' The conservation interest of the Moors Rivers system is associated with the maintenance of natural flow	**49.2% of the site area meeting PSA target.** 28.5% favourable condition; 20.7% unfavourable recovering; 33.9%	

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			mammal species of conservation importance. Moors Rivers SSSI encompasses a number of smaller water courses including the River Crane and Leaden Stour making it very important in landscape ecological terms.	regimes including the annual flood cycle and sedimentary and erosion features. Any input of artificial nutrients or toxic chemical could greatly harm the plant and animal communities through eutrophication or direct mortality. Consideration should be given to maintaining the full range of associated riparian habitats including reed beds, flood meadows, swamps wet woodland and pools and back waters disjoined from the main river channel.	unfavourable no-change; 16.9% unfavourable declining.	
Avon Valley (Bickton-Christchurch) SSSI	SU 142,984	Part in1984, part in 1989, part in 1993.	Notified as a mosaic of riverine, riparian and freshwater lake habitats. This includes unimproved hay meadows, grazing meadows, flood plain meadows, fen, standing water and pond habitats. The River Avon is considered to show a greater range of habitats and a more diverse flora and fauna than any other chalk river valley in Britain. The habitats present support nationally and	Summary of Natural England's 'Views about management' The conservation of much of the SSSI is maintained by active management of meadows, marshes, flood plain fen and management of ditches to maintain water levels throughout the year. The occurrence of some annual flooding and active hydrological processes are necessary to maintain the vegetation mosaic	**51.7% of site area meeting PSA target.** 9.66 % favourable condition; 42.0% un-favourable recovering; 27.3% unfavourable no-change; 21.0% unfavourable declining. (compiled 09 Apr 08).	

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
			internationally important assemblages of breeding and wintering birds and an outstanding flora including several nationally rare and scarce species.	required by a variety of fauna, including breeding and overwintering water birds. Any input of artificial nutrients or toxic chemical could greatly harm the plant and animal communities through eutrophication or direct mortality. Equally, disturbance by humans and domestic livestock or the carrying out of management operations during sensitive times for breeding waders and waterfowl could harm these species.		
NATURE CONSERVATION SITES OF COUNTY VALUE						
SNCIs						
Fir Grove Copse SNCI	SZ 108, 999	Data unavailable	Damp woodland with a good moss and lichen flora. Also important for habitat connectivity.	*Owing to the similar character of many of the SNCIs (i.e. fragmented remnant heathland/bog/wet woodland*	N/a	

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
Hurn Airport NE Industrial Area SNCI (four discrete blocks)	SZ 116, 984	Data unavailable	Dry heath habitat adjoining Hurn Common SSSI. The site also contains an area of wet carr woodland where a rich flora is present including the nationally scare, tasteless water pepper *Persicaria mitis*.	*patches) vulnerabilities are summed here for all SNCI sites:* <u>Physical loss of habitat</u> Removal <u>Physical damage to habitat</u> Habitat degradation; Fragmentation; Edge effects <u>Non-physical disturbance</u> Human presence <u>Changes to hydrology</u> Drying; Water level and stability <u>Toxic contamination</u> Water pollution/contamination; Soil contamination; Air pollution <u>Non-toxic contamination</u> Nutrient enrichment <u>Biological disturbance</u> Direct mortality; Natural	N/a	
Hurn Forest SNCI	SZ 125,991/ SU 110,007	Data unavailable	Plantation woodland with remnants of heath, bog and carr woodland present along firebreaks. The rare elongated sedge is present *Carex elongata* near the Moors River.		N/a	
Fillybrook Plantation SNCI	SZ 128,990	Data unavailable	An area of plantation containing heathland habitat along forestry rides. The locally rare narrow buckler fern *Dryopteris carthusiana* is present.		N/a	
Fillybrook, Crabbsfield SNCI	SZ 127,984	Data unavailable	Part of Dorset Wildlife Trust's Hurn Forest Reserve. An dry acid grassland site with several notable/rare moss and herb species.		N/a	

Site Name	Grid Reference[24]	Date designated	Qualifying features / Reasons for designation/ notification	Key vulnerabilities and environmental conditions to support site integrity[25]	Condition of features (latest NE assessment)[26]	Comments
Avon Common Plantation SNCI	SZ 134, 996	January 1993	Remnant heath and bog habitats containing the uncommon county species Brown Beak-sedge *Carex* sp. and the nationally scare mossy stonecrop *Sedum* sp.	succession	N/a	
Sopley Common Plantation SNCI	SZ133,977	July 2000	Remnant heathland containing a range of heath species and several uncommon species of lichen *Cladonia* spp.		N/a	The majority of this site was amalgamated into Town Common SSSI what remains are two foresty track ways.

PRIORITY HABITATS

4.7. **Table 4.2** summarises the UK Biodiversity Action Plan Priority Habitats identified from biological records within 3 km of the Airport. These are mapped in **Figure 4.3**. The Priority Habitat data set is provisional[27] and therefore caution should be taken when interpreting this information. It is likely that not all Priority Habitat types occurring within the 3 km search area have been mapped yet in terms of presence/absence or their spatial extent.

Table 4.2: UK BAP Priority Habitat types recorded within a 3 km search radius of Bournemouth Airport (Source: DERC 2008).

Priority habitat type	DERC qualifier	Coincidence of priority habitat type with nature conservation sites	Mapped area within 3km radius of Site
Lowland mixed deciduous woodland	Some uncertainty whether this habitat has been mapped accurately and/or this habitat has not been surveyed within the last 5 years	This habitat type is in part coincident with **Filly Brook Plantation SNCI** and **Avon Common Plantation SNCI**, however, small areas (approximately 3 ha) occur which are not coincident with any protected areas (SZ 104,992 = representative location).	5.95 ha
Wet woodland	As above.	This priority habitat is entirely coincident with the **Moors Rivers SSSI** and **Fir Grove Copse SNCI**	10.9 ha
Lowland dry acid grassland	As above.	The overwhelming majority of this habitat type is coincident with the **Dorset Heathlands SAC**	11.1 ha
Lowland meadow	As above.	This priority habitat is entirely coincident with the **Moors Rivers SSSI**	16.0 ha
Lowland Heathland	The majority of this habitat type has been mapped accurately, however, there is some uncertainty whether this habitat has been mapped accurately and/or this habitat has not been surveyed within the last 5 years.	The majority of this habitat type is coincident with the **Dorset Heathlands SAC**	238 ha

[27] Dorset Environmental Records Centre (2008). *Data search for area surrounding Bournemouth Airport.* March 2008.

4.8. As indicated by **Table 4.2** there is a high coincidence of Priority Habitat types (as mapped by DERC) within the boundaries of the nature conservation sites which have been discussed earlier in this report. For example, virtually all heathland and acid grassland priority habitats are constituents of designated sites.

4.9. Certain areas of **Lowland mixed deciduous woodland** are distributed beyond the boundaries of nature conservation sites (**Figure 4.3**), and it is known that woodland habitats are present in the area which are not yet included in the DERC dataset. For example, this includes areas within the Northern Business Park and numerous woodlands and copses visible on OS mapping.

NOTABLE SPECIES

4.10. The data supplied by DERC contains over 4,500 biological records for over 200 species. The following were identified for further consideration:

- identifying the occurrence of European Protected Species and Birds directive Annex I species;
- identifying the occurrence of UK and South West Biodiversity Action Plan species;

4.11. These records have been mapped by taxa for ease of interpretation:

- **Figure 4.4** indicates the distribution of legally protected reptiles and amphibians;
- **Figure 4.5** indicates the distribution of notable mammals;
- **Figure 4.6** indicates the distribution of legally protected invertebrates and fish;
- **Figure 4.7** indicates the distribution of rare and vulnerable plants species.

4.12. However, although biological records provide a useful indication of the species present within a locality, **the absence of a given species from a dataset cannot be taken to represent actual absence**. Species distribution patterns should be interpreted with caution as they may reflect survey effort rather than an accurate indication of a species distribution. In addition survey data may be out of date. For example, Annex II reptile species are far more widespread in the area than records suggest (Natural England pers. comm. 2008).

European Protected Species and Nationally Protected Species

4.13. **Table 4.3** lists European Protected Species (listed on Annexes II or IV of the EU Habitats Directive) occurring within a 3 km radius of Bournemouth Airport. Also included in this table is summary information of the key vulnerabilities associated with different species and their local conservation status.

4.14. **Table 4.4** lists the occurrence of species listed in Annex I of the Birds Directive and Schedule 1 of the Wildlife and Countryside Act, 1981 within a 3 km radius of Bournemouth Airport.

Table 4.3: European Protected Species recorded within a 3 km radius of Bournemouth Airport (Source: DERC, 2008)

Species	Level of protection [28]	Value	Key vulnerabilities and environmental conditions to support integrity	Conservation status in the local context
Bullhead *Cottus gobio*	Annex II	International	Bullhead appears to favour fast-flowing, clear shallow water with a hard substrate (gravel/cobble/pebble). However, it occurs in lowland situations on softer substrates so long as the water is well-oxygenated and there is sufficient cover. It is not found in badly polluted rivers (JNCC, 2008).	*"The Avon represents bullhead Cottus gobio in a calcareous, relatively unmodified river in the southern part of its range in England. The River Avon has a mosaic of aquatic habitats that support a diverse fish community. The bullhead is an important component of this community, particularly in the tributaries".*[29]
Common pipistrelle *Pipistrellus pipistrellus*	Annex IV	International	Reduction in insect prey abundance, due to high intensity farming practice and inappropriate riparian management. Loss of feeding habitats and flyways, with loss and fragmentation of wetlands, hedgerows and other suitable prey habitats. Also indirect effects such as lighting and disturbance. Disturbance and destruction of roosts (in particular maternity and over-wintering roosts), including due to building renovation, works on other structures such as bridges and caves, the use of toxic timber treatment chemicals, tree felling (UK BAP, 2008)	It is anticipated that both common and soprano pipistrelle are widely occurring species in the area encompassed by a 3 km radius of Bournemouth Airport. Populations of common pipistrelle are considered to be stable to increasing nationally and those of soprano pipistrelle stable with some evidence of a slight decrease in numbers.[30] It is also expected that other bat species will be present in the vicinity. All UK bat species are European Protected Species.
Otter *Lutra lutra*	Annex II	International	Otter populations utilise a range of running and standing freshwater habitats in southern England. These must have an abundant supply of food	Numerous recent (1994-2006) records of otter exist for the River Stour (to the south of the Site) and on the Moors River (to the east of the Site) ;

[28] Annex II/ Annex IV of the EU Habitats Directive.
[29] JNCC (2007). *www.jncc.org.uk*
[30] Bat Conservation Trust (2008). *The National Bat Monitoring Programme Annual Report 2006*. BCT.

Species	Level of protection [28]	Value	Key vulnerabilities and environmental conditions to support integrity	Conservation status in the local context
			(normally associated with high water quality), together with suitable habitat, such as vegetated river banks, islands, reed beds and woodland, which are used for foraging, breeding and resting. Otters will shelter and breed in holts and are therefore particularly vulnerable to their destruction in the breeding season (Source: JNCC, 2008).	see **Figure 4.5**).
Sand lizard *Lacerta agilis*	Annex IV	International	Loss, deterioration and fragmentation of heathland and dune habitat to a wide range of competing uses and pressures, for example development, forestry, mineral extraction, etc. Require a mosaic of open areas for basking, and low vegetation with scattered / occasional scrub for foraging and shelter. Birch, pine, bracken and other scrub (for example *Gaultheria shallon*) encroachment of and heathland habitats creates over shaded habitats which are unsuitable for thermoregulation requirements. Bare sand is required for breeding (egg laying). Uncontrolled fires and other 'urban effects' such as illicit vehicle access, predation by pets and persecution. (UK BAP, 2008)	In a UK context this species is entirely restricted to several discrete population hubs, with south Dorset being by far the national stronghold[31] (Source: Beebee and Griffiths, 2000).
Smooth snake *Coronella austriaca*	Annex IV	International	Loss, deterioration and fragmentation of heathland and dune habitat to a wide range of competing uses and pressures, for example development,	In a UK context this species is almost entirely restricted to south Dorset and Hampshire with small populations in Surrey and West Sussex

[31] Beebee, T.J.C. and Griffiths, R.A. (2000). *Amphibians and Reptiles: A natural history of the British herpetofauna*. Harper Collins. London.

Species	Level of protection [28]	Value	Key vulnerabilities and environmental conditions to support integrity	Conservation status in the local context
			forestry, mineral extraction, etc. Require a mosaic of open areas for basking, and low vegetation with scattered / occasional scrub for foraging and shelter. Birch, pine, bracken and other scrub (for example *Gaultheria shallon*) encroachment of and heathland habitats creates over shaded habitats which are unsuitable for thermoregulation requirements. In summer they may forage wider in adjacent habitats including wetlands and woodland edges. Uncontrolled fires and other 'urban effects' such as illicit vehicle access, predation by pets and persecution. (UK BAP, 2008)	(Source: Beebee and Griffiths, 2000).
Soprano pipistrelle *Pipistrellus*	Annex IV	International	See common pipistrelle. Soprano pipistrelles are typical associated with more wetland and aquatic habitats then common pipistrelle.	
Stag beetle *Lucanus cervus*	Annex II	International	Stag beetle is vulnerable to loss of habitat through the removal of stumps and other dead wood and inappropriate woodland management practices such as poor maintenance of veteran trees. Fragmentation of woodland habitats and associated 'edge effects' may threaten this species.	*"The New Forest represents stag beetle Lucanus cervus in its Hampshire/Sussex population centre, and is a major stronghold for the species in the UK. The forest is one of the most important sites in the UK for fauna associated with rotting wood, and was identified as of potential international importance for its saproxylic invertebrate fauna by the Council of Europe"* (Source : JNCC, 2008)

Table 4.4: Annex I and Schedule 1 bird species recorded within a 3 km radius of Bournemouth Airport (Source: DERC, 2008)

Species	Level of protection[32]
Barn owl *Tyto alba*	W&CA
Bar-tailed godwit *Limosa lapponica*	Annex I
Bewick's swan *Cygnus columbianus*	Annex I; W&CA
Brambling	W&CA
Cetti's warbler *Cettia cetti*	W&CA
Common tern *Sterna hirundo*	Annex I
Crossbill	W&CA
Dartford warbler *Sylvia undata*	Annex I; W&CA
Fieldfare *Turdus pilaris*	W&CA
Goshawk *Accipiter gentilis*	W&CA
Green sandpiper *Tringa ochropus*	W&CA
Hen harrier *Circus cyaneus*	Annex I; W&CA
Hobby *Falco subbuteo*	W&CA
Kingfisher *Alcedo atthis*	Annex I; W&CA
Little egret *Egretta garzetta*	Annex I
Merlin *Falco columbarius*	Annex I; W&CA
Montagu's harrier *Circus pygargus*	Annex I; W&CA
Nightjar *Caprimulgus europaeus*	Annex I
Peregrine *Falco peregrinus*	Annex I; W&CA
Pintail *Anas acuta*	W&CA
Redwind_*Turdus iliacus*	W&CA
Ruff *Philomachus pugnax*	Annex I; W&CA
Woodlark *Lullula arborea*	Annex I; W&CA

[32] Annex I = Birds Directive Annex I species; W&CA = Species listed on Schedule 1 of the Wildlife and Countryside Act, 1981.

UK / Local BAP Species

4.15. **Table 4.5** lists UK and SW BAP Priority Species recorded within a 3 km radius of Bournemouth Airport. DERC data is based on BAP listings published in 1996; however, the UK BAP has recently been updated (in 2008)[33] and now includes numerous other species and habitats these are not reflected in DERC data.

Table 4.5: UK and SW Biodiversity Action Plan priority species recorded within a 3km radius of Bournemouth Airport (Source: DERC, 2008).

Species	Status	Value
Asilus crabroniformis (a robber fly)	UK BAP	National
Brown hare *Lepus europaeus*	UK BAP	National
Bullfinch *Pyrrhula pyrrhula*	UK BAP	National
Buttoned snout (a moth) *Hypena rostralis*	UK BAP	National
Common pipistrelle *Pipistrellus pipistrellus*	UK BAP; SW BAP	International (European Protected Species)
Dingy mocha (a moth) *Cyclophora pendularia*	UK BAP	National
Donacia bicolora (a leaf beetle)	UK BAP	National
Linnet *Carduelis cannabina*	UK BAP	National
Nightjar *Caprimulgus europaeus*	UK BAP; SW BAP	National
Olive cresent *Trisateles emortualis*	UK BAP	National
Otter *Lutra lutra*	UK BAP	International (European Protected Species)
Reed bunting *Emberiza schoeniclus*	UK BAP	National
Sand lizard *Lacerta agilis*	UK BAP; SW BAP	International (European Protected Species)
Silver-studded blue *Plebejus argus*	UK BAP	National
Skylark *Alauda arvensis*	UK BAP	National
Song thrush *Turdus philomelos*	UK BAP	National

[33] UK Biodiversity Action Plan (2008). *(WWW) http://www.ukbap.org.uk/bapgrouppage.aspx?id=112*

Soprano pipistrelle *Pipistrellus pygmaeus*	UK BAP	International (European Protected Species)
Spotted flycatcher *Muscicapa striata*	UK BAP	National
Stag beetle *Lucanus cervus*	UK BAP	National
Uloborus walckenaerius (an orb web spider)	UK BAP	National
Water vole *Arvicola terrestris*	UK BAP; SW BAP	National
Wood tiger beetle *Cicindela sylvatica*	UK BAP	National
Woodlark *Lullula arborea*	UK BAP	National

4.16. In addition, the following species are listed in the South West BAP (excluding marine species)[34] although records are not held by DERC within the 3 km search area:

Priority species:

- great crested newt *Triturus cristatus;*
- marsh fritillary butterfly *Eurodryas aurinia*;
- southern damselfly *Coenagrion mercuriale*

Local species:

- early gentian *Gentianella anglica*

Receptors to be Considered Within the Ecological Study

4.17. All **international, national and local sites** previously identified above will be included within the ecological study. Whilst these will cover the majority of UKBAP priority habitats, woodland habitats will be considered separately as this habitat is relatively widespread and there is greater potential for areas outside of designated habitats to be affected.

