

**Bournemouth Airport,  
Ecological Study to Support  
Appropriate Assessment**

**Working Final Report**

**APPENDICES**

**Prepared for Christchurch Borough  
Council  
by  
Land Use Consultants**

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## APPENDICES

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## **APPENDIX I: SUMMARY OF HIGHWAY ACCESS ROUTE CORRIDOR OPTIONS**



# SUMMARY OF PROPOSED HIGHWAY ACCESS OPTIONS FOR BOURNEMOUTH AIRPORT

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1. The following note provides a summary of:

- **Dorset Engineering Consultancy (2007)**. Bournemouth Aviation Park: Highway Access Route Corridor Options. DCC

From here on this document is referred to as 'the study'. Specific attention is given to highlighting ecological issues associated with the different road schemes which are presented therein.

## OVERVIEW

2. The proposals to expand Bournemouth Airport (BIA) would generate "significant additional traffic flow which would overload the existing highway network". The study identifies **two** possible route corridors for new or improved links to the airport:
  - a) the '**Northern Corridor**'; a link from the north east corner of the airport eastwards to the A338;
  - b) the '**Southern Corridor**'; proposals include provision of a new road OR improvements to the B3073 south of the airport (the B3073 currently intersects with the A338 at the Blackwater junction).
3. Owing to a predicted increase in traffic loads in the local area resulting from the airport expansion proposals, if implemented, all schemes considered would require widening of the A338 adjacent to the airport (**para 3.2**). This proposal is also considered by the study.
4. Lastly, the study considers proposals for development of the airports internal road network based on a feasibility study undertaken by TPS Consult.

## NORTHERN CORRIDOR

5. Options for both a dual-carriageway and a single carriageway link road, connecting the A338 to the east and the airport to the west are considered.

### Dual carriage way

6. 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.

### Single carriageway

7. A single carriageway would have a lesser impact on the **SNCI in Hurn Forest** it would also have a reduced shading effect within the **Moors Rivers SSSI (para 5.6 and para 5.7)**. However, it is anticipated that a single carriageway would increase the likelihood of congestion and associated localised air-borne pollutants. The 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 way. 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.

### Ecological considerations (both single and double carriageway)

8. The proposed route has been designed to avoid SPAs and SACs and therefore the available route is confined between the Port View Caravan Park and the Christchurch Ski centre (**para 4.1**).
9. The link road between the A338 junction and the airport is anticipated to be similar for both the above junction configurations. It will pass over the **Moor River SSSI** via a 140m long bridge, approximately 4m above the river. The length of the bridge has been designed to avoid deposition of material within the Moors River system. Water flow will be affected to some degree by bridge uprights (**see para 4.8**).
10. The link road between the A338 and the airport will “have a small direct impact on the **SNCI in Hurn Forest**” (**see para 4.9**).
11. It is not anticipated that the link road itself would need to be lit, however, both roundabouts (at either end) would need to be lit (**para 4.10**).
12. It is anticipated that the Northern Corridor option would require the construction of some form of balancing pond to intercept the increase surface water run-off generated by the scheme. This is expected to require land take within the **Moors River SSSI/ Hurn Forest SNCI** or very close to it (**see para 4.11**).

### SOUTHERN CORRIDOR

13. The Southern Corridor would entail improving the Blackwater Junction to the west of the airport. Further, linking between the Blackwater junction and the south of the airport. Two options are 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 taking the most direct route to the Chapel Gate roundabout south west of the airport site.

“Both route options would have a direct impact on the **Moors River SSSI** – the southern option crossing a narrower width of designated area but a wider extent of floodplain”.

### **Ecological considerations (entire Southern Corridor)**

- 14. The proposed route has been designed to cause least impact crossing the Moors River SSSI (**para 6.1**). There is little scope to increase the configuration of the Blackwater junction as it is spatially constrained by SAC/SPA areas (**para 6.1**).
- 15. The Southern Corridor route would likely entail construction of a new bridge at the Blackwater Junction taking the B3073 over the A338 (**para 6.4**). It would also involve improvements to the bridge taking the A338 over the River Stour to the east of the Blackwater junction (**para 6.6**), some distance to the east of the airport. The latter option would encroach on the River Stour floodplain and affect the flow path of the river.
- 16. The link road between the Blackwater junction and the airport would not need to be lit but all roundabout would need to be lit.
- 17. Construction of the Southern Corridor would necessitate the construction of settling ponds to attenuate the increase surface water run-off generated by the scheme.

### **INTERNAL AIRPORT LINK ROADS**

- 18. No explicit ecological effects are highlighted by the study in reviewing the numerous options for link roads between the proposed Northern Corridor or the Southern Corridor options. Mention is made of an ‘impact’ on the Moors River floodplain by ‘Option 1a’ it is unclear specifically what this is though. An internal link road is proposed between the eastern and western parts of the Northern Development Sector. It is highly likely that any internal link road would require repositioning/extension of the Airport runway and hence be prohibitively expensive.<sup>1</sup>

### **A338 WIDENING**

- 19. Paragraph 8.2 notes that “the standards required for a 3-lane dual carriageway without metre strips but with national speed limit could probably be achieved with relaxations” (i.e. no lateral encroachment on SAC/SPA areas).
- 20. Paragraph 8.3 notes that replacement of three bridges would be necessary if widening occurs.

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<sup>1</sup> Personal communication (2008). Manchester airports. Responses to Scoping Report, July 2008.

21. Paragraph 8.5 states that “It would appear feasible that widening could be achieved over much of the A338 without affecting the boundaries of the SPAs and SACs but further investigations would need to be carried out...”
22. It is noted that construction in such a confined space would entail closure of the road for long periods and perhaps construction of retaining walls and not lateral embankments.
23. “The provision of an additional lane would also require replacement of or improvement to any drainage, safety fences, access points and lay-bys, signs and statutory undertakers plant” (**para 8.6**).
24. The assumption that widening of the A338 would be required solely because of plans to expand the Airport is yet to be verified; other factors will influence the need to carry out road widening including background traffic growth as well other significant developments (e.g. housing development) in the area.<sup>2</sup> A traffic report being prepared by Peter Brett Associates for Manchester Airports in 2008 will further inform this.

## CONCLUSIONS

25. Given current projections for traffic growth the study makes clear but there is very little option but to increase the flow capacity of the A338 OR embark on an extensive traffic management plan for the entire area to redistribute capacity.

9 April, 2008

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<sup>2</sup> Personal communication (2008). Manchester airports. Responses to Scoping Report, July 2008.

## **APPENDIX II: INCEPTION MEETING NOTE, 3 APRIL 2008**



## **ATTENDEES**

### **I.1. Present at the meeting:**

- Simon Trueick - Community and Planning Policy Manager and George Whalley – Planning Policy (Christchurch Borough Council);
- Phil Sterling - Natural Environment Team Manager and Paul Willis -Transport Planner (Dorset County Council);
- Jon Grantham, Pete Lawrence and Richard Gowing (Land Use Consultants).

## **GENERAL POINTS RAISED PRIOR TO AGENDA ITEMS**

### **I.2. ST noted several points relevant to the scope of the study:**

- the Christchurch Core Strategy Issues and Options consultation is underway with the Preferred Options for the Core Strategy due to be ready for consultation in January 2009. The Airport will be addressed in both the Core Strategy and Area Action Plan;
- in terms of the potential to encounter ecological constraints, the transport infrastructure proposals are perhaps the most significant element of the ecological study which Christchurch Borough Council (CBC) want LUC to consider;
- to date no 'clear source' of funding for the proposed transport links to the BIA site has been secured. Insufficient sources of funding have been identified to deliver strategic infrastructure in the longer term;
- It is intended that the ecological study will assess development options being considered in the LDF to establish the most sustainable policy direction;
- CBC is tentatively confident that an ecologically suitable route for transport proposals can be found. However, financial restraints will likely dictate the progress of the scheme (particularly in respect of the link road);
- the ecological study should provide an evidence base and return appropriate mitigation/compensation measures to inform a road infrastructure scheme, should finances become available;

### **Other Planning issues**

#### **I.3. A planning application has recently been approved for reconfiguration of the BIA terminal within the existing footprint.**

### **Notes on Natural England's Position**

#### **I.4. ST revealed that in his experience, Natural England's (NE) position with regard to the sustainability/climate change aspects of air travel is ambiguous. He was uncertain to**

what extent NE would likely adopt a rigid stance with respect to BIA expansion proposals over this issue. He noted that local NE staff are very informed about the climate change issue and it should be expected that further discussion on this point will be necessary over the course of the ecological study. More definite is NE's position with respect to N2K sites, which is that no impact should be sustained.

- 1.5. Tranquillity issues had been raised in the past by the New Forest National Park Authority (NFNP). ST noted that it was difficult to see how this issue could be addressed at the strategic planning level. For example, rerouting of flight approach paths is an option but is this within the remit of an AAP? NFNP are currently considering calling for a judicial review of the plans for reconfiguring the terminal at BIA (see point 3).

### **General information on the expansion proposals**

- 1.6. ST noted:

- BIA currently handles 1M air passengers, this is expected to rise to 4.5M by 2030, in particular through growth in low-cost airlines;
- the employment zone on site consists of 80 ha gross (65-67 ha net) of land intended for mixed used development not necessarily related to aviation;
- Nathaniel Litchfield and Drivers Jonas/RPS Burks Green have carried out an economic potential study and RPS have produced a masterplan and planning framework for the operational Airport;
- the employment zone is excluded from the surrounding Green-Belt and it is not envisaged that any increase in the built footprint will be necessary to accommodate expansion plans;
- a vision document has been produced which assumes 100% of employment land being development, however, this is contingent on the access road being operation from day 1 (this is a highly unlikely aspiration given that no funding exists);
- NE have not to date expressed any concerns over potential impact on heathland sites from development of employment land;
- the government office have suggested that an AAP may not be necessary for the employment zone expansion proposals, rather a SPD may suffice.

### **LIASON MEETINGS WITH ADVISORY GROUP AND CONSULTEES FOR ECOLOGICAL STUDY**

- 1.7. The BIA Advisory Group is composed of a large number of interested organisation and individuals and it is unlikely that LUC will need to meet with the entire group.

- I.8. Key contacts from the advisory group will be at NE, BIA, Christchurch Borough Council (CBC) and the Dorset County Council (DCC) ecologist.
- I.9. The Forestry Commission (FC) are not on the BIA advisory group and may need to be consulted. There are a number of potentially relevant contacts from Manchester Airport Group (who own BIA). ST also encouraged contact with the Environment Agency (EA).
- I.10. Mitigation measures may entail planting on adjacent land. It may be necessary, therefore, to contact Malmesbury Estates and the FC at an early opportunity as owners of land adjacent to BIA.
- I.11. **CBC to supply LUC will a full contacts list.**
- I.12. PS added several additional contacts including:
  - Renny Henderson from the RSPB;
  - Katherine Burt from the EA (who is a planning contact but may be able to direct LUC to more relevant persons);
  - John Atkins (Director of Strategy and Development, Manchester Airports Development Limited) and John Twigg (Director of Group Planning, Manchester Airports Group) also Estates/Development staff from Manchester Airports.

With respect to the proposal for a new Mechanical Waste Treatment (MBT) plant [see para 3.4 of the CBC tender document] PS suggested it may be necessary to contact relevant DCC staff in waste management (Steve Burdiss, DCC). He stressed, however, that this proposal was highly tentative.

PS suggested that for reasons of efficiency it may not be necessary to contact the full spectrum of NGO/informal environmental organisations, rather those organisations which possess the infrastructure to offer a strategic/policy view with respect to the aims of the ecological study.

- I.13. On the topic of the Avon Commons gravel extraction operations [see para 3.5 of the CBC tender document, sub-para on 'A338 Link'] PS noted that the potential for heathland restoration was in his opinion limited given the sites hydrology/geology. Contact at DCC will be Peter White – Group Leader Development Control or Tony Jeffries.

## **DATES FOR KEY MILESTONES/OUTPUTS**

- I.14. ST mentioned that the original deadline for the completion of the ecological study was based on the proposed date of issue of Preferred Options for the Core Strategy by CBC. He noted that it is now very likely that this date will slip to July/August 2009. Given the time it has taken to arrange an inception meeting it was agreed that the absolute deadline for completion of the study will now be September/October 2008.
- I.15. PL suggested a new timetable based on moving the existing project timeframe (see tender) back by c. 3 months.

- I.16. **The next meeting will be on 05 June 08. The purpose of the meeting will be to review the Scoping Report (to be issued in advance by LUC).**

## **INFORMATION AVAILABILITY**

- I.17. PL raised the point that the number of N2K sites identified as falling within 10km<sup>3</sup> of BIA by LUC exceeds the number of sites listed for inclusion in the study by CBC [see para 3.16 LUC tender document].
- I.18. PS suggested that those sites identified by CBC were the sites likely to be of greater relevance, however, it would be useful to include all N2K sites as guided by LUC.
- I.19. PS noted that information on the conservation objectives for all the requisite sites may be limited and also that to his knowledge there had been no recent changes to N2K site boundaries.
- I.20. A recent revision to SINC boundaries has been carried out to include certain key species' habitat e.g. nightjar and woodlark, within FC land holdings. This data should be available from Dorset Environmental Records Centre (DERC).
- I.21. There will be a small administrative charge for extracting data from DERC.

## **CONFIRM WHICH EPS/OTHER SPECIES TO INCLUDE**

- I.22. PS suggested that the overarching purpose of the ecological study should be to highlight all ecological issues/risks associated with the BIA proposals. As such it should seek to produce a fairly high-level outline of ecological pinch points.
- I.23. PS made comments on a number of different species in relation to the study:
- **Smooth snake** and **sand lizard** data should be available through DERC, however, it would be wise to check with the local Herpetological Conservation Trust (HCT). He also cautioned that the area is dotted with remnant populations of smooth snake/sand lizard and that care should be taken identifying areas of importance to these species. He noted the example of a population of sand lizards which was discovered during maintenance works to roadside verges of the A338 and which has caused severe delays to works. The same areas had previously been discounted as being unsuitable habitat;
  - **Bats:** there is a high potential for bat roosting sites to be present in the area and care should be taken to identify these;
  - **Dormouse:** dormouse habitat requirements can be broad/unpredictable and it will be extremely difficult to provide a meaningful assessment of likely impacts on dormouse at this strategic level;

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<sup>3</sup> Natural England recommends that a 10km buffer be used to screen for impacts on N2K sites during HRA.



- **Otter:** It may be necessary to consider likely impacts on Otters given the proximity of the Moors River/River Stour.

## **CONFIRMATION OF LOCATION FOR SITE VISIT/ISSUES TO CONSIDER ON SITE VISIT**

### **Transport options**

I.24. PW provided locations and details of the proposed A338 widening scheme on CD. These are stored electronically (LUC internal):

- S:\4300\4302 Bournemouth Airport Ecological Study\Documents\Projects information\Highways options report.

With respect to widening of the A338, PW made several comments:

- engineering reports state that based on the current road layout by 2013 the A338 will be up to peak hour capacity;
- 
- It may be decided that major upgrading of the A338 will be necessary as BIA expansion proposals resolve, however, it was agreed not to include road widening in the ecological study at this stage.
- **PW to provide LUC with land take drawings for the A338 proposals.**
- within the highway options report (see link above) para A33.1 notes that relaxation of existing road geometry and incursion into the central reservation may accommodate road widening without the need for encroachment into adjoining land;
- there are proposals to upgrade the drainage along the A338 which could likely have a greater effect on road verges than road widening (see Andy Ackerman, DCC for details). These may commence soon if EA funding is secured.

### **General points**

I.25. PS suggested that a familiarisation visit should not focus unduly on the airport itself as management has been directed as preventing colonisation by protected species for sometime (keeping grass swards closely mown).

I.26. **LUC to prepare sketch map for site visit and circulate to ST/PS for comments.**

## **AIR QUALITY**

I.27. JG raised this issue as a separate agenda item:

- how should air quality be treated within the ecological study? There are options ranging from technical emissions modelling through to broad scale screening of likely impacts;

- emissions from aircraft may be beyond the scope of the study as these disperse at high altitude and a traceable effect on adjoining habitat would be extremely difficult to ascertain;
- emissions from road traffic could potentially affect surrounding habitats, particularly heathland;
- PS noted that there is still a great deal of scientific uncertainty as to the effects of nitrogen deposition on heathland habitats and that it would be wise to proceed with a precautionary approach;
- ST noted that given NE's attention to this issue locally and also the potential for air quality issues to be a 'show-stopper' for BIA expansion proposals this issue was critical;
- PS noted that given the cost of a technical modelling study, at this stage it would be appropriate to seek to identify 'worrying outputs' during HRA screening based on available research and consultation;
- JG suggested that an outcome of the study could be the provision of recommendations or a specification for further technical modelling studies to cover sensitive locations/scenarios which are identified. LUC could also produce indicative costings for such work, if further modelling work is deemed necessary.
- It was agreed that the issue of air quality impacts and the level of technical assessment required would be kept under review during the study.

## **ABBREVIATIONS**

AAP	Area Action Plan
BA	Bournemouth Airport
CBC	Christchurch Borough Council
DERC	Dorset Environmental Records Centre
EA	Environment Agency
FC	Forestry Commission
NE	Natural England
NFNP	New Forest National Park

Richard Gowing, Land Use Consultants, 11 April, 2008

## **APPENDIX III: SUMMARY NOTE FROM FAMILIARISATION VISIT**

## **BOURNEMOUTH AIRPORT FAMILIARISATION VISIT: TARGET NOTES 23 APRIL 2008**

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### **I. Blackwater Junction**

#### a) East

- B3073 immediately abuts the River Stour, steep river bank (approx. > 3m high) with frequent mature trees and scrub
- River Stour approx 4-5 m wide at this point
- Golf course on south side of river, with steep river bank approx 1.5m high. Frequent scattered mature trees in the golf course
- SAC immediately adjacent to NE of loop junction (B3037 / A388)
- The bridge over the A388 is single lane

#### b) West

- Quomp Copse – large woodland block south of B3073 on route of proposed road
- Also pasture with standard mature trees
- Moors River

### **2. Avon Causeway, west of A388**

- SAC/Ramsar both sides
- Mosaic of woodland (birch, conifers) and wet/dry heath, with pools. Scrub encroachment frequent

### **3. Northern Corridor** (see **Figure 5.1** in main report for proposed location of northern corridor)

#### a) East of Matchams Lane

- SNCI composed of heath rides through conifer plantation
- Conifer plantation, including recently felled areas (scrub regeneration)
- East of A338 – mature conifer plantation (viewed from distance)

#### b) West of Matchams Lane

- Mostly conifer plantation including patches with birch regeneration (these possibly form the small patches of SNCI)

- SNCI to south of proposed road route includes the plantation edge and ride, mostly acid grassland to south
- c) Moors River SSSI
- River approx. 2 - 3 wide
  - Wet woodland and reed swamp habitats surround the river
  - Bat corridor and roosting opps; otter; water vole potential
  - Offshoot of the SSSI extends west into airport with stream/ditch and reedbeds (+ wet heath?)
- 4. Existing entrance to Aviation Park East**
- Passes through SAC/Ramsar dry heath habitats
  - Single track bridge over Moors River SSSI (river and reedbeds) causes a bottleneck. Anecdotal evidence strongly suggests that this is currently no traffic issue in this location.<sup>4</sup>
- 5. Aviation Park East**
- The northern part is a patchwork of semi-natural woodland/scrub habitats (+ open areas with heath/grassland/ruderal communities) interspersed with light industrial/haulage/storage yards
  - 2 SNCI blocks within the Park – wet woodland/woodland/scrub alongside unculverted sections of stream / ditch
  - SAC/Ramsar immediately abuts Park to the north – woodland fringe surrounding dry heath, with colonising scrub – this area is currently subject to a management agreement which Natural England have been consulted over and advised upon.<sup>5</sup>
- 6. Terminal Buildings and Parking, etc**
- Frequent mature trees scattered around buildings/hard standing
- 7. Mill Lane**
- Moors River to the east lined by mature trees/scrub/small copses
  - East and west of road with pasture, hedgerows, scattered mature trees and small copses (Mill Copse) – parkland feel.
  - Mill Lane lined by hedgerows with mature trees
  - West of road within gravel extraction area (no extraction evident)

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<sup>4</sup> Personal communication (2008). Manchester airports. Responses to Scoping Report, July 2008.

