

## 4.0 Effects on the Integrity of European Sites

### Changes in Air Quality

#### Effects on site integrity in combination with WMRSS Phase 2 Revisions

- 4.1 The HRA Assessment for the Phase 2 Revisions identified that emissions of SO<sub>2</sub>, NO<sub>x</sub> and NH<sub>3</sub> are currently leading to nitrogen and acid deposition at European sites above their habitats' critical loads and this can have a deleterious effect on vegetation and associated features of interest. In addition, a number of sites are receiving tropospheric ozone levels above their critical level. Therefore the integrity of a number of European sites is at risk from any additional air pollution associated with the additional housing options being considered by this study.

### Local Air Quality

- 4.2 The following sites are currently receiving nitrogen and acid deposition above their critical loads and will be further affected if **local** air pollution levels increase on roads that pass within 200m of the site:
- Cannock Chase SAC
  - Peak District Dales SAC
  - South Pennine Moors SAC
  - Peak District Moors SPA
  - West Midlands Mosses SAC
  - Midland Meres and Mosses Phase 1 Ramsar site
- 4.3 Due to the current situation at these sites and the additional housing that is proposed in areas where these roads are likely to be the primary routes it is not possible to conclude that the local air pollution will not worsen from any additional traffic.
- 4.4 A 200m limit was adopted during the HRA Phase 2 Revision of the WMRSS because research by Laxen and Wilson (2002) suggests that NO<sub>2</sub> emissions from motorways essentially reach background levels within 200m. This is reflected in guidance from the Highways Agency (Design Manual for Roads and Bridges<sup>7</sup> which also suggests that deposition of traffic-related air pollutants (including both NO<sub>x</sub> and volatile hydrocarbons) reach negligible levels within 200m of a road. English Nature's (now Natural England) advice<sup>8</sup> to Runnymede Borough Council on traffic-related air pollution, based on interim guidance from the Department for Transport (2005), was that NO<sub>2</sub> emissions only needed to be considered if there is a road carrying a significant proportion of new traffic related to the plan within 200 metres of a European site. It has therefore been assumed that adverse effects of traffic-related increases in NO<sub>x</sub> on European sites are only likely if these are located within 200m of a major road and this assumption has also been applied to pollutants from other types of development in line with Natural England's advice<sup>9</sup>.

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<sup>7</sup> Department for Transport (2003). Design Manual for Roads and Bridges. Vol 11. Section 3. Air Quality

<sup>8</sup> English Nature (16 May 2006) letter to Runnymede Borough Council, 'Conservation (Natural Habitats &c.) Regulations 1994, Runnymede Borough Council Local Development Framework'.

<sup>9</sup> Levett-Therivel & Treweek Environmental Consultants (2006). Appropriate Assessment of the Hertfordshire Waste Plan

Major roads within 200m from sites	European site concerned	Housing scenarios that would increase traffic along roads near sites
A495 (between Ellesmere and Whitchurch), A518 (running between Stafford and Uttoxeter)	Clarepool Moss, Chartley Moss (West Midland Mosses SAC and Midland Meres and Mosses Ramsar Phase 1)	Scenario 2 and 3 allocate an additional 1,900 housing units in Shropshire; 6,000 in North Staffordshire and 3,000 in Stafford.
A513 (from Weeping Cross to Wolsley Bridge); A460 (from Cannock to Rugely); A34 (Newcastle under Lyme to Cannock)	Cannock Chase SAC	Scenario 1 would have the least impact on this site as there will not be any additional housing additional to the RSS Phase 2 within the local area
A515 between Ashbourne and Buxton, A623 between Baslow and Stockport, and the A6 between Derby and Stockport	Peak District Dales SAC	Scenario 2 and 3 allocate an additional 1,900 housing units in Shropshire; 6,000 in North Staffordshire and 3,000 in Stafford.  Increased levels of traffic through the Peak District on any of these trunk roads could lead to an increase in the level of local air pollution within 200m of the site.
A53 (Leek to Buxton)	South Pennine Moors SAC  South Pennine Moors Phase II SPA	All the scenarios could result in an increased level of pollution in relation to traffic and increased recreational use of the South Pennines