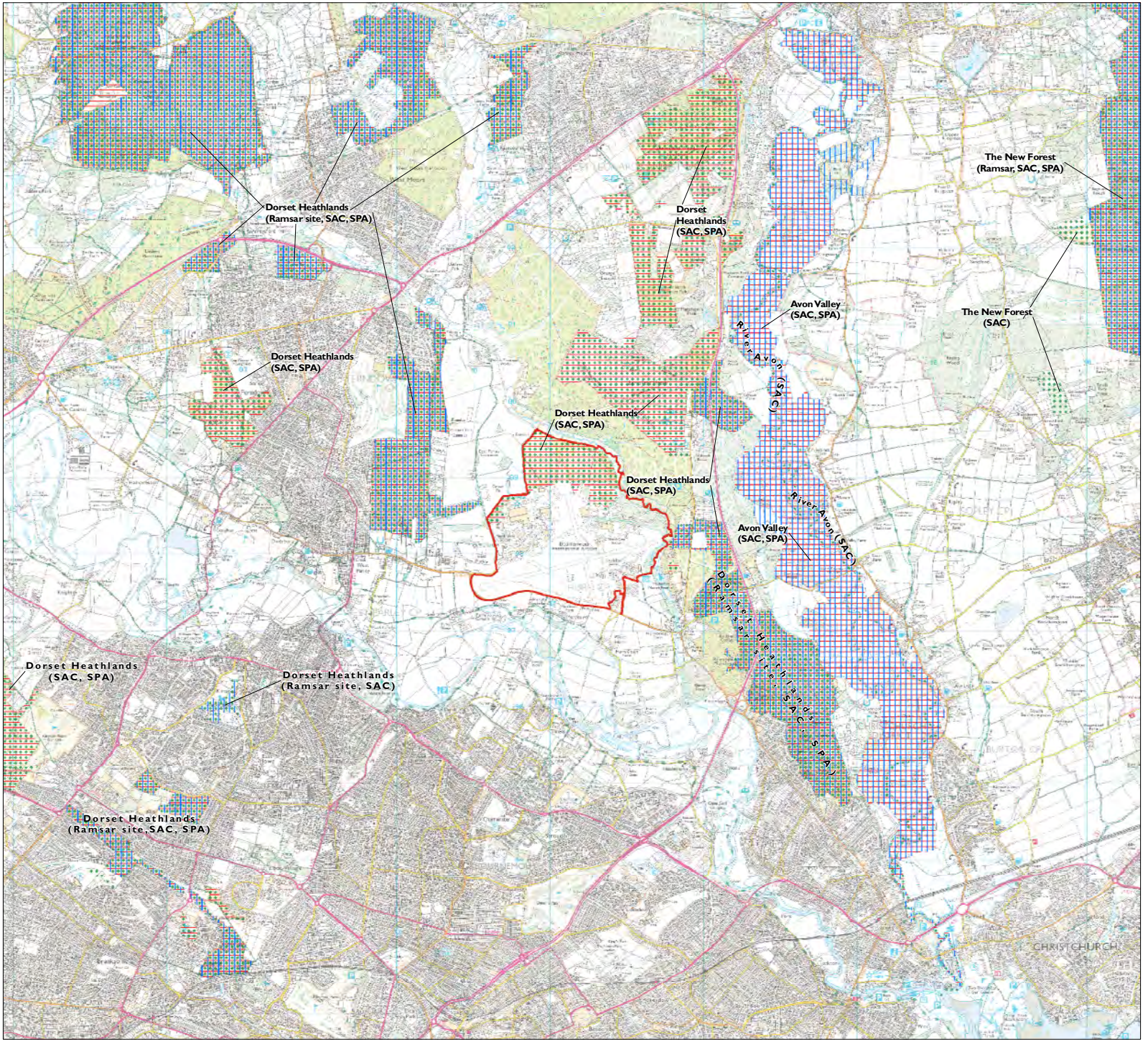
4.18. In addition, the rationale for the inclusion of species needed to accommodate the large number of species records, difficulties associated with the accuracy of records, and also the outline nature of the proposals. The following approach was therefore adopted:

- owing to the high level of protection afforded to EPS and their widespread distribution, **otter, bats, sand lizard** and **smooth snake** will be considered separately within the study;

[34] South West Regional Biodiversity Partnership (1997) *Action for Biodiversity in the South West: a series of habitat and species plans to guide delivery*

- Annex I Bird species will not be considered separately as it is assumed that these will be covered adequately by impacts upon designated sites
- to enable the consideration of implications for the large number of Schedule 1 species and BAP Priority Species present in the vicinity, a habitat approach will be employed similar to the SWBAP.[35] This will also enable habitats to be considered as functional units in relation to their integrity and potential impacts, and resultant implications for wildlife. The following broad habitat types will therefore be considered:
  - **Rivers and wetlands** (e.g. kingfisher, water vole, bullhead, amphibians, invertebrates, *Odonata*);
  - **Farmland** (e.g. barn owl, brown hare, invertebrates, *Lepidotera*);
  - **Woodlands** (e.g. woodland birds, invertebrates such as stag beetle).

[35] South West Regional Biodiversity Partnership (2004). *SW Biodiversity Implementation Plan*



Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 4.1: International nature conservation sites

Key

- Airport boundary
- Ramsar sites
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

N
W E
S

0 375 750 1,500 m

Source: CBC, Natural England

1:50,000 at A3
Date: 11/07/2008
Revision: B

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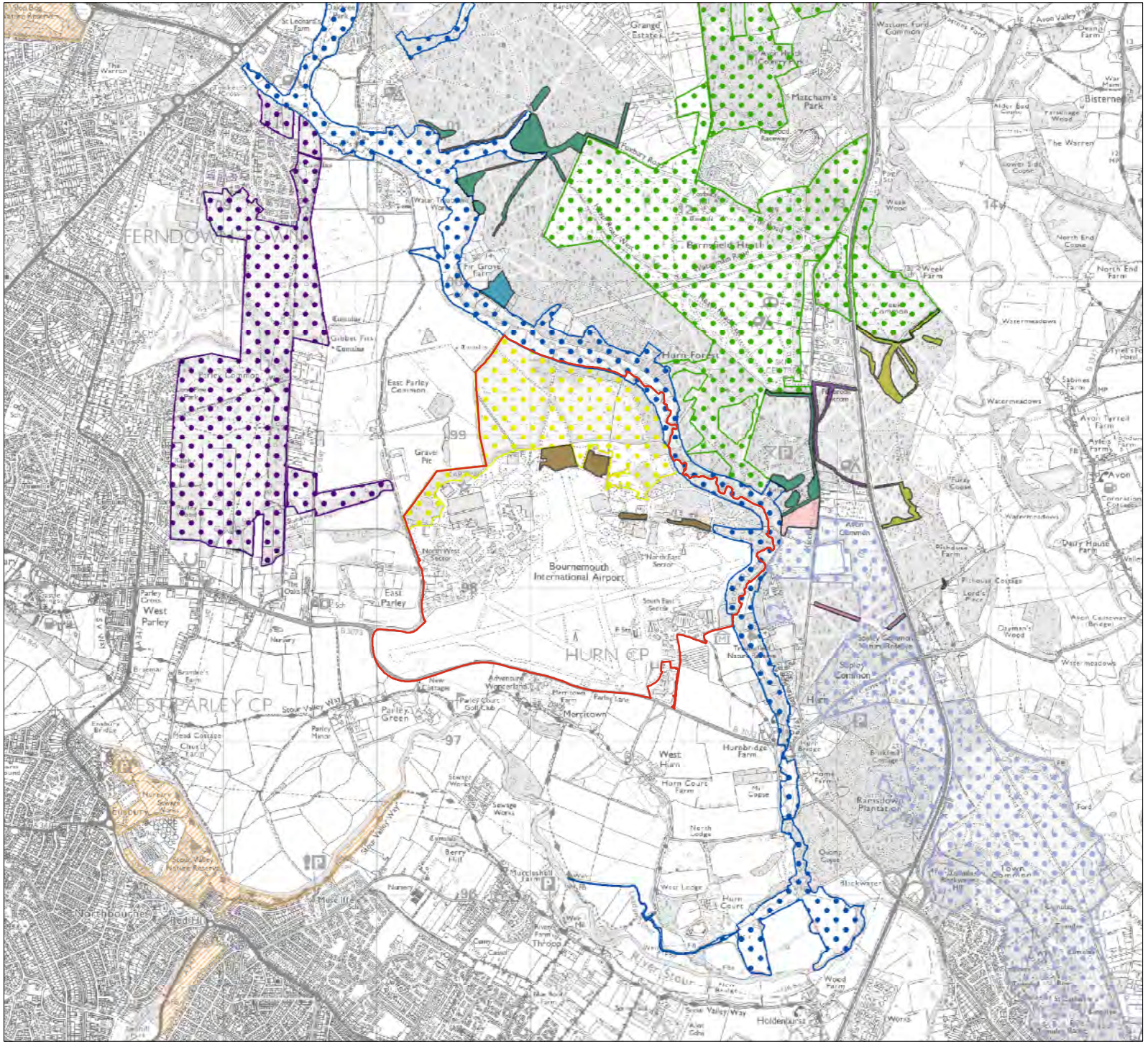

Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 4.2: National and local nature conservation sites

Key

- Airport boundary
- Local National Reserves

Sites of Special Scientific Interest (SSSI)

- Town Common
- St Leonards & St Ives Heaths
- Parley Common
- Moors River System
- Hurn Common

Sites of Nature Conservation Importance (SNCI)

- Avon Common Plantation
- Fillybrook Plantation
- Fillybrook-Crabs Field
- Fir Grove Copse
- Hurn Airport-NE industrial area
- Hurn Forest
- Sopley Common Plantation

N
W E
S

0 200 400 800 m

Source: CBC, DERC, Natural England

1:25,000 at A3
Date: 11/07/2008
Revision: D

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Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 4.3: Distribution of Priority Habitat types in the vicinity of the Airport (mapped by DERC, 2008)

Key

- Airport boundary
- Natura 2000 sites and Sites of Special Scientific Interest (SSSI)

Priority Habitats

- Lowland dry acid grassland
- Lowland heathland
- Lowland meadows
- Lowland mixed deciduous woodland
- Wet woodland

N
W E
S

0 200 400 800 m

Source: CBC, DERC, Natural England

1:25,000 at A3
Date: 11/07/2008
Revision: B

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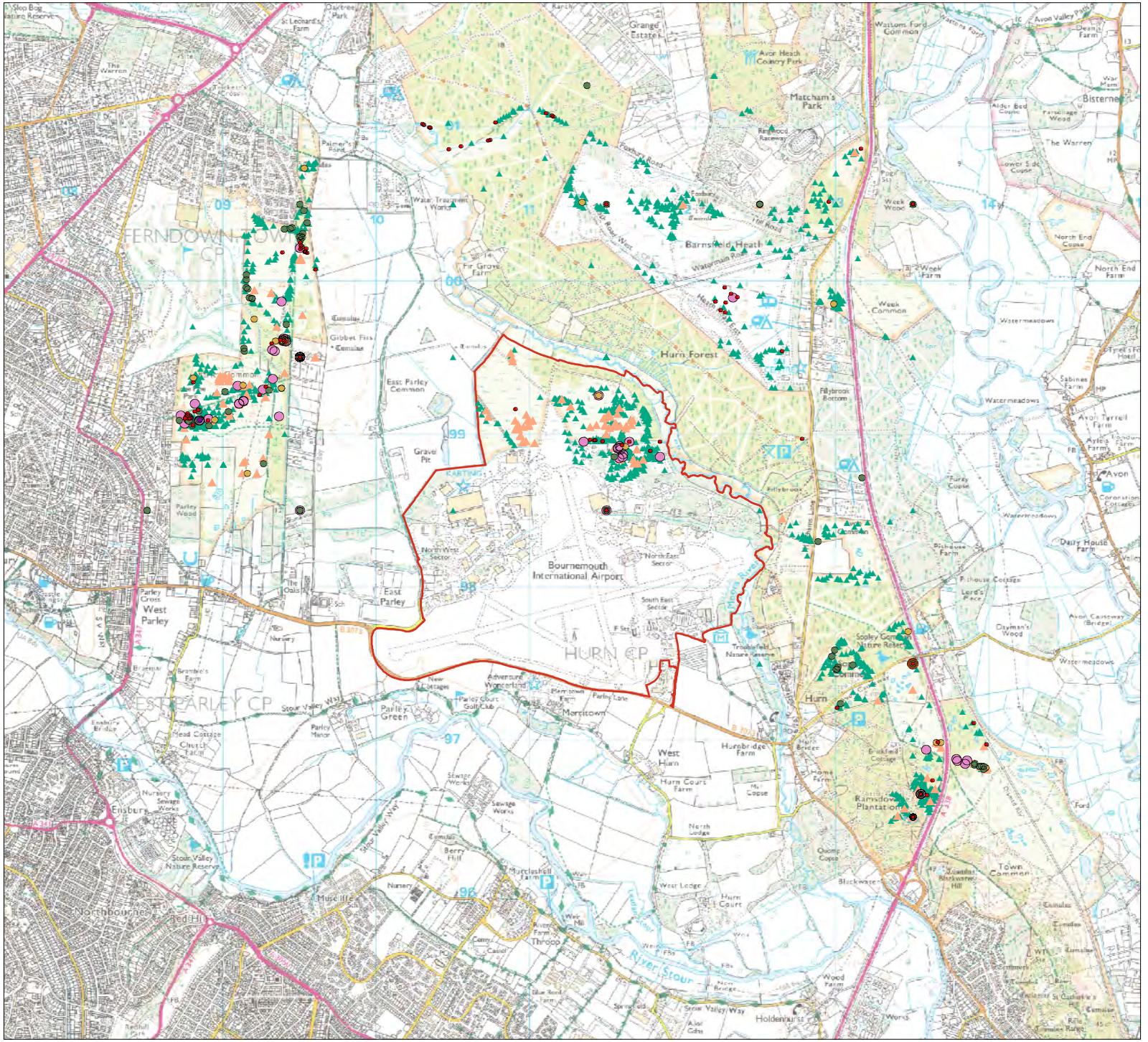

Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 4.4: Distribution of legally protected herptiles in the vicinity of Bournemouth Airport

Key

- Airport boundary

Species protected under the EC Habitats Directive

- Sand Lizard (recorded: 1990 - 2004)
- Smooth Snake (recorded: 1990 - 2005)

Species listed on Schedule 5 of the Wildlife and Countryside

- Adder (recorded: 1991 - 2004)
- Common Frog (recorded: 1999)
- Common Lizard (recorded: 1990 - 2004)
- Grass Snake (recorded: 1990 - 2004)
- Slow-worm (recorded: 1991 - 2004)
- Palmate Newt (recorded: 1994)

Note: Species records plotted at resolutions of 1m, 10m, 100m, and 1km

N W E S

0 200 400 800 m

Source: CBC, DERC

1:25,000 at A3
Date: 11/07/2008
Revision: B

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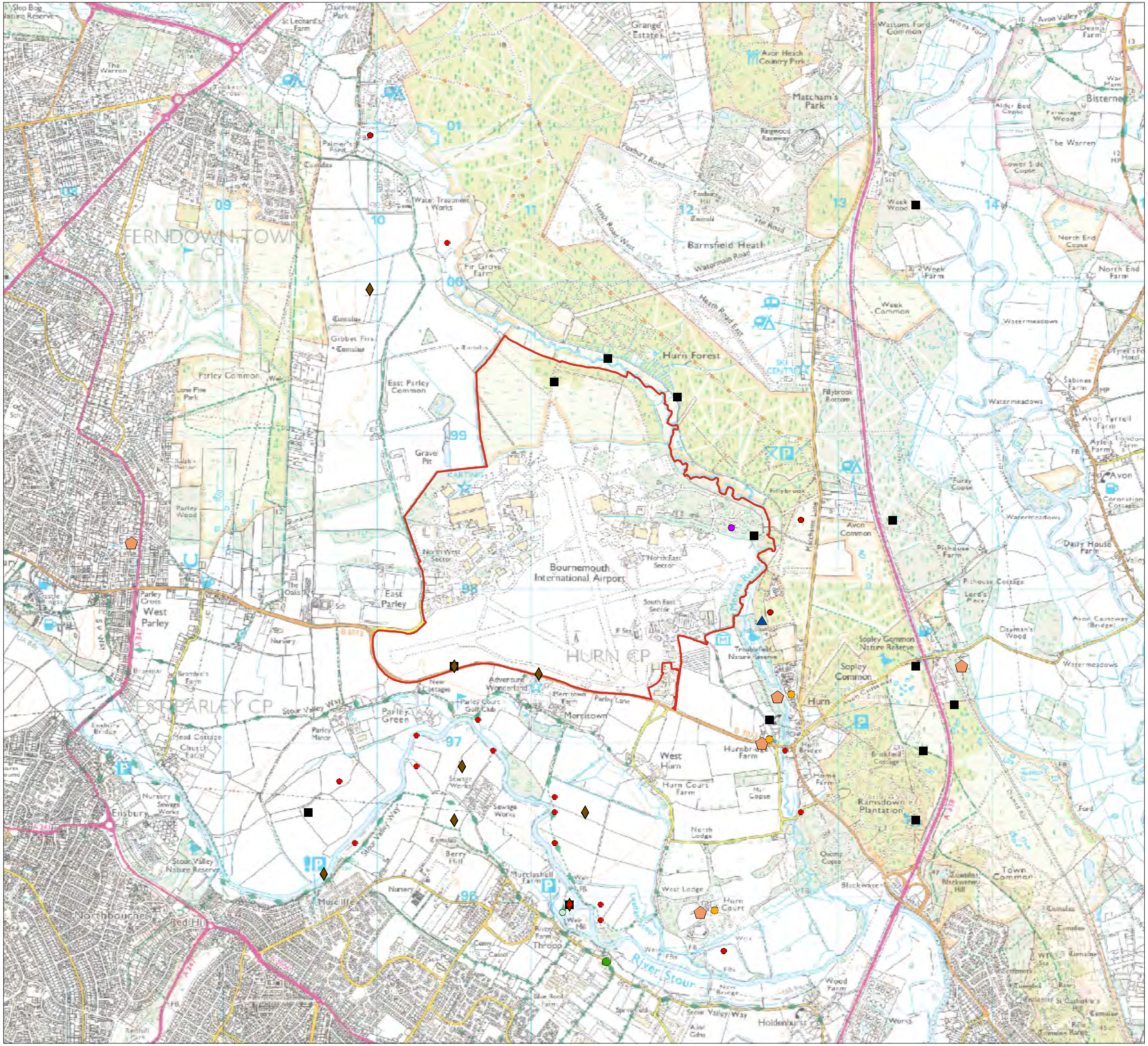

Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 4.5: Distribution of notable mammals in the vicinity of Bournemouth Airport

Key

Airport boundary

Mammal protected under the EC Habitats Directive

- Otter (recorded: 1994 - 2006)
- 45 kHz Pipistrelle (recorded: 2004)
- 55 kHz Pipistrelle (recorded: 2004)
- Pipistrelle (recorded: 2004)
- Unidentified species of bat (recorded: 1995 - 1996)
- Bat roosts (recorded: 1982 - 1996)

Mammal listed on Schedule 5 of the Wildlife and Countryside Act, 1981

- Water Vole (recorded: 2005)

Protection of Badgers Act, 1992

- Badger (recorded: 1990 - 2005)

UK BAP Species

- Brown Hare (recorded: 1991 - 2004)