<sup>5</sup> Personal communication (2008). Manchester airports. Responses to Scoping Report, July 2008.

**8. Hurn Court Lane at West Hurn**

- East of lane with active gravel and sand works
- West of lane with arable fields
- Lane flanked by hedgerows

**9. West of Merritown Farm**

- Pasture and arable fields, hedgerow network with scattered/occasional trees
- River Stour to south

**10. Aviation Park West**

- SW part more developed with modern office developments
- N & E parts with semi-natural habitat remnants (scrub, woodland and open grassland/bracken/ruderal communities) interspersed with haulage/light industrial plots
- Small section of unculverted stream
- SAC/Ramsar immediately to north (woodland fringed)

**11. B3073 Chapel Gate Roundabout about to Hurn Village**

- Hedgerow along south boundary, mostly with arable/pasture to south, and gravel extraction area (active and pre-extraction)
- Grassland verges/pedestrian route/ airport grasslands to north

**12. Hurn Village to Blackwater Junction B3037**

- Appeared more constrained either side of the road with occasional private dwellings

Peter Lawrence  
Land Use Consultants  
25 April, 2008

## **APPENDIX IV: NOTE ON AIR QUALITY ISSUES AND LIMITATIONS OF APIS DATA**





## TYPES OF AERIAL POLLUTION

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### Nitrogen Oxides

Nitrogen oxides ( $\text{NO}_x$ ) are produced in combustion processes, mostly by direct combination of atmospheric oxygen and nitrogen in flames.  $\text{NO}_x$  is produced naturally in smaller quantities by lightning, and also, to a small extent, by microbial processes in soils. Of the 2.2 million tonnes of  $\text{NO}_2$  emitted by the UK each year, about one-quarter is from power stations, one-half from motor vehicles, and the rest from other industrial and domestic combustion processes. Unlike emissions of sulphur dioxide, emissions of  $\text{NO}_x$  are only falling slowly in the UK, as emission control strategies for stationary and mobile sources are offset by increasing numbers of road vehicles.

Nitrate containing particles and nitric acid contribute to wet and dry deposition of nitrogen in areas both close to and remote from sources. The major role of  $\text{NO}_x$  is as a transboundary pollutant, and its conversion in the atmosphere to nitric acid ( $\text{HNO}_3$ ) vapour and nitrate particles which are deposited directly or in precipitation many hundreds of km from sources. Deleterious effects of deposited nitrogen on natural N-limited terrestrial ecosystems have been reported from across Europe, and N deposition also makes a significant contribution to the productivity of phytoplankton blooms in the surface waters of the Atlantic Ocean and North Sea. Although some of this 'excess' nitrogen comes from ammonia, control of  $\text{NO}_x$  emissions is required to reduce the amount of nitrogen transported over long distances.

Direct effects may also occur in the immediate vicinity of major roads and in the centre of cities, caused by high  $\text{NO}_x$  emissions from vehicles. As with ammonia,  $\text{NO}_x$  may lead to ground flora changes related to eutrophication.  $\text{NO}_x$  is also a key precursor for ozone production in the atmosphere and stringent control of  $\text{NO}_x$  emissions will be required if regional (and hemispheric) ozone concentrations are to be reduced to levels which are harmless to vegetation.

Impacts include:

- Subtle changes in plant morphology, physiology and biochemistry which do not affect growth but increase sensitivity to environmental factors such as wind, frost, drought and pests.
- Visible decline symptoms for example, leaf discoloration.
- The vulnerability to direct damage of mosses, liverworts and lichens which receive their nutrients largely from the atmosphere.
- Changes in species composition and decrease in species diversity.
- Impacts on functioning of the peat ecosystem, e.g. decomposition, sulphate reduction, nitrate uptake, organic acid production.

Effects of N on heathlands need to be considered together with management effects (e.g. burning, grazing).  $\text{NO}_x$  is known to have greater adverse effects in the presence

of SO<sub>2</sub> and O<sub>3</sub> so the critical levels of these should also be considered. NO<sub>x</sub> is not directly harmful to plants at concentrations below 14 ppb.

## Sulphur Dioxide

The main sources of SO<sub>2</sub> emissions are electricity generation, industry and domestic fuel combustion. Over the past 20 years there has been a reduction in the emissions from low level sources including domestic combustion, so that emissions are now dominated by a few large high level sources. Ground-level concentrations of SO<sub>2</sub> in the UK have fallen so much that there is no longer a threat to plant health.

However, the reductions in deposition corresponding to this change have been observed mostly near sources, rather than in long range transported S deposition. The result is that the reductions in emissions are not currently matched by reductions in deposition and impacts in the most sensitive areas of the UK.

Impacts of SO<sub>2</sub> include:

- Visible decline symptoms for example, abnormal branching patterns, reduced crown density and leaf discoloration.
- Soil and freshwater acidification.
- Poor general tree health.
- Subtle changes in morphology, physiology and biochemistry can occur which do not affect tree growth but increase the sensitivity of trees to environmental factors such as wind, frost, drought and pests.
- Stimulated growth at low concentrations of S potentially changing community composition.
- The vulnerability to direct damage of mosses, liverworts and lichens which are sensitive to lower concentrations than those causing injury to higher plants.
- Impacts on functioning of the peat ecosystem, e.g. decomposition, sulphate reduction, organic acid production.

The most sensitive component of many habitats is often the epiphytic lichen flora. A large number of lichens are particularly sensitive to SO<sub>2</sub> exposure, leading to the use of lichens as bioindicators for SO<sub>2</sub>.

## Ozone

Ozone (O<sub>3</sub>) is produced by photochemical reactions from NO<sub>x</sub> and volatile organic compounds (VOCs), which include various hydrocarbons, originating from fossil fuel combustion and natural sources. The chemical cycles producing and destroying O<sub>3</sub> depend on pollutant and light levels so different reactions are established during the day and night. In warm, summer conditions photochemical events often occur in which O<sub>3</sub> concentrations increase successively over several days. These "ozone episodes" provide concentrations of O<sub>3</sub> of >40 ppb (compared with a natural global average background of around 10-20 ppb) which are toxic both to human health, buildings and wildlife.

Ground level ozone may have the following effects on vegetation:

- Visible injury to foliage.

- Reduction in growth rate.
- Changes in stomatal conductance and therefore plant water use.
- Selection against ozone sensitive genotypes.
- Changed reaction to water stress.
- Altered species composition of semi-natural plant communities.

## **Ammonia**

Ammonia (NH<sub>3</sub>) in the atmosphere results primarily from the decomposition and volatilisation of animal wastes. Other sources of ammonia emission include direct volatilisation from mineral fertilizers (particularly urea), agricultural crops and a wide range of non-agricultural sources including sewage, catalytic converters, wild animals, seabirds and industrial processes. Atmospheric ammonia has impacts on both local and international scales. In the atmosphere ammonia reacts with acid pollutants such as the products of SO<sub>2</sub> and NO<sub>x</sub> emissions to produce fine ammonium containing aerosol which may be transferred over 1000 km.

Direct exposure to high concentrations of ammonia can lead to:

- Direct damage to woodlands, for example, leaf discoloration and loss.
- Suppression of root uptake of cations such as Ca, Mg and K leading to nutrient imbalances.
- Reduced ability of stomata to close under drought conditions, leading to plant water stress.
- Changes in the composition of ground flora, bryophyte and lichen communities. Epiphytic lichens may be particularly affected by the increase in bark pH.
- There may also be subtle changes in plant morphology, physiology and biochemistry which can not only increase growth, but also increases sensitivity to environmental factors such as wind, frost, drought and pests (e.g. increased tissue N concentrations can predispose plants to insect attack).
- Reduced NO<sub>3</sub><sup>-</sup> uptake which may exacerbate base cation status and availability.
- Increased foliar N status which could increase herbivory.
- Changes in the composition of bryophyte and lichen communities.
- Significant increases in foliar uptake which is less controllable than root uptake.
- Direct damage to sensitive species, for example, leaf loss, premature senescence, leaf discoloration and bleaching.

### **Potential impact of airport expansion proposals**

It is unlikely that airport expansion proposals will lead to increases in sulphur dioxide, ammonia, as these pollutants arise predominantly from power stations or agriculture. However, the increases in car travel likely to be associated with the road improvement scheme to access the airport are assumed to result in increased nitrogen oxides and possibly ozone.

## TYPES OF DEPOSITION POLLUTANTS

### Acid deposition

Acid deposition (also referred to as acid rain and acid precipitation) represents the mix of atmospheric pollutants, particularly oxides of sulphur and nitrogen, which together cause precipitation to become more acidic when converted to sulphuric and nitric acids, and lead to the acidification of soils and freshwaters. The term encompasses wet deposition, dry deposition and the direct impaction of cloudwater on hills, sometimes referred to as "occult deposition".

Specific impacts of acid deposition include:

- Visible decline symptoms, e.g. branch dieback, abnormal branching patterns, reduced crown density and leaf discoloration.
- Enhanced 'leaching' of nutrients out of leaves.
- Higher soluble Aluminium (Al) concentrations in soil solution - closely associated with unhealthy trees via detrimental effects on fine roots.
- Poor general tree health.
- Potential for increased susceptibility to secondary stresses such as drought and frost.
- Reduced availability of Phosphorous, already only poorly available at heathland sites.
- Direct damage of upland heath mosses, liverworts and lichens which receive all of their nutrients from precipitation. Damage to cell membranes is the most widespread direct impact.
- Decline in pH of peat.
- The often overlooked concentrating effect of occult (cloud-borne) deposition at high altitudes which can be significant for upland communities.
- Reproduction in both birds and plants appears to be sensitive to acidification e.g. egg shell condition and seed production, viability and germination.
- Birds may be adversely affected through negative impacts on their food down the trophic levels. Crustaceans do not survive in acidified waters.

Acidifying deposition is generally agreed to have little effect on calcareous grasslands since the calcareous soil provides ample neutralising capacity.

### Nitrogen Deposition

Nitrogen deposition consists of the input of reactive nitrogen species from the atmosphere to the biosphere. Most concern has addressed the impacts of nitrogen deposition to terrestrial ecosystems, which may lead to nitrogen eutrophication, but impacts may also occur in the marine environment. The pollutants that contribute to nitrogen deposition derive mainly from nitrogen oxides (NO<sub>x</sub>) and ammonia (NH<sub>3</sub>) emissions.

NH<sub>3</sub> is generally deposited in high quantities to semi-natural vegetation through intensive agriculture, whilst reduced N (NH<sub>y</sub>) is primarily emitted from intensive animal units and more recently vehicles with the introduction of catalytic converters.

Specific impacts of N deposition include:

- Increase in sedges, tall grasses and vascular plants
- Negative effects on peat mosses
- Decrease in diversity, bryophytes and characteristic mosses.
- Tree crown discoloration and chlorosis (yellowing), particularly associated with very high rates of nitrogen deposition.
- Increased shoot-root ratio as a result of greater N supply.
- Potential for increased susceptibility to secondary stresses such as drought and frost.
- Nutrient imbalance.
- Reduction in diversity of ground layer species as aggressive competitors take advantage of higher Nitrogen levels. Measurements in deciduous woodlands have shown major impacts near farms.
- Negative effects on bryophytes and epiphytic lichens and mycorrhizas.
- Changes in species composition, with increased dominance of grasses at the expense of heathers, mosses, and lichens.
- Direct damage to upland heath mosses, liverworts and lichens which receive their nutrients from precipitation, and in a very concentrated form as occult deposition cloud.

A key concern is potential changes in species composition following enhanced N deposition. Communities most at risk from N eutrophication are those rich in bryophytes and where species richness is comprised of slow growing species. High levels of atmospheric deposition may lead to loss of sensitive species. Management intervention can reduce impacts of N through removal via burning and sod cutting.

#### **Potential impact of airport expansion proposals**

Due to the mix of air pollutants from different sources that contribute to acidification and deposition, increases in both could be associated with increased car travel resulting from the road improvement proposals associated with airport expansion.

### **APIS DATA LIMITATIONS**

1.28. Key limitations associated with the use of APIS data and methodological assumptions that have been made are detailed below:

- Maps of pollutant air concentrations and deposition used within the APIS analytical tool are generated by a combination of models and measurements (see [www.nbu.ac.uk/negtap](http://www.nbu.ac.uk/negtap)). If the queried location is close to large emission sources, then this tool may underestimate deposition or concentrations.
- Maps of pollutant concentration and deposition are only available at a 1 km or 5 km grid resolution. For many pollutants, in particular NH<sub>3</sub>, NO<sub>x</sub>, SO<sub>2</sub>

and Acidity, there is real sub-grid variability which is not revealed in these averages.

- The grid reference used to map each Natura 2000 and Ramsar site is the point nearest to Bournemouth Airport. The tabulated results therefore give only a snapshot of pollutant levels at one point, rather than a comprehensive view of the whole site or a protected area network.
- Many of the Natura 2000 sites assessed have been designated for more than one type of habitat and some mainly for species present. For the purposes of this assessment, all habitat types which compose >1% by area of a nature conservation site have been included. Data on the percentage cover of different habitat types has been sourced from JNCC (2008) 'Natura 2000 Site Data Form' (<http://www.jncc.gov.uk/page-4>). Where two or more sites are coincident (e.g. an SAC and a SPA) the SPA data form has been used as this provides details of habitat coverage accounting for 100% of the area present. In contrast, the SAC data form only tabulates Annex II habitats. For heathland, APIS offers critical values for both 'dry heath' and 'wet heath' habitats. Where both habitats occur within a nature conservation site, figures pertaining to the habitat (dry or wet heath) of greater areal coverage have been used. Freshwater or estuarine habitats were not available in the APIS database, thus no data was obtained for river or estuarine Natura 2000 sites.
- Excepting the comments made in the last point, the habitat specific critical loads/levels data are only available for a limited number of habitat types, therefore, the most similar APIS habitat type has been assigned to the habitat being considered. There are, therefore, uncertainties in both the best estimates of the critical loads and levels and in the assignment of habitat types.
- The figures for Nitrogen deposition are provided by APIS in the form of a range of values, with the highest and lowest potential exceedance figures given. For the purposes of comparison, the middle value of this range has been used. This introduces a further level of uncertainty into the values given here.

#### *Rationale for Selection of Ecological Receptors*

1.29. For this review, air quality parameters have been investigated for Natura 2000 sites, Ramsar sites and those Priority Habitat types which are not contained within these sites. This is guided by the following rationale:

- The spatial resolution of air quality data available through APIS is of a fairly coarse scale, therefore, it would achieve little to consider each of the nature conservation sites surrounding the Airport separately as the available air quality information would likely be the same.
- A limited range of habitats is considered by APIS. This means that any analyses made will be tentative and generalised (see comments above).

- Excepting the possible omission of the Priority Habitat type Lowland Mixed Deciduous Woodland (see discussion in Chapter 5 of this report), it is felt that by considering Natura 2000 sites and Ramsar sites this will automatically include all habitats and those species of principal nature conservation importance within the vicinity of the airport. Baseline air quality information will be provided for Lowland Mixed Deciduous Woodland separately, however, this data must be interpreted with caution given the provisional distribution data for this habitat type provided by DERC (2008).





## **APPENDIX V: ECOLOGICAL RECEPTOR ASSESSMENT PROFORMAS**



## NATURE 2000 AND RAMSAR SITE PROFORMAS

Site Name: River Avon	
Designation	SAC
<b>Qualifying Features</b>	<ul style="list-style-type: none"> <li>• Water courses of plain to montane levels with the <i>Ranuncion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</li> <li>• Desmoulin's whorl</li> <li>• Sea lamprey</li> <li>• Brook lamprey</li> <li>• Atlantic salmon</li> <li>• Bullhead</li> </ul>
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>Watercourse (<i>Ranunculus</i>) habitat</b></p> <ul style="list-style-type: none"> <li>• The river's natural structure and form should be maintained to support a natural flow regime. This includes the avoidance of the constriction of the river or blockage of its floodplain and the maintenance of natural erosion and sedimentation processes.</li> <li>• Riparian areas and the wider catchment need to be managed sensitively to avoid excessive run-off of soil particles and nutrients into the river.</li> <li>• The structure and composition of bankside and aquatic vegetation should be maintained</li> <li>• Increased growth of epiphytic algae and planktonic algae can lead to excessive shading of plants, reduced seed germination, enhanced capture of silt.</li> </ul> <p><b>Annex II primary species - Fish</b></p> <ul style="list-style-type: none"> <li>• The river's natural structure and form should be maintained to support a natural flow regime that will help ensure the provision of resting pools for fish, conserve the quality of the riverbed as fish spawning habitat, and avoid the creation of artificial barriers to the passage of migratory fish and other animals, such as otters.</li> <li>• Any exploitation of fish populations or other native animals or plants should be at a sustainable level, without manipulation of the river's natural capacity to support them or augmentation by excessive stocking</li> </ul> <p><b>Annex II primary species - Desmoulin's whorl snail</b></p> <ul style="list-style-type: none"> <li>• Desmoulin's whorl snail are sensitive to the structure and composition of marginal vegetation of rivers, structure and composition of tall fen and swamp vegetation, the water table and water quality. The site should therefore be managed to ensure these factors stay within acceptable levels.</li> <li>• Although some flooding is permissible the site should not be deeply flooded in summer months</li> <li>• The snails may be vulnerable to direct damage, habitat change due to adjacent Newbury bypass, lowering of water table, water pollution and shading due to encroachment of larger plant species</li> </ul>
<b>Existing trends and pressures</b>	<p><b>Condition assessment of Avon Valley (Bickton To Christchurch) SSSI<sup>6</sup></b></p> <p>Where SSSI units have been recorded as unfavourable or as declining in condition the absence of appropriate water levels is the most frequently cited reason. This is caused by the absence of appropriate water management infrastructure (ditches or water flow control structures). SSSI units where favourable or recovering condition has been recorded tend to be those where agri-environment agreements have been secured with land owners.</p> <p><b>South West Draft RSS HRA<sup>7</sup></b></p> <p>Concerns about the impact of abstraction on the River Avon SAC have been raised by a number of sources during both the Screening and Appropriate Assessment stages. (South West Regional Biodiversity Partnership, South West Wildlife Trusts, Gloucestershire,</p>

<sup>6</sup> <http://www.naturalengland.org.uk/>

<sup>7</sup> All consultation referred to in this box refers to that undertaken as part of the Habitat Regulations Assessment (HRA) of the Draft South West Regional Spatial Strategy, undertaken by the South West Regional Assembly (Land Use Consultants, 2007).