**Table 8: Major roads within 200m of a European Site with features sensitive to air pollution**

4.5 Mott MacDonald has produced the WM RSS Phase 2 Transport Evidence for the Highways Agency to assess the projected increase in traffic levels across the region. For the purposes of the NLP Study, they have tested two of the nine initial housing options, focusing on seven and nine (with growth distributed across all parts of the region at the mid and the upper end of the NHPAU Supply Range. Based on this analysis, they conclude that:

- Overall, there is little strategic impact of the RSS2 Preferred Option on the network
- The variation of journey time between the RSS Preferred Option and Options 7 and 9 is quite small along the key corridors.
- In terms of applying transportation mitigation works, a highway based do something scenario (P-TIF) is increasing the journey times on routes, but is also reducing the congestion on the Strategic Road Network (SRN) and allowing more traffic.

4.6 However, they state:

*There are local impacts noted due to the housing and network interventions, which would need to be assessed in more detail.*

### Diffuse Air quality

4.7 All sites listed below are currently affected by diffuse air pollution and are in exceedance of their critical loads for acid and nitrogen deposition and will be subject to significant adverse effects on integrity if levels of emissions increase in the West Midlands region generally. It is not possible to prove that levels will not increase and an adverse effect on integrity should be concluded due to effects of diffuse air pollution:

- West Midland Mosses SAC (Clarepool Moss, Chartley Moss)

- Midlands Meres and Mosses Phase 1
- Midlands Meres and Mosses Phase 2 Ramsar
- Cannock Chase SAC
- Downton Gorge SAC
- Fenn's, Wixhall, Bettisfield, Wem and Cadney Mosses SAC
- Peak District Dales SAC
- South Pennine Moors SAC
- The Stiperstones and Hollies SAC
- Wye Valley Woodlands SAC
- South Pennine Moors Phase 2 SPA
- Peak District Moors (South Pennine Moors Phase 1) SPA

### **Initial avoidance and mitigation measures suggested for local air quality and diffuse air quality**

- 4.8 The HRA for the Phase 2 Revisions of the WMRSS put forward a number of suggested measures which are considered likely to address any additional diffuse or local air quality issues the measures are presented in Tables 9 & 10 below.

**Table 9: Effects and possible mitigation for local air quality**

Source of site base data and the avoidance/mitigation in relation to RSS Phase 2 HRA: *Ursus Consulting Ltd & Treweek Environmental Consultants (2007) Habitats Regulations Assessment of the Phase II Revision of the Regional Spatial Strategy for the West Midlands*