Note: Species records plotted at resolutions of 10m, 100m and 1km

N W E S

0 200 400 800 m

Source: CBC, DERC

1:25,000 at A3

Date: 11/07/2008

Revision: B

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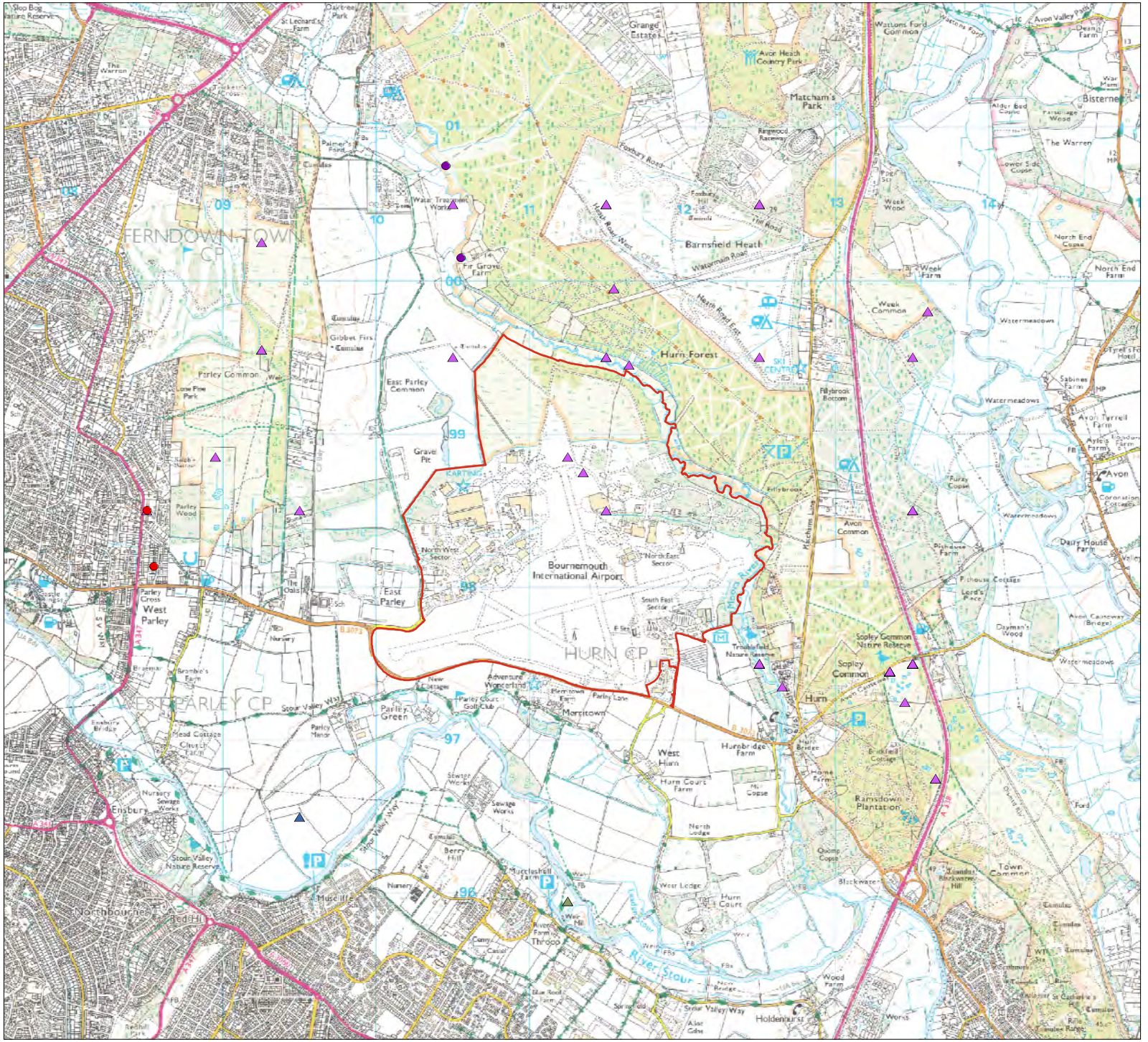

Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 4.6: Distribution of legally protected invertebrates and fish in the vicinity of Bournemouth Airport

Key

Airport boundary

Species protected under the EC Habitats Directive

- Bullhead (recorded: 1995)
- Stag Beetle (recorded: 1998)

Species listed on Schedule 5 of the Wildlife and Countryside Act, 1981

- Large Heath (recorded: 2004)
- Silver-studded Blue (recorded: 1991 - 2004)
- Small Blue (recorded: 2004)
- White Letter Hairstreak (recorded: 2000)

Note: Species records plotted at resolutions of 10m, 100m and 1km

N W E S

0 200 400 800 m

Source: CBC, DERC

1:25,000 at A3
Date: 11/07/2008
Revision: B

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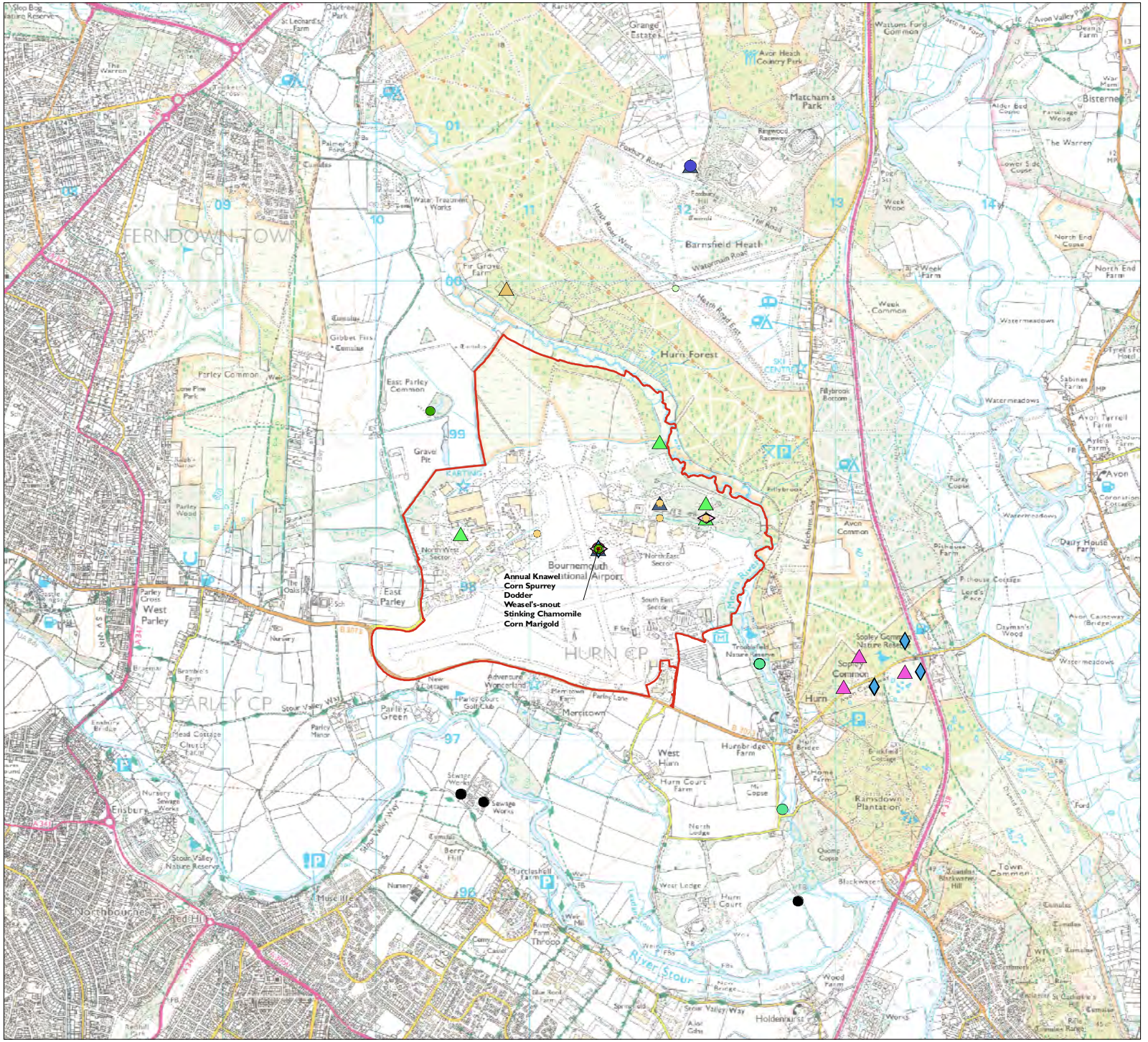
Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 4.7: Distribution of rare and vulnerable plants species in the vicinity of Bournemouth Airport



Key

Airport boundary

National RDB Endangered (EN) and National RDB Vulnerable (VU) plant species

- Annual Knawel (recorded: 1991)
- Corn Marigold (recorded: 1991)
- Corn Spurrey (recorded: 1991 - 2003)
- Dodder (recorded: 1990 - 1997)
- Mousetail (recorded: 1991 - 2005)
- Smooth Cat's-ear (recorded: 1996)
- Stinking Chamomile (recorded: 1991)
- Tasteless Water-pepper (recorded: 1991)
- Weasel's-snout (recorded: 1991)
- Yellow Bird's-nest (recorded: 1990)
- Pondweed (recorded: 1990 - 1996)

National RDB Lower Risk including Near Threatened (NT) plant species

- Common Cudweed (recorded: 1991 - 1996)
- Hoary Cinquefoil (recorded: 1991 - 1992)
- Shepherd's Cress (recorded: 1990 - 1997)
- Lichen (recorded: 1992)

Note: Species records plotted at resolutions of 100m and 1km

Threatened status taken from Cheffings and Farrell (Eds). (2005). The Vascular Plant Red Data List for Great Britain. JNCC

N W E S

0 200 400 800 m

Source: CBC, DERC

1:25,000
Date: 11/07/2008
Revision: B

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5. SUMMARY OF THE AIRPORT EXPANSION PROPOSALS

5.1. Expansion proposals for different areas of the Airport are at different stages in their development, with some aspects at inspirational or option stages whilst others have progressed to achieve planning permission. The Airport Masterplan 2007[36] sets out a vision and outline options for the operational airport. As part of this, proposed infrastructure improvements for expansion of the Airport Terminal are known in full detail and planning consent has been granted. With respect to other areas of the Airport, the emerging Core Strategy, Area Action Plan and accompanying evidence base will address a range of possible development options including an employment vision for the Northern Business Park. However, the full infrastructure requirements for the Northern Business Park are not yet known and will be dependent upon the scale of growth proposed in the Local Development Framework and also the results of further detailed analysis, such as a study into transport infrastructure requirements being prepared by Peter Brett Associates on behalf of Manchester Airport.

5.2. Based on the above information sources, for the purposes of the Ecological Study, 'Airport expansion' will be considered as broadly comprising the following elements:

- expansion of terminal and airport facilities to meet projected growth in air passenger numbers;
- development of employment land in the Northern Business Park within the airport boundary;
- associated transport infrastructure improvements necessary for implementation of the above proposals;

5.3. These elements are illustrated in **Figure 5.1**. Other plans and projects which are to be included as part of an in-combination assessment of the proposals are discussed in **Section 6**.

Airport Terminal and Facilities Expansion

5.4. A Masterplan was developed for the airport in May 2007 on behalf of Manchester Airport Developments Ltd. This sets out the future scale and direction of growth for the operational airport. Key development proposals required to meet the projected growth in air passenger numbers include:

- provision of additional terminal space with a proposed phased gradual expansion to meet projected growth up to 2030 (from 5430 sq.m. to 12700 sq.m.). Planning permission is currently held for a new terminal building to the south west of the existing building. However, instead of constructing a new facility it is currently proposed to gradually improve and extend the existing facilities to match growth;

[36] Bournemouth Airport (2007). *The Master Plan*. Bournemouth Airport. Bournemouth.

- provision of additional, and rationalisation of existing, aircraft parking stands (passenger and cargo) to enable higher aircraft numbers, with associated surface water drainage systems;

- from 2006 to 2030 the provision of approximately 6404 additional car parking spaces with a proposed new car park in the south by 2015 as well as in the Northern Business Park in later years. Enhancements will also be undertaken of the surface access routes and coach and bus facilities. However, it is proposed that the private car will remain the predominant mode of transport (currently 59 % of passengers are 'dropped-off' by family or friends);

- associated infrastructure works, including upgrading of the existing sewage treatment works. A preliminary option would include provision of a new sewer from the southern sector to the Holdenhurst wastewater treatment works which is some 2.5 km south east of the airport. New facilities and accommodation will also be required for crew and ground staff, rationalisation of fuelling operations, and upgraded fire station facilities.

5.5. In 2007 a planning application was submitted and full planning permission granted (Application No. 8/07/0065) for works including surface access and parking facilities, a new terminal building, and associated infrastructure (wastewater) and landscape works. Planning permission was accompanied by a Section 106 agreement in part to prevent and monitor environmental impacts of the scheme. This included the following conditions in the First Schedule of the permission:

- **Section 5** requires submission of a landscape scheme and landscape management plan;

- **Section 9 and 10** require details of connection to Holdenhurst Sewage Treatment Works and surface water drainage;

- **Section 16** makes reference to a desk study to identify the likelihood of contamination incorporating a conceptual model of potential pollutant linkages. This also makes provision for a remedial works to be undertaken and measures to avoid risk from contaminants;

- **Section 17** refers to the requirement for a Construction Environment Management Plan to avoid adverse impacts of construction on sensitive environmental resources;

- **Section 19** refers to the programme for the relocation of reptiles prior to the commencement of the eastern car park extension;

- **Section 20** requires submission of tree protection measures to be employed.

5.6. The second schedule relates to operational restrictions including those with potential to reduce emissions from the airport.

5.7. The ninth schedule refers to the requirement for the airport to produce an Air Quality Monitoring scheme, including both NOx and vegetation monitoring. Trigger levels will be established which, when exceeded, will require remedial action.

Development of the Northern Business Park

5.8. In 2003 a feasibility study and Masterplan was developed specifically for the Northern Business Park prepared by EDAW.[37] The general principles of the 2003 Master Plan include to '*strengthen the Northern Development Zone….as a major business location for Bournemouth, Christchurch and East Dorset*'. Continued work is being undertaken to develop the planning framework for the Northern Business Framework on behalf of Manchester Airport Developments Ltd. In broad terms the general principles include:

- retention of larger business occupiers, including non-airside businesses at the Chapel Gate Entrance and airside businesses,
- provision of new development plots within the Northern Business Park including:
  - standard quality office accommodation in the Western Sector at Chapel Gate
  - high quality office accommodation in the Eastern Sector within an area currently of storage and light industrial plots interspersed with semi-natural habitat including woodland;
  - a central industrial area (non-airside) in the north west of the development zone and including land associated with the north-south runway. Suitable for non-airside businesses including light industrial, general industrial, and warehouse and distribution categories;
  - a central industrial area (airside) to the south of this, also including land associated with the north-south runway. Suitable for businesses associated with airside requirements, such as aircraft maintenance and repair;
- rationalisation of internal surface transport facilities including new road networks;
- works to upgrade the utilities and services within the employment area, including:
  - surface drainage water improvements to cope with a possible 20 – 30 % increase in run-off, to include Sustainable Urban Drainage Systems;
  - foul water drainage which has been identified as the most problematic of the services on the site. A sewage link is under construction to the Holdenhurst Sewage Treatment Works, whilst other options include improvements to on-site treatment facilities;

[37] EDAW (2003). *Northern Development Zone at Bournemouth Airport: Development Feasibility and Masterplan – Draft Final Report.* Prepared for MADL, Bournemouth Airport and SWRDA.

- improved water supply to cope with a 60% increase in demand, with options including sinking a bore hole;
- potential for relocation or regrading of existing electricity infrastructure;

- open space and landscape strategy to in part address sensitive environmental conflicts, including incorporation of nature conservation areas and provision of landscaped buffer strips.

5.9. The 2003 EDAW Airport Master Plan is based on the aspiration to progress full development of the Northern Business Park to its maximum extent. It is now recognised that this level of development may not be commercially viable at present given infrastructure requirements. In view of this, in 2007, Manchester Airport Developments (MADL) commissioned RPS Burks Green to produce a spatial Planning Framework solely for the west section of the Northern Business Park[38].

5.10. The 2007 Planning Framework suggests that a more deliverable strategy, requiring only minor access improvements, would be to progress development/redevelopment of the Northern Business Park Western Sector to offer *"between 20,000sqm and 75,000sqm of net additional floorspace supporting a range of aviation and non-aviation occupiers across a full range of employment classes."* The 2007 Planning Framework, presents a number of principles to ensure development in the Northern Business Park is progressed with environmental considerations in mind. These include targets to eliminate waste disposal, to *"achieve a positive impact on local water resources"* and to *"regenerate degraded environments and halt biodiversity loss"*.

5.11. It is clear from the 2007 Planning Framework that although focus is on the western sector of the Northern Business Park in the short to medium term, a remaining aspiration is to realise the "*full development potential"* of the Airport in the long term. However, it is acknowledged that this may depend on provision of a link road to the A338.

5.12. In addition to the above sources of information, a study of the economic potential of development land at Bournemouth Airport was prepared by Nathaniel Litchfield and Partners in 2008 on behalf of Christchurch Borough Council. The study evaluates a number of development scenarios for the Northern Business Park which include development of employment land to incorporate:

- predominantly office users;
- predominantly industrial/aviation related uses;
- a mix of industrial (80%) and offices (20%);
- a mix of industrial (50%) and offices (50%)

[38] The planning framework consists of two documents. 1) A report summarising key findings and recommendations from a review of development options: Manchester Airport Developments (2007) *Bournemouth Airport Aviation Park: Planning Framework*. MADL. Manchester. 2) an accompanying visual spatial strategy: RPS Burks Green (2007) *Bournemouth International Airport Business Park: Spatial Strategy to Guide Redevelopment*. MADL.

5.13. The study concludes on a preferred development option for Northern Business Park which is for a "mixed employment area with most land occupied by industrial and aviation related activities with a relatively small office element."

Associated Transport Infrastructure Enhancements

5.14. Off-site transport infrastructure works will be required to provide road capacity for airport expansion proposals. A study commissioned by Dorset County Council (2007) identified options of the provision of a new access route to the north east of the airport (Northern Business Park Eastern Sector) and improvements to the southern corridor (associated with the existing B3073). These are summarised below (a more detailed summary is provided in **Appendix I**).

5.15. In addition, Peter Brett Associates has been commissioned by Manchester Airports Ltd. to undertake a Transport Assessment. This is believed to investigate the implications of development options in terms of additional transport infrastructure requirements. At the time of writing, this report was not available.

Northern Corridor

5.16. Options have been identified for both a dual-carriageway and a single carriageway link road, connecting the Northern Business Park Eastern Sector to the A338.

5.17. The dual-carriageway option can be further divided into design proposals for a 'dumb-bell' junction and a 'loop' junction where the link road connects with the A338 north east of the airport. In terms of ecological effects, the study indicates there is a minimal difference between either option.

5.18. A single carriageway option would require settling ponds to attenuate water run-off, however, these would be of a lesser size to those required for the dual carriageway. It is considered that eventually a dual carriageway would be needed to accommodate predicted future traffic flows. If implemented as an upgrade to an existing single carriageway this would result in a higher land take than if a dual carriageway were to be constructed in the first instance.

5.19. In both above cases, roundabouts at either end would require lighting, although the road section would not.

Southern corridor

5.20. The Southern Corridor would entail improving the Blackwater Junction to the south east of the Airport with potential redirection of the River Stour. Two options were considered for linking between the Blackwater junction and Airport/employment zone:

a) a northern route, which would upgrade the existing B3073 by tracking the existing route as closely as possible.

b) a southern route which would cross the Moors River at its narrowest point and take the most direct route to the Chapel Gate roundabout south west of the Airport.

5.21. Both routes would entail construction of a new / widened bridge at the Blackwater Junction taking the B3073 over the A338. The southern route would also involve improvements to the bridge taking the A338 over the River Stour at Blackwater junction, and would encroach on the River Stour floodplain and affect the flow path of the river. Both routes would also require new bridges over the Moors River.

5.22. The link road between the Blackwater junction and the Airport would not need to be lit, but all roundabouts would be lit.

5.23. Furthermore the southern route would necessitate the construction of settling ponds to attenuate the increase surface water run-off generated by the scheme.