	<p>Wiltshire and Avon Group Workshop and James Hayward, EA South Wessex local team, Dagmar Junghanns, NE.)</p> <p>The possibility of run-off from large areas of exposed soil during development and changes to natural rates of run-off. (Julie Swain Natural, England)</p> <p>Water quality issues have also been identified on the River Avon. These issues specifically relate to the exceedance in available phosphorus, contributed in part from sewage discharges. Particularly vulnerable river corridors in relation to Annex II species, lamprey or salmon. (James Hayward, EA South Wessex local team).</p> <p>Agricultural runoff may also be a source of nutrient enrichment of the river and associated habitats.</p> <p>At the mouth of the River Avon, Christchurch Harbour, sufficient flow and temperature are thought to be imperative for the facilitation of migration of Annex 2 species (Salmonids) upstream. Other areas of concern include fish passes around major fish farms at Bickton and Britford and the areas of reduced flow during summer months, notably the River Bourne, and the River Till. (James Hayward, South Wessex local team)</p> <p>Modifications to the channel may cause changes to sediment processes</p> <p>There is significant concern about the condition of the breeding habitats for Atlantic salmon within the river system, especially in respect of sedimentation of redds. (EN)</p> <p>Invasive freshwater species</p>
<p><b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b></p> <p><i>Construction</i></p> <ul style="list-style-type: none"> <li>• Ecological effects (e.g. light pollution, noise, dust) arising from any construction necessary to facilitate expansion/reconfiguration of airport terminal building itself and associated aircraft infrastructure have been ruled out on the basis of distance (over 2 km west of the SAC) and existing screening by woodland/scrub vegetation (e.g. that occurring in between Pussex Lane and Matchams Lanes). In addition the S106 Agreement in place as part of extant planning permission should minimise environmental impacts, such as contamination of the River Stour (which could otherwise have potential knock on effects for the River Avon).</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>• The proposed improvements to airport drainage and sewage treatment (Holdenhurst Sewage Treatment Works) should minimise potential water quality implications for the River Stour (and as a result the River Avon).</li> </ul> <p><b>Northern business park</b></p> <p><i>Construction</i></p> <ul style="list-style-type: none"> <li>• Impacts likely to arise from construction are not considered likely to affect the SPA/Ramsar largely due to distance from the site and existing screening which would minimise light, noise and dust disturbance to sensitive fauna. Works may potentially result in the contamination of the River Stour, with potential reductions in water quality of the River Avon downstream of the River Avon SAC affecting migratory fish.</li> </ul>

	<p>However, given the distance from works to the confluence of these two rivers and the nature of the works, it is not considered that this impact would have a significant impact upon the designated interest features of the site.</p> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>As above, although works associated with the realignment of the Blackwater Junction and crossings over the Moors River on the Southern Corridor Option may result in water contamination of the River Stour and Moors River, it is not considered that these would significantly affect the SAC.</li> </ul>
<b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>8</sup></b>	<p><b>Airport terminal and facilities expansion &amp; Northern business park</b></p> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>The SAC site is already susceptible to ecological damage from inappropriate water management and insufficient water levels. Projections for increased water use in the Airport Terminal and the Northern Business Park may exacerbate this situation dependent on the source.</li> </ul>
<b>Other plans and policies with potential in-combination effects (identified during scoping)</b>	<ul style="list-style-type: none"> <li>Increased water supply requirements as a result of airport expansion may have in-combination impacts with wider abstraction requirements to meet regional residential and economic growth.</li> <li>Avon Common Sand and Gravel extraction including permanent draw down with groundwater piped to the River Avon.</li> </ul>
<b>Assessment of impact magnitude</b>	High
<b>Potential options for avoidance or mitigation</b>	<ul style="list-style-type: none"> <li>Investigation of increased water abstraction requirements to meet increased demand for the Northern Business Park and identification of supply options with minimal ecological impacts (this project would be likely to require EIA and AA).</li> <li>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.</li> </ul>
<b>Further information required</b>	

Site Name: Avon Valley		
Designation	SPA	Ramsar
<b>Value of ecological receptor</b>	International	International
<b>Qualifying Features</b>	<ul style="list-style-type: none"> <li>Bewick's swan</li> <li>Gadwell</li> </ul>	<ul style="list-style-type: none"> <li>Ramsar criterion 1: Diverse range of habitats associated with chalk river, including fen, mire, lowland wet grassland and woodland.</li> <li>Ramsar criterion 2: Diverse assemblage of wetland flora and fauna including nationally-rare species.</li> <li>Ramsar criterion 6: Overwintering gadwall</li> </ul>
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.	N/A

<sup>8</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<p><b>Summary of standards/factors which maintain site integrity</b></p>	<p><b>Wetland habitats and associated fauna</b></p> <ul style="list-style-type: none"> <li>• The river's natural structure and form should be maintained to support a natural flow regime. This includes the avoidance of the constriction of the river or blockage of its floodplain and the maintenance of natural erosion and sedimentation processes.</li> <li>• Riparian areas and the wider catchment need to be managed sensitively to avoid excessive run-off of soil particles and nutrients into the river.</li> <li>• The structure and composition of bankside and aquatic vegetation should be maintained</li> <li>• Increased growth of epiphytic algae and planktonic algae can lead to excessive shading of plants, reduced seed germination, enhanced capture of silt.</li> </ul> <p><b>SPA birds</b></p> <ul style="list-style-type: none"> <li>• All species are vulnerable to disturbance and predation. The site must therefore be managed to keep these factors within acceptable parameters.</li> <li>• It is important that habitats found on this site support areas for these birds that are suitable for nesting and feeding.</li> <li>• Gadwall is generally associated with inland fresh water feeding on the leaves and stems of aquatic plants.</li> <li>• Bewick's swan in winter use either permanent pasture, winter cereals, root crops or flooded meadows close to water, or brackish lagoons at coastal sites.</li> </ul>
<p><b>Existing trends and pressures</b></p>	<p>The boundary of the Avon Valley SPA and Avon Valley Ramsar site are in the main part coincident with each other. A relatively small area of the Ramsar site exists to the north west of the Avon Causeway bridge which is designated Ramsar site but not included in the SPA. It is therefore proposed that potential impacts arising from airport expansion proposals are considered for both sites in tandem.</p> <p><b>Condition assessment of Avon Valley (Bickton To Christchurch) SSSI<sup>9</sup></b></p> <p>Where SSSI units have been recorded as unfavourable or as declining in condition the absence of appropriate water levels is the most frequently cited reason. This is caused by the absence of appropriate water management infrastructure (ditches or water flow control structures). Other reasons cited for failure of SSSI units to attain favourable condition include inappropriate grazing management and encroachment by scrub and secondary woodland. Within the woodland SSSI units removal of exotic species is a key reason favourable conservation status is not being achieved. SSSI units where favourable or recovering condition has been recorded tend to be those where agri-environment agreements have been secured with land owners.</p> <p><b>South West Draft RSS HRA<sup>10</sup></b></p> <p>Concerns about the impact of abstraction on the River Avon SAC have been raised by a number of sources during both the Screening and Appropriate Assessment stages. (South West Regional Biodiversity Partnership, South West Wildlife Trusts, Gloucestershire, Wiltshire and Avon Group Workshop and James Hayward, EA South Wessex local team, Dagmar Junghanns, NE.)</p> <p>The possibility of run-off from large areas of exposed soil during</p>

<sup>9</sup> <http://www.naturalengland.org.uk/>

<sup>10</sup> All consultation referred to in this box refers to that undertaken as part of the Habitat Regulations Assessment (HRA) of the Draft South West Regional Spatial Strategy, undertaken by the South West Regional Assembly (Land Use Consultants, 2007).

	<p>development and changes to natural rates of run-off. (Julie Swain Natural, England)</p> <p>Water quality issues have also been identified on the River Avon. These issues specifically relate to the exceedance in available phosphorus, contributed in part from sewage discharges. Particularly vulnerable river corridors in relation to Annex II species, lamprey or salmon. (James Hayward, EA South Wessex local team).</p> <p>Agricultural runoff may also be a source of nutrient enrichment of the river and associated habitats.</p> <p>At the mouth of the River Avon, Christchurch Harbour, sufficient flow and temperature are thought to be imperative for the facilitation of migration of Annex 2 species (Salmonids) upstream. Other areas of concern include fish passes around major fish farms at Bickton and Britford and the areas of reduced flow during summer months, notably the River Bourne, and the River Till. (James Hayward, South Wessex local team)</p> <p>Modifications to the channel may cause changes to sediment processes</p> <p>There is significant concern about the condition of the breeding habitats for Atlantic salmon within the river system, especially in respect of sedimentation of redds. (EN)</p> <p>Invasive freshwater species</p>
<p><b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b></p> <p><i>Construction</i></p> <ul style="list-style-type: none"> <li>• Ecological effects (e.g. light pollution, noise, dust) arising from any construction necessary to facilitate expansion/reconfiguration of airport terminal building itself and associated aircraft infrastructure have been largely ruled out largely based on distance from the SPA/Ramsar (over 1.8 km west of the SPA/Ramsar). The terminal is also screened from the SPA/Ramsar by woodland/scrub vegetation at various locations (e.g. that occurring in between Pussex Lane and Matchams Lanes). Hydrological connectivity from the site to the SPA/Ramsar would be insufficient to enable significant contamination. In addition the S106 Agreement in place as part of extant planning permission should minimise environmental impacts.</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>• The proposed improvements to airport drainage and sewage treatment (Holdenhurst Sewage Treatment Works) should minimise impacts on the SPA/Ramsar given limited hydrological connectivity to the habitats of the SPA/Ramsar.</li> </ul> <p><b>Northern business park</b></p> <p><i>Construction</i></p> <ul style="list-style-type: none"> <li>• Impacts likely to arise from construction are not considered likely to affect the SPA/Ramsar largely due to distance from the site and existing screening which would minimise light, noise and dust disturbance to sensitive fauna. As above contamination of the groundwater feeding the</li> </ul>

	<p>SPA/Ramsar is considered unlikely.</p> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>The proposed reconfiguration of the Blackwater Junction, to the south west of the SPA and Ramsar site, is unlikely to affect the SPA/Ramsar given distance (&gt;1 km) and existing screening. Although water contamination may impact upon the River Stour, this joins the River Avon downstream of the SPA/Ramsar.</li> </ul>
<b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>11</sup></b>	<p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>Construction and operation impacts associated with the Northern Corridor Option may result in the contamination of groundwater through surface runoff, drainage and accidental spillage.</li> </ul>
<b>Other plans and policies with potential in-combination effects (identified during scoping)</b>	<ul style="list-style-type: none"> <li>The proposal to widen the A338 entails the potential for a range of construction related effects (e.g. noise, light, dust) on the fauna inhabiting the SPA/Ramsar. This may have in combination impacts with potential drainage and contamination impacts associated with the Northern Corridor Option.</li> <li>Increased water supply requirements as a result of airport expansion may have in-combination impacts with wider abstraction requirements to meet regional residential and economic growth.</li> <li>Avon Common Sand and Gravel extraction including permanent draw down with groundwater piped to the River Avon.</li> </ul>
<b>Assessment of impact magnitude</b>	Medium
<b>Potential options for avoidance or mitigation</b>	<ul style="list-style-type: none"> <li>Investigation of increased water abstraction requirements to meet increased demand for the Northern Business Park and identification of supply options with minimal ecological impacts (this project would be likely to require EIA and AA).</li> <li>Best construction practice and appropriate drainage proposals will be required to ensure that indirect contamination impacts do not occur due to construction of the Northern Corridor Option and widening of the A338. This may require a SuDs approach to improve water quality prior to discharge. This will need to consider implications for other nearby habitats, protected species as well as air safety regulations.</li> <li>Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> </ul>
<b>Further information required</b>	

<sup>11</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.



Site Name: Dorset Heaths and Dorset Heathlands			
Designation	SAC	SPA	Ramsar
<b>Qualifying Features</b>	<ul style="list-style-type: none"> <li>Northern Atlantic wet heaths</li> <li>European dry heaths</li> <li>Depressions on peat substrates of the <i>Rhynchosporion</i></li> <li><i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils</li> <li>Calcareous fens</li> <li>Alkaline fens</li> <li>Old acidophilus oak woods with <i>Quercus robur</i> on sandy plains</li> <li>Southern damselfly</li> <li>Great crested newt</li> </ul>	<ul style="list-style-type: none"> <li>Dartford Warbler</li> <li>Nightjar</li> <li>Woodlark</li> <li>Hen Harrier</li> <li>Merlin</li> </ul>	<p><b>Ramsar criterion 1:</b></p> <ul style="list-style-type: none"> <li>Particularly good examples of northern Atlantic wet heaths with cross-leaved heath, acid mire with <i>Rhynchosporion</i>, southern Atlantic wet heaths with Dorset heath and cross-leaved heath.</li> </ul> <p><b>Ramsar criterion 2:</b></p> <ul style="list-style-type: none"> <li>Supports 1 nationally rare and 13 nationally scarce wetland plant species, and at least 28 nationally rare wetland invertebrate species.</li> </ul> <p><b>Ramsar criterion 3:</b></p> <ul style="list-style-type: none"> <li>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.</li> </ul>
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.		N/A
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>All Habitats</b></p> <ul style="list-style-type: none"> <li>Maintenance of the extent of designated habitats with suitably characteristic vegetation composition and structure. Control requires regular management to restrict colonisation, such as grazing or parch burning, as well as more intensive control of invasive species such as <i>Rhododendron</i>.</li> <li>Maintenance of water quality is important within each of the designated habitats and air pollution and atmospheric deposition is likely to be an important cause of eutrophication within these habitats.</li> </ul> <p><b>Heaths:</b></p> <ul style="list-style-type: none"> <li>Appropriate heathland management is required to maintain the structural diversity, including undisturbed bare ground, age structure and vegetation mosaic. Grazing plays an important role in this management. The control of invasive species is required.</li> <li>Maintaining hydrological conditions as wet heaths require wet soils during winter with a dry surface in summer. Also importance of water quality, including lack of eutrophication and maintenance of oligotrophic character. Air pollution and atmospheric deposition is likely to be an important cause of eutrophication.</li> </ul> <p><b>Woodlands:</b></p> <ul style="list-style-type: none"> <li>Within woodlands, maintenance of natural processes and structural development is important, including the regeneration potential, presence of features such as dead and decaying wood, open glades etc., and the control of invasive species.</li> </ul> <p><b>Dunes:</b></p> <ul style="list-style-type: none"> <li>Within dune communities, unrestrained natural mobility, natural substrate supply, maintenance of substrate composition, and water quality are important factors.</li> </ul> <p><b>Oligotrophic waters:</b></p> <ul style="list-style-type: none"> <li>Maintaining appropriate levels of phosphorus, and water quantity and quality are</li> </ul>		

	<p>important factors.</p> <p><b>Southern Damselfly</b></p> <ul style="list-style-type: none"> <li>• Important factors include maintenance of wetland habitat quality, including the extent of larval habitat, low nutrient water, water level, vegetation with runnels, and a vegetation mosaic with a low percentage cover of tree and scrub.</li> </ul> <p><b>Great crested newt</b></p> <ul style="list-style-type: none"> <li>• Maintenance of habitat diversity including un-shaded, medium sized ponds, and a variety of terrestrial habitat unrestricted to newt movement, such as woodland, scrub and grassland, fallen branches, and piles of logs and stones to provide suitable resting, foraging and hibernation areas.</li> <li>• Control or elimination of fish and invasive/alien aquatic plants may be required.</li> </ul> <p><b>Birds</b></p> <ul style="list-style-type: none"> <li>• Maintenance of habitat diversity is important to meet varying seasonal usage, Bird communities are highly mobile and exhibit patterns of activity related to habitat successional stages. The most important factors are the maintenance of the current extent and distribution of suitable feeding and roosting habitat, sufficient food availability and levels of disturbance within necessary levels which are especially important for ground nesting birds such as nightjar.</li> </ul>
<p><b>Existing trends and pressures</b></p>	<p><b>Condition assessment of constituent SSSIs in the vicinity of Bournemouth Airport<sup>12</sup></b></p> <ul style="list-style-type: none"> <li>• Hurn Common SSSI – 98.9% in favourable or favourable recovering condition.</li> <li>• Parley Common SSSI – 8.21% in favourable or favourable recovering condition.</li> <li>• Town Common SSSI – 11.6% in favourable or favourable recovering condition</li> <li>• St Leonards and St Ives Heaths SSSI – 59.6% in favourable or favourable recovering condition</li> </ul> <p><b>South West Draft RSS HRA<sup>13</sup></b></p> <ul style="list-style-type: none"> <li>- The Dorset Heaths comprise a large number of highly fragmented parcels, with extensive development in the area associated with Bournemouth and Poole.</li> <li>- Urban effects are currently having a negative impact upon the integrity of the sites (Liley et al., 2006), through disturbance from walkers and dogs, as well as other impacts such as predation by pets, fire setting, tipping, erosion etc. The Local Authorities whose boundaries contain the Dorset heathlands have prepared a joint Interim Planning Framework which sets out a package of measures to mitigate urban effects via a combination of the provision of alternative open spaces and enhanced site management to enhance the robustness of the habitats and improve the sites for Annex I bird species.</li> <li>- Soils sensitive to nutrient enrichment from atmospheric deposition or other sources. Many sites already considered to have deposition and higher levels than estimated critical loads.</li> <li>- Scrub and bracken management, including <i>Rhododendron</i>, of mires and heathlands. Requires frequent management.</li> <li>- Inappropriate tree planting for plantations. Projects to restore areas of heathland with removal of scrub, <i>Rhododendron</i>, colonising birch and conifer plantations are underway.</li> <li>- Insufficient grazing management in some parts (again relates to colonisation of scrub etc. as well as vegetation structure).</li> </ul>
<p><b>List of Airport expansion proposals and associated</b></p>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> </ul>

<sup>12</sup> These are the SSSIs surrounding Bournemouth Airport which the steering group requested LUC to include in the ecological study.