Site Name	Effect on integrity	Avoidance/Mitigation following RSS Phase 2 HRA	Additional mitigation/avoidance from 3 scenarios
Cannock Chase SAC	Site is over its critical load and any additional pollution would have a significant adverse effect. The western edge of Cannock Chase runs approximately 200m from the A34 between Newcastle under Lyme to Cannock, the northern edge is alongside the A513 which runs from Weeping Cross to Wolsley Bridge, and the A460 bisects the site running from Cannock to Rugely. Increase in traffic on these roads is likely to increase local air pollution at some parts of the site. Further changes in the composition and viability of lowland heathland vegetation are likely. The only housing proposed in Cannock Chase is through the RSS Phase 2 Revision (5,800). There are 10,100 new homes through RSS Phase 2 and additional increases for both scenarios 2 and 3 (1,500 and 3,000 respectively).	Policy CF3 should be amended as follows:  "The delivery of additional housing in this district is dependant on further studies to confirm that the housing and associated traffic movements will not lead to an increase in local air pollution at the site".  Following the further studies, housing in the District should be implemented in conjunction with measures to ensure that traffic levels do not increase on roads around the site. (Road pricing, improved public transport etc).	Currently this suggested text has not been included within the PO. The exact text needs to be agreed for the PO.  All three scenarios will need to include the text which is agreed for the PO.  No additional mitigation over and above this is considered necessary for the three scenarios.
Peak District Dales SAC	Site is over its critical load and any additional pollution would have a significant adverse effect. The A515 between Ashbourne and Buxton, A623 between Baslow and Stockport, and the A6 between Derby and Stockport; which are major trunk roads running within 200m of certain sections the site. The increase of 6,000 houses in north Staffordshire (Scenarios 2 and 3) and Staffordshire Moorlands (Scenarios 1, 2 and 3) and may have an adverse effect on the integrity of the site if this leads to an increase in the use of these roads. .At this stage it is not possible to rule out an adverse effect on site integrity.	Similar policy should be developed for Peak District Moors SPA and Peak District Dales SAC which may be affected by housing growth in Staffordshire Moorlands and Stoke and by associated transport emissions.  Relevant Local Authorities could produce air quality strategies for their area to explore and monitor ways to reduce air pollution.  <b>Regionally:</b>	The above policy should be extended to cover all of the sites potentially affected by local AQ.
South Pennine Moors SAC  Peak District	Site is over its critical load and any additional pollution would have a significant adverse effect.  The nearest road is the A53 which runs from Leek to Buxton through the centre of the site. The Staffordshire LTP suggests that congestion on the A53 will worsen from 2011 onwards.	RSS Policy should require LPA s establish the link between the development proposed within the LDFs, individual transport schemes in LTP and the implications for road traffic on identified transport routes that pass near sensitive European sites.	

Site Name	Effect on integrity	Avoidance/Mitigation following RSS Phase 2 HRA	Additional mitigation/avoidance from 3 scenarios
Moors SPA	The increase of 6,000 houses in north Staffordshire (Scenarios 2 and 3) and Staffordshire Moorlands (Scenarios 1, 2 and 3) may have an adverse effect on the integrity of the site if this leads to an increase in the use of the A53.	Specific new text added to RSS Chapter 2, to highlight to LPAs the need to consider the impacts of development within 200m of European sites.  See above	
West Midlands Mosses SAC,  Midlands Meres and Mosses Phase 2 Ramsar.	<p>Site is over its critical load and any additional pollution would have a significant adverse effect.</p> <p>Scenario 2 allocates an additional 1,900 housing units in Shropshire; 6,000 in North Staffordshire and 1,500 in Stafford.</p> <p>Scenario 3 allocates an additional 1,900 housing units in Shropshire; 6,000 in North Staffordshire and 3,000 in Stafford.</p> <p>Chartley Moss is approximately 200m from the A518 (running between Stafford and Uttoxeter) at its closest point on the northern boundary, and may be affected by local air quality changes caused by traffic increases in Stafford and North Staffordshire associated with the RSS Phase 2 and Scenarios 2 and 3..</p> <p>Clarepool Moss is adjacent to the A495 between Ellesmere and Whitchurch, and again lies within 200m Beyond 200m; the contribution of vehicle emissions from the road centre to local pollution levels is not significant (TAG 2004). Overall there are 27,600 new houses allocated for Shropshire (25,700 Phase 2 and 1,900 all Scenarios) which may lead to an increase in road traffic on A495 and an adverse effect on site integrity cannot be ruled out without local modelling.</p>		

**Table 10: Effects and possible mitigation for diffuse air quality**

Source of site base data and the avoidance/mitigation in relation to RSS Phase 2 HRA: Ursus Consulting Ltd & Treweek Environmental Consultants (2007) Habitats Regulations Assessment of the Phase II Revision of the Regional Spatial Strategy for the West Midlands