A338 Widening

5.24. In addition, the report discusses potential requirements for the widening of the A338. However, it is currently uncertain whether this project would be required to enable the expansion of the airport. Indeed, the A338 is currently at capacity and requires upgrading to improve capacity to cope with other development proposals in the vicinity, including residential and employment proposals as detailed in various local development plans. As such this is not considered in this study as an aspect of airport expansion but will be addressed as part of the in-combination assessment. The

POTENTIAL FOR IMPACTS BY STAND ALONE AIRPORT EXPANSION PROPOSALS

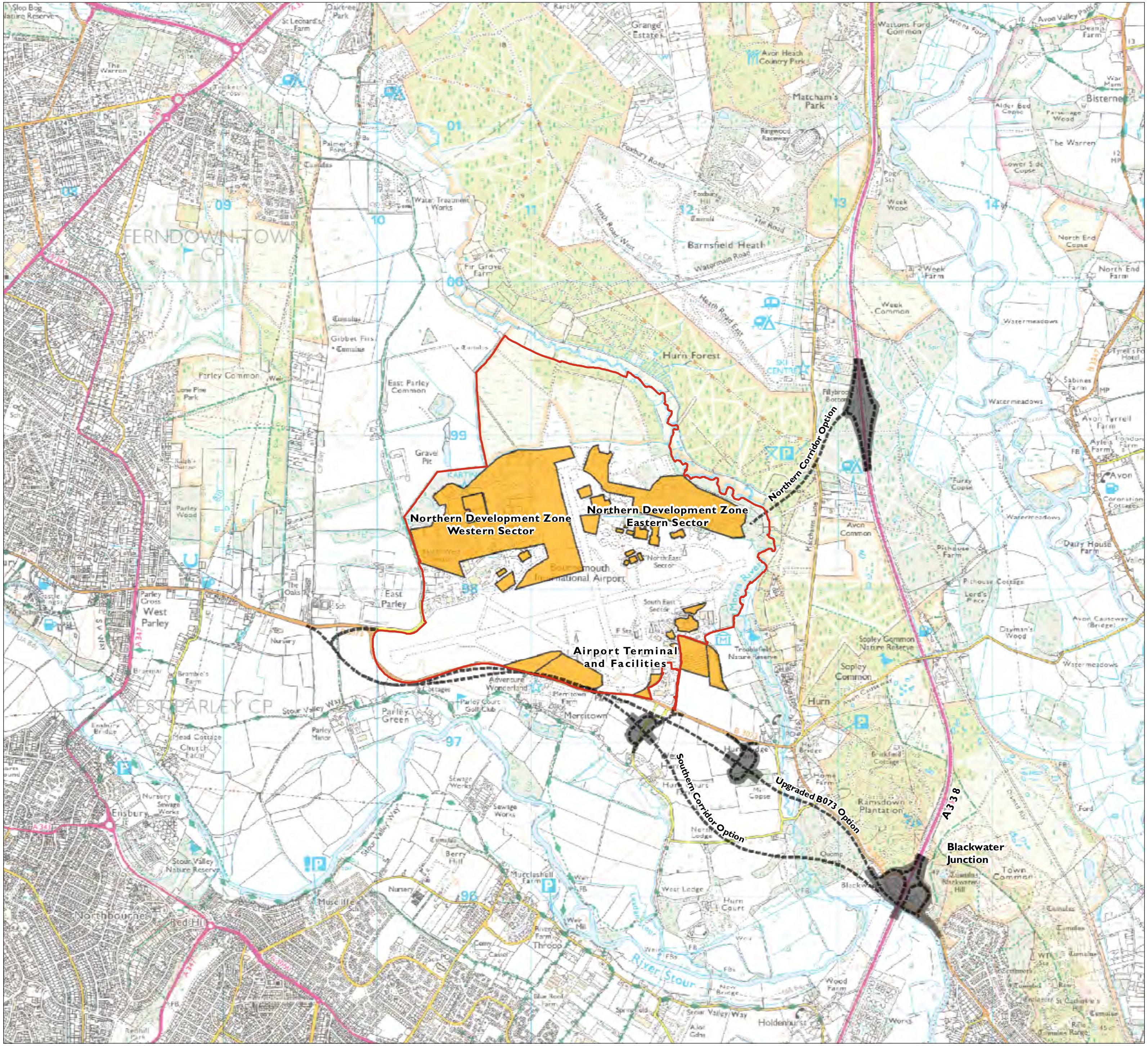
5.25. **Table 5.1** provides a summary of the potential environmental effects of the development proposals. This is then compared with the vulnerabilities of the various ecological receptors in **Section 7** to identify potential ecological impacts.

Table 5.1 Identification of potential impacts arising from different elements of Airport expansion proposals

Key Elements of Airport Expansion	Potential to cause adverse impacts on Ecological Receptors?	Discussion
Airport Terminal and Facilities Expansion (based on extant planning permission)	No	Section 106 agreement is in place in terms of the extant planning permission for ecological protection in terms of contamination, tree protection, landscape scheme, Construction Environmental Management Plan, reptile relocation and air quality (**Section 7** provides further detail on the air quality analysis).

Key Elements of Airport Expansion	Potential to cause adverse impacts on Ecological Receptors?	Discussion
Development of the Northern Business Park	Yes	Demolition and construction works have potential to result in disturbance and contamination through dust, run off, drainage and accidental spillage. Noise, human presence and vehicle movements are likely to increase. Potential for land take of undeveloped areas within the Park, risk of killing and injury of species. Increased human presence and traffic is likely during operation. Increased air pollution and water abstraction.
Associated Transport Infrastructure Enhancements: Northern Corridor Option	Yes	Demolition and construction works have potential to result in disturbance and contamination through dust, run off, drainage and accidental spillage. Noise, human presence and vehicle movements are likely to increase. Semi-natural habitat loss to the north east of the Northern Development Park. Construction works and during operation increased risk of killing and injury to wildlife. During construction and during operation, fragmentation of habitats, including lighting. Increased traffic and air pollution. Contamination impacts may arise from run-off (including de-icing), accidental spillage and dust

Key Elements of Airport Expansion	Potential to cause adverse impacts on Ecological Receptors?	Discussion
		(construction and operation). A new road may also open up previously less accessible land to disturbance from recreation and urban impacts.
Associated Transport Infrastructure Enhancements: Southern Corridor Option	Yes	As for Northern Corridor Option



Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 5.1: Summary of airport expansion proposals

Key

- Airport boundary
- Proposed road route
- Proposed junction
- Proposed development zones

N / E / S / W

0 200 400 800 m

Source: CBC

1:25,000 at A3
Date: 11/07/2008
Revision: B

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6. OTHER RELEVANT PLANS AND PROJECTS

INTRODUCTION

6.1. This Section sets out the policies, plans and projects which are of relevance to the expansion of Bournemouth Airport. The first section identifies those policies, plans and projects of direct relevance to the airport at a national, regional and local level based on the description of airport proposals set out in **Section 1**.

6.2. The second section considers other 'major projects/plans/programmes' proposed within a 10km boundary of the airport which may give rise to cumulative effects in combination with the airport proposals. This boundary is in keeping with the Natural England guidance for Appropriate Assessment of regional and sub-regional strategies.[39]

6.3. 'Major' projects/plans/programmes have been based on the broad definitions in Schedule 1 and Schedule 2 of the Environmental Impact Assessment Regulations.[40] The likely projects/plans/programmes have been identified through reference to key development plan documents (this has included both adopted plans and emerging local development documents). The potential for in combination effects has been considered in relation to both committed plans/projects (e.g. in the adopted plans) and those proposed in local development documents (LDDs). A comprehensive check as to whether committed proposals have been realised on the ground has not been made.

6.4. The administrative areas which lie within 10km of the airport are:

- Christchurch Borough.
- Bournemouth Borough.
- East Dorset District.
- New Forest District and National Park.
- Poole Borough.

6.5. These are shown on **Figure 6.1**

[39] Natural England (2007). *The Habitats Regulations Assessment of Regional Spatial Strategies and Sub-Regional Strategies*. Natural England

[40] TSO. (1999). *Statutory Instrument 1999 No. 293 -The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999*

POLICIES, PLANS, PROJECTS OF RELEVANCE TO THE PROPOSED AIRPORT EXPANSION

National Aviation Policy

6.6. National aviation policy is set out in two key White Papers, The Future of Air Transport[41] and The Future of Transport[42]. The Civil Aviation Act 2006[43] also contains various measures for the regulation of aircraft noise, vibration and emissions at UK airports. The Future of Air Transport White Paper made specific reference to Bournemouth noting that "*additional terminal capacity within the airport boundary at Bournemouth Airport is supported, subject to action to minimise impacts on environmentally sensitive sites and improved access.*.". In particular, the White Paper notes that further growth at Bournemouth is likely to require improvements to road access to serve the airport and its adjacent business park, alongside further enhancements to bus links from Bournemouth station.

Regional Policy

6.7. Bournemouth Airport lies within the South West Region. Regional Planning Guidance (RPG) is contained in RPG 10, which was published in 2001. The emerging Regional Spatial Strategy (RSS) will eventually replace RPG10. The draft RSS was submitted to Government in April 2006 and has subsequently undergone an examination in public (EiP). Proposed changes to the draft Plan are currently being developed following the EiP process.

6.8. The Draft Plan sets out the region's approach to air travel. No new airports are proposed, however, in order to meet the predicted growth in regional air travel, the overall strategy aims to develop the role of existing airports including at Bournemouth.

6.9. Bournemouth Airport lies within the South East Dorset area of the region. The draft RSS recognises the airport expansion as a key element of growth in this conurbation making particular reference to the '*..Provision for a new passenger terminal at Bournemouth Airport and a package of measures to improve access, including a link road to the A338*.'

6.10. The RSS Panel Report[44] discussed the airport, particularly the need for the link road to form a longer term planning requirement for intensification of the airport. There were also concerns over the absence of any guidance on the relationship between the proposals at the airport and the town centre plans and suggested that the draft RSS be more specific about the intended role of the employment proposals at the airport.

6.11. The RSS Modifications are due to be published in 2008. These will need to be carefully reviewed in relation to the airport proposals.

[41] Department for Transport (December, 2003): The Future of Air Transport.
[42] Department for Transport (20th July 2004): The Future of Transport.
[43] HMSO (2006). *Civil Aviation Act.* London
[44] Draft Regional Spatial Strategy for the South West: Examination in Public, April – July 2007 – Panel Report December 2007.

Local Planning Policy

6.12. The airport is located within the administrative area of Christchurch in the county of Dorset. The relevant adopted development plan documents are:

- The Bournemouth, Dorset and Poole Structure Plan, adopted 2000.
- The Borough of Christchurch Local Plan, adopted 2001.
- South East Dorset Local Transport Plan 2006-2011.
- The Bournemouth, Dorset and Poole Waste Local Plan adopted 2006.
- Dorset Minerals and Waste Local Plan adopted 1999.

The Bournemouth, Dorset and Poole Structure Plan

6.13. The Bournemouth, Dorset and Pool Structure Plan establishes the broad context for new development and the conservation of the environment up to 2011. In relation, to major growth points for employment, the plan recognises the employment land at the airport as the '.. *most significant opportunity to develop a high quality site..*' with over 80ha of land being available. The airport is considered to have the potential to be developed as a '*centre of aviation excellence, both as an operational airport and as an attractive environment for high-technology firms in aerospace and other sectors..*'

6.14. The plan places a strong emphasis on the improvement of existing facilities at the airport, particularly the development of a new replacement passenger terminal.

Christchurch Borough Local Plan

6.15. The Christchurch Borough Local Plan also covers the period up to 2011. It was adopted in 2001 with certain policies saved beyond September 2007. The local plan recognises that the airport is an important centre for industry and employment and that a comprehensive strategy is required to enable the airport to meet its full potential.

6.16. The local plan also sets out the Safeguarding Zones which apply to the airport. The safeguarding zone restricts the heights of buildings in the vicinity of the airport. The airport is also subject to Public Safety Zone policy within which there should be no significant increase in the number of people living, working or congregating.

South East Dorset Local Transport Plan

6.17. The Local Transport Plan (LTP) sets out the key transport priorities in the period 2006-2011 within Bournemouth, Poole and Christchurch. The airport is listed as one of the Strategic Transport Schemes within the LTP area. Its importance as a major employment site in South East Dorset is also recognised.

6.18. The LTP reiterates the importance of the major link road to the A338 to facilitate growth at the airport and the strategic employment site in the longer term. The Strategic Environmental Assessment (SEA) of the LTP noted that the route of the link

road in the Christchurch Local Plan should be modified to reduce its environmental impact.

Bournemouth, Dorset and Poole Waste Local Plan

6.19. The Waste Local Plan contains policies and proposals for dealing with Bournemouth, Dorset and Poole's Waste in the period up to 2016. Specifically relating to the Airport, the plan contains policies iterating the need to safeguard waste sites so as not to attract foraging birds which may pose a safety risk to aircraft. Schedule 1 of the Plan (Preferred Sites) lists Bournemouth Airport as having potential to site a *"Mechanical Biological Treatment with Refuse Derived Fuel"* facility.

Dorset Minerals and Waste Local Plan

6.20. The Dorset Minerals and Waste Local Plan 1999 identifies to sand and gravel extraction sites within the vicinity of the airport:

- Hurn Court Farm – immediately south of the B3073. 48 ha, to be restored to low level agriculture following operation.
- Avon Common – east of the A338. 75 ha, to be restored with main land use as nature conservation.

6.21. The Minerals and Waste Local Development Framework is currently under development, with the Bournemouth, Dorset and Poole Minerals Site Allocation Document programmed for consultation in Summer 2008.

OTHER MAJOR POLICIES, PLANS AND PROJECTS OF RELEVANCE TO THE AIRPORT

6.22. This section identifies those policies/plans/projects which have the potential to have effects in combination with the proposed expansion of the airport. These are sub-divided into proposals at the regional and local levels.

Regional Policy – Draft RSS

6.23. In order to consider the regional proposals which may have an impact in combination with the airport expansion, a review has been undertaken of the South East Dorset conurbation – one of the Strategically Significant Cities and Towns (SSCTs) of the region. This encompasses Bournemouth, Poole, Christchurch and the immediate hinterland (Wimbourne Minster, Colehill, Ferndown, Verwood, St Leonard's, West Moors and Wareham). The proposals cover the plan period 2006 – 2026. The likely in combination polices/projects are listed under key headings below.

Employment (provision between 2006 – 2026)

- 23,000 jobs at Bournemouth – 40% of this growth is expected to come from the education and health sectors; high technology (including growth at Bournemouth Airport) is also important.
- 14,700 – 18,900 jobs in Poole.

- Within East Dorset District, 20 hectares of employment land.

Housing (provision between 2006 -2026)

- An average of c. 680-780 dwellings per annum in Bournemouth.
- An average of c. 450 – 500 dwellings per annum in Poole.
- An average of c.165 to 180 dwellings per annum in Christchurch, to include an urban extension.
- An average of c. 260 dwellings per annum in East Dorset (120 dwellings per annum will be extensions to existing settlements).
- An urban extension to the north of Christchurch urban area of about 600 dwellings.

Infrastructure

- A31 to Poole corridor improvements.
- Port of Poole deeper access channel and berth improvements (subject to further study).

Panel Report to the Draft RSS

6.24. There are a number of recommendations from the Panel Report which relate to the growth proposals set out above. These include:

- A total of 3,450 dwellings in Christchurch (173 per annum), and an increase to 6,400 dwellings in East Dorset (320 per annum) between 2006-2026.
- Support for provision of urban extension areas of search in both Christchurch and East Dorset.
- Recommendation to remove the Green Belt from the operational airport (the southern sectors).
- Recommendation for an additional 1,000 dwellings as smaller urban extensions in East Dorset District (in addition to those already required in the draft RSS).
- A target of 110 ha of land to be provided for employment in the Bournemouth and Poole area as a whole – the airport could potentially provide 70ha of this subject to infrastructure improvements..
- The necessary links to the Airport are considered by the Panel as being a low priority for public spending and a commercial concern.

6.25. This equates to a maximum of some 35,000 new dwellings over the plan period.

Regional Policy - South East Plan

6.26. In New Forest District the SE Plan calls for 4,138 additional dwellings over the plan period (2006-2026), equivalent to 207 dwellings per annum (dpa).

6.27. High priority is given to conserving and enhancing land within New Forest National Park, and emphasis placed on sustainable land management policies, both inside the National Park and on grazing land outside the Park.

6.28. The Plan recognises the importance of the regional link to Bournemouth/Poole.

Local Policy

6.29. The growth proposals for the South East Dorset conurbation, as set out in the Draft RSS, are translated at the local level through local development frameworks (LDFs). Progress in developing the LDF is varied across the South East Dorset area and consequently reference is also made to the relevant adopted plans and the proposals contained therein.

The Bournemouth, Dorset and Poole Structure Plan (July 2000)

6.30. Housing growth of 52,900 new dwellings between 1994 and 2011, including:

- Bournemouth about 12,400 (of which 100 on greenfield)
- Christchurch about 2,700 (400 greenfield)
- East Dorset about 4,400 (1,800 greenfield)
- Poole about 9,500 (1,700 greenfield)

6.31. Develop 300ha of land for employment uses: from which 20ha will be in Bournemouth, 49ha in Christchurch, 20ha in East Dorset, 29ha in Poole, and the remaining 182ha amongst various towns to the west of the study area.

6.32. Major economy growth points at Bournemouth Airport, Winfrith Technology Centre, and the former defence sites at Weymouth and Portland.

6.33. New commercial office developments of more than 2,000m^2 gross floorspace will be accommodated in Bournemouth (town centre, Lansdowne/Central Station, and Castle Lane East) and Poole (town centre).

6.34. Encourage development of major new tourist attractions in Christchurch, Bournemouth, Poole, and Swanage.

6.35. Construct and improve trunk roads: A31 to Poole Link Road, Poole Harbour Crossing, A31 Stag Gate, and the A350 corridor.

6.36. Reserve land for major highway schemes: A354 Underhill Relief Road, A350 Shaftesbury Bypass, A341 Kinson Bypass, and the A3060 Castle Lane West Relief Road.

6.37. Rail network duel track installation at Salisbury and line reinstatement and Park and Ride facilities at Weymouth.

6.38. Exploit the potential of the Poole-Weymouth railway corridor for further growth and development.

Borough of Christchurch Local Plan (March 2001, updated 2007)

6.39. Increase housing provision by 2,700 dwellings (between 1994-2011), almost wholly by infill and redevelopment, with limited greenfield development.

6.40. Allocate land on the west side of the High Street (between and to the rear of the frontage premises) for shopping and professional service development.

6.41. New road construction:

- A new road between the A338 Spur Road and the Northbourne roundabout (to relieve congestion on A3060 Castle Lane West)

6.42. Existing road improvements:

- A35 Barrack Road
- Adjacent to and including Hurn Bridge roundabout
- A338 Blackwater junction
- B3073 Bournemouth Airport Chapel Gate
- Stoney Lane roundabout
- Fairmile Road, Jumpers Road, and Knapp Mill Ave junctions

6.43. Expansion of Wicks Lane, Bargates, and Highcliffe Shopping Centre car parks, creating approximately 325 additional spaces, as well as more modest expansions.

Bournemouth District Wide Local Plan (adopted February, 2002)

6.44. The provision of *"about 12,400 new dwellings in the Borough between 1994 and 2001"*

- This is to be met principally through infill development, redevelopment and conversion given the fact that in Bournemouth strategic allocations at Littledown and North Bournemouth have been taken up.