<sup>13</sup> All consultation referred to in this box refers to that undertaken as part of the Habitat Regulations Assessment (HRA) of the Draft South West Regional Spatial Strategy, undertaken by the South West Regional Assembly (Land Use Consultants, 2007).

<p><b>impacts potentially affecting site (selected from those identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b></p> <p><i>Construction</i></p> <ul style="list-style-type: none"> <li>• Given the distance of the majority of terminal enhancement proposals and the current levels of disturbance on the site, effects (light, noise and dust pollution) arising from construction necessary to facilitate expansion/reconfiguration would not be expected to be significant on either the SAC, SPA or Ramsar site. This conclusion was also reached by the Environmental Statement prepared to accompany reconfiguration of the Airport Terminal.</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>• Given the current levels of disturbance associated with the airport, it is not considered that additional flights and visitor numbers would have additional impact upon the N2K site.</li> <li>• The Environmental statement air pollution chapter associated with the expansion of the terminal facilities concluded that air quality impacts upon the N2K site would be negligible.</li> </ul>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>14</sup></b></p>	<p><b>Northern business park</b></p> <p><i>Construction</i></p> <ul style="list-style-type: none"> <li>• The Northern Business Park is situated directly adjacent to the N2K site and therefore there is the potential to impact upon its nature conservation value. In particular there would be potential for localised increases in light, noise and dust pollution, and contamination from surface runoff. Further, any modification of the drainage in the Northern business park could potentially affect the hydrology of the adjacent habitats.</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>• There is a potential for increased visitor pressure on the SSSI, which is a particular problem for sensitive bird species, if the numbers of persons employed on the Northern business park increases and access is allowed to the SSSI.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• There would be an indirect impact associated with increased collision risk of species using the N2K site. This would not be considered to be significant.</li> <li>• Proposals to realign the Blackwater Junction associated with the Southern Corridor option would be likely to impact upon the adjacent N2K site, including direct land take through construction (road and associated drainage, signage, etc.), land take as a result of screening planting and the extension of the zone of influence of the road further in to the N2K site. The later would include air pollution (up to 200m as per Highways Agency guidelines), and contamination from run-off including de-icing. Disturbance would be unlikely to increase significantly given current use of the junction and disturbance levels.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>• Individually air quality impacts associated with the various elements of the proposal are not considered to have a significant impact upon the integrity of the SSSI. However, airport expansion, employment development and road infrastructure enhancements together may result in impacts upon the SSSI as a result of decreasing air quality.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects</b></p>	<ul style="list-style-type: none"> <li>• Potential plans to widen the A338 directly to the east of the Airport have the potential to generate a number of ecological effects on the SAC, SPA, Ramsar site. Firstly, construction would require direct land take in the from the N2K site. Secondly, along the entire length of the A338 the fringing heathland habitats would be exposed to</li> </ul>

<sup>14</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<p><b>(identified during scoping)</b></p>	<p>increased levels of air pollution from the predicted increase in traffic flows, with the zone of influence of the road extending further in to the site (including contamination from surface run-off). Thirdly, movement of vehicles along the A338, once operational, may increase the risk of disturbance, killing and injury of faunal species (particularly SPA birds) foraging and roosting near to the carriageway (although due to current use disturbance and collision risk is likely to be high).</p> <ul style="list-style-type: none"> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic. This may also add to recreational pressure on the sites.</li> <li>• Avon Common Sand and Gravel extraction including permanent draw down with groundwater piped to the River Avon – will be likely to have significant implications for local hydrology.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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: <ul style="list-style-type: none"> <li>- 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 on existing routes)</li> <li>- Measures to minimise energy requirements of new development, through appropriate design to improve thermal efficiency, use of renewable and/or low carbon technologies.</li> </ul> </li> </ul> <p>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.</p> <ul style="list-style-type: none"> <li>• Best construction practice must be followed to minimise contamination and disturbance impact of the adjacent heath during construction.</li> <li>• Landscape screening along the northern boundary of the Northern Business Park will be required and must comprise appropriate native species. Ideally this would be in place, and protected, prior to development works.</li> <li>• Public access must continue to be prevented from the site to the Heath. Provide high quality open space within the business park.</li> <li>• Continued management and monitoring of the Heath to the north of the Northern Business Park as per the management agreement with Natural England.</li> <li>• Drainage must avoid adverse impacts upon the N2K site. There would be potential for a SuDS approach to compliment the habitat on the Heath subject to agreement with Natural England.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• Where at all possible land take within the N2K site associated with the Blackwater Junction must be avoided if at all possible. Strategic planting may be possible to reduce air pollution impacts, whilst drainage should ensure surface water runoff impacts are avoided. This may include a SuDS approach although there is unlikely to be sufficient space available for this.</li> <li>• There may be potential for screening elsewhere to reduce air pollution impacts in other parts of the Heath, maintaining (or possible enhancing) condition over the Heath as a whole.</li> <li>• If temporary land take is required, restoration may be an option.</li> <li>• In terms of compensation, this may be an option dependent on the quality of the existing roadside habitat to be lost. This would need to be informed by detailed ecological surveys and consultation with Natural England. This would seek to determine the <u>significance</u> of the impact for the integrity of the N2K site as a whole.</li> </ul>

	<p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <ul style="list-style-type: none"><li>• Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li><li>• As above, there may be scope for localised screening to improve air quality and conditions within parts of the N2K site to balance potential declines in quality elsewhere.</li><li>• Recreation impacts are being dealt with at a regional level through the SWRSS, and also by the Dorset Heathlands Interim Planning Framework (2007).</li></ul>
<b>Further information required</b>	

Site Name: The New Forest			
Designation	SAC	SPA	Ramsar
<b>Qualifying Features</b>	<ul style="list-style-type: none"> <li>• Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)</li> <li>• Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea</li> <li>• Northern Atlantic wet heaths with Erica tetralix</li> <li>• European dry heaths</li> <li>• Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)</li> <li>• Depressions on peat substrates of the Rhynchosporion</li> <li>• Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)</li> <li>• Asperulo-Fagetum beech forests</li> <li>• Old acidophilous oak woods with Quercus robur on sandy plains</li> <li>• Bog woodland</li> <li>• Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)</li> <li>• Transition mires and quaking bogs</li> <li>• Alkaline fens</li> <li>• Southern damselfly</li> <li>• Stag beetle</li> <li>• Great crested newt</li> </ul>	<ul style="list-style-type: none"> <li>• Dartford warbler</li> <li>• Honey buzzard</li> <li>• Nightjar</li> <li>• Woodlark</li> <li>• Hen harrier</li> <li>• Hobby</li> <li>• Wood warbler</li> </ul>	<p>The New Forest is an area of semi-natural vegetation including valley mires, fens and wet heath within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. The habitats present are of high ecological quality and diversity with undisturbed transition zones.</p> <p>The suite of mires is regarded as the “locus classicus” of this type of mire in Britain. Other wetland habitats include numerous ponds of varying size and water chemistry including several ephemeral ponds and a network of small streams mainly acidic in character which have no lowland equivalent in the UK. The plant communities in the numerous valleys and seepage step mires show considerable variation, being affected especially by the nutrient content of groundwater. In the most nutrient-poor zones, Sphagnum bog-mosses, cross-leaved heath, bog asphodel, common cottongrass and similar species predominate. In more enriched conditions the communities are more fen-like.</p>
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.		N/A

<p><b>Summary of standards/factors which maintain site integrity</b></p>	<p><i>NB: No conservation objectives were available for this site.</i></p> <p><b>Oligotrophic waters</b></p> <ul style="list-style-type: none"> <li>• The management of this habitat should aim to maintain a natural hydrological regime including water levels and flushing rates of the system.</li> <li>• Sediment quality and quantity when enriched or smothering base sediments are likely to cause increases in species indicative of more mesotrophic or eutrophic conditions. It is therefore vital that the management of this habitat keeps the sedimentary regime within acceptable limits.</li> <li>• Water quality has a direct impact on this habitat and the management of this site should ensure water quality is kept within acceptable levels particularly in regards to the total phosphorous level.</li> </ul> <p><b>Heaths</b></p> <ul style="list-style-type: none"> <li>• Without management heathland becomes progressively dominated by bracken, gorse and/or scrub and trees. Appropriate heathland management is therefore required to maintain the extent of the heaths, the structural diversity including undisturbed bare ground, age structure and vegetation mosaic. Grazing plays an important role in this management. The control of inappropriate and invasive species is required.</li> <li>• Maintaining hydrological conditions as wet heaths require wet soils during winter with a dry surface in summer. Also importance of water quality, including lack of eutrophication and maintenance of oligotrophic character.</li> </ul> <p><b>Molinia meadows</b></p> <ul style="list-style-type: none"> <li>• Appropriate management is required to maintain sward composition and ensure positive indicator species are present. Sward structure (height, litter and bare ground) need to be maintained and inappropriate and invasive species controlled.</li> <li>• Hydrology, water quality and air quality must be maintained</li> </ul> <p><b>Depressions on peat substrates of the Rhynchosporion</b></p> <ul style="list-style-type: none"> <li>• This habitat occurs on humid, bare or recently exposed peat. Less than 1% of this should be attributable to intensive stock management or human activities.</li> <li>• The management of this habitat should ensure that the vegetation structure includes low, open vegetation in which <i>Rhynchospora</i> can flourish. Vegetation composition and the vegetation mosaic form should be kept within acceptable limits.</li> <li>• <i>Rhynchosporion</i> vegetation is dependent on oligotrophic unpolluted water and is therefore vulnerable to eutrophication or pollution. The water quality of percolating or other groundwater must therefore be kept within acceptable levels</li> <li>• Water levels should be kept consistently high and not fluctuating greatly with the mire surface being soft and wet all year round. Artificial drainage channels which can adversely affecting hydrology must be prevented. Also trees or scrub, either on the mire itself or on its catchment, should not be allowed to adversely affect the mire hydrology</li> </ul> <p><b>Woodlands:</b></p> <ul style="list-style-type: none"> <li>• Appropriate woodland management is required to maintain natural processes, a diverse woodland structure, tree regeneration potential, a diverse age structure, control invasive species, and support characteristic species and habitat types.</li> </ul> <p><b>SPA Annex I birds</b></p> <ul style="list-style-type: none"> <li>• All species are vulnerable to disturbance and predation. The site must therefore be managed to keep these factors within acceptable parameters.</li> <li>• It is important that habitats found on this site support areas for these birds that are suitable for nesting and feeding.</li> </ul>
<p><b>Existing trends and pressures</b></p>	<p><b>Issues arising from condition assessment of the New Forest SSSI<sup>15</sup></b> Inappropriate management and scrub control are sited as frequently occurring reasons for failure to achieve favourable condition, including over or undergrazing. Reasons for</p>

<sup>15</sup> <http://www.naturalengland.org.uk/>

	<p>recovering condition include restoration of fen/swamp habitats including raising of the water table (ditch blocking), and appropriate forestry/woodland management, including pollarding and removal of exotics/conifers. Occasional issues associated with visitor pressure are also identified.</p> <p><b>Consultation carried out for the South West Draft RSS HRA<sup>16</sup></b>          Afforestation of heathland habitats with conifers and other non-native species in the past has led to the loss of designated habitats. Some removal of exotics (including Rhododendron) is undertaken from woodland areas. Inadequate scrub control can cause the loss or damage to open habitats. Correct grazing levels are required for the management of open habitats, whilst avoiding poaching/trampling. Essential grazing by commoners' animals is vulnerable to current economic trends, and public access may cause conflicts.          Also appropriate forest and woodland management is required to include positive management for lichens and dead-wood invertebrates          The drainage of wetland habitats has also occurred in the past to provide for improved grazing and forestry.          Recreational pressure on the site is very high, including rambling, horse riding, cycling etc. This has potential to cause disturbance to bird species, as well as damage to habitats, and will increase with proposed development in the SW/SE regions. There is also an impact associated with vehicle access.          Bournemouth Airport: Increased traffic associated with transport infrastructure proposals may impact upon the site. Expanding the airport's capacity for air travel is likely to conflict in local air quality terms with conservation of both adjacent internationally important wildlife sites and those in the nearby New Forest National Park.</p>
<p><b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Indirect ecological effects resulting from airport expansion plans</li> </ul>
<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion and Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• Given distance from the site (over 5 km at the closest point) direct construction and operational impacts are highly unlikely.</li> <li>• Given existing levels of disturbance associated with flights and traffic, it would not be considered likely that airport expansion proposals would result in increased disturbance in the vicinity of the New Forest which would have a significant impact upon the integrity of the designated interest features.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• Again, given the distance from the site direct impacts are considered unlikely.</li> </ul>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>17</sup></b></p>	<p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>• Indirect impacts cannot be ruled out as a result of the airport expansion plans, including increased traffic as a result of road infrastructure and employment provision. Also increased flights may result in increased visitor pressure.</li> </ul>

<sup>16</sup> All consultation referred to in this box refers to that undertaken as part of the Habitat Regulations Assessment (HRA) of the Draft South West Regional Spatial Strategy, undertaken by the South West Regional Assembly (Land Use Consultants, 2007).

<sup>17</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.



<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> <li>• Similarly there is potential for increased recreational pressure on the site.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>Low</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<ul style="list-style-type: none"> <li>• Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> <li>• Recreation impacts are being dealt with at a regional level through the SWRSS, and also by the Dorset Heathlands Interim Planning Framework (2007).</li> </ul>
<p><b>Further information required</b></p>	

## SITES OF SPECIAL SCIENTIFIC INTEREST

<b>Site Name: Hurn Common</b>	
<b>Designation</b>	<b>SSSI</b>
<b>Value of ecological receptor</b>	National
<b>Qualifying Features</b>	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 (e.g. sand lizard, smooth snake, Dartford warbler, nightjar and woodlark) and invertebrates (e.g. <i>Orthoptera</i> and <i>Odonata</i> ) are associated with these habitats. This site forms an important link between the heathlands of the New Forest and those of South East Dorset.
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>All Habitats</b></p> <ul style="list-style-type: none"> <li>Maintenance of the extent of designated habitats with suitably characteristic vegetation composition and structure. All habitats require a certain degree of regular management to restrict colonisation, such as grazing or parch burning, as well as more intensive control of invasive species such as <i>Rhododendron</i>.</li> <li>Maintenance of water quality is important within each of the designated habitats and air pollution and atmospheric deposition is likely to be an important cause of eutrophication within these habitats.</li> </ul> <p><b>Dwarf shrub heath vegetation/ acid grassland mosaic vegetation:</b></p> <ul style="list-style-type: none"> <li>Appropriate heathland management is required to maintain the structural diversity, including undisturbed bare ground, a varied age structure and vegetation mosaic. Grazing traditionally played an important role in management. The control of invasive species is required.</li> <li>Maintaining hydrological conditions as wet heaths require wet soils during winter with a dry surface in summer. Also importance of water quality, including lack of eutrophication and maintenance of oligotrophic character. Air pollution and atmospheric deposition is likely to be an important cause of eutrophication.</li> <li>Large areas of uniform grassland sward do not provide the full range of niches required by notable herptiles, birds and invertebrates. Controlled grazing, mowing and rotation management techniques may all assist in adding diversity the micro-topography and range of grassland niches available.</li> </ul>
<b>Existing trends and pressures</b>	<p><b>SSSI condition assessment:</b><sup>18</sup></p> <p>The majority of this site (slightly over 98%) is in favourable or favourable recovering condition. The primary reason for this appears to be the presence of appropriate management (e.g. scrub control and controlled ploughing/soil disturbance) in agreement with the land owner.</p> <p>There is some concern over the developing uniformity of the dry heath and acid grassland communities in the largest SSSI unit, this might limit the range of ecological conditions required by heathland birds (foraging sites and sparsely vegetated areas), reptiles (basking burrowing sites) and invertebrates (bare earth areas). Woodlark and nightjar were not recorded as breeding on the site in the most recent assessment.</p>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>

<sup>18</sup> <http://www.naturalengland.org.uk/>

<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b> <i>Construction</i></p> <ul style="list-style-type: none"> <li>Given the distance of the majority of terminal enhancement proposals and the current levels of disturbance on the site, effects (light, noise and dust pollution) arising from construction necessary to facilitate expansion/reconfiguration would not be expected to be significant.</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>Given the current levels of disturbance associated with the airport, it is not considered that additional flights and visitor numbers would have additional impact upon the SSSI.</li> <li>The Environmental statement air pollution chapter associated with the expansion of the terminal facilities concluded that air quality impacts upon the SSSI would be negligible.</li> </ul> <p><i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>Any affects arising from alterations to the localised surface hydrology resulting from development to the Airport Terminal and facilities are considered to be negligible given the likely drainage paths away from this area.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>In keeping with the recommended distance set out by the Highways Agency of 200 m either side of a road for the consideration of air quality effects on sensitive habitats, the SSSI should not be subject to air quality impacts arising directly from any of the transport infrastructure enhancement proposals when considered singly.</li> </ul>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>19</sup></b></p>	<p><b>Northern business park</b> <i>Construction</i></p> <ul style="list-style-type: none"> <li>The Northern Business Park is situated directly adjacent to the SSSI therefore even small scale proposals have the potential to impact upon the nature conservation value of this site. In particular there would be potential for localised increases in light, noise and dust pollution associated with demolition, refurbishment or construction activities. Further, any modification of the drainage in the Northern business park could potentially affect the hydrology of the SSSI.</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>There is a potential for increased visitor pressure on the SSSI, which is a particular problem for sensitive bird species, if the numbers of persons employed on the Northern business park increases and access is allowed to the SSSI.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>There would be an indirect impact associated with increased collision risk of species using the SSSI. This would not be considered to be significant.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>Individually air quality impacts associated with the various elements of the proposal are not considered to have a significant impact upon the integrity of the SSSI. However, airport expansion, employment development and road infrastructure enhancements together may result in impacts upon the SSSI as a result of decreasing air quality.</li> </ul>
<p><b>Other plans and policies with potential in-combination</b></p>	<ul style="list-style-type: none"> <li>In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport</li> </ul>