Site Name	Effect on integrity	Avoidance/Mitigation recommended by RSS Phase 2 HRA <sup>10</sup>	Additional mitigation/avoidance from 3 scenarios
Cannock Chase SAC	Site is over its critical load and any additional pollution would have a significant adverse effect. Regeneration and further development within the West Midlands region will contribute to an increase in diffuse air pollution due to increases in emissions associated with transport, homes and businesses.	<p>Introduce a new specific policy on air pollution focusing on air quality as a regional issue. The Policy should:</p> <ul style="list-style-type: none"> <li>Set out a trajectory of improvement to be achieved across the region.</li> <li>Require air quality strategies to be produced for each authority, taking account of risks to European sites.</li> <li>Provide for Regional planning guidance on the consideration of air quality for local development documents and for considering the contribution of air pollutants to background levels of diffuse air pollution as well as local receptors.</li> <li>Signpost the need for HRAs of Local Development Documents and Local Transport Plans to consider air quality affects on sensitive European sites even when plan does not contain proposals directly adjacent to the sites.</li> </ul> <p>Following the integration of a regional approach on air quality into local planning guidance the RSS should require local authorities to adopt a "pollution neutral" approach to NOx emissions:</p> <p>This would require all new developments that would contribute significantly to NOx emissions to contribute to other measures to improve air quality or reduce levels of emissions from other sources. A greater impact on housing</p>	No additional mitigation over that in policy SR4 considered necessary for the additional housing scenarios.
Downton Gorge	The site is currently at critical loads any additional pollution may exacerbate this if they contribute to increased levels of NOx emissions in future.		
The Stiperstones and Hollies SAC	The site currently exceeds critical levels of acid and nitrogen levels through diffuse air pollution. An increase in housing within the region as a whole may exacerbate the problem through contributing to an increase in pollution levels		
Peak District Dales SAC	Site is over its critical load and any additional pollution would have a significant adverse effect. High levels of nitrogen deposition may affect structural diversity of the <i>Tilio Acerion</i> forests, and could also change characteristic vegetation composition of the lowland heathland. Additional housing is proposed for the West Midlands region could lead to an increase in air pollution generally.		
South Pennine Moors	Site is over its critical load and any additional pollution would have a significant adverse effect.		

<sup>10</sup> Ursus Consulting Ltd and Treweek Environmental Consultants 2007 HRA of the Phase II Revision of the RSS for the West Midlands

Site Name	Effect on integrity	Avoidance/Mitigation recommended by RSS Phase 2 HRA <sup>10</sup>	Additional mitigation/avoidance from 3 scenarios
SAC	It is possible that the development generally within the west midlands could lead to an increase in air pollution generally across the region and an adverse effect on the integrity of the site.	emissions could be made if Level 6 of the Code for Sustainable Homes is applied for at an earlier date.	
Peak District Moors SPA	Site is over its critical load and any additional pollution would have a significant adverse effect. Development generally within the west midlands could lead to an increase in air pollution generally and an adverse effect on the integrity of the site	Amend Policy CF3 to reduce the number the number of additional dwellings in locations remote from existing services and infra structure which are likely to generate increases in transport emissions. The Sustainable Communities policy in Phase 2 should also be amended to reflect this.	
West Midlands Mosses SAC, Midlands Meres and Mosses Phase 2 Ramsar	Site receives nitrogen and acid deposition above critical load. A precautionary approach dictates that a an adverse effect on integrity should be concluded due to effects of diffuse air pollution, as it is not possible to prove that levels will not increase.	Measures are required to reduce traffic levels, for example through charging for journeys and investment in lesser polluting public transport.	
South Pennine Moors Phase 2 SPA	Site receives nitrogen and acid deposition above critical load. A precautionary approach dictates that a an adverse effect on integrity should be concluded due to effects of diffuse air pollution, as it is not possible to prove that levels will not increase.	Based on this suggested mitigation Policy SR4 was included within the preferred option and has been agreed with Natural England.	
Fenn's, Wixhall, Bettisfield, Wem and Cadney Mosses SAC, Midlands Meres and Mosses Phase 1 Ramsar	High level of acid and nitrogen deposition may be currently having an adverse effect on habitat structure and the species composition of plant communities. This has knock-on effects for associated bird populations and their breeding success.  Development generally within the west midlands could lead to an increase in air pollution generally and an adverse effect on the integrity of the site		

Site Name	Effect on integrity	Avoidance/Mitigation recommended by RSS Phase 2 HRA <sup>10</sup>	Additional mitigation/avoidance from 3 scenarios
Wye Valley Woodlands SAC	<p>The HRA of Phase 2 concluded that the site is currently receiving Nitrogen deposition above critical load and ozone above critical levels. Ozone is secondary pollution generated through complex process involving sunlight. So concentrate on reducing NOx emissions.</p> <p>It was concluded therefore that an adverse effect upon the site could not be ruled out. All three new housing scenarios could exacerbate diffuse pollution levels at the site. However Scenario 1 is likely to have the lowest additional impact upon the site as the levels as it represents the lowest level of additional housing growth.</p>		No additional mitigation over that in policy SR4 considered necessary for the additional housing scenarios.