6.45. In the case of transportation, development is to be permitted on primary and county distributor routes, however, only where it will not result in direct access, movements or turning on these roads.

East Dorset Local Plan (January 2002)

6.46. The provision of 4,400 new dwellings within the District from 1994 to 2011.

- Verwood emphasized as a strategic site for housing growth, without phasing restrictions.

6.47. Extension of existing Industrial Estates in Ferndown, Wimborne Minster, and Sturminster Marshall by approximately 20ha total.

6.48. Major road improvement schemes:

- Construction of the West Moors Bypass, which will link to the A31 in the south and a proposed new road at Three Legged Cross in the north.
- Construction of the A350 Spetisbury, Charlton Marshall, and Sturminster Marshall Bypass
- Completion of Verwood Distributor Road
- B3072 improvements at West Moors

6.49. Policy allowance for future redevelopment of the St. Leonard's Hospital site – 30ha within the greenbelt.

6.50. Designation of substantial area of woodland to the north of the A31 between the Ashley Heath roundabout and the junction with Verwood Road as open space preserved for recreation and conservation.

Christchurch and East Dorset Joint Core Strategy Issues and Options Discussion Paper March 2008

6.51. Christchurch Borough Council and East Dorset District Council are working together on the production of a joint Core Strategy. Spatial strategy options of considered in the emerging Core Strategy and of relevance to Airport expansion include:

Urban Extensions

- North of Christchurch urban area .
- North West of the main urban area at Corfe Mullen (c. 700 dwellings).
- North and West of Wimborne Minster.
- East and South East of Ferndown (c. 1,700 dwellings between the two).
- West of Ferndown for 20 ha of employment land.
- 1,000 houses on other sites around the main towns and built up areas of East Dorset.

Poole Local Plan 1st Alteration (adopted March 2004)

6.52. The Poole Local Plan 1st Alteration sets out the policies to guide development up to 2011. Key proposals made within this plan which have potential to have effects in combination with the airport expansion are:

- A31 to Poole Link (improving links between the A31 and the Port of Poole).

- Poole Bridge Regeneration Initiative – including redevelopment of major brownfield sites in the Central Area (particularly Holes Bay Basin) and a second lifting bridge between the town centre and Hamworthy.
- 9,500 gross dwellings between 1994 and 2011 (Structure Plan requirement); 4,424 completed at 2003.
- 29 ha of employment land between 1994 and 2011 (Structure Plan Requirement); 28 ha completed at 2003.
- 42.5 ha of employment land (B1-B8) allocated (all sites less than 10ha).

Poole Core Strategy Submission Document 2008

6.53. The Poole Core Strategy Submission Document was submitted to the Secretary of State in May 2008. It sets the framework to meet the growth targets in the draft RSS. The Core Strategy submission document is due for publication at the end of May 2008 and will be reviewed as this project progresses.

6.54. The Preferred Strategy is for the Central Area of Poole to act as a driver for economic and retail growth. The proposals arising from Preferred Strategy which could have an impact in combination with the airport expansion include:

- Regeneration of the Central Area of Poole – with a focus on the Twin Sails Regeneration Area (formerly the Poole Bridge Regeneration Initiative), Town Centre and Adjoining Sites – the overall regeneration will help deliver a second lifting bridge, a new public waterfront, housing (around 4,000 new dwellings) and employment (up to 36,000 sqm of business floorspace).
- Up to 45,000 sqm (net) of additional retail development (with a focus on better use of existing under-used sites).
- Improve access between Poole and the national Trunk Road network along the north-south (A31) link.
- Improve access between the A31 and the Port of Poole.

6.55. As discussed earlier these proposals will need to be reviewed to take account of any revisions which have been made in the Core Strategy submission document which is due to be published. Poole Harbour Aquatic Management Plan (January 2007)

6.56. The Poole Harbour Aquatic Management Plan has been prepared to offer strategic guidance for the development of commercial and recreation activities within the harbour within the context of the key environmentally sensitive areas.

New Forest National Park Authority Management Plan and Core Strategy (Consultation Draft August 2008)

6.57. '*The draft National Park Plan sets out the long-term Vision and objectives for the National Park, together with the policies and actions for the next 5 years and beyond'.* It incorporates both the National Park Management Plan and the Local Development

Framework Core Strategy including Development Control policies, both statutory planning documents.

New Forest District Local Plan (August 2005)

For relevance to the study area of this report, emphasis has been placed on projects and policies relating to western area of the district (encompassing Fordingbridge to Lymington).

6.58. Provision of 5,480 additional dwellings (between 1996 and 2011) plus a reserve allowance for 500 additional dwellings throughout the District.

6.59. Reservation of up to 7ha for future residential development (approximately 150 dwellings) and 3ha employment development at Crow Lane in Ringwood.

6.60. Allocation of 11.5ha for industrial /office development in Ringwood.

6.61. Improvements to the A338 north of Ringwood.

6.62. Discouragement of any expansion of the Lymington – Isle of Wight ferry terminal.

New Forest District Core Strategy Preferred Options (October 2007)

For relevance to the study area of this report, emphasis has been placed on projects and policies relating to western area of the district (encompassing Fordingbridge to Lymington).

6.63. The Preferred Options document outlines strategic objectives and planned developments:

- Allow for greenfield development in "least constrained" areas:
    - greenbelt adjoining and near Lymington
    - greenbelt near New Milton
    - greenfield land near Bransgore
    - greenfield land south and south-east of Ringwood
- Allow for a maximum total housing provision (from 2006-2026) of 980 dwellings in Lymington, 720 dwellings in New Milton, and 510 dwellings in Ringwood.
- A projected shortfall of 290 dwellings (to meet the SE Plan objective of 4,138 dwellings by 2026), roughly half of which will be met on greenfield sites around Ringwood.
- Additional retail development within Ringwood/Fordingbridge and New Milton/ Lymington totalling 11,000m^2, plus a further 3,500m^2 large format retail warehouse in these same areas (from 2005-2018).

- Build out existing but undeveloped employment sites in Ringwood (10.5 ha), Lymington (3ha) and New Milton (4.2 ha). Ensure these sites are retained specifically for employment use.
- Improve the A35 and safeguard required land.

South East Dorset Local Transport Plan

6.64. The Local Transport Plan (LTP2) sets out a delivery strategy for transport improvements in South East Dorset for the five year period 2006 – 2011. The LTP2 defines prime transport corridors where expenditure will be concentrated and which will be focus for key transport infrastructure. These are:

- A35 – Poole – Bournemouth (town centre route) – including on-street parking restraints and overall focus on better management of existing road network.
- A3049 – East West Corridor – including road widening at critical locations to facilitate bus and multi occupancy lanes.
- A341/A347/A3060 – Northern Corridor – including road widening at critical locations.
- A35 – Eastern Corridor – In the short term the focus will be on better management of the existing road network.

<u>Rail Improvements</u>

6.65. The £32m rail improvements for the period to 2026 comprise four elements:

- Redevelopment of the Poole station and former goods yard site, providing mixed development and a new transport interchange.
- Reconnection of the Swanage branch.
- Funding of a more intense cross-conurbation local service with local rail-based Park and Ride sites.
- New Boscombe station and regeneration sites.

A338 Widening

6.66. As a specific project, further detail is provided about potential widening of the A338 in two reports produced by Dorset Engineering Consultancy (2007 and 2008). The design requirements for speed limits of 70 mph and 60 mph were assessed, with widening for both resulting in land take at certain locations within designated sites and conservation verges. Furthermore associated works (such as vegetation clearance associated with topographic surveys, lay-bys, replacement ditches, signage, flood storage, flood replacement, site compounds and ecological mitigation measures may have further ecological implications.

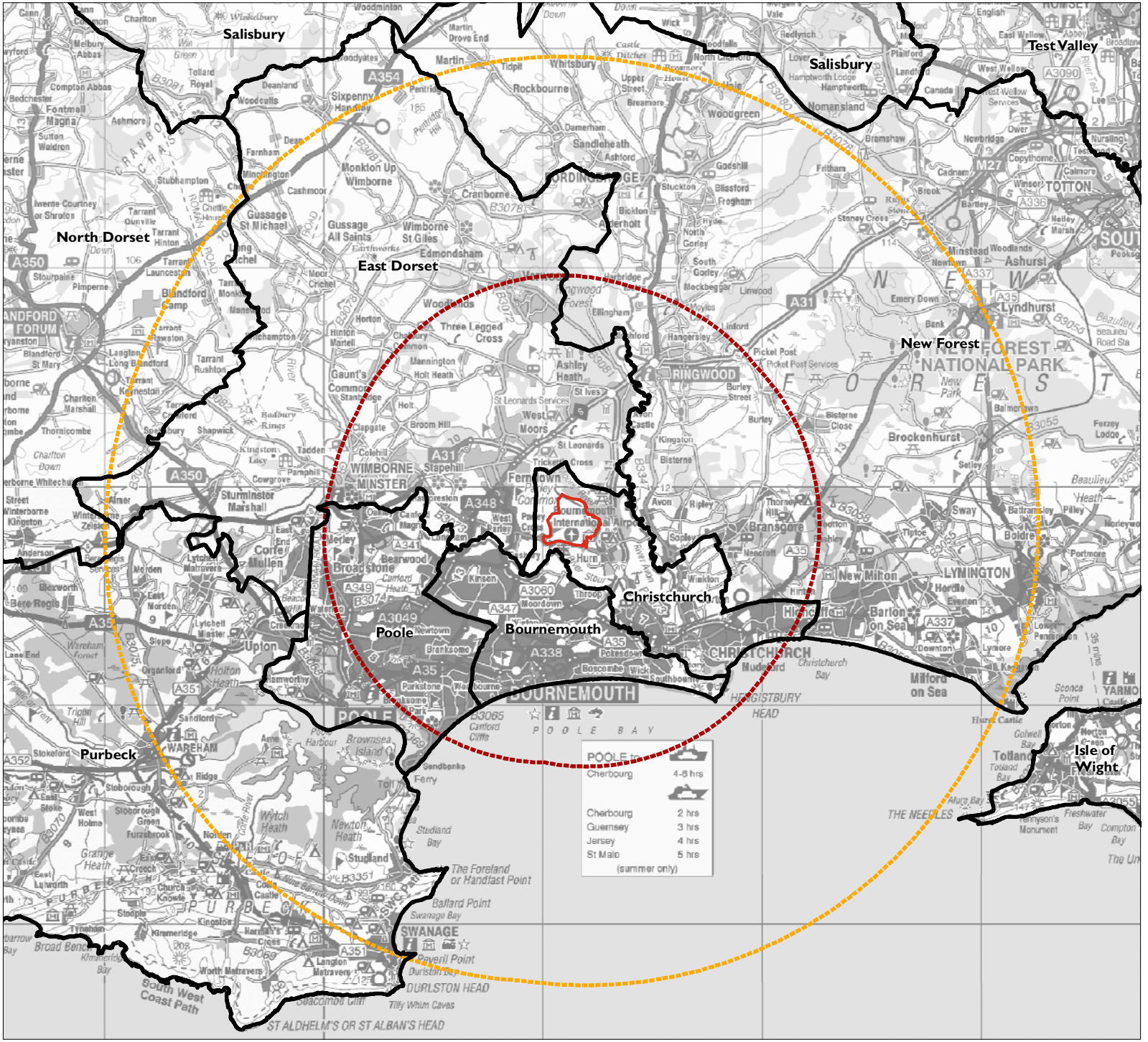
SUMMARY AND CONCLUSIONS

6.67. The preceding sections set out a long list of all potential policies, plans and programmes which have the potential to have effects in combination with the proposals at Bournemouth Airport. This section aims to refine the overall list to those polices/plans/programmes which have the potential to have the most detrimental in combination effects. Furthermore, housing and employment allocations identified in the adopted plans have not been included as it is assumed these have already been delivered or are nearing completion. The projects listed below will be used in the assessment of in combination effects.

List of Projects with potential to have In Combination Effects.

Project	Source
Infrastructure	
A31 to Poole Link	**The Bournemouth, Dorset and Poole Structure Plan (July, 2000)**
Poole Harbour Crossing	**The Bournemouth, Dorset and Poole Structure Plan (July, 2000)**
A31 Stage Gate	**The Bournemouth, Dorset and Poole Structure Plan (July, 2000)**
A350 Corridor	**The Bournemouth, Dorset and Poole Structure Plan (July, 2000)**
New road between the A338 Spur Road and the Northbourne roundabout	**Borough of Christchurch Local Plan (March 2001, updated 2007).**
Construction of the West Moors Bypass	**East Dorset Local Plan (January, 2002)**
Construction of the A350 Spetisbury, Charlton Marshall and Sturminster Marshall Bypass	**East Dorset Local Plan (January, 2002)**
Improve access between the A31 and the Port of Poole.	**Poole Core Strategy Preferred Options**
A3049 East West Corridor including road widening at critical locations to facilitate bus and multi occupancy lanes.	**South East Dorset Local Transport Plan.**
A341/A347/A3060 Northern Corridor (Castle Lane West Relief Road) including road widening at critical locations.	**South East Dorset Local Transport Plan.**
Redevelopment of the Poole Station and former goods yard site.	**South East Dorset Local Transport Plan.**

New Boscombe station and regeneration sites.	**South East Dorset Local Transport Plan.**
Housing	
Urban Extensions: ➢ **North of Christchurch (600 dwellings)** ➢ **North West of main urban area at Corfe Mullen (700 dwellings).** ➢ **North and West of Wimbourne Minster.** ➢ **East and South East of Ferndown (1,700 dwellings).** ➢ **West of Ferndown for 20ha of employment land.** ➢ **1,000 dwellings distributed around the main towns and built up areas of East Dorset**	**Christchurch and East Dorset Core Strategy Issues and Options Discussion Paper (March, 2008)**
Maximum total housing provision of: ➢ **980 dwellings in Lymington.** ➢ **720 dwellings in New Milton.** ➢ **510 dwellings in Ringwood.**	**New Forest District Core Strategy Preferred Options (October 2007).**
Employment	
Up to 45,000 sqm (net) of additional retail development.	**Poole Core Strategy Preferred Options**
Additional retail development: ➢ **11,000m^2 within Ringwood/Fordingbridge/NewMilton/Lymington.** ➢ **3,500m^2 large format retail warehouse in areas listed above.**	**New Forest District Core Strategy Preferred Options (October 2007).**
Minerals and Waste	
Bournemouth Airport *"Mechanical Biological Treatment with Refuse Derived Fuel"* facility.	**Bournemouth, Dorset and Poole Waste Local Plan 2006**
➢ **Hurn Court Farm sand and gravel extraction.** ➢ **Avon Common sand and gravel extraction.**	**Dorset Minerals and Waste Local Plan 1999**
Other	
Regeneration of the Central Area of Poole (including a second lifting bridge, a new public waterfront, c. 4,000 new dwellings, up to 36,000 sqm of business floorspace)	**Poole Core Strategy Preferred Options**
A338 widening	**To meet wider development**



Bournemouth International Airport, Ecological study to support Appropriate Assessment

Figure 6.1: Administrative boundaries in the vicinity of Bournemouth Airport

Key

- Administrative boundaries
- Airport boundary
- 10km buffer of airport boundary
- 20km buffer of airport boundary

N W E S

0 1.25 2.5 5 Km

Source: OS, CBC

1:175,000 at A3
Date: 11/07/2008
Revision: B

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7. ASSESSMENT OF POTENTIAL IMPACTS ON ECOLOGICAL RECEPTORS

APPROACH TO IMPACT ASSESSMENT

7.1. Treating each receptor in turn, this section brings together the key ecological vulnerabilities (identified in **Section 4**) of each of the identified receptors, and compares these with the development proposals /options and their likely effects (identified in **Section 5**). This therefore enables the identification of how the development proposals may specifically impact upon ecological receptors, and an initial assessment of the magnitude and significance of these impacts. However, it is important to note that in the case of this study, the development proposals are largely at a very early stage in their development and therefore the identification of actual impacts associated with detailed design is not possible. The study seeks to identify those likely impacts based on best available information. It involved regular consultation with Natural England as well as the Steering Group.

7.2. The impact assessment process is further detailed in **Section 2**. Once the potential impacts have been identified, potential mitigation options are presented. Again, due to the scope of the study and nature of the proposals, it is not possible to present finalised mitigation proposals. The information presented here may be used to inform further refinement and development of the airport expansion proposals, and full Appropriate Assessment and Environmental Impact Assessment will be required in the future.

7.3. **Table 7.1** provides a summary of the impacts of the various development options associated with each of the ecological receptors, including an initial indication of the potential magnitude and significance of the impacts. Mitigation options are then described. Further detail is provided in **Appendix V** where proformas for each ecological receptor also detail those proposals and effects which have been judged as not impacting upon the conservation status of the receptor. The findings are discussed in **Section 8**.