<sup>19</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>effects (identified during scoping)</b>	<p>expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</p> <ul style="list-style-type: none"> <li>• Potential in-combination impacts of waste treatment facilities in the vicinity, including Chapel Lane Waste Transfer Station and potential Mechanical Biological Treatment Facility.</li> </ul>
<b>Assessment of impact magnitude</b>	Medium
<b>Potential options for avoidance or mitigation</b>	<p><b>Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• The development of the Northern Business Park must be informed by full ecological survey and impact assessment. EIA and AA would be required.</li> <li>• Best construction practice must be followed to minimise contamination and disturbance impact of the adjacent heath during construction.</li> <li>• Landscape screening along the northern boundary of the Northern Business Park will be required and must comprise appropriate native species. Ideally this would be in place, and protected, prior to development works.</li> <li>• Public access must continue to be prevented from the site to the Heath. Provide high quality open space within the business park.</li> <li>• Continued management and monitoring of the Heath to the north of the Northern Business Park as per the management agreement with Natural England.</li> <li>• Drainage must avoid adverse impacts upon the N2K site. There would be potential for a SuDS approach to compliment the habitat on the Heath subject to agreement with Natural England.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <ul style="list-style-type: none"> <li>• Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> </ul>
<b>Further information required</b>	

<b>Site Name: Moors River System</b>	
<b>Designation</b>	<b>SSSI</b>
<b>Value of ecological receptor</b>	National
<b>Qualifying Features</b>	Notified as an example of a lowland river supporting an exceptional diversity of aquatic and wetland plants. The river also supports several several fish, birds and aquatic 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.
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>Wetland habitats and associated fauna</b></p> <ul style="list-style-type: none"> <li>• The river's natural structure and form should be maintained to support a natural flow regime. This includes the avoidance of the constriction of the river or blockage of its floodplain and the maintenance of natural erosion and sedimentation processes.</li> <li>• Riparian areas and the wider catchment need to be managed sensitively to avoid excessive run-off of soil particles and nutrients into the river.</li> <li>• The structure and composition of bankside and aquatic vegetation should be maintained</li> <li>• Increased growth of epiphytic algae and planktonic algae can lead to excessive shading of plants, reduced seed germination, enhanced capture of silt.</li> </ul>
<b>Existing trends and pressures</b>	<p><b>SSSI condition assessment:</b><sup>20</sup></p> <p>Slightly over 49% of the SSSI has been classified as being in favourable or favourable recovering condition. Where favourable condition has not been met principle causes are thought to be water pollution from agricultural run-off and changes to hydrology brought about by encroachment of marginal vegetation into the river channel or . Colonisation by Himalayan Balsam and inappropriate management of bankside vegetation are also reasons attributed to poor condition assessment scores.</p> <p>With reference to the Airport:</p> <ul style="list-style-type: none"> <li>• specific mention is made of deterioration of water quality in one of the SSSI units (Unit 45). It is speculated that 'Hurn Airport' in combination with several other factors which are mentioned may be partly attributable for this trend;</li> <li>• The condition assessment states that part of Unit 57 could be lost to link road development at Bournemouth Airport;</li> </ul> <p><b>Issues arising from consultation responses from received by Manchester Airports from Natural England in relation to terminal expansion Environmental Statement</b></p> <p>Natural England are concerned that with enhanced activity at the Airport, they will less likely be able to obtain felling licences for encroaching poplar trees in the Moors River due to public opposition. These poplars provide screening between the Airport and properties in Hurn Village.</p> <p><b>Issues arising from consultation with Natural England</b><sup>21</sup></p>

<sup>20</sup> <http://www.naturalengland.org.uk/>

<sup>21</sup> Meeting between LUC and Douglas Kite (NE Arne Office) on 9<sup>th</sup> July 2008

	<p>Natural England recognises that the special interest features of this site arise partly through the presence of a transitional mosaic of different wetland habitats. In this respect impacts upon the ecological character of a particular SSSI unit leading to a change in the vegetation composition need not be negative if the overall habitat mosaic across the whole SSSI is maintained. Vulnerability of flood meadows in the very south of the SSSI was discussed.</p>
<p><b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<p><b>Airport expansion proposals discounted from further examination</b></p>	<p>Owing to the proximity of the SSSI to the airport, there is a potential for a majority of the Airport expansion proposals to result in impacts upon SSSI integrity.</p> <p><b>Airport terminal and facilities expansion</b> <i>Construction</i></p> <ul style="list-style-type: none"> <li>• The majority of potential environmental impacts associated with the terminal expansion has been considered and dealt with in the extant planning permission and S106 agreement.</li> </ul>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>22</sup></b></p>	<p><b>Northern business park</b> <i>Construction</i></p> <ul style="list-style-type: none"> <li>• The Northern Business Park (eastern sector) is situated directly adjacent to the SSSI. Even small scale proposals have the potential to impact upon the nature conservation value of this site. If refurbishment/construction of any of the industrial units is to proceed the potential for light and noise disturbance and dust pollution to affect the sensitive vegetation fauna of the site is significant. Further, any modification of the drainage in the Northern business park (eastern sector) could potentially affect the water regime of river channel and fringing wet woodland. Surface water flow and accidental spillage may result in contamination.</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>• There is a potential for increased visitor pressure on the SSSI if the numbers of persons employed on the Northern business park (eastern sector) increases. Furthermore, the area of the Park adjacent to the SSSI is currently relatively undeveloped compared to the western area. Therefore, increased employment in this part of the site may result in increased disturbance.</li> <li>• The SSSI is already susceptible to ecological damage from inappropriate water management and insufficient water levels. Projections for increased water use in the Northern Business Park may exacerbate this situation dependent on the source.</li> </ul> <p><b>Transport infrastructure enhancements</b> <i>Northern Corridor</i></p> <ul style="list-style-type: none"> <li>• The proposal to construct a Northern Corridor (link road) between the A338 and the Northern business park would likely result in direct habitat loss within the SSSI including in the short term for construction and long term for the road footprint and associated infrastructure. This proposal would also increased traffic flows in the vicinity of the SSSI. The potential for air quality impacts arising for construction of this road may be significant (assuming a 200 m</li> </ul>

<sup>22</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

	<p>buffer for air quality impacts as recommended by the Highways Agency), with a greater area of the SSSI exposed to direct air pollution from the road edge.</p> <ul style="list-style-type: none"> <li>• Surface run-off may also result in increased contamination. There would also be a risk of accidental spillage and increased contamination/disturbance during construction.</li> </ul> <p><i>Southern corridor</i></p> <ul style="list-style-type: none"> <li>• Similar impacts as above would be related to the southern corridor options, including the creation of new crossing points over the SSSI.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Increased water supply requirements as a result of airport expansion may have in-combination impacts with wider abstraction requirements to meet regional residential and economic growth.</li> <li>• Hurn Court Farm sand and gravel extraction will result in the loss of significant areas of farmland in the vicinity of the SSSI and would be expected to affect local hydrology.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• The development of the Northern Business Park must be informed by full ecological survey and impact assessment. EIA and AA would be required.</li> <li>• Investigation of increased water abstraction requirements to meet increased demand for the Northern Business Park and identification of supply options with minimal ecological impacts.</li> <li>• Best construction practice must be followed to minimise contamination and disturbance impact of the adjacent heath during construction.</li> <li>• Landscape screening along the northern boundary of the Northern Business Park will be required and must comprise appropriate native species. Ideally this would be in place, and protected, prior to development works.</li> <li>• Public access to the SSSI must be restricted. Provide high quality open space within the business park.</li> <li>• Drainage must avoid adverse impacts upon the SSSI. There would be potential for a SuDS approach to compliment the habitat on the SSSI subject to agreement with Natural England.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• The above mitigation proposals would also be appropriate in relation to the northern and southern corridor options.</li> <li>• Extensive bridge crossings / viaducts may be required over the River and associated floodplain to reduce direct impacts on the SSSI (restricted to construction access and footings) whilst maintaining connectivity underneath.</li> <li>• In terms of the riverine wetland habitats (excluding wet meadows to the very south) there is potential for the change in locations of habitats assuming the overall area of each habitat is not reduced (for example wet woodland reduced to reedbed at the crossing location, if wet woodland is recreated elsewhere).</li> <li>• A SuDS approach will be particularly important to reduce the control surface discharge from the road to the river.</li> <li>• There may be specific opportunities for the retention and enhancement of buffering vegetation alongside the Northern Corridor option.</li> </ul>
<p><b>Further information required</b></p>	

<b>Site Name: Parley Common</b>	
<b>Designation</b>	<b>SSSI</b>
<b>Value of ecological receptor</b>	National
<b>Qualifying Features</b>	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). Includes dry and wet heathland habitats, gorse scrub and acid oak woodland.
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>All Habitats</b></p> <ul style="list-style-type: none"> <li>Maintenance of the extent of designated habitats with suitably characteristic vegetation composition and structure. All habitats require a certain degree of regular management to restrict colonisation, such as grazing or parch burning, as well as more intensive control of invasive species such as <i>Rhododendron</i>.</li> <li>Maintenance of water quality is important within each of the designated habitats and air pollution and atmospheric deposition is likely to be an important cause of eutrophication within these habitats.</li> </ul> <p><b>Dwarf shrub heath vegetation/ acid grassland mosaic vegetation:</b></p> <ul style="list-style-type: none"> <li>Appropriate heathland management is required to maintain the structural diversity, including undisturbed bare ground, a varied age structure and vegetation mosaic. Grazing traditionally played an important role in management. The control of invasive species is required.</li> <li>Maintaining hydrological conditions as wet heaths require wet soils during winter with a dry surface in summer. Also importance of water quality, including lack of eutrophication and maintenance of oligotrophic character. Air pollution and atmospheric deposition is likely to be an important cause of eutrophication.</li> <li>Large areas of uniform grassland sward do not provide the full range of niches required by notable herptiles, birds and invertebrates. Controlled grazing, mowing and rotation management techniques may all assist in adding diversity the micro-topography and range of grassland niches available.</li> </ul>
<b>Existing trends and pressures</b>	<p><b>Issues arising from SSSI condition assessment:<sup>23</sup></b></p> <p><b>Only 8.21% of site area is meeting PSA target.</b> 73.1% unfavourable no-change; 18.2% unfavourable declining; 0.42% destroyed/part destroyed.</p> <p>The site is immediately adjacent to residential land, and urban effects are overwhelmingly responsible for the poor condition of the site. This includes public access and disturbance, fire, tipping and dumping, and illicit vehicle access. Inappropriate management is also an issue resulting in scrub and tree colonisation including insufficient grazing.</p> <p>Other issues include water pollution and nutrient enrichment from adjacent land uses (agricultural and urban).</p>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>

<sup>23</sup> <http://www.naturalengland.org.uk/>



<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>Given the distance of the SSSI from the site and precautions within extant planning permission and S106 agreements, no significant issues are considered likely.</li> </ul> <p><b>Northern business park</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>Given distance from works and site drainage patterns, impacts on hydrology are considered unlikely. No direct impacts are envisaged. Also given current levels of disturbance, it is not considered that construction works would have further implications for the SSSI.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>In keeping with the recommended distance set out by the Highways Agency of 200 m either side of a road for the consideration of air quality effects on sensitive habitats, the SSSI should not be subject to air quality impacts arising directly from any of the transport infrastructure enhancement proposals when considered singly.</li> </ul>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>24</sup></b></p>	<p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>Individually air quality impacts associated with the various elements of the proposal are not considered to have a significant impact upon the integrity of the SSSI. However, airport expansion, employment development and road infrastructure enhancements together may result in impacts upon the SSSI as a result of decreasing air quality.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic. This may also add to recreational pressure - the site is already significantly adversely affected by 'urban effects' as a result of public use.</li> <li>Potential in-combination impacts of waste treatment facilities in the vicinity, including Chapel Lane Waste Transfer Station and potential Mechanical Biological Treatment Facility.</li> <li></li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>Low</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <ul style="list-style-type: none"> <li>Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> <li></li> </ul>
<p><b>Further information required</b></p>	

<sup>24</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Site Name: St Leonards and St Ives Heaths</b>	
<b>Designation</b>	<b>SSSI</b>
<b>Value of ecological receptor</b>	National
<b>Qualifying Features</b>	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 assemblages characteristic of lowland heath habitats. These include sand lizard, smooth snake, and bird species such as Dartford warbler, nightjar and woodlark (one of the largest breeding populations in the Dorset Heaths), hen harrier and merlin. A number of rare and scarce invertebrates are also supported.
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>All Habitats</b></p> <ul style="list-style-type: none"> <li>• Maintenance of the extent of designated habitats with suitably characteristic vegetation composition and structure. All habitats require a certain degree of regular management to restrict colonisation, such as grazing or parch burning, as well as more intensive control of invasive species such as <i>Rhododendron</i>.</li> <li>• Maintenance of water quality is important within each of the designated habitats and air pollution and atmospheric deposition is likely to be an important cause of eutrophication within these habitats.</li> </ul> <p><b>Dwarf shrub heath vegetation/ acid grassland mosaic vegetation:</b></p> <ul style="list-style-type: none"> <li>• Appropriate heathland management is required to maintain the structural diversity, including undisturbed bare ground, a varied age structure and vegetation mosaic. Grazing plays an important role in this management. The control of invasive species is required.</li> <li>• Maintaining hydrological conditions as wet heaths require wet soils during winter with a dry surface in summer. Also importance of water quality, including lack of eutrophication and maintenance of oligotrophic character. Air pollution and atmospheric deposition is likely to be an important cause of eutrophication.</li> <li>• Large areas of uniform grassland sward do not provide the full range of niches required by notable herptiles, birds and invertebrates. Controlled grazing, mowing and rotation management techniques may all assist in adding diversity the micro-topography and range of grassland niches available.</li> </ul>
<b>Existing trends and pressures</b>	<p><b>Issues arising from SSSI condition assessment:</b><sup>25</sup></p> <p>Slightly over 59% of the site is in favourable or favourable recovering condition.</p> <p>The overwhelming reason for the failure of other units within the site to reach a favourable condition is a result of lack of appropriate management. Pine, birch, bracken, <i>Gaultheria</i> sp. and rhododendron encroachment in addition to unvaried stands of heather are limiting the range of ecological niches present in these units. For example, sand lizard <i>Lacerta agilis</i> is no longer found in some areas owing to the lack of basking/burrowing sites.</p>

<sup>25</sup> <http://www.naturalengland.org.uk/>

	<p>Management to reduce site drainage (thus maintaining wetter communities) and instigation of rough grazing have successfully restored certain areas of the SSSI. Also localised damage from off-road vehicles.</p>
<p><b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>• Given the distance of the SSSI from the site and precautions within extant planning permission and S106 agreements, no significant issues are considered likely.</li> </ul> <p><b>Northern business park</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>• Given distance from works and the intervening habitat, impacts on the SSSI are considered unlikely (for example hydrological impacts of contamination). Also given current levels of disturbance, it is not considered that construction works would have further implications for the SSSI.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• There would be an indirect impact associated with increased collision risk of species using the SSSI. This would not be considered to be significant.</li> </ul>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>26</sup></b></p>	<p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• The proposal to construct a Northern Corridor (link road) between the A338 and the Northern business park would result in increased traffic flows in the vicinity of the SSSI. It is likely that at its nearest point the Northern Corridor would fall within 120 m of the SSSI. The potential for air quality impacts arising for construction of this road may be significant (assuming a 200 m buffer for air quality impacts as recommended by the Highways Agency).</li> <li>• Surface run-off may also result in increased contamination. There would also be a risk of accidental spillage and increased contamination/disturbance during construction.</li> <li>• The potential for disturbance and direct killing of birds and direct killing of insects and reptiles on the SSSI is apparent given that these species are highly mobile and the proposed Northern Corridor link road is in close proximity. This impact is not regarded as being significant owing to the fact species inhabiting the SSSI will already be habituated to relatively high traffic flows.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>• Individually air quality impacts associated with the various elements of the proposal are not considered to have a significant impact upon the integrity of the SSSI. However, together, terminal expansion, development and road infrastructure enhancements together may</li> </ul>

<sup>26</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

	result in impacts upon the SSSI as a result of decreasing air quality.
<b>Other plans and policies with potential in-combination effects (identified during scoping)</b>	<ul style="list-style-type: none"> <li>• If progressed plans to widen the A338 would be likely to impact upon the SSSI. A section of the A338 (approximately 1.2 km in length) bisects the SSSI. This would result in direct habitat loss; extension of the zone of influence of the road in to the SSSI including surface water flow contamination and air pollution; and the risk of killing and injuring species during construction and operation.</li> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> </ul>
<b>Assessment of impact magnitude</b>	Medium
<b>Potential options for avoidance or mitigation</b>	<p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats.</li> <li>• Maintain a buffer between the site and road corridor, including management and / or planting of a native screening belt to filter pollutants.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <ul style="list-style-type: none"> <li>• Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> <li>• 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.</li> </ul>
<b>Further information required</b>	

<b>Site Name: Town Common</b>	
<b>Designation</b>	<b>SSSI</b>
<b>Value of ecological receptor</b>	National
<b>Qualifying Features</b>	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.
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>All Habitats</b></p> <ul style="list-style-type: none"> <li>• Maintenance of the extent of designated habitats with suitably characteristic vegetation composition and structure. All habitats require a certain degree of regular management to restrict colonisation, such as grazing or parch burning, as well as more intensive control of invasive species such as <i>Rhododendron</i>.</li> <li>• Maintenance of water quality is important within each of the designated habitats and air pollution and atmospheric deposition is likely to be an important cause of eutrophication within these habitats.</li> </ul> <p><b>Dwarf shrub heath vegetation/ acid grassland mosaic vegetation:</b></p> <ul style="list-style-type: none"> <li>• Appropriate heathland management is required to maintain the structural diversity, including undisturbed bare ground, a varied age structure and vegetation mosaic. Grazing plays an important role in this management. The control of invasive species is required.</li> <li>• Maintaining hydrological conditions as wet heaths require wet soils during winter with a dry surface in summer. Also importance of water quality, including lack of eutrophication and maintenance of oligotrophic character. Air pollution and atmospheric deposition is likely to be an important cause of eutrophication.</li> <li>• Large areas of uniform grassland sward do not provide the full range of niches required by notable herptiles, birds and invertebrates. Controlled grazing, mowing and rotivation management techniques may all assist in adding diversity the micro-topography and range of grassland niches available.</li> </ul>
<b>Existing trends and pressures</b>	<p><b>Issues arising from SSSI condition assessment:<sup>27</sup></b></p> <p>Slightly over 11% of the site is in favourable or favourable recovering condition. Reasons stated within the condition assessment for failure of other areas of the SSSI to meet these standards relate principally to the absence of appropriate scrub control. Scrub/tree encroachment is linked to the degradation of both heathland and mire habitats. In places disturbance by the public is an issue causing degradation of habitat composition and structure.</p>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>