## Changes in Water Quality

- 4.9 Treweek Environmental Consultants are undertaking a review of WRMPs and the latest information in relation to water resources including RoCs and HRAs associated with these. They will consider deficits in headroom for specific water zones associated with the Preferred Option and NLP Scenarios 1, 2, and 3. If risk to site integrity remains, they will draw up a list of possible avoidance/mitigation measures.

## Effects on site integrity in combination with WMRSS Phase 2 Revisions

- 4.10 The HRA Assessment for the Phase 2 Revisions identified that the WMRSS has the potential to reduce water quality at a number of sites. The scenarios have the potential to further reduce water quality at the sites listed in Table 4 for those components that may feed into these sites through putting additional pressure on the sewage treatment infrastructure and through increasing the risk of diffuse pollution getting into surface water sewers.
- 4.11 Due to the likely additional waste water effluent discharges from the additional homes and lack of water treatment capacity it is not possible at this stage to be able to conclude that there will be no additional impact upon Pasturefields Salt Marsh SAC, River Mease SAC, River Wye SAC, the Severn Estuary SAC & Ramsar site and River Clun SAC. However water quality and water supply issues are currently be reassessed under a separate piece of work that will consider the new housing scenarios.
- 4.12 Additional housing growth will potentially add to the impacts of the WMRSS Phase 2 Preferred Option.

## Initial avoidance and mitigation measures suggested

- 4.13 To be addressed through a separate report to be produced by Treweek Environmental Consultants.

## Changes in Water Supply

- 4.14 Treweek Environmental Consultants are undertaking a review of WRMPs and the latest information in relation to water resources including RoCs and HRAs associated with these. They will consider deficits in headroom for specific water zones associated with the Preferred Option and NLP Scenarios 1, 2, and 3. If risk to site integrity remains, they will draw up a list of possible avoidance/mitigation measures.

## Effects on site integrity in combination with WMRSS Phase 2 Revisions

- 4.15 The HRA of the WMRSS Phase 2 Revisions identified the approximate increases in water demand from the domestic sector by water resource zones (WRZ). The scenarios are likely to increase this demand. The affect of the additional water demand in each WRZ on specific European sites will depends on the specific hydrological needs of each site, other pressures on water resources and whether the Water Companies have plans in place to establish additional infrastructure to collect and distribute water without sourcing additional surface or groundwater that supplies European sites and at this stage it is not possible to predict which elements of the housing scenarios may affect the European site.
- 4.16 The HRA of the WMRSS Phase 2 Revisions identified that there are a number of systems and feedback loops in place to avoid abstractions adversely affecting European sites and other designated conservation sites. The EA issues a variety of licences that allow abstraction including a "Hands Off" flow licence which is designed to protect a variety of interests when river levels fall below a certain level. Until now, it is considered this has proved effective in protecting European sites from adverse effects associated with low flows.

4.17 Consultation with the Water Resource Group during the HRA of the WMRSS Phase 2 Revisions suggested that increasingly, controls to protect the needs of European sites might not leave enough water for the Water Companies to meet their obligations. As a result Water Companies may be left with options that are extremely expensive, and perhaps not immediately deliverable, or which are likely to have an impact upon the environment. The controls in place cannot be completely relied on in future to protect all the European sites given the growth in demand expected. In addition, the needs of sites have tended to be considered on a case by case basis. Increasing demand across the region is likely to reduce future room for manoeuvre in terms of balancing demand and supply to sites and