Table 7.1: Impact assessment matrix

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
Special Protection Areas, Special Areas of Conservation and Ramsar sites (International value)					
River Avon SAC	**Airport terminal and facilities expansion** Impact on water flow as a result of increased abstraction **Northern Business Park** Impact on water flow as a result of increased abstraction	High	Major	**Yes**: Impact on water flow as a result of increased abstraction from residential, employment and infrastructure development. Avon Common sand and gravel extraction and drainage and contamination impacts. This has been subject to separate Appropriate Assessment.	**Airport terminal and facilities expansion** **Northern Business Park** **Yes**: To enable a judgement of no significant effect, new development within the Airport should achieve water neutrality, i.e. through various measures there should be no increase in net water use as a result of development. Measures may include rainwater harvesting, water reuse, water efficiency and auditing and metering.
Avon Valley SPA and Ramsar Site	**Transport infrastructure enhancements:** *Northern corridor* Potential contamination of ground water supply (new junction with A338) in relation to Ramsar interest features in particular	Medium	Major	**Yes**: Water quality as a result of contamination due to contamination from residential, employment and infrastructure development. A338 widening and drainage and contamination impacts. Avon Common sand and gravel extraction and drainage and contamination impacts. This has been subject to separate Appropriate Assessment. Disturbance of over wintering birds	**Transport infrastructure enhancements** **Yes:** Best construction practice, appropriate design of drainage and use of SuDS to ensure infiltration is intercepted and filtered, or directed away from sensitive habitats. **In combination effects** **Yes:** Disturbance impacts on over-wintering birds should be mitigable if further increases in traffic volumes along the Avon Causeway are prevented either through the successful implementation of a Green Travel Plan or other restriction of traffic on

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
				from increase traffic flows on roads linking to the A338 (e.g. Avon Causeway) associated with wider development proposals. This could be exacerbated if development of Northern Business Park leads to greater traffic flows also. However, given current high use of the Avon Causeway, the limited capacity of the road and the possible habituation of birds, it is considered that this may not have a significant impact upon over-wintering bird populations.	the Avon Causeway. Further detail may be required in relation to potential increases in traffic volumes along the Avon Causeway and the distribution of overwintering birds / suitable habitat within the vicinity.
Dorset Heaths / Heathlands SAC, SPA and Ramsar site	**Northern business park:** Air pollution largely as a result of increased traffic Toxic and non-toxic contamination (including dust) Potential for increased human disturbance Disturbance from light and noise **Transport infrastructure enhancements** *Southern corridor* At Blackwater junction: Direct habitat loss Air pollution and contamination (run off) impacts would extend	High	Major	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development. A338 widening with associated with run-off and contamination impacts. Avon Common sand and gravel extraction and drainage and contamination impacts. This has been subject to separate Appropriate Assessment.	**Northern business park** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Given existing uncertainty relating to air quality impacts and to enable the assessment to conclude there would be no significant effects upon Natura 2000 sites, stringent controls on emissions would be required. Any new development should seek to off-set any additional Nitrogen loading by reducing the emissions of other activities, resulting in no net increase in loading on Natura 2000 sites. This may include: - Implementation of a Green Travel Plan to reduce private car usage and transport emissions (for example any new access routes may support multi-occupational vehicles or favour public transport, or reduction of traffic

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	further in to the site as a result of land take. *Northern corridor* Increased air pollution **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts				on existing routes) - Measures to minimise energy requirements of new development, through appropriate design to improve thermal efficiency, use of renewable and/or low carbon technologies. Other mitigation options may include the development of a sub-regional roadside planting strategy to filter out pollutants at key transport locations, such as transport hubs. Best construction practice and use of SuDS would avoid potential construction impacts, including contamination and disturbance. Recreation impacts being addressed through the SWRSS, and also by the Dorset Heathlands Interim Planning Framework (2007). Improved boundary security would protect adjacent heathland habitats, whilst development proposals should include high quality greenspace to reduce recreational pressure outside development boundary. **Transport infrastructure enhancements** *Southern corridor* **No:** Should transport improvements at the Blackwater Junction require land-take within the Natura 2000 site, this would result in significant impacts upon the site in relation to the conservation objective to maintain area. This would therefore require the IROPI test to be met. Best construction practice and use of SuDS may

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
					reduce contamination impacts. *Southern corridor* **Yes:** As above in relation to air pollution **Cumulative ecological effects resulting from airport expansion plans** **Yes:** As above in relation to air pollution
The New Forest SAC, SPA and Ramsar site	**Cumulative ecological effects resulting from airport expansion plans** Air quality impacts as a result of changing travel patterns of those using and employed at the airport	Low	Moderate	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development.	**Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Sites of Special Scientific Interest (National value)					
Hurn Common SSSI	**Northern business park:** Air pollution largely as a result of increased traffic Toxic and non-toxic	Medium	Moderate	**Yes**: Air pollution as a result of increased traffic from residential, employment	**Northern business park** **Yes:** Options to minimise air pollution impacts are discussed above, including developments to off-set

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	contamination (including dust) Potential for increased human disturbance Disturbance from light and noise **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts			and infrastructure development. Waste proposals	any increases in N loads, for example from transport and energy supply. All development must be informed by full ecological survey and impact assessment to inform detailed design and minimise impacts. Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats. Maintain an appropriate buffer between the site and development, including native screening within landscape proposals. Continued heathland management agreement between Natural England and Bournemouth Airport. Public access must continue to be excluded from the SSSI.
Moors River System SSSI	**Northern business park:** Disturbance from light and noise Toxic and non-toxic contamination (including surface runoff and dust) Hydrological disruption **Transport infrastructure enhancements** *Northern Corridor (river crossings in particular)*	High	Major	**Yes**: Water levels as a result of increased abstraction due to the above. Hurn Court Farm sand and gravel extraction and drainage and contamination impacts. This has been subject to separate Appropriate Assessment.	**Northern business park** **Yes:** All development must be informed by full ecological survey and impact assessment to inform detailed design and minimise impacts. This would include micro-siting to minimise impact of direct habitat loss. Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats. Maintain an appropriate buffer between the site and

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	Direct habitat loss Contamination during construction and operation from spillage, run off, dust etc. Hydrological disruption Fragmentation as a result of crossing *Southern corridor* As above associated with new crossings.				development, including native screening within landscape proposals. **Transport infrastructure enhancements** **Yes:** As above impacts would be mitigable following detailed ecological survey and implementation of measures including best construction practice, use of SuDS, lighting design. Further, new crossings associated with both northern and southern corridor options must be designed to minimise habitat loss and disturbance during construction, again with ecological survey to inform location. In particular the northern corridor crossing would require a viaduct design to reduce impacts upon wetland habitats associated with the river.
Parley Common SSSI	**Cumulative ecological effects resulting from airport expansion plans** Air quality impacts	Low	Moderate	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development. Waste proposals	**Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
St Leonards and St Ives	**Transport infrastructure**	Medium	Moderate	**Yes**:	**Transport infrastructure enhancements** *Northern corridor*

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
Heaths SSSI	**enhancements** *Northern corridor* Air pollution Contamination during construction and operation from spillage, run off, dust etc. **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts			Air pollution as a result of increased traffic from residential, employment and infrastructure development. A338 widening and drainage and contamination impacts.	**Yes:** Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats. Maintain a buffer between the site and road corridor, including management and / or planting of a native screening belt to filter pollutants. **Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Town Common SSSI	**Transport infrastructure enhancements** *Northern corridor* Air pollution *Southern corridor (Blackwater Junction)* Direct habitat loss	Medium	Moderate	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development. A338 widening and drainage and contamination impacts, and increased air pollution.	**Transport infrastructure enhancements** *Southern corridor (Blackwater Junction)* **Yes:** All proposals would need to be informed by full ecological survey and impact assessment. Given the likely minimal area of direct habitat loss, this would be mitigable with, for example, habitat enhancement elsewhere, and the implementation of best construction practice and SuDS to reduce

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	Air pollution and contamination (run off) impacts would extend further in to the site as a result of land take. **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts				contamination impacts. **Note:** in relation to the Natura 2000 designation direct habitat loss would not be mitigable. **Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Avon Valley (Bickton to Christchurch) SSSI	**Northern business park:** Impact on water flow as a result of increased abstraction **Transport infrastructure enhancements** *Northern corridor* Potential contamination of ground water supply (new junction with A338) in relation to rare plant interest and freshwater habitats	High	Major	**Yes**: Disturbance of over wintering birds from increase traffic flows on roads linking to the A338 (e.g. Avon Causeway) associated with wider development proposals. This could be exacerbated if development of Northern Business Park leads to greater traffic flows also. However, given current high use of the Avon Causeway, the limited capacity of the road and the possible habituation of birds, it is considered that this may not have a significant impact upon over-wintering bird populations. Impact on water flow as a result of	**Transport infrastructure enhancements** **Yes:** Best construction practice, appropriate design of drainage and use of SuDS to ensure infiltration is intercepted and filtered, or directed away from sensitive habitats. To enable a judgement of no significant effect, new development within the Airport should achieve water neutrality, i.e. through various measures there should be no increase in net water use as a result of development. Measures may include rainwater harvesting, water reuse, water efficiency and auditing and metering. **In combination effects**

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
				increased abstraction from residential, employment and infrastructure development. Water quality as a result of contamination due to contamination from residential, employment and infrastructure development. Avon Common sand and gravel extraction and drainage and contamination impacts. This has been subject to separate Appropriate Assessment.	**Yes:** Impacts should be mitigable if further increases in traffic volumes along the Avon Causeway are prevented either through the successful implementation of a Green Travel Plan or other restriction of traffic on the Avon Causeway. Further detail may be required in relation to potential increases in traffic volumes along the Avon Causeway and the distribution of overwintering birds / suitable habitat within the vicinity.
Sites of Nature Conservation Importance (County value)					
Avon Common Plantation	**Cumulative ecological effects resulting from airport expansion plans** Air quality impacts	Low	Minor	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development. Avon Common sand and gravel abstraction may result in loss of site	**Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Fillybrook Plantation	**Transport infrastructure enhancements**	High	Moderate	**Yes**: Air pollution as a result of increased traffic from residential, employment	**Transport infrastructure enhancements** *Northern corridor* **Yes:**

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	Northern corridor Habitat loss and fragmentation Contamination during construction and operation from spillage, run off, dust etc. Direct killing and injury of species using the site and disturbance. **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts			and infrastructure development.	All development must be informed by full ecological survey and impact assessment to inform detailed design and minimise impacts. This would include micro-siting to minimise impact of direct habitat loss. Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats. Habitat creation along road verges. Incorporate features to maintain connectivity (for example dormouse bridges). **Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Fillybrook, Crabbesfield	**Transport Infrastructure Enhancements** *Northern corridor* Contamination during construction and operation from spillage, run off, dust	High	Moderate	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development.	**Transport infrastructure enhancements** *Northern corridor* **Yes:** All development must be informed by full ecological survey and impact assessment to inform detailed

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	etc. Habitat fragmentation Direct killing and injury of species using the site and disturbance. **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts				design and minimise impacts. Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats. Habitat creation along road verges. Incorporate features to maintain connectivity (for example dormouse bridges). **Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Fir Grove Copse	Minimal impacts	Neutral	Negligible	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development.	Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Hurn Airport NE Industrial Area	**Northern business park:**	High	Moderate	**Yes**: Air pollution as a result of increased	**Northern business park** **Yes:**

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	Habitat loss Further fragmentation due to loss of interlinking habitats Disturbance from light and noise, and recreational use Toxic and non-toxic contamination (including surface runoff and dust) Impacts upon hydrology **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts			traffic from residential, employment and infrastructure development.	All development must be informed by full ecological survey and impact assessment to inform detailed design and minimise impacts. Micro-siting to avoid or minimise habitat loss. Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats. Habitat buffers to be maintained, including native landscaping. Enhancement opportunities include creation of landscape corridors from parcels to wider habitats, buffer planting and enhanced/long term management. Contribution to high quality open space within the park. **Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Hurn Forest	**Transport Infrastructure Enhancements**	High	Moderate	**Yes**: Air pollution as a result of increased traffic from residential, employment	**Transport infrastructure enhancements** *Northern corridor*

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	Northern corridor Habitat loss and fragmentation Contamination during construction and operation from spillage, run off, dust etc. Direct killing and injury of species using the site and disturbance. **Cumulative ecological effects resulting from airport expansion plans** Air quality impacts			and infrastructure development.	**Yes:** All development must be informed by full ecological survey and impact assessment to inform detailed design and minimise impacts. Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats. Habitat creation along road verges. Incorporate features to maintain connectivity (for example dormouse bridges). **Cumulative ecological effects resulting from airport expansion plans** **Yes:** Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from transport and energy supply.
Sopley Common Plantation	Minimal impacts	Neutral	Negligible	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development.	Further investigation is required to determine whether significant adverse impacts may result from decreasing air quality due to in-combination impacts of increased traffic volumes. Options to minimise air pollution impacts are discussed above, including developments to off-set any increases in N loads, for example from

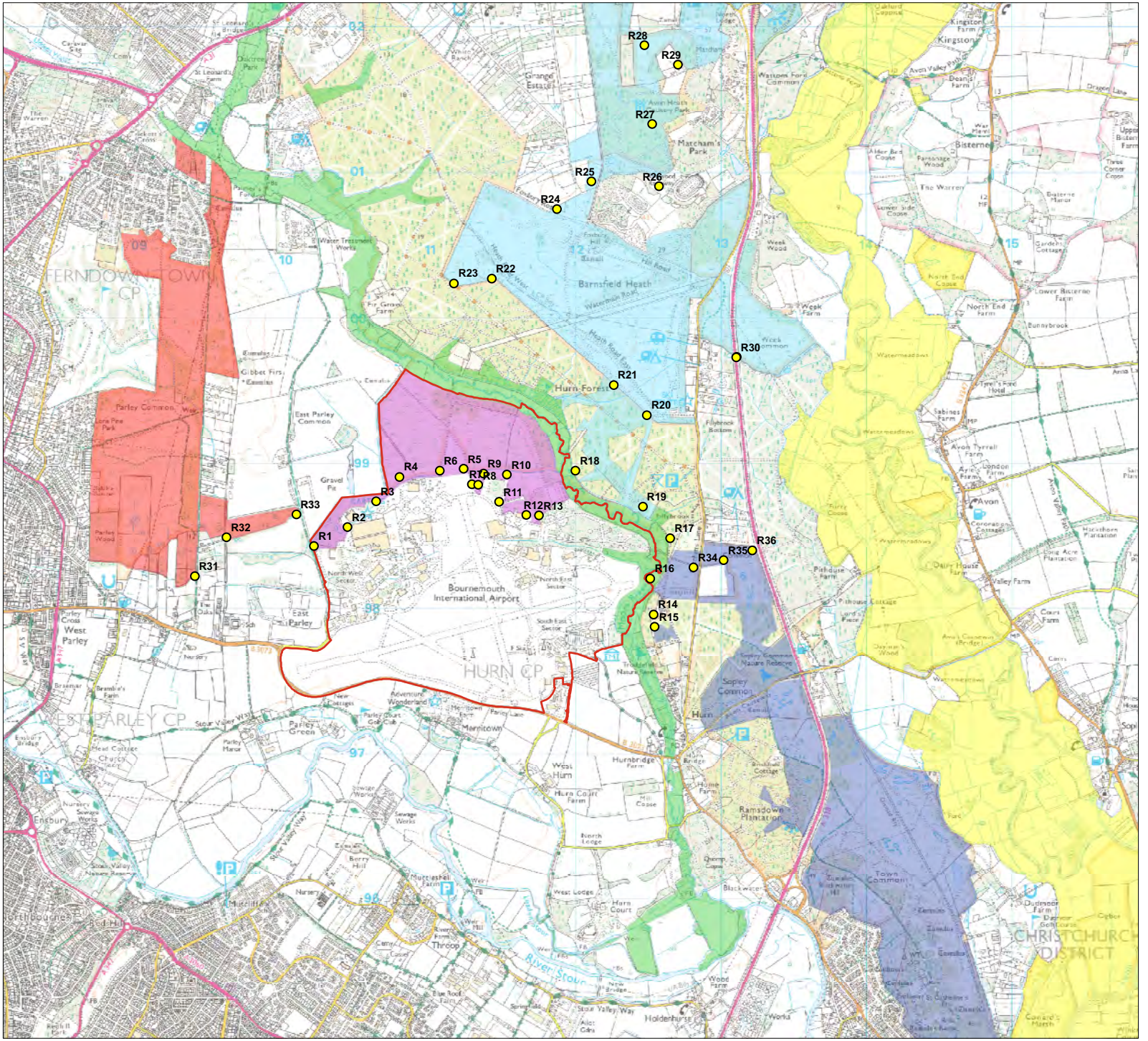
Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
					transport and energy supply.
European Protected Species (International value)					
Bats	**All proposals excluding Terminal Expansion** Loss of roosts in trees or buildings Risk of killing or injury as well as implications for the population viability dependent on the number and nature of the roosts lost. Habitat loss with reduction in foraging habitat, and fragmentation of flight lines. Lighting may reduce the available foraging habitat, disrupt roosts and flight lines. Contamination during construction, including dust and water contamination, may result in the reduced suitability of foraging habitats for bat, reducing insect prey abundance. Killing and injury by vehicles	High	Major	**Yes**: Other road enhancement schemes and development projects in the area (including urban extensions and employment development) may result in similar impacts as above. As well as potential roost loss this may result in the severance of numerous flight lines, reducing the areas available to bats to forage.	All development proposals will require EIA given their nature and scale, and the likelihood of impacts. These will require specific ecological input, and appropriate mitigation potentially including licensing to maintain the conservation status of bats in the local area. This must be informed by sufficient survey in line with best practice guidelines. Given the potential widespread nature of potential impacts, mitigation would benefit from a landscape scale approach to maintain ecological corridors within the area.
Otter	**All proposals alongside watercourses (eastern**	High	Major	**Yes**:	All development proposals will require EIA given their nature and scale, and the likelihood of impacts.

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	sector of Northern Business Park, potential river crossings and Blackwater Junction) Risk of killing or injury during construction, and as a result of increased collision risk from new roads and increased traffic on existing roads. Loss of holts alongside waterways (particularly as a result of new crossings) Habitat loss and fragmentation of river corridors Lighting may reduce habitat suitability Contamination of waterways during construction, including dust, spillage and run-off, may result in the reduced water quality and prey abundance			Wider impacts upon water quality as a result of increasing urban run-off, pressure on sewage treatment works etc. may have an adverse impact on prey abundance for otter.	These will require specific ecological input, and appropriate mitigation potentially including licensing to maintain the conservation status of otter in the local area if shelters are to be affected. This must be informed by sufficient survey in line with best practice guidelines. Mitigation would be likely to include the maintenance of otter transport corridors along waterways. New crossings associated with the northern and southern corridor options would likely be wide enough to incorporate sufficient riverine and bankside habitats for otters to continue to pass underneath.
Sand lizard / smooth snake	**All proposals excluding Terminal Expansion** Loss of habitat, including open habitats other than heathlands particularly in the case of sand lizard	High	Major	**Yes**: Other road enhancement works in the vicinity, including widening of the A338, have potential for killing, injury, disturbance and habitat loss during land take within open	All development proposals will require EIA given their nature and scale, and the likelihood of impacts. These will require specific ecological input, and appropriate mitigation potentially including licensing to maintain the conservation status of sand lizard and smooth snake in the local area. Mitigation

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	Risk of killing or injury during construction Contamination during construction, including dust and water contamination, may result in the reduced habitat quality and prey abundance Killing and injury by vehicles In particular, the Northern Business Park includes suitable habitat for reptiles within the footprint			habitats adjacent to the road. Mineral extraction operations in the vicinity similarly have potential for the above effects, as do widespread residential and employment development.	would likely require translocation, and the provision of replacement habitat of at least the same size and quality of that lost. This must be informed by sufficient survey in line with best practice guidelines. Given the potential widespread nature of potential impacts, mitigation would benefit from a landscape scale approach to maintain ecological corridors within the area.
Habitats (Habitats and species of varied value)					
Farmland	**Transport Infrastructure Enhancements** *Southern Corridor* Direct loss of farmland habitats Risk of killing and injury of farmland species. Fragmentation of remaining habitats, for example hedgerows. Contamination of adjacent	High	Major	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development. Sand and gravel extraction at Hurn Court Farm, and therefore the ecological baseline will have been significantly degraded prior to road construction works. Widespread residential, employment, and infrastructure development proposals in the vicinity have potential to similarly	All development proposals will require EIA given their nature and scale, and the likelihood of impacts. These will require specific ecological input to determine likely impacts on ecological receptors in the vicinity and constraints and opportunities mapping to identify routes of least impact. As far as possible, ecological connectivity should be maintained and enhanced. Works should be undertaken in line with best construction practice and with sufficient drainage and screening measures to reduce off-site impacts, including air pollution. A SuDS approach should be employed to minimise

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	habitats. Disturbance to species from noise, lighting and human / vehicle presence, and greater risk of killing and injury through collision.			impact upon farmland habitats.	water contamination risk. Opportunities for habitat creation / enhancement should be sought as part of proposals.
Rivers and Wetlands (impacts have also been considered in relation to the Moors River SSSI)	**Transport Infrastructure Enhancements (Southern Corridor)** Impacts associated with surface runoff, sedimentation and toxic contamination of water courses. In particular this includes proposals to reroute the River Stour at the Blackwater Junction would have significant medium term implications. Risk of killing and injury of wetland species during construction works. Habitat loss and fragmentation of wetland habitats along the proposed route.	High	Major	**Yes**: Air pollution as a result of increased traffic from residential, employment and infrastructure development. Sand and gravel extraction at Hurn Court Farm, and therefore the ecological baseline will have been significantly degraded prior to road construction works, with implications in particular for local hydrology. Widespread residential, employment, and infrastructure development proposals in the vicinity have potential to similarly impact upon wetland habitats.	All development proposals will require EIA given their nature and scale, and the likelihood of impacts. These will require specific ecological input to determine likely impacts on ecological receptors in the vicinity and constraints and opportunities mapping to identify routes of least impact. As far as possible, ecological connectivity of watercourse corridors should be maintained. Any river realignment should mature prior to original route being closed off. Works should be undertaken in line with best construction practice and with sufficient drainage and screening measures to reduce off-site impacts, including air pollution. A SuDS approach should be employed to minimise water contamination risk.
Woodland	**All proposals excluding Terminal Expansion**	High	Major	**Yes**:	All development proposals will require EIA given their nature and scale, and the likelihood of impacts.