<sup>27</sup> <http://www.naturalengland.org.uk/>

<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>Given the distance of the SSSI from the site and precautions within extant planning permission and S106 agreements, significant issues associated with construction impacts are considered likely. In addition given existing aircraft movements, it is not considered likely that additional flights would have an additional significant effect on species using the area of the SSSI below the flight path.</li> </ul> <p><b>Northern business park</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>Again given the location of the SSSI in relation to the prevailing hydrology, modification of the drainage in the Northern business park (eastern sector) is unlikely to affect the hydrology of the SSSI.</li> <li>Again owing to proximity the potential for light and noise disturbance and dust pollution to affect the sensitive fauna of the is not considered to be significant.</li> </ul>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>28</sup></b></p>	<ul style="list-style-type: none"> <li></li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>The proposal to construct a Northern Corridor (link road) between the A338 and the Northern business park would likely result in increased traffic flows in the vicinity of the SSSI. It is likely that at its nearest point the Northern Corridor would fall within 160 m of the SSSI. The potential for air quality impacts arising from construction of this road may be significant (assuming a 200 m buffer for air quality impacts as recommended by the Highways Agency). There may be some existing buffer effect from plantation woodland to reduce this impact.</li> <li>In relation to the Southern Corridor options, The Blackwater Junction lies directly west of the SSSI. Reconfiguration of this junction would be likely to result in direct land take through construction (road and associated drainage, signage, etc.), land take as a result of screening planting and the extension of the zone of influence of the road further in to the SSSI. The later would include air pollution (up to 200m as per Highways Agency guidelines), and contamination from run-off including de-icing. Disturbance would be unlikely to increase significantly given current use of the junction and disturbance levels.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>In addition to the predicted air quality impacts which are thought to result from vicinity of the SSSI to the A338/ proposed Northern Corridor link road, it is apparent that ‘in combination’ effect from increased road traffic and aircraft movements could lead to local air quality indices deteriorating.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>Areas of the SSSI directly adjoin both the east and west sides of the A338. Outline proposals to widen the A338 would lead to direct habitat loss within the SSSI. In addition, the topographical survey required to develop detailed proposals for widening of the road would require extensive strimming of roadside verges directly adjoining the A338. This has the potential to affect faunal species using both areas and the need for a full ecological survey is</li> </ul>

<sup>28</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

	<p>highlighted in the A338 Widening Feasibility Study. Widening of the A338 would require overhauling of the associated drainage infrastructure. This would likely affect the volumes of water discharged onto the SSSI.</p> <ul style="list-style-type: none"> <li>• Once operational increased traffic flows on the refurbished A338 may generate increased levels of nitrogen pollution within the SSSI. The potential for disturbance and direct killing of sensitive birds and direct killing of insects, reptiles and mammals by motor vehicles is also apparent given the very close proximity of the A338 to the SSSI.</li> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic. This may also add to recreational pressure.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>Medium</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• There may be specific opportunities for the retention and enhancement of buffering vegetation alongside the Northern Corridor option.</li> <li>• Where at all possible land take within the SSSI associated with the Blackwater Junction must be avoided if at all possible. Strategic planting may be possible to reduce air pollution impacts, whilst drainage should ensure surface water runoff impacts are avoided. This may include a SuDS approach although there is unlikely to be sufficient space available for this.</li> <li>• There may be potential for screening elsewhere to reduce air pollution impacts in other parts of the Heath, maintaining (or possible enhancing) condition over the Heath as a whole.</li> <li>• If temporary land take is required, compensation may be an option.</li> <li>• In terms of compensation, this may be an option dependent on the quality of the existing roadside habitat to be lost. This would need to be informed by detailed ecological surveys and consultation with Natural England. This would seek to determine the <u>significance</u> of the impact for the integrity of the SSSI as a whole.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <ul style="list-style-type: none"> <li>• Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> <li>• 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.</li> </ul>
<p><b>Further information required</b></p>	

<b>Site Name: Avon Valley (Bickton to Christchurch) SSSI</b>	
<b>Designation</b>	<b>SSSI</b>
<b>Value of ecological receptor</b>	National
<b>Qualifying Features</b>	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 internationally important assemblages of breeding and wintering birds and an outstanding flora including several nationally rare and scarce species.
<b>Conservation Objectives</b>	To maintain the designated interest features in favourable condition.
<b>Summary of standards/factors which maintain site integrity</b>	<p><b>Wetland habitats and associated fauna</b></p> <ul style="list-style-type: none"> <li>• Maintenance of the extent of designated habitats with suitably characteristic vegetation composition and structure.</li> <li>• Grassland habitats require a certain degree of regular management to restrict over dominance of aggressive grass/ruderal species and drying out, this includes grazing and the control of water levels.</li> <li>• The river's natural structure and form should be maintained to support a natural flow regime. This includes the avoidance of the constriction of the river or blockage of its floodplain and the maintenance of natural erosion and sedimentation processes.</li> <li>• Riparian areas and the wider catchment need to be managed sensitively to avoid excessive run-off of soil particles and nutrients into the river.</li> <li>• The structure and composition of bankside and aquatic vegetation should be maintained</li> <li>• Increased growth of epiphytic algae and planktonic algae can lead to excessive shading of plants, reduced seed germination, enhanced capture of silt.</li> </ul> <p><b>Overwintering/breeding water birds</b></p> <ul style="list-style-type: none"> <li>• All species are vulnerable to disturbance and predation. The site must therefore be managed to keep these factors within acceptable parameters.</li> <li>• It is important that habitats found on this site support areas for these birds that are suitable for nesting and feeding.</li> </ul>
<b>Existing trends and pressures</b>	<p><b>Issues arising from SSSI condition assessment:<sup>29</sup></b></p> <p>As of April 2008, <b>51.7% of site area is meeting PSA target.</b> 9.66 % is favourable condition; 42.0% un-favourable recovering; 27.3% unfavourable no-change; 21.0% unfavourable declining condition.</p> <p>Where SSSI units have been recorded as unfavourable or as declining in condition the absence of appropriate water levels is the most frequently cited reason. This is caused by the absence of appropriate water management infrastructure (ditches or water flow control structures). Other reasons cited for failure of SSSI units to attain favourable condition include inappropriate grazing management and encroachment by scrub and secondary woodland. Within the woodland SSSI units removal of exotic species is a key reason favourable conservation status is not being achieved. SSSI units where favourable or recovering condition has been recorded tend to be those where agri-environment agreements have been secured with</p>

<sup>29</sup> <http://www.naturalengland.org.uk/>



	<p>land owners.</p> <p><b>Consultation between LUC, Dorset Country Council and Natural England (July 2008)<sup>30</sup></b> The potential for disturbance effect of over-wintering birds resulting from increased traffic using roads linking to the A338 (if widened) was expressed. In particular the Avon Causeway road which traverses the SSSI to the west of the Airport was highlighted. Natural England mentioned recent research which has been carried out demonstrating a link between effective loss of bird feeding habitat due to indirect disturbance from motor vehicles.</p>
<p><b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<p><b>Airport expansion proposals discounted from further examination</b></p>	<p><b>Airport terminal and facilities expansion</b> <i>Construction</i></p> <ul style="list-style-type: none"> <li>• Ecological effects (e.g. light pollution, noise, dust) arising from any construction necessary to facilitate expansion/reconfiguration of Airport terminal building itself and associated aircraft infrastructure have been ruled out on the basis of distance (minimum of 1.7km west of the SSSI) and existing screening by woodland/scrub vegetation (e.g. that occurring in between Pussex Lane and Matchams Lanes). In addition the S106 Agreement in place as part of extant planning permission should minimise environmental impacts, such as contamination of the River Stour (which could otherwise have potential knock on effects for the River Avon).</li> </ul> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>• The proposed improvements to Airport drainage and sewage treatment (Holdenhurst Sewage Treatment Works) should minimise potential water quality implications for the River Stour (and as a result the River Avon).</li> </ul> <p><b>Northern business park</b> <i>Construction</i></p> <ul style="list-style-type: none"> <li>• Impacts likely to arise from construction are not considered likely to affect the SSSI largely due to distance from the Site (a minimum of 1.2km) and existing screening which would minimise light, noise and dust disturbance to sensitive fauna. Works may potentially result in the contamination of the River Stour, with potential reductions in water quality of the River Avon downstream of the River Avon SSSI affecting fish, invertebrates and rare flora. However, given the distance from works to the confluence of these two rivers and the nature of the works, it is not considered that this impact would have a significant impact upon the designated interest features of the site.</li> </ul> <p><b>Transport infrastructure enhancements</b> The proposed reconfiguration of the Blackwater Junction, to the south</p>

<sup>30</sup> Consultation held between Phil Sterling (Dorset County Council), Douglas Kite (Natural England) and LUC on 21<sup>st</sup> July 2008.

	west of the SSSI, is unlikely to affect the site given its distance (>1 km) and existing screening. Although water contamination may impact upon the River Stour, this joins the River Avon downstream of the SSSI.
<b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>31</sup></b>	<p><b>Northern business park</b> <i>Operation</i></p> <ul style="list-style-type: none"> <li>The SSSI site is already susceptible to ecological damage from inappropriate water management and insufficient water levels. Projections for increased water use in the Northern Business Park may exacerbate this situation dependent on the source.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>Construction and operation impacts associated with the Northern Corridor Option may result in the contamination of groundwater through surface runoff, drainage and accidental spillage.</li> </ul>
<b>Other plans and policies with potential in-combination effects (identified during scoping)</b>	<ul style="list-style-type: none"> <li>The proposal to widen the A338 may lead to disturbance of over-wintering waders and water-fowl within the SSSI resulting from increased traffic volumes using roads linking to the A338 from the east (e.g. the Avon Causeway which traverses the SSSI). This effect may be exacerbated if development of the Northern Business Park leads to more passenger journeys in this area due to people commuting to work.</li> <li>The proposal to widen the A338 entails the potential for a range of construction (e.g. noise, light, dust) effects on the fauna inhabiting the SSSI. This may have in combination impacts with potential drainage and contamination impacts associated with the Northern Corridor Option.</li> <li>In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> <li>Increased water supply requirements as a result of airport expansion may have in-combination impacts with wider abstraction requirements to meet regional residential and economic growth.</li> <li>Avon Common Sand and Gravel extraction including permanent draw down with groundwater piped to the River Avon.</li> </ul>
<b>Assessment of impact magnitude</b>	High
<b>Potential options for avoidance or mitigation</b>	<ul style="list-style-type: none"> <li>Ecological survey and impact assessment would be required to established potential for disturbance effects on over-wintering birds within the SSSI.</li> <li>Investigation of increased water abstraction requirements to meet increased demand for the Northern Business Park and identification of supply options with minimal ecological impacts (this project would be likely to require EIA and AA).</li> <li>Best construction practice and appropriate drainage proposals will be required to ensure that indirect contamination impacts do not occur due to construction of the Northern Corridor Option and widening of the A338. This may require a SuDs approach to improve water quality prior to discharge. This will need to</li> </ul>

<sup>31</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

	<p>consider implications for other nearby habitats, protected species as well as air safety regulations.</p> <ul style="list-style-type: none"><li>• Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li></ul>
<b>Further information required</b>	

## Sites of Nature Conservation Importance

Site Name: Avon Common Plantation	
Designation	SNCI
Value of ecological receptor	County
Qualifying Features	Remnant heath and bog habitats containing the uncommon county species Brown Beak-sedge <i>Carex</i> sp. and the nationally scarce mossy stonecrop <i>Sedum</i> sp.
Conservation Objectives	To maintain extent and distribution of interest features.  Long term aspiration for management of this site will likely include maintenance/restoration of these habitats. Additionally, SNCI perform a role in maintaining ecological connectivity between other nature conservation sites.
Summary of standards/factors which maintain site integrity	<ul style="list-style-type: none"> <li>Relatively little information is available for these SNCI sites. However, it is likely that they are most vulnerable to inappropriate management as are many of the heathland sites. However, these often comprise relatively restricted and often degraded heathland habitats which have been affected by forestry operations, road schemes or other forms of development. They may also be vulnerable to a range of urban effects, such as visitor pressure, illicit vehicle access, predation from pets, eutrophication from pets, fire and tipping. They will also be vulnerable to changes in hydrological conditions.</li> </ul>
Existing trends and pressures	See above
List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>
Airport expansion proposals discounted from further examination	<p><b>Airport terminal and facilities expansion</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is over 1.2 km from the airport terminal. Further the SNCI is separated from the Airport by vegetation in the Moors River valley and the embankments and roadway of the A338. Given this, and precautions associated with extant planning permission and S106, it is unlikely that any significant construction and operational impacts will occur.</li> </ul> <p><b>Northern business park</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>Given distance to the SNCI, significant impacts are considered unlikely.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>In general any additional risk of killing injury and disturbance of species using the SNCI resulting from transport infrastructure enhancement is considered to be low given that the site is already bordered by a very busy dual carriageway.</li> <li>.</li> <li>At its nearest point the Southern Corridor road enhancement option is over 1.8 km south west of the SNCI. It is unlikely that any impact on the SNCI would directly result from construction and operation of this roadway.</li> </ul>

<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>32</sup></b></p>	<p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>Once operational the additional traffic flows using this junction would likely generate increase level of air pollution given that the SNCI is within the 200m buffer for incorporation of air pollution effects recommended by the Highways Agency.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> <li>Avon Common Sand and Gravel Extraction – this will be likely to have a significant impact upon the site (potential loss) which would over-ride impact and mitigation measures associated with airport expansion. Reinstatement to heathland would be expected to significantly improve the area for wildlife in the long-run.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>Low</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Transport infrastructure enhancements</b></p> <p>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. <b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <ul style="list-style-type: none"> <li>Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> </ul>
<p><b>Further information required</b></p>	

<sup>32</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Site Name: Fillybrook Plantation</b>	
<b>Designation</b>	<b>SNCI</b>
<b>Value of ecological receptor</b>	County
<b>Qualifying Features</b>	An area of plantation containing heathland habitat along forestry rides. The locally rare narrow buckler fern <i>Dryopteris carthusiana</i> is present.
<b>Conservation Objectives</b>	To maintain extent and distribution of interest features.  Long term aspiration for management of this site will likely include maintenance/restoration of these habitats. Additionally, SNCI perform a role in maintaining ecological connectivity between other nature conservation sites.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>Relatively little information is available for these SNCI sites. However, it is likely that they are most vulnerable to inappropriate management as are many of the heathland sites. However, these often comprise relatively restricted and often degraded heathland habitats which have been affected by forestry operations, road schemes or other forms of development. They may also be vulnerable to a range of urban effects, such as visitor pressure, illicit vehicle access, predation from pets, eutrophication from pets, fire and tipping. They will also be vulnerable to changes in hydrological conditions.</li> </ul>
<b>Existing trends and pressures</b>	See above
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport terminal and facilities expansion</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is over 1.2 km from the airport terminal. Further the SNCI is separated from the Airport by vegetation in the Moors River valley and the embankments and roadway of the A338. Given this, and precautions associated with extant planning permission and S106, it is unlikely that any significant construction and operational impacts will occur.</li> </ul> <p><b>Northern business park</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>Given distance to the SNCI, significant impacts are considered unlikely.</li> </ul>
<b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>33</sup></b>	<p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>If constructed the Northern Corridor access route would bisect the SNCI at its middle point, resulting in habitat loss and fragmentation. Faunal species using this SNCI would also be exposed to a much enhanced risk of disturbance, killing and injury through construction and operation of the Northern Corridor.</li> <li>Increased air pollution and contamination as a result, with a greater area of the SNCI adjacent to the road network.</li> </ul>

<sup>33</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>Works should be undertaken in line with best construction practice and with sufficient drainage and screening measures to reduce off-site impacts.</li> <li>If the work were to proceed, there may be scope for heathland creation alongside newly created road verges within areas of conifer plantation or other lower value habitats, and in areas subject to disturbance as part of the works (working areas and construction compounds). This should seek to maintain continuous habitat corridors. This could include translocation (seed or soil) from areas lost to the construction.</li> <li>Options should be investigated to maintain connectivity, for example through the encouragement of a closed canopy over roads or installation of small scale wildlife crossings such as bridges usually installed for dormouse.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <ul style="list-style-type: none"> <li>Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</li> <li>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.</li> </ul>
<p><b>Further information required</b></p>	

<b>Site Name: Fillybrook, Crabbesfield</b>	
<b>Designation</b>	<b>SNCI</b>
<b>Value of ecological receptor</b>	County
<b>Qualifying Features</b>	Part of Dorset Wildlife Trust's Hurn Forest Reserve. A dry acid grassland site with several notable/rare moss and herb species.
<b>Conservation Objectives</b>	To maintain extent and distribution of interest features.  Long term aspiration for management of this site will likely include maintenance/restoration of these habitats. Additionally, SNCI perform a role in maintaining ecological connectivity between other nature conservation sites.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>Relatively little information is available for these SNCI sites. However, it is likely that they are most vulnerable to inappropriate management as are many of the heathland sites. However, these often comprise relatively restricted and often degraded heathland habitats which have been affected by forestry operations, road schemes or other forms of development. They may also be vulnerable to a range of urban effects, such as visitor pressure, illicit vehicle access, predation from pets, eutrophication from pets, fire and tipping. They will also be vulnerable to changes in hydrological conditions.</li> </ul>
<b>Existing trends and pressures</b>	See above
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport Terminal and Facilities Expansion</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is located over 600 m from the proposals for expansion of the Airport Terminal. In between these two locations in the Moors River and vegetation surrounding Matchams Lane and the roadway itself. Given this, and precautions associated with extant planning permission and S106, it is unlikely that any significant construction and operational impacts will occur.</li> </ul> <p><b>Development of the Northern Business Park</b></p> <ul style="list-style-type: none"> <li>Proposals for development of the eastern sector of the Northern Business Park fall c. 250 m from the boundary of the SNCI. Construction and operational impacts are therefore ruled out.</li> </ul>
<b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>34</sup></b>	<p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>If constructed the Northern Corridor access route would pass in very close proximity to the SNCI (less than 75 m from the Site boundary). The road would also bisect the adjoin SNCI (Hurn Forest SNCI). Faunal species using this SNCI would likely be exposed to a much enhanced risk of disturbance, killing and injury through construction and operation of the Northern Corridor. Further, this SNCI and Hurn Forest SNCI are in reality one site,</li> </ul>

<sup>34</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.