Ecological Receptor	Likely impacts on receptor arising from the proposals?	Potential Impact magnitude	Potential Impact significance	Are significant impacts likely in combination with other plans?	Are impacts mitigable and what may mitigation entail
	Direct loss of woodland habitats Risk of killing and injury of woodland species. Further fragmentation of remaining woodland parcels. Disturbance to species from noise, lighting and human / vehicle presence, and greater risk of killing and injury through collision.			Air pollution as a result of increased traffic from residential, employment and infrastructure development. Sand and gravel extraction at Hurn Court Farm, and therefore the ecological baseline will have been significantly degraded prior to road construction works, with habitat loss and implications in particular for local hydrology. Widespread residential, employment, and infrastructure development proposals in the vicinity have potential to similarly impact upon woodland habitats.	These will require specific ecological input to determine likely impacts on ecological receptors in the vicinity and constraints and opportunities mapping to identify routes of least impact. As far as possible, woodland loss should be avoided and ecological connectivity should be maintained. Works should be undertaken in line with best construction practice and with sufficient drainage and screening measures to reduce off-site impacts, including air pollution, and tree protection measured employed.



Bournemouth Airport, Ecological study to support Appropriate Assessment

Figure 7.1: Location of air quality receptors in relation to SSSI

Key

- Location of ecosystem receptors*
- Airport boundary

Location of SSSIs in vicinity of the Airport

- Avon Valley (Bickton-Christchurch)
- Hurn Common
- Moors River System
- Parley Common
- St Leonards & St Ives Heaths
- Town Common

NOTE:

*From AQC (2007). Passenger Terminal Extension and Refurbishment Environmental Statement: Chapter 9: Air Quality. BA

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Source: Manchester Airports

Date:28/06/2008

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8. DISCUSSION OF IMPACT ASSESSMENT FINDINGS

8.1. This section provides a discussion of the key elements of the airport expansion proposals in terms of potential impacts on nature conservation interest features and mitigation options. This includes discussion of the following:

- **Air Quality**
- **Terminal Expansion**
- **Development of the Northern Business Park**
- **Transport Infrastructure Enhancements**
- **Other in-combination effects**

8.2. Air quality is discussed as a separate topic due to the nature of this as an in-combination impact as a result of all elements of airport expansion as well as wider regional development proposals. Other in-combination effects are also considered separately.

AIR QUALITY

Introduction

8.3. The potential for declining air quality as a result of the potential expansion of Bournemouth Airport (including employment development and infrastructure enhancements) and implications for nature conservation have been highlighted as of particular concern.

8.4. Airport expansion proposals have the potential to result in declining air quality as a result of increased flights, but perhaps more significantly as a result of increased levels of road traffic in the area through increased passenger numbers (and other vehicle activity associated with the airport) and increased employment provision in the northern development zone. This is against a backdrop of wider increases in traffic volumes due to economic and residential growth in the region as detailed in the South West Regional Spatial Strategy.

8.5. This section summarises existing baseline information relating to air quality in the vicinity of Bournemouth Airport, and implications for nature conservation, in particular European protected sites. This includes a review of air quality modelling undertaken as part of the Environmental Impact Assessment for expansion and reconfiguration of the Airport terminal.

8.6. Habitats and species can be directly and/or indirectly affected by pollutants concentrated in the air ('levels') such as oxides of nitrogen (NO_x), oxides of sulphur (SO_x) or ammonia; or by pollutants deposited on the ground ('loads') through acidification or terrestrial eutrophication via soil (deposition of nitrogen). The pollutants likely to arise as a result of proposals for airport expansion are:

- acid deposition;
- nitrogen deposition;
- nitrogen oxides;
- ozone.

Review of Baseline Air Quality Resources

Method

Data Sources

8.7. Two sources of information were investigated with a view to providing up to date air quality baseline:

- Air quality data from Air Pollution Information System (APIS) website sponsored by a range of Government agencies and funded bodies (http://www.apis.ac.uk/index.html).
- Air quality data UK National Air Quality Archive (http://www.airquality.co.uk/archive/index.php)

8.8. APIS provides data with respect to different types of air pollution, and allows analyses to be carried out with respect to individual locations and habitat types.[45] The data provided by APIS needs to be treated with some caution, however, as the APIS website lists a number of uncertainties relating to the process of using nationally available mapped data, OS grid references and habitat specific values.

8.9. Data from the UK National Air Quality Archive is currently being trialled as an alternative source of information for HRA purposes.[46] Data presented on the archive in the vicinity of the airport was found to be limited to a single monitoring station some distance away. Further, whilst the temporal resolution of data available from the UK National Air Quality Archive is far greater than that contained in APIS, the level of expertise required to extract meaningful synthesis of this data may render it less useful for identifying the broad potential for significant ecological impacts.

8.10. APIS data was therefore used to provide a preliminary indication of likely air quality issues for the purposes of scoping. Key limitations associated with the APIS data and the method used to review it are provided in **Appendix IV**.

Baseline Air Quality Information (APIS)

8.11. **Table 8.2** sets out a summary of pollution information extracted from APIS for each Natura 2000 and Ramsar site listed for inclusion in the study and for Lowland Mixed Deciduous Woodland within 3km of the airport centre point. The APIS analytical tool uses information from national maps of air pollutant exposure and Critical Loads

[45] Habitats in APIS are based on the UK Biodiversity Action Plan (BAP), the Habitats Directive (Annex I habitats occurring in the UK).
[46] Personal Communication (2008). Joint Consultants Group. The Joint Consultants Group is an informally convened group of consultants including LUC, Scott Wilson, Levett-Therivel Sustainability Consultants and Treweek Environmental Consulting, who meet quarterly to discuss HRA methodological challenges and approaches.

(in the case of atmospheric deposition) or Critical Levels (air concentrations). In many cases the Critical Loads and Levels applied do not vary spatially, but are linked to a specific habitat type. **Table 8.2** indicates a percentage value for each habitat type, based on the proportion of deposition of a pollutant in relation to the Critical Load, or concentration of pollutant in relation to the Critical Level for a specific habitat. A percentage of >100% indicates that a Critical Level/Load has been exceeded, the converse is true for a percentage <100%. The table of results is colour coded as follows:

Below Critical Load/Level				Above Critical Load/Level		
<25%	25 – 74%	75 – 99%	100 – 124%	125 – 200%	200 – 499%	>500%

All habitat types constituting greater than 1% of a site's area are listed adjacent to pollution analysis in the **Table 8.2**. A representative Ordnance Survey grid reference (approximate point location within a site nearest to the Airport boundary) is also given for each site.

Table 8.2: Summary of air quality information for Natura 2000 sites, Ramsar sites and Lowland Mixed Deciduous Woodland (UK BAP Habitat) surrounding Bournemouth Airport.

Percentage (%) exceedance figures represent a pollutant Level/Load (as reported for a given OS grid reference in APIS) as a percentage of the Critical Level/Load reported therein.

Site	**Grid ref. (point nearest airport)**	Main habitats Present (% area)	**APIS habitat (dominant habitats on site)**	**Acid dep. as % of Critical Load**	**N dep. as % of Critical Load**	**N Oxides as % of Critical Level**	**Ozone as % of Critical Level**
Natura 2000 sites							
River Avon SAC	SU142,984	Water courses (95%)	*Data not available from APIS*				
		Alkaline fens (2%)	Alkaline fens and reed-beds	49%	95%	44%	134%
		Alluvial forests (1%)	*Habitat 1% or less of area*				
Avon Valley SPA and Avon Valley Ramsar site	SU142,984	Inland water bodies (14%)	*Data not available from APIS*				
		Humid/ Mesophile grassland (85%)	Unimproved hay meadow (Low and medium altitude hay meadows)	49%	95%	44%	134%
		Broad-leaved deciduous woodland (1%)	*Habitat 1% or less*				
Dorset Heaths SAC, Dorset Heathland SPA and	SU 111,991	Dry heath (83%)	Lowland heathland (dry heath)	260%	158%	44%	134%
		Bog/Marsh/Fen (6%)	Alkaline fens and reed beds (rich fens)	260%	95%	44%	134%

Site	**Grid ref. (point nearest airport)**	Main habitats Present (% area)	**APIS habitat (dominant habitats on site)**	**Acid dep. as % of Critical Load**	**N dep. as % of Critical Load**	**N Oxides as % of Critical Level**	**Ozone as % of Critical Level**
Dorset Heathland Ramsar site		Dry grassland (4%)	Acid grassland (Non-Mediterranean dry acid and neutral closed grassland)	260%	158%	44%	134%
		Coniferous woodland (4%)	Planted coniferous woodland	355%	370%	44%	135%
		Sand dunes (1%)	*Habitat 1% or less of area*				
		Inland water bodies (1%)	*Habitat 1% or less of area*				
		Broad-leaved deciduous woodland (1%)	*Habitat 1% or less of area*				
The New Forest SAC, SPA and Ramsar site	SU 184, 008	Inland water bodies (0.2%)	*Data not available from APIS*				
		Bog/Marsh/Fen (5.9%)	Alkaline fen and reed-beds (rich fen)	1320%	103%	42%	172%
		Dry Heath (27%)	Lowland heathland (dry heaths)	1320%	103%	42%	172%
		Dry (acid) grassland (17.6%)	Acid grassland (Non-Mediterranean dry acid and neutral closed grassland)	1320%	103%	42%	172%

Site	**Grid ref. (point nearest airport)**	Main habitats Present (% area)	**APIS habitat (dominant habitats on site)**	**Acid dep. as % of Critical Load**	**N dep. as % of Critical Load**	**N Oxides as % of Critical Level**	**Ozone as % of Critical Level**
		Humid/mesophile grassland (2.1%)	Unimproved hay meadow (Low and medium altitude hay meadows)	1320%	62%	42%	172%
		Broadleaved deciduous woodland (28.9%)	Oak woodland (deciduous)	347%	240%	42%	168%
		Coniferous woodland (17.3%)	Planted coniferous woodland	605%	240%	42%	168%
UK BAP Priority Habitat types not considered above							
UK BAP Priority Habitat	SZ 104,992 (representative location of three habitat patches amounting to c. 3 ha)	Lowland mixed deciduous woodland	Oak woodland (deciduous)	364%	251%	54%	165%

Summary of Results

8.12. The critical levels and loads indicate the point at which, should the concentration of the pollutant increase further, a decline in habitat quality would be observed.

8.13. In summary, these results indicate that currently the air quality at all of the sites is below the critical levels for NOx above which habitat condition would decline. For the River Avon SAC, SPA and Ramsar only the critical levels for ozone are already exceeded (for alkaline fen and mesophile grassland habitats). However, the habitats of the Dorset Heaths and New Forest are currently at greater risk.

8.14. The air quality at the Dorset Heaths SAC, SPA and Ramsar site is currently exceeded for a number of its key habitats. In particular the critical levels are exceeded for all of the key habitats for acid deposition and ozone. Furthermore the critical load for Nitrogen deposition is exceeded for dry heath, coniferous woodland and dry grassland habitats.

8.15. In the New Forest SAC, SPA and Ramsar site the critical load for acid deposition is significantly exceeded for all habitats (by up to 1320 %), with ozone also exceeded to a lesser degree. Nitrogen deposition is also exceeded for all habitats except humid/mesophile grasslands.

8.16. This indicates that for certain pollutants and habitats, all sites would be vulnerable to some extent to decreasing air quality. Where exceedance has already been reached, these habitats would obviously be vulnerable to further declining quality, whilst further declines in air pollution may result in the critical levels / loads being exceeded in habitats which are currently below the threshold.

Review of Environmental Statement Chapter on Air Quality

8.17. The Environmental Statement accompanying the planning application for expansion and refurbishment of the Airport passenger terminal was submitted to Christchurch Borough Council in 2007. The document contains a specific impact assessment relating to air quality carried out by Air Quality Consultants (AQC, 2007)[47].

8.18. The Environmental Statement considered the following specific proposals in relation to airport expansion:

- expansion of airport operations to 1.8 mppa in 2010, and to 3 mppa in 2015;
- associated and ongoing modification of existing ground operations and infrastructure, including the construction of new car parking facilities and the realignment of taxiways and apron layout.

Approach

8.19. A computer model[48] was employed to project the impacts on air quality of specific elements of airport expansion associated with 'terminal expansion and refurbishment'

[47]AQC (2007). Passenger Terminal Extension and Refurbishment Environmental Statement: Chapter 9: Air Quality. BA

[48] The software packages AERMOD and ADMS-ROADS were employed by AQC.

on surrounding heathland habitats. The approach involved using existing data sources (e.g. APIS and local air quality monitoring information) to ascertain an air quality baseline for 2005 as a control. A number of scenarios associated with expansion of the Airport were then simulated using the computer model to project future air quality conditions resulting from proposed expansion of the Airport. The following scenarios were tested (**Table 7.4**):

Table 7.4: Air Quality Scenarios Relating to Proposed Airport Expansion

Air quality scenario	Explanation
Baseline 2005	Existing situation with 0.9 mppa[49]
2010 "Without Scheme"	Future baseline with operation at 1.25 mppa (current maximum capacity)
2010 "With Scheme"	Future situation with operations expanded to 1.8 mppa
2015 "Without Scheme"	Future baseline with operation at 1.25 mppa (current maximum capacity)
2015 "With Scheme"	Future situation with operations expanded to 3.0 mppa

8.20. In relation to the expansion proposals, the following specific emissions sources were considered:

- aircraft operations;
- auxiliary power and ground power units;
- airside vehicles;
- Airport car parks;
- road traffic within the airport and surrounding road network.[50]

8.21. The Environmental Statement did not consider (as these were outside the scope) air quality implications associated with potential redevelopment of the Northern Employment Zone, nor wider in combination impacts (although it did incorporate projections of national traffic increases). These would need to be considered as part of the current ecological study to support Habitats Regulations Assessment.

[49] MPPA = million people per annum

[50] The surround road network is defined as the B3073 from Parley Cross to the Blackwater Interchange, Chapel Lane, Avon Causeway, the A338 and the terminal access road. ES employs a baseline of traffic flows measured in 2005 by Peter Brett Associates. Predictions of future traffic flows utilise National Road Traffic Forecasts (NRTF).

Habitats included in the study

8.22. The study focused largely on potential impacts on heathland habitats as these comprise the most sensitive habitats in the vicinity of the Airport. Monitoring points were also located within wetland and forestry habitats. In total 36 'ecosystem receptors' or modelling locations were selected to determine likely air quality impacts. These were selected to reflect "worst-case locations in the vicinity of the airport", defined as those closest to the pollutant sources (the airport and surrounding road network), where the impact of air quality would be likely to be most pronounced. As indicated by **Figure 7.1** the ecosystem receptors include positions within Hurn Common SSSI, Town Common SSSI, Parley Common SSSI, Moors River SSSI and St. Leonards and St. Ives Heaths SSSI. They also represent locations near to the A338.

Consideration of different pollutants and critical pollution values

8.23. The Air Quality study focuses solely on Nitrogen oxides and nitrogen deposition. Sulphur dioxide was not considered as this was scoped out as having an insignificant impact by previous research by AQC[51].

8.24. Critical pollutant thresholds used in the study are selected to comply with the UK government objective for the protection of sensitive ecosystems. This equalled an annual mean nitrogen oxide of nitrogen oxide of 30 $\mu g/m^3$. The critical load for nitrogen deposition effects on heathland employed follows APIS figures, with a critical range of between10 and 20 kg-N/ha/yr.

Criteria for assessment of impact magnitude

8.25. The study employs a fairly standard matrix for assigning impact significance. The matrix amalgamates 'impact magnitude' (% change in pollutant levels) with the relative importance of an impact (as compared to an objective air quality standard). Combined this assessment gives a five point impact significance rating ranging from 'negligible' to 'very substantial adverse'.

8.26. For the purposes of this ecological study it is important that the Environmental Statement considers the **magnitude** of any air quality impacts, as a detrimental air quality trends will be identified even if it does not exceed a critical threshold.

Results

Baseline conditions

8.27. An important conclusion of the study was that ambient air quality conditions for NOx and N deposition are predicted to improve both between 2005 and 2010, further improving by 2015. This reflects predicted reductions in UK wide and international emissions.

[51] AQC (2005) Assessment of Potential Air Quality Impacts on Vegetation from the Proposed New Terminal at Bournemouth International Airport

8.28. The study describes existing conditions and predicts the future baseline assuming no proposals for Airport expansion are progressed.

- In 2005 the study indicates that levels of nitrogen oxide were recorded at below critical thresholds for all but 2 of the 36 receptors. The two receptors where this was not the case (R30 and R36; **Figure 7.1**) are directly adjacent to the A338 and are thought to be significantly influenced by local road traffic.
- According to the model, by 2010 critical levels for NOx would be exceeded at only one receptor (R30; **Figure 7.1**). Again this receptor lies by the A338.

8.29. As noted above, APIS provide a range of critical deposition rates for nitrogen deposition (10-20 kg-N/ha/yr). According to the baseline modelling undertaken, if the upper limit is used the critical load for N deposition is not exceeded for all of the ecosystem receptor locations. If the lower limit is used ('worst case scenario') the critical loading for all ecosystem receptor locations are exceeded. AQC employ a 'worst case scenario' approach.

Ecosystem impacts during operation

8.30. **Table 7.5** summarises the predicted impacts of airport expansions in terms of the four scenarios detailed previously.

Table 7.5: Summary of operational air quality impacts

Scenario	Receptors where critical value is exceeded	Comments (impact magnitude taken from Environmental Statement; percentages are based on proportion of critical level/load)
Nitrogen oxides		
2010 (1.8 mppa)	A338 north of the airport (1 of 36).	The 'with scheme' scenario would increase NOx at all receptors compared with the baseline for 2010. With or without the scheme the critical threshold would be exceeded at receptor R30. At all other receptors the threshold is not exceeded. The highest magnitude of change is at receptor R16 (the eastern end of the runway within Moors Rivers SSSI), however, this is judged to have an impact significance of 'negligible'. Where changes >1% are predicted these still remain well below the critical level. At ecosystem receptor R30 (the A338 north of the airport) the impact is judged to be 'slightly adverse' given that the critical level is already exceeded.
2015 (3 mppa)	A338 north of the airport (1 of 36).	This scenario would increase in NOx concentrations at all receptors compared with the 2010 baseline.

		Critical levels continue to be exceeded at receptor R30 (with or without the scheme). All other receptors would experience below critical value NOx levels. The highest magnitude of increase (11%) would be experienced by receptor R28 (this point lies within St. Leonards and St. Ives Heaths SSSI). Where changes >1% are predicted these still remain well below the critical level. When compared to the impact assessment criteria, owing to the magnitude of change, 'slightly adverse' impacts are recorded for 6 of the 36 (R14, R15, R16, R17, R30, R34 and R35; **see Figure 7.1**) receptors and negligible impacts recorded for 29 of 36 receptors.
Nitrogen deposition		
2010 (1.8 mppa)	All receptors (36 of 36)	The proposed scheme would increase N deposition at all receptors but by an increment <1% compared with the 2005 baseline. This assumes the worst case scenario is used to define the baseline. These changes are judged to be 'slightly adverse' according to the impact assessment criteria employed within the environmental statement.
2015 (3 mppa)	All receptors (36 of 36)	Predicted changes in N deposition between 2010 (assuming no scheme) and 2015 (with the scheme) are judged to be 'slightly adverse' according to the impact assessment criteria employed within the environmental statement and based on the worst case scenario baseline.