	<p>species using both sites as part of their territories would be disrupted. Lastly, given the close proximity, air pollution impacts and altered hydrological conditions would likely ensue at the SNCI from construction of the Northern Corridor road proposal.</p>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Development of the Northern Business Park and Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>• All development must be informed by full ecological survey and impact assessment to inform detailed design and minimise impacts.</li> <li>• Construction impacts to be minimised through best construction practice and use of SuDS, and lighting strategy to avoid increased illumination of semi-natural habitats.</li> <li>• Habitat creation along road verges. Incorporate features to maintain connectivity (for example dormouse bridges).</li> <li>• <b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b> 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.</li> <li>• 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.</li> </ul>
<p><b>Further information required</b></p>	

<b>Site Name: Fir Grove Copse</b>	
<b>Designation</b>	<b>SNCI</b>
<b>Value of ecological receptor</b>	County
<b>Qualifying Features</b>	Damp woodland with a good moss and lichen flora. Also important for habitat connectivity.
<b>Conservation Objectives</b>	To maintain extent and distribution of interest features.  Long term aspiration for management of this site will likely include maintenance/restoration of these habitats. Additionally, SNCI perform a role in maintaining ecological connectivity between other nature conservation sites.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>Relatively little information is available for these SNCI sites. However, it this habitat type is most vulnerable to hydrological impacts including water quantity (associated with abstraction) and quality (from sewage treatment works, agricultural and urban runoff, and air pollution for example). The bryophyte flora is also likely to be sensitive to air quality.</li> </ul>
<b>Existing trends and pressures</b>	See above
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport Terminal and Facilities Expansion</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is over 2.2 km from the Airport Terminal. Given this, and precautions associated with extant planning permission and S106, it is unlikely that any significant construction and operational impacts will occur.</li> </ul> <p><b>Development of the Northern Business Park</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the western sector of the Northern Business Park is over 900 m south of the SNCI. Given this distance it is unlikely that impacts would accrue directly to the SNCI through construction or operation associated with these proposals.</li> </ul> <p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is over 2 km from either the Southern or Northern Corridor road proposals. Impacts arising from construction and operation of either transport route are discounted.</li> </ul>
<b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>35</sup></b>	N/a

<sup>35</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Other plans and policies with potential in-combination effects (identified during scoping)</b>	<ul style="list-style-type: none"> <li>In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> </ul>
<b>Assessment of impact magnitude</b>	Neutral
<b>Potential options for avoidance or mitigation</b>	<p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b> Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</p>
<b>Further information required</b>	

<b>Site Name: Hurn Airport NE Industrial Area</b>	
<b>Designation</b>	<b>SNCI</b>
<b>Value of ecological receptor</b>	County
<b>Qualifying Features</b>	Dry heath habitat adjoining Hurn Common SSSI. The site also contains an area of wett carr woodland where a rich flora is present including the nationally scarce, tasteless water pepper <i>Persicaria mitis</i> .
<b>Conservation Objectives</b>	To maintain extent and distribution of interest features.  Long term aspiration for management of this site will likely include maintenance/restoration of these habitats. Additionally, SNCI perform a role in maintaining ecological connectivity between other nature conservation sites.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>Relatively little information is available for these SNCI sites. However, it is likely that they are most vulnerable to inappropriate management as are many of the heathland sites. However, these often comprise relatively restricted and often degraded heathland habitats which have been affected by forestry operations, road schemes or other forms of development. They may also be vulnerable to a range of urban effects, such as visitor pressure, illicit vehicle access, predation from pets, eutrophication from pets, fire and tipping. They will also be vulnerable to changes in hydrological conditions. Wet woodland habitat type is most vulnerable to hydrological impacts including water quantity (associated with abstraction) and quality (from sewage treatment works, agricultural and urban runoff, and air pollution for example). The bryophyte flora is also likely to be sensitive to air quality.</li> </ul>
<b>Existing trends and pressures</b>	See above
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport Terminal and Facilities Expansion</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is located over 475 m from the proposals for expansion of the Airport Terminal. Given this, and precautions associated with extant planning permission and S106, it is unlikely that any significant construction and operational impacts will occur.</li> </ul> <p><b>Transport Infrastructure Enhancements</b> Specific impacts associated with transport infrastructure works are considered unlikely given distance (approximately 250m) and the presence of semi-natural habitat and built up areas separating the areas.</p>
<b>Remaining Airport expansion proposals considered to have</b>	<p><b>Development of the Northern Business Park</b> <i>Construction</i></p> <ul style="list-style-type: none"> <li>This SNCI consists of four discreet areas integrated within the</li> </ul>

<p><b>potentially adverse effects on site integrity<sup>36</sup></b></p>	<p>Northern Business Park itself and there is therefore a high risk of direct habitat loss, accidental damage, fragmentation contamination (dust, run off, air pollution), hydrological impacts and disturbance.</p> <p><i>Operation</i></p> <ul style="list-style-type: none"> <li>• If the number of people employed within the Northern Business Park increases the potential for increased visitor pressure on these areas is present.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>• There is potential for air quality impacts upon the site as a result of airport expansion proposals cumulatively.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Development of the Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Works should be undertaken in line with best construction practice and with sufficient drainage and screening measures to reduce off-site impacts.</li> <li>• Strict habitat protection measures should be employed to protect areas from accidental incursion, which should include appropriate buffer zones.</li> <li>• Landscape proposals could include the creation of adjacent open space supporting wildlife habitats, providing additional protection to these areas whilst allowing public access to natural green space for employees. Incorporation of well designed SuDS would protect these and other designated sites from damage, whilst complementing their wildlife value.</li> <li>• Wildlife corridors should be retained from surrounding habitats to these areas to prevent further isolation.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <p>Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</p>
<p><b>Further information required</b></p>	

<sup>36</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Site Name: Hurn Forest</b>	
<b>Designation</b>	<b>SNCI</b>
<b>Value of ecological receptor</b>	County
<b>Qualifying Features</b>	Plantation woodland with remnants of heath, bog and carr woodland present along firebreaks. The rare elongated sedge is present <i>Carex elongata</i> near the Moors River.
<b>Conservation Objectives</b>	To maintain extent and distribution of interest features.  Long term aspiration for management of this site will likely include maintenance/restoration of these habitats. Additionally, SNCI perform a role in maintaining ecological connectivity between other nature conservation sites.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>Relatively little information is available for these SNCI sites. However, it is likely that they are most vulnerable to inappropriate management as are many of the heathland sites. However, these often comprise relatively restricted and often degraded heathland habitats which have been affected by forestry operations, road schemes or other forms of development. They may also be vulnerable to a range of urban effects, such as visitor pressure, illicit vehicle access, predation from pets, eutrophication from pets, fire and tipping. They will also be vulnerable to changes in hydrological conditions. Wet woodland habitat type is most vulnerable to hydrological impacts including water quantity (associated with abstraction) and quality (from sewage treatment works, agricultural and urban runoff, and air pollution for example). The bryophyte flora is also likely to be sensitive to air quality.</li> </ul>
<b>Existing trends and pressures</b>	See above
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport Terminal and Facilities Expansion</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is located over 700 m from the proposals for expansion of the Airport Terminal. Given this, and precautions associated with extant planning permission and S106, it is unlikely that any significant construction and operational impacts will occur.</li> </ul> <p><b>Development of the Northern Business Park</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>Proposals for development of the eastern sector of the Northern Business Park fall c. 250 m from the boundary of the SNCI. Impacts are therefore rule out on account of proximity.</li> <li></li> </ul>
<b>Remaining Airport expansion proposals considered to have</b>	<p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>If constructed the Northern Corridor access route would cause</li> </ul>

<p><b>potentially adverse effects on site integrity<sup>37</sup></b></p>	<p>further fragmentation of the northern and southern parts of the SNCI (currently separated by plantation woodland only). Direct land take of habitat and impacts on faunal species using this SNCI (disturbance, killing and injury) would likely result from construction and operation of the Northern Corridor. The remaining habitats would likely be exposed to air pollution impacts and altered hydrological conditions, with a greater area of the SNCI opened up to the zone of influence of the road network (including contamination from runoff).</p> <p><b>Cumulative ecological effects resulting from airport expansion plans</b></p> <ul style="list-style-type: none"> <li>• There is potential for air quality impacts upon the site as a result of airport expansion proposals cumulatively.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<p>In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</p>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p><b>Development of the Northern Business Park and Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>• All development must be informed by full ecological survey and impact assessment to inform detailed design and minimise impacts.</li> <li>• Works should be undertaken in line with best construction practice and with sufficient drainage and screening measures to reduce off-site impacts.</li> <li>• Measures could be put in place to reduce potential recreation impacts, such as use of dense boundary planting / scrub management to discourage access, or fencing.</li> <li>• Positive habitat management if implemented in the surrounding plantation woodland and remaining SNCI (including tree and scrub thinning) could be undertaken to create replacement habitat to that lost through road construction. There would be the opportunity for the enhancement of a larger area to that lost. Ideally this would include a long-term management plan for the SNCI and habitats.</li> <li>• Options should be investigated to maintain connectivity, for example through the encouragement of a closed canopy over roads or installation of small scale wildlife crossings such as bridges usually installed for dormouse.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b></p> <p>Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.</p>
<p><b>Further information required</b></p>	

<sup>37</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Site Name: Sopley Common Plantation</b>	
<b>Designation</b>	<b>SNCI</b>
<b>Value of ecological receptor</b>	County
<b>Qualifying Features</b>	Remnant heathland containing a range of heath species and several uncommon species of lichen <i>Cladonia</i> spp.
<b>Conservation Objectives</b>	To maintain extent and distribution of interest features.  Long term aspiration for management of this site will likely include maintenance/restoration of these habitats. Additionally, SNCI perform a role in maintaining ecological connectivity between other nature conservation sites.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>Relatively little information is available for these SNCI sites. However, it is likely that they are most vulnerable to inappropriate management as are many of the heathland sites. However, these often comprise relatively restricted and often degraded heathland habitats which have been affected by forestry operations, road schemes or other forms of development. They may also be vulnerable to a range of urban effects, such as visitor pressure, illicit vehicle access, predation from pets, eutrophication from pets, fire and tipping. They will also be vulnerable to changes in hydrological conditions.</li> </ul>
<b>Existing trends and pressures</b>	See above
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>Airport Terminal and Facilities Expansion</li> <li>Development of the Northern Business Park</li> <li>Transport Infrastructure Enhancements</li> <li>Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport Terminal and Facilities Expansion &amp; Development of the Northern Business Park</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI is over 600 m from both the site of development proposals to the north and the south of the Airport. In between the Airport and Sopley common are the Moors River valley, Matchams Lane and vegetation fringing Matchams Lane. Given this, and precautions associated with extant planning permission and S106, it is unlikely that any significant construction and operational impacts will occur.</li> </ul> <p><b>Transport Infrastructure Enhancements</b> <i>Construction and operation</i></p> <ul style="list-style-type: none"> <li>At its nearest point the SNCI over 1 km from the Southern Corridor route proposals and over 630 m from the Northern Corridor road proposal. Impacts arising from construction and operation of either transport route are discounted on the basis of distance, but also the separation of the SNCI from either corridor route by Matchams Lane and vegetation in the Moors River valley.</li> </ul>
<b>Remaining Airport expansion proposals considered to have</b>	N/a



<b>potentially adverse effects on site integrity<sup>38</sup></b>	
<b>Other plans and policies with potential in-combination effects (identified during scoping)</b>	In line with the precautionary principle there is potential for in-combination air quality impacts upon the site as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.
<b>Assessment of impact magnitude</b>	Neutral
<b>Potential options for avoidance or mitigation</b>	<b>Cumulative ecological effects resulting from airport expansion plans and in-combination effects</b> Further investigation is required of in-combination air quality implications in the area as a result of increased traffic volumes. This will further inform potential mitigation requirements.
<b>Further information required</b>	

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<sup>38</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

## European Protected Species

<b>Species: Bats</b>	
<b>Value of ecological receptor</b>	International
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>• All UK species of bat are insectivorous and are therefore dependent on suitable feeding location and the availability of suitable insect prey. Fresh water habitats and mature woodland edges are of particular value to foraging bat species in this respect as are to a lesser extent hay meadows and livestock pastures.</li> <li>• Bats are highly mobile and use resources which are distributed widely across the landscape. Within the range occupied by a bat roosting locations and feeding locations feeding locations may be distant from one another. The presence of linear habitat features (e.g. river corridors, hedgerows and tree lines) enables bats to commute between different resources.</li> <li>• Bat use roosting locations for various purposes e.g. as temporary shelters/refugia, for rearing young (maternity roosts) and for over winter hibernation. In particular, the presence of mature and veteran trees and different types of buildings in the landscape offer bats a range of roosting opportunities.</li> </ul>
<b>Existing trends and pressures</b>	<p>A number of generic pressures are affecting bats across the UK, these maybe more or less prevalent in the area surrounding the Airport:</p> <ul style="list-style-type: none"> <li>• building and development work may lead to the disturbance or destruction of bat roosts;</li> <li>• felling of mature and veteran trees/hedgerows may destroy/damage suitable bat roosts. Intensive forestry management, reduces the range of roosting opportunities available to bats in addition to the abundance of invertebrate prey sources.</li> <li>• intensive agricultural practices are linked to decreases availability of insect prey for bats;</li> <li>• Fragmentation of linear habitats (such as woodland edges, hedgerows, waterways etc.) can disrupt flight lines between roosts and preferred foraging areas, with potential significant implications for local bat populations. Similarly the loss of such habitats will result in the loss of actual foraging habitats.</li> <li>• many bats have vision which is highly adapted to low light levels. Provision of artificial lighting can disturb bats by interrupting movement corridors, disturbing roosting behaviour (e.g. emergence from roosts), and reducing the suitability of otherwise productive feeding habitats.</li> </ul>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport terminal and facilities expansion</b></p> <ul style="list-style-type: none"> <li>• The ES accompanying the planning application for terminal expansion states that all trees with potential as bat roosts are to be retained. Furthermore, tree protection measures are in place. Given existing disturbance and lighting associated with the terminal and infrastructure, it is assumed that no additional impacts will result for bats.</li> </ul>

<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>39</sup></b></p>	<p><b>Northern business park</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>• Any loss of trees or buildings within the footprint of the Northern Business Park may result in the loss of bat roosts, with a risk of killing or injury as well as implications for the population viability dependent on the number and nature of the roosts lost.</li> <li>• Any loss of semi-natural habitat within the area would reduce the available foraging habitat. The existing mosaic of trees, scrub with more open areas of habitat adjacent to the Moors River would be likely to provide high quality foraging habitat.</li> <li>• Additional lighting may reduce the available foraging habitat, as well as disrupt bat roosts if present.</li> <li>• Contamination during construction, including dust and water contamination, may result in the reduced suitability of habitats for bat, reducing insect prey abundance.</li> </ul> <p><b>Transport infrastructure enhancements</b> Construction of the Northern or Southern Corridor link roads may generate a number of impacts on bats using these areas:</p> <ul style="list-style-type: none"> <li>• either option has the potential to increase the number of bats killed or injured by vehicles using these route ways;</li> <li>• loss of potential roosts through tree felling;</li> <li>• fragmentation of flightlines and foraging habitat through removal of linear features such as hedgerows, tree lines, water courses or woodland edges;</li> <li>• Lighting of bridges and roads may reduce the suitability of foraging habitats and flight lines including river corridors.</li> </ul> <p><b>Cumulative ecological effects resulting from airport expansion plans</b> Artificial light pollution arising from all proposals cumulatively has the potential to disrupt bat foraging and commuting routes across the landscape surrounding the Airport.</p>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<p>Other road enhancement schemes and development projects in the area (including urban extensions and employment development) may result in similar impacts as above.</p> <p>As well as potential roost loss this may result in the severance of numerous flightlines, reducing the areas available to bats to forage.</p>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p>All development proposals will require EIA given the nature and scale of the developments, and the likelihood of impacts.</p> <p>These will require specific ecological input to determine likely impacts upon bats, and appropriate mitigation would be required to allow development to proceed. This would include licensing requirements in accordance with the Habitat Regulations, with sufficient mitigation required to maintain the conservation status of bats in the local area.</p> <p>This must be informed by sufficient survey in line with best practice guidelines.</p> <p>Given the potential widespread nature of potential impacts, mitigation would benefit from a landscape scale approach to maintain ecological corridors within the area.</p>

<sup>39</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Further information required</b>	
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<b>Species: Otter</b>	
<b>Value of ecological receptor</b>	International
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>• Otter are semi-aquatic mammals and utilise a range of running and standing freshwaters. These must have an abundant supply of food (normally associated with high water quality), together with suitable habitat which can include vegetated river banks, islands, reedbeds and riparian woodlands, which are used for foraging, breeding and resting.</li> <li>• In particular, otter require the presence of suitable riverside habitat structures (e.g. stream side caves, tree root plates) to use as shelters both on an opportunistic basis (e.g. for feeding, avoiding bad weather) and more permanent/well concealed structures for rearing young in.</li> <li>• Otter are highly susceptible to the effects of bioaccumulation of water borne pollutants derived from agricultural pesticides.</li> <li>• A significant cause of otter mortality arises from collisions with road traffic and severance of habitat caused by the inability of otters to safely traverse roads.</li> </ul>
<b>Existing trends and pressures</b>	<ul style="list-style-type: none"> <li>• The presence of otter has been recorded as recently as 2006 on both the Moors River and the River Stour.</li> <li>• This species is highly susceptible to the effects of pollution which are thought to cause direct mortality through poisoning caused by bioaccumulation of harmful chemicals in the body tissue of individual animals. The effect of water borne pollutants (both toxic and non-toxic) on fish populations and populations of aquatic invertebrates may also reduce the amount of prey available to otter.</li> <li>• The fairly urbanised character of much of the landscape south of the Airport may lead to high levels of disturbance (e.g. to breeding locations) and mortality (e.g. through road collisions) thus rendering relatively undisturbed location within the protected areas surrounding the Airport of particular importance.</li> </ul>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport terminal and facilities expansion</b></p> <ul style="list-style-type: none"> <li>• Given the distance of the terminal proposals from the Moors River and River Stour, it is considered unlikely that proposals would impact upon otter. Measures within a S106 agreements are in place to reduce potential contamination impacts.</li> </ul>
<b>Remaining Airport expansion proposals considered to have</b>	<p><b>Northern business park</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>• Given the proximity of proposals for expansion of the Airport</li> </ul>

<p><b>potentially adverse effects on site integrity<sup>40</sup></b></p>	<p>terminal and facilities, ecological effects arising from alterations to the localised surface hydrology may result. For example, soil and sediments particles mobilised by construction activities may cause pollution of the Moors River. There is also a risk of direct disturbance of breeding otter by noise and light resulting from construction activities, as well as increased use of the site during operation.</p> <ul style="list-style-type: none"> <li>• Semi-natural habitat loss in the vicinity of the Moors River may result in the loss of or disturbance to holts.</li> <li>• Lighting and reduced habitat suitability.</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• Construction of either the Northern or the Southern Route Corridor options could lead to effects on the quantities of surface runoff, sedimentation and toxic contamination of water courses with associated impacts on otter as described above.</li> <li>• Greater traffic volumes may lead to an attendant rise in otter/road traffic collisions.</li> <li>• New road crossings may result in fragmentation of otter habitat, creating unsuitable conditions for otter passage.</li> <li>• Loss of habitats adjacent to rivers and watercourses, for example for new crossings or the realignment of the Blackwater Junction, may result in the loss of holts and a risk of killing or injury to otter.</li> <li>• Lighting and reduced habitat suitability.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p>All development proposals will require EIA given the nature and scale of the developments, and the likelihood of impacts.</p> <p>These will require specific ecological input to determine likely impacts upon otter for works in the vicinity of waterways (specifically the Northern Business Park and river crossings), and appropriate mitigation would be required to allow development to proceed. This would include licensing requirements in accordance with the Habitat Regulations, with sufficient mitigation required to maintain the conservation status of otter in the local area.</p> <p>This must be informed by sufficient survey in line with best practice guidelines.</p> <p>Given the potential widespread nature of potential impacts, mitigation would benefit from a landscape scale approach to maintain ecological corridors within the area.</p> <p>Planning policy should include for the maintenance of the integrity of watercourses in line with national guidance.</p>
<p><b>Further information required</b></p>	