8.31. For both NOx concentrations and N deposition the study concludes that despite increases in emissions from airport operations associated with the proposed scheme, predicted levels/loads of both pollutants in both 2010 and 2015 would be lower than current levels (in 2005) at all receptor locations.

Proposed mitigation and residual effects

8.32. The following mitigation measures (**Table 7.6**) were proposed within the Planning Application to reduce emissions of NOx and associated nitrogen deposition:

Table 7.6: Proposed mitigation measures

Proposed mitigation measure	Rationale
Planting of a bund along the Airport southern boundary	Use of species such as scots pine which are known to absorb NOx. The bund will also physically intercept nitrogen from being deposited on

	heaths to the east.
Expand current practice of emissions testing	Vehicles producing excessive emissions will be decommissioned.
Hybrid/duel fuel emissions vehicles	These will be trialled.
Expansion of the airports diffusion tube monitoring scheme	The airports diffusion tube monitoring scheme will be expanded from 8 monitoring locations to 15, principally centred on the heathland.

Potential Implications of Airport Expansion on Air Quality and Nature Conservation

8.33. The existing baseline conditions as determined from APIS indicate that air quality thresholds in terms of levels and loads have already been reached for many of the key habitats associated with European sites.

8.34. In terms of the terminal expansion proposals, the Environmental Statement indicates that the scheme would result in increased levels and loads of both NOx and N. However, even based on worst case scenarios of critical levels / loads the contribution of the scheme would be low (of negligible to slightly adverse significance).

8.35. Furthermore, the ES predicts that despite the small increases as a result of the scheme, air quality is actually projected to improve with or without the scheme as a result of national and international measures and improvements in technology. However, this is based on assumed air quality improvements and is not certain.

8.36. It is also important to note, that although the study included assumed increases in traffic volumes over this period (National Road Traffic Forecasts), it excluded wider air quality impacts:

- increased traffic as a result of increased vehicle movements associated with the expansion of the northern employment zone;
- new link road construction, particularly to the northern employment zone, which would result in a greater exposure of habitats to air pollution (greater area of habitat adjacent to roads);
- other in-combination effects, for example increased road traffic as a result of residential and employment development in the vicinity.

8.37. Given the current exceedance of critical levels and loads and without an assessment of potential implications of other drivers for increased traffic, it is therefore not possible at this stage to conclude without doubt the proposals will not, in combination with wider proposals, have an adverse impact upon Natura 2000 and Ramsar sites.

Mitigation

8.38. In the absence of further information relating to in-combination impacts on air quality, and following consultation with Natural England and Dorset County Council, it was concluded that to enable a judgement of no significant effect to be drawn, proposals would need to demonstrate 'Nitrogen Neutrality'. This would mean that any increase in nitrogen emissions arising from development would need to be off-set by some related reduction to ensure a no net increase in NOx and N levels and loads, thereby preventing further impacts on internationally designated sites.

8.39. This could be achieved by a variety of measures:

- Implementation of a Green Travel Plan capable of restricting increases in vehicle numbers. A Green Travel Plan to be implemented as part of the terminal expansion proposals may need expansion and further measures to accommodate other airport expansion options
- Improvements to the public transport network to the airport / business park
- Restricting the northern transport corridor as multi-occupational vehicles or for public transport
- Measures to reduce energy requirements of developments, including the thermal efficiency of buildings
- Use of renewable or low emission energy sources

8.40. Other mitigation options may include the development of a screening strategy to reduce the dispersal of pollutants from the road network. Given the heavily constrained nature of the region, screening planting along all roads may actually adversely impact upon protected sites, if it results in disturbance to and loss of heathland. Therefore it may be possible to identify strategic areas (such as key junctions) for screening projects which would result in an overall improvement to air quality.

8.41. There may also be further opportunities to reduce air pollution associated with the operational airport, such as through the design and energy supply of proposed new terminal facilities and the more rapid advancement of proposals to reduce emissions associated with operational ground vehicles. These would further offset potential increases associated with other airport expansion proposals.

TERMINAL EXPANSION

8.42. In relation to the current proposals for terminal expansion (Application No. 8/07/0065), no ecological impacts were identified and full planning permission has been granted. As discussed above, it is considered that sufficient uncertainty still remains in relation to air pollution impacts in particular in combination with other airport expansion proposals, and wider development. Potential mitigation is discussed above.

8.43. During consultation with Natural England and Dorset County Council, potential issues relating to water abstraction implications for the River Avon and Moors River were also raised in-combination with development of the Northern Business Park. This is discussed further below.

DEVELOPMENT OF THE NORTHERN BUSINESS PARK

8.44. A number of development scenarios have been produced for the Northern Business Park, with initial aspirations described in the 2003 Airport Master Plan. This has been further developed through a 2007 Spatial Framework for the Park, and a study of the economic potential of development land by Nathaniel Litchfield and Partners in 2008 on behalf of Christchurch Borough Council (**Section 5**). In particular this study evaluates a number of development scenarios for the Northern Business Park in relation to proportions of floor space given to industrial and office uses. The study concludes that a preferred development option would be for a "mixed employment area with most land occupied by industrial and aviation related activities with a relatively smaller office element."

8.45. At this stage in the development of the long term vision for the redevelopment of the entire Northern Business Park, the following potential impacts have been identified:

- direct habitat loss of semi-natural habitats, particularly in the eastern sector and of the Hurn Airport NE Industrial Area SNCI;
- abstraction and impacts on water flow of the Moors River SSSI and Avon Valley SAC;
- air pollution particularly in relation to Dorset Heaths SPA/SAC and Ramsar as well as other heathland habitats (discussed previously);
- contamination including dust and runoff;
- disturbance, from human presence, noise and lighting.

8.46. On the whole the types and level of ecological impacts are unlikely to vary significantly with the various options of employment use. The scale of development would be likely to result in similar construction impacts associated with the risk of contamination and level of disturbance. Many of these impacts can be addressed through the implementation of best construction practice, and through appropriate design, for example inclusion of buffer areas and landscaping proposals, provision of high quality open space within the proposals to reduce potential recreation impacts off-site, improved boundary security (again to reduce recreation impacts), and the development of a lighting strategy sensitive to nature conservation. Furthermore, all options will be restricted to within the current Northern Business Park boundary and would therefore not result in land take of adjacent sites and habitats.

8.47. However, the scale of development would affect the area of loss of semi-natural habitat fragments located within the Business Park itself, dependent on the extent to which new development proposals extended beyond the current built footprint. This would have potential to effect woodland, a UKBAP priority habitat, the Hurn Airport NE Industrial Area SNCI, and protected species (sand lizard, smooth snake and bats

in particular). However, with appropriate ecological survey and advice it should be suitable to minimise these impacts through the avoidance of areas of highest ecological value and the SNCI in particular, and implementation of tried and tested species mitigation measures such as provision of replacement habitat where necessary and translocation. This may require Natural England species licensing (for example in the case of loss of bat roosts in trees, or translocation and habitat loss for sand lizard or smooth snake.

8.48. The proposals would also potentially allow for habitat enhancement, particularly of the SNCI through reinstatement of beneficial management practices and implementation of a long term management plan. The provision of greenspace and landscaping within the business park should aim to complement and buffer retained habitats as well as boundary and adjacent sites (as discussed in the 2003 Masterplan), whilst retaining habitat corridors through the site.

8.49. The 2007 Northern Business Park Framework indicates that development in the short and medium term would focus on the western part which would be likely to result in a smaller area of direct habitat impacts, whereas much of the eastern part is undeveloped. In addition, development of the eastern part has been identified as the trigger for the construction of the northern corridor option to the A388. Impacts associated with this are discussed below.

8.50. The scale of development would determine the level of impact on nearby waterways as a result of abstraction. However, these are already affected by water abstraction and mitigation would therefore be required for any development that results in increased abstraction. It was therefore considered during consultation with Natural England and Dorset County Council that any further development should be 'Water Neutral' and as a minimum not require abstraction above existing levels. This could be achieved through a variety of measures including enhanced water efficiency, water harvesting and reuse, and metering and audits of water use.

8.51. Finally, the scale of development would also result in varying levels of air quality impacts associated with resultant traffic volumes, movement patterns and vehicle types. To determine the potential implications of different options would require specialist air quality input informed by a Traffic Assessment. Through such a study it may be possible to identify potential 'tipping points' beyond which further traffic and air pollution would have significant impacts upon ecology, and in particular, internationally designated sites, although critical levels and loads of habitat receptors are already exceeded, suggesting that further decreases in air quality may simply add to an already unfavourable situation. In line with the precautionary principle, given the existing sensitivities of the sites and potential for in-combination impacts, the mitigation options identified in the Air Quality section would apply to all levels / options of development.

TRANSPORT INFRASTRUCTURE ENHANCEMENTS

Northern Corridor Option

8.52. The requirement to construct the northern corridor link road to the A338 would be triggered by long term development of the eastern part of the Northern Business

Park. Dual-carriageway and a single carriageway options have been identified, the later including 'dumb-bell' and 'loop' junction options where the link road connects with the A338 north east of the airport.

8.53. With the current level of detail available, the following potential impacts associated with the development of the Park have been identified:

- direct habitat loss of semi-natural habitats, including within the Moors River System SSSI;
- impacts upon protected, UKBAP and notable species including habitat fragmentation (physical barriers and disturbance as a result of human/vehicle presence and lighting), risk of injury / killing during construction and as a result of traffic collision;
- contamination including dust and runoff during construction and operation, including of the Avon Valley SPA/Ramsar site, Moors River SSSI, and adjacent and nearby SNCIs;
- increased air pollution particularly in relation to Dorset Heaths SPA/SAC and Ramsar (discussed previously);

8.54. On the most part, there is likely to be a minimal difference between the various design options in terms of the types and level of ecological impacts, and the same mitigation strategies would be likely to be appropriate.

8.55. On the whole, the detailed design and micro-siting would need to be informed by full ecological survey. This would seek to ensure ecological impacts were minimised and inform mitigation requirements such as translocation, habitat manipulation and provision of replacement habitats. As above this may require Natural England species licensing. Furthermore, best construction practices and sustainable design measures would need to be employed to minimise impacts associated with contamination, including run-off during construction and operation. This should include a SuDS approach to ensure that water is of an appropriate quality prior to discharge in the Moors River. The location of the SuDS features itself may have ecological impacts, but through appropriate design and siting it should be possible to provide valuable wetland habitats.

8.56. In terms of fragmentation, this may be a particular issue associated with the crossing over the Moors River. To minimise habitat loss within the Moors River SSSI (including wetland habitats adjacent to the river) would require a viaduct design spanning the SSSI, with direct impacts associated with footings and construction access. This would also maintain a movement corridor underneath the viaduct for wildlife. Dependent on the exact ground levels and road design, there may be opportunities to incorporate wildlife tunnels elsewhere along the northern corridor option, whilst road design should minimise the risk to species such as reptiles being trapped and killed on the road. This may include the use of sloping kerbs and appropriately designed drains. The use of reflectors and speed control measures may also reduce risk of collision with larger mammals. Appropriate lighting design would address impacts upon nocturnal species.

8.57. Issues associated with air pollution have previously been discussed. Specific options to reduce air pollution impacts associated with the northern corridor option would include to restrict access to or favour multi-occupational vehicles or public transport.

Southern Corridor Option

8.58. The Dorset County Council transport report identifies two options for new road links between the Blackwater junction and Airport/employment zone:

i. a northern route, which would upgrade the existing B3073 by tracking the existing route as closely as possible.

ii. a southern route which would cross the Moors River at its narrowest point and take the most direct route to the Chapel Gate roundabout south west of the Airport.

8.59. Both routes would entail construction of a new / widened bridge at the Blackwater Junction taking the B3073 over the A338 and associated junction improvements. Both routes would also require new bridges over the Moors River. The southern route would also involve improvements to the bridge taking the A338 over the River Stour at Blackwater Junction, and would encroach on the River Stour floodplain and require realignment of the river.

8.60. In terms of potential impacts, both options would be likely to have significant impacts upon the condition of the Dorset Heaths SAC and SPA sites associated with direct habitat loss associated with improvements to the Blackwater Junction. This would affect habitats within the international sites along the road verge. Even if these habitats were in poor condition, any loss of habitat within the international sites would require fulfilment of the IROPI test for the proposals to proceed. Therefore, the preferred option from an ecological perspective would be the Northern Corridor Option. Given that this alternative exists, it is unlikely that the IROPI test could be met.

8.61. Aside from this, the northern route option would be preferred from an ecological point of view. In particular, the southern route would require realignment of the River Stour with associated ecological impacts in the short / mid-term until maturation of the newly aligned river. Although this would strictly be possible, it is likely to be unfeasible from a cost perspective. In addition, this route would result in greater woodland habitat loss within Quomp Copse and associated protected species issues. If this route were shifted further to the south, this would potentially result in the loss of wet meadow habitats within the Moors River System SSSI. Furthermore, this southern route would result in the greater fragmentation of agricultural habitats than the northern route, although these areas are also to be disturbed as a result of mineral abstraction.

8.62. In comparison, the northern route would result in the loss of a smaller area of habitat, although still with potential impacts on Quomp Copse, Mill Copse and farmland habitats (again the later would be significantly disturbed as a result of abstraction proposals).

OTHER IN-COMBINATION EFFECTS

A338 Widening

8.63. The A338 has been highlighted as requiring widening, with the road currently beyond capacity without further expansion at the airport. Therefore further expansion of the airport terminal facilities and Northern Business Park, and the associated increase in traffic, would certainly require the need for road widening. However, a recent study for DCC has concluded that at both 70 and 60 mph speed limits, road widening and associated infrastructure works would result in land take from the Dorset Heaths SAC/SPA and Ramsar site.

8.64. As discussed above, this would require the fulfilment of the IROPI test and the implementation of compensation measures, including the provision of replacement habitat. In terms of meeting the argument that the widening is of over-riding public interest, the case for this may be argued on the basis that the infrastructure enhancement is required to allow growth supported in the Regional Spatial Strategy, to meet national objectives. It is unlikely that a satisfactory alternative to this project could be met, for example given environmental and other constraints in the area it would be inappropriate to construct new infrastructure. In terms of this background it may be possible that the provision of compensatory heathland habitat elsewhere (which would likely need to be of a greater area and quality than the road edge heathland habitats lost) may be appropriate.

Increased Traffic Volumes on the Avon Causeway

8.65. Concern was raised by Natural England that airport expansion proposals may increase traffic volumes on the Avon Causeway which is used as a 'short cut' route. It is presumed that this would occur as a result of sub-regional development in general, with airport expansion likely to exacerbate the problem. Without detailed traffic modelling it is not possible to say to what level the expansion proposals will increase traffic volumes, nor to quantify the impact on ecological receptors. In particular this has been raised as an issue of disturbance to overwintering birds within the Avon Valley SPA and SSSI, which may be deterred from using parts of the SSSI reducing habitat suitability and availability. However, this impact is uncertain given the absence of data. The severity of the impact is questioned in terms of the high traffic volumes currently using the Causeway, the likely habituation of overwintering birds to such disturbance, and also the possibility that further increases in traffic volumes may be constrained by the nature of the road itself.

8.66. In terms of mitigation and in the absence of detailed information to quantify the impact, in line with the precautionary principle it is suggested that measures are implemented to ensure that traffic volumes on the Avon Causeway do not increase as a result of further airport expansion. This could include the implementation of a strict Green Travel Plan as discussed in terms of air quality impacts, and potentially traffic calming / reduction measures on the Causeway itself where this would not conflict with road safety.

9. CONCLUSION

9.1. The above discussion highlights many potential impacts associated with the development options at Bournemouth Airport. This reflects the highly constrained nature of the site, and the value of the surrounding areas for nature conservation, including internationally and nationally protected sites and species. As a result, prior to mitigation, many of these impacts are considered to be moderate to major in significance.

9.2. However, it is considered that many of these impacts are mitigable given:

- appropriate ecological survey and input, including detailed Environmental Impact Assessment and Appropriate Assessment;
- the implementation of best construction measures;
- careful design and incorporation of mitigation and enhancement measures within the developments (including substantial sustainable design / construction features and landscaping);
- sufficient resources.

9.3. Certain ecological impacts are likely to remain or require significant measures to address them. In particular, air pollution is a significant in-combination issue within the region and a detailed analysis of potential impacts and mitigation is outside the range of this study. However, it was considered during consultation with Natural England that to address uncertainty relating to the extent of impacts a strict approach of 'Nitrogen Neutrality' would enable a judgement to be made of no significant impact on internationally designated sites. This would likely require a detailed and rigorous Green Travel Plan associated with the airport development proposals. Indeed, given the nature of the in-combination effect, it is possible that further development of such an approach is required at the local and sub-regional scale.

9.4. To provide a better understanding of potential air quality impacts as a result of airport expansion, and the extent to which these can be mitigated by the above approach, it is recommended that a further study be undertaken. This would involve transport, air quality, and ecological expertise, and would comprise three aspects:

1) Review of potential changes in local traffic volumes as a result of various development options within the Northern Business Park (including the quantum of development and relative proportions of office / industrial employment, for example as identified by the Nathaniel Litchfield and Partners study, 2008). This would include a review of the recent Peter Brett Associates traffic assessment report and the expansion of modelling to include analysis the implications of the various development options on traffic volumes.

2) Investigation of the implications of the various development options, and changes in traffic volumes, on air quality. This should incorporate within the baseline any recent air quality monitoring data collected since production of the terminal expansion ES, if available, and any assumed improvements in background air quality. The baseline would also include predicted air quality implications of the airport terminal expansion in line with existing planning permission (Application No. 8/07/0065).

3) Testing of the potential for developments to achieve Nitrogen Neutrality, in terms of both alterations to existing operations and measures included within development proposals. This would include the identification of the tools available to achieve Nitrogen Neutrality, and whether such a goal is realistic and achievable.

9.5. The above analysis may enable a 'trigger point' of development to be identified. This would be the optimum quantum and type of development (and associated infrastructure enhancements) which would achieve maximum benefits in terms of employment potential, but for which air quality implications following mitigation would not have a significant impact upon the nearby ecological receptors (particularly European sites).

9.6. Water Neutrality is also recommended to address potential water abstraction issues, with technological and supply solutions implemented which which would avoid or minimise further abstraction.

9.7. Indeed, if the above measures were introduced it may be possible to present the developments as exemplars of sustainable development.

9.8. Importantly certain impacts have been identified for which mitigation is not possible. In relation to transport enhancements, the Southern Corridor Options would result in direct loss of habitats within the Dorset Heaths SAC / SPA / Ramsar and therefore would need to meet the IROPI test with compensation measures put in place.

9.9. Similarly, the IROPI test would need to be met to enable the widening of the A338. Although this has been identified as an in-combination effect, if the increased traffic volumes as a result of the airport expansion could not be accommodated without widening of the A338, the IROPI test would need to be met prior to airport expansion. In particular this is likely to relate to development of the Northern Business Park and construction of the Northern Corridor Option link road.