<sup>40</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Species: Smooth snake and sand lizard</b>	
<b>Value of ecological receptor</b>	International
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>• Maintenance of heathland habitat including diverse structural and age ranges of vegetation, including open areas for basking, and dense dwarf shrub for shelter and foraging.</li> <li>• Maintenance of bare habitats for basking, as well as sandy areas for sand lizard egg laying.</li> <li>• Maintenance of hibernacula to enable overwintering, and refugia which provide sheltering and basking opportunities. In particular the disturbance or destruction of as hibernacula during the hibernation season can result in the killing or injury of a large number of individuals and result in local extinctions.</li> <li>• Maintenance of food resources related to habitat quality.</li> </ul>
<b>Existing trends and pressures</b>	<p>Heathland habitats in the vicinity have become increasingly fragmented as a result of urbanisation (including residential and employment development for example, as well as associated infrastructure such as roads). As well as direct habitat loss in the past, this has resulted in isolated populations of smooth snake and sand lizard which are therefore more vulnerable to local extinction without immigration of new individuals. This also results in decreased genetic diversity, and again potentially greater vulnerability of the population.</p> <p>Insufficient heathland management of heathland patches is resulting in many of the remaining heathland habitats declining in quality, either due to decreasing habitat heterogeneity with the development of older heathland stands and lack of open habitats. Colonisation by tree and scrub species results in increased shading and reduced habitat suitability for reptiles.</p> <p>In addition, 'urban effects' such as the setting of uncontrolled fires, vehicle access, predation by pets and disturbance or even persecution by the public, are likely to be adversely affecting the remaining populations in the vicinity.</p> <p>Smooth snake and sand lizard have been recorded widely in the vicinity of the airport including at locations within the Airport boundary to the north. It should be expected that during summer smooth snake will forage widely in adjoining habitats and may not be confined solely to areas of heathland. Likewise sand lizard may use non-heathland habitat areas (e.g. road verges and waste ground) for basking, egg laying and or foraging for invertebrates.</p>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p>Given the wide distribution of these species in the vicinity of the Airport and their ability to use nearby habitats seasonally and opportunistically, all proposals have the potential to affect both individual animals and their habitats.</p> <p><b>Airport terminal and facilities expansion</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>• The S106 agreement associated with extant planning permission</li> </ul>

	<p>includes surveying and mitigation for sand lizard, and outline mitigation proposals accompany the application. Habitats are largely unsuitable for smooth snake. Therefore impacts are considered unlikely.</p>
<p><b>Remaining Airport expansion proposals considered to have potentially adverse effects on site integrity<sup>41</sup></b></p>	<p><b>Northern business park</b> <i>Construction and Operation</i></p> <ul style="list-style-type: none"> <li>• There are numerous records of smooth snake and sand lizard in the vicinity of the Northern Business Park (both eastern and western sectors). Given the presence of areas of suitable habitat throughout the Business Park (particularly peripheral habitats and throughout the Eastern Sector) there is potential for killing, injury and disturbance of these species resulting from construction and operational activities (e.g. earth movement, vegetation clearance, vehicle movements).</li> <li>• Other impacts which result in reductions of heathland habitat quality as described for adjacent SSSI and SNCIs would impact upon reptile populations (declining habitat suitability through shading, declining food availability etc.).</li> </ul> <p><b>Transport infrastructure enhancements</b></p> <ul style="list-style-type: none"> <li>• As above, sand lizard and smooth snake are recorded in the vicinity of the Northern Corridor option, and construction in areas of suitable open habitats may result in killing and injury, habitat loss, habitat fragmentation and the isolation of populations, decreasing habitat quality and food availability (for example contamination from surface runoff and air pollution).</li> <li>• There are no records of smooth snake in the vicinity of the Southern Corridor link road option. However, absence of a record does not necessarily relate to the absence of a species, and sand lizard are known to use other open habitats (not only heathland) in the area if refugia, egg laying opportunities etc. are present. Therefore there may be scope for killing and injury during construction works, and habitat loss.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• 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 habitats adjacent to the road.</li> <li>• Mineral extraction operations in the vicinity similarly have potential for the above effects, as do widespread residential and employment development.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p>All development proposals will require EIA given the nature and scale of the developments, and the likelihood of impacts.</p> <p>These will require specific ecological input to determine likely impacts upon reptiles for works in the area to determine whether potential reptile habitat may be affected and whether reptiles are present. Appropriate mitigation would be required to allow development to proceed. This would include licensing requirements in accordance with the Habitat Regulations, with sufficient mitigation required to maintain the conservation status of reptiles in the local area.</p> <p>This must be informed by sufficient survey in line with best practice guidelines.</p>

<sup>41</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.



	<p>Given the potential widespread nature of potential impacts, mitigation would benefit from a landscape scale approach to maintain ecological corridors within the area.</p> <p>Planning policy should include for the maintenance of the area of potential reptile habitat, with at least the replacement of the area lost (in terms of quantity and quality).</p>
<b>Further information required</b>	

## Other Key Habitats

<b>Habitat: Farmland</b>	
<b>Value of ecological receptor</b>	Various
<b>Interest features</b>	UK and SW BAP habitats and species including: Hedgerows, woodlands, parkland, grassland, and arable habitats. These may support farmland species such as various farmland birds (barn owl, skylark, hedge sparrow, linnet etc.), mammals including brown hare, invertebrates, and <i>Lepidoptera</i> . Also includes wood pasture, parkland and mature trees.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>• Traditional or sensitive agricultural management maintaining habitat features for wildlife.</li> <li>• This includes habitats which provide habitat in themselves, such as hedgerows, copses, scattered trees, ponds, field margins, and arable/grassland fields, as well as those providing ecological connectivity through the landscape (both as isolated features and as a wider habitat mosaic).</li> <li>• By their nature farmland habitats are less sensitive to and dependent on regular management as part of agricultural practices.</li> </ul>
<b>Existing trends and pressures</b>	<ul style="list-style-type: none"> <li>• Historically traditional management as mixed farms has been replaced by specialist arable or livestock farming. In addition farming practices have become more intensive. These trends have in part resulted in semi-natural habitat loss or the use of farming practices less sensitive to wildlife.</li> <li>• These trends have been somewhat reversed by the implementation of agri-environment schemes.</li> <li>• Agricultural farmland may also be lost as a result of activities such as development of housing, employment land, associated infrastructure, forestry or mineral extraction.</li> </ul>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport terminal and facilities expansion and Development of the Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• Given the restriction of much of the development proposals (excluding landscape works) to the existing airport footprint, and the existing levels of disturbance, airport expansion proposals are considered to have a negligible impact upon farmland habitats and species.</li> </ul> <p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>• Transport Infrastructure Enhancements associated with the Northern Corridor option would not result in impacts on farmland habitats.</li> </ul> <p><b>Development of the Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• Development within the Northern Business Park would not result in impacts on farmland habitats.</li> </ul>
<b>Remaining Airport expansion proposals considered to have</b>	<p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>• Transport Infrastructure Enhancements associated with the Southern Corridor options would result in the direct loss of</li> </ul>

<p><b>potentially adverse effects on site integrity<sup>42</sup></b></p>	<p>farmland habitats. This would present a risk of killing and injury of farmland species.</p> <ul style="list-style-type: none"> <li>• These would also result in the fragmentation of remaining habitats, for example hedgerows, with severance of movement corridors for farmland species.</li> <li>• New roads would present a greater risk of contamination of adjacent habitats via run off (including de-icing) and air pollution.</li> <li>• There would be greater levels of disturbance to species from noise, lighting and human / vehicle presence, and a greater risk of killing and injury through collision.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon habitats as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> <li>• A large section of the Southern Corridor option will have been disturbed / lost as a result of sand and gravel extraction at Hurn Court Farm, and therefore the ecological baseline will have been significantly degraded prior to road construction works.</li> <li>• Widespread residential, employment, and infrastructure development proposals in the vicinity have potential to similarly impact upon farmland habitats.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p>All development proposals will require EIA given the nature and scale of the developments, and the likelihood of impacts.</p> <p>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. This should include arboricultural and veteran tree survey, and hedgerow survey.</p> <p>As far as possible, ecological connectivity should be maintained. This may include habitat creation to maintain connectivity along roads, whilst options for the creation of green bridges or tunnels may be prohibitively expensive and may not be justified in terms of ecological value and benefits. However, options should be investigated to maintain connectivity, for example through the encouragement of a closed canopy over roads or installation of small scale wildlife crossings such as bridges usually installed for dormouse.</p> <p>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. In particular there may be particular opportunities for hedgerow and woodland planting surrounding the new road corridor to reduce air contamination in the area (the current B3073 has little screening planting) which may off-set to some degree increased disperse pollution elsewhere.</p> <p>A SuDS approach should be employed to minimise water contamination risk.</p>
<p><b>Further information required</b></p>	

<sup>42</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Habitat: Rivers and Wetlands</b>	
<b>Value of ecological receptor</b>	Various
<b>Interest Features</b>	UK and SW BAP habitats and species including: Rivers, ponds, reedbeds, lowland meadows and floodplain grazing marsh; kingfisher, water vole, bullhead, amphibians, invertebrates, <i>Odonata</i> )
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>• The integrity of riverine and wetland habitats are largely dependent on water quality and quantity. A sufficient 'quantity' of water is required in terms of ground water level, perched water tables, groundwater and overland flow (for example) to maintain wetland habitats, and often a mosaic of wetland habitats to support a diverse array of wildlife (from wet grassland to marginal to open water habitats).</li> <li>• Water quality is again necessary to maintain a diverse ecosystem, starting with the lower trophic levels in the food chain.</li> </ul>
<b>Existing trends and pressures</b>	<ul style="list-style-type: none"> <li>• Inappropriate water level management (such as drainage for agriculture) and over abstraction are often resulting in falling ground and surface water levels. This can result in a reduced diversity of wetland habitats.</li> <li>• Flood control measures, such as canalisation, have also resulted in decreasing value and diversity of wetland habitats as part of engineering solutions.</li> <li>• Wetlands are also vulnerable to pollution and contamination from a range of sources, such as agricultural runoff, urban runoff, sewage treatment works with insufficient capacity, air pollution.</li> <li>• Water quality is generally improving nationally through pollution control measures. However, demand for water is increasing and rivers are under increasing pressure from abstraction.</li> <li>• Climate change is also resulting in significant alterations to wetlands, either through the increase in extreme weather conditions resulting in falling water levels or flash flooding.</li> </ul>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport terminal and facilities expansion</b></p> <ul style="list-style-type: none"> <li>• Given current mitigation measures in place as part of the extant planning application, impacts upon wetlands and rivers in the vicinity of the proposals are not considered to be significant. These include treatment of sewage at the Holdenhurst Treatment Works, and contamination control measures during construction and operation.</li> </ul> <p><b>Development of the Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• Impacts upon the Moors River SSSI and associated wetlands are considered for this SSSI and are not considered further here.</li> </ul> <p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>• Impacts of the Northern Corridor Option upon the Moors River SSSI and associated wetlands are considered for this SSSI and are not considered further here.</li> </ul>
<b>Remaining Airport expansion proposals</b>	<p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>• Construction of Southern Corridor options could lead to effects</li> </ul>

<p><b>considered to have potentially adverse effects on site integrity<sup>43</sup></b></p>	<p>on the quantities of surface runoff, sedimentation and toxic contamination of water courses during both operation and construction, with potential impacts for the River Stour and other smaller wetlands.</p> <ul style="list-style-type: none"> <li>Proposals to reroute the River Stour at the Blackwater Junction would have significant implications in the medium term whilst re-routed sections matured and developed as wetland habitats. These works would also have an associated risk of killing and injury of wetland species during construction works.</li> <li>The Southern Option may also result in habitat loss and fragmentation of wetland habitats along the proposed route, including localised wet grassland/marsh/swamp habitats, ponds, ditches and small streams.</li> <li>Habitat loss associated with these proposals may result in various implications for wetland species, such as loss of kingfisher nesting banks, amphibian breeding waterbodies, and water vole habitats.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>In line with the precautionary principle there is potential for in-combination air quality impacts upon habitats as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> <li>A large section of the Southern Corridor option will have been disturbed as a result of 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.</li> <li>Widespread residential, employment, and infrastructure development proposals in the vicinity have potential to similarly impact upon wetland habitats.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p>All development proposals will require EIA given the nature and scale of the developments, and the likelihood of impacts.</p> <p>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. This must include full ecological survey (Phase I Habitat Survey, River Corridor Survey and faunal surveys as appropriate).</p> <p>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. In particular waterways (including rivers, streams, ditches) should be maintained as ecological corridors with the appropriate design of bridges and culverts.</p> <p>If river diversion is required, this should be completed in advance of closing of original route to maintain ecological connectivity.</p> <p>A SuDS approach should be employed to minimise water contamination risk, whilst creating wetland habitats.</p>
<p><b>Further information required</b></p>	

<sup>43</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

<b>Habitat: Woodland</b>	
<b>Value of ecological receptor</b>	Various
<b>Interest Features</b>	UK and SW BAP habitats and species including: woodland birds, invertebrates such as stag beetle, bryophytes.
<b>Summary of standards/factors which maintain site integrity</b>	<ul style="list-style-type: none"> <li>• The value of woodlands is largely dependent on the various management options and objectives as appropriate. For example, high forest may require little management input, whilst coppice woodland with standards may require regular management to maintain the special interest features.</li> <li>• In general a diverse woodland structure is desirable for nature conservation purposes, providing habitat for a wide variety of species. This includes canopy, understorey, and ground flora with a diverse age range of trees to ensure long-term continuity. Further diversity is provided by glades, either through natural processes such as wind throw and grazing, or maintenance of glades and rides by management.</li> <li>• Dead wood habitats, fallen and standing, provide value a range of species.</li> </ul>
<b>Existing trends and pressures</b>	<ul style="list-style-type: none"> <li>• In this area much of the woodland areas comprise conifer plantations on previous heathland habitats, or possible on previous semi-natural woodland or agricultural habitats.</li> <li>• Management of these plantations has largely been for forestry purposes rather than nature conservation. Heathland restoration schemes are relatively frequent with plantations clear felled and restored to heathland.</li> <li>• In general, due to declining economic value of woodlands, semi-natural deciduous woodlands suffer from neglect or inappropriate management.</li> <li>• Woodland habitats are increasingly fragmented, with smaller woodland units subject to greater edge effects (such as exposure and wind throw, agricultural pollution etc.).</li> <li>• Air pollution may impact upon woodland notable for their bryophyte flora in particular, which in this area is largely restricted to wet woodland (largely designated along the Moors River).</li> </ul>
<b>List of Airport expansion proposals and associated impacts potentially affecting site (selected from those identified during scoping)</b>	<ul style="list-style-type: none"> <li>• Airport Terminal and Facilities Expansion</li> <li>• Development of the Northern Business Park</li> <li>• Transport Infrastructure Enhancements</li> <li>• Cumulative ecological effects resulting from airport expansion plans</li> </ul>
<b>Airport expansion proposals discounted from further examination</b>	<p><b>Airport terminal and facilities expansion</b></p> <ul style="list-style-type: none"> <li>• No direct impacts on woodlands are predicted. Given current mitigation measures in place as part of the extant planning application, impacts upon woodland in the vicinity of the proposals are not considered to be significant. These include contamination control measures during construction and operation.</li> </ul>
<b>Remaining Airport expansion proposals considered to have</b>	<p><b>Development of the Northern Business Park</b></p> <ul style="list-style-type: none"> <li>• Semi-natural woodland habitats in the Northern Business Park, in particular in the Eastern Sector, which fall outside designated</li> </ul>

<p><b>potentially adverse effects on site integrity<sup>44</sup></b></p>	<p>areas may be vulnerable to habitat loss during construction dependent on the development and construction footprint. These areas will also be at risk of disturbance (although disturbance is currently high, construction activities would be immediately adjacent to these habitats), contamination from dust pollution, surface water flow and accidental spillage during works, as well as increased air pollution.</p> <ul style="list-style-type: none"> <li>• During operation, there may similarly be increased risk of contamination from surface water runoff, whilst disturbance may be increased from greater use of these parts of the site and recreational access to remaining woodland areas.</li> </ul> <p><b>Transport Infrastructure Enhancements</b></p> <ul style="list-style-type: none"> <li>• The Northern Corridor option would likely result in the direct loss of semi-natural and plantation woodland habitats along its route.</li> <li>• The remaining habitats would likely be exposed to air pollution impacts and altered hydrological conditions, with a greater area of the habitat opened up to the zone of influence of the road network (including contamination from runoff).</li> <li>• Construction of Southern Corridor would be likely to result in similar effects as above on plantation and semi-natural woodland habitats within a farmland setting. This would include Quomp and Mill copses.</li> <li>• Transport corridor options would also increase habitat fragmentation.</li> </ul>
<p><b>Other plans and policies with potential in-combination effects (identified during scoping)</b></p>	<ul style="list-style-type: none"> <li>• In line with the precautionary principle there is potential for in-combination air quality impacts upon habitats as a result of airport expansion proposals as well as residential and employment development in the region, particularly resulting in increased road traffic.</li> <li>• A large section of the Southern Corridor option will have been disturbed as a result of 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.</li> <li>• Widespread residential, employment, and infrastructure development proposals in the vicinity have potential to similarly impact upon woodland habitats.</li> </ul>
<p><b>Assessment of impact magnitude</b></p>	<p>High</p>
<p><b>Potential options for avoidance or mitigation</b></p>	<p>All development proposals will require EIA given the nature and scale of the developments, and the likelihood of impacts.</p> <p>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.</p> <p>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.</p> <p>As far as possible, ecological connectivity should be maintained. This may include habitat creation to maintain connectivity along roads, whilst options for the creation of green bridges or tunnels may be prohibitively expensive and may not be justified in terms of ecological value and benefits. However, options should be investigated to</p>

<sup>44</sup> Impacts are divided into those predicted to occur during *operation* of the expanded airport and those which may result from *construction*.

	<p>maintain connectivity, for example through the encouragement of a closed canopy over roads or installation of small scale wildlife crossings such as bridges usually installed for dormouse.</p> <p>A SuDS approach should be employed to minimise water contamination risk, whilst creating wetland habitats.</p> <p>Enhancement of edge habitats (through planting or management) ay be appropriate to maintain woodland integrity particularly if woodlands are fragmented.</p>
<b>Further information required</b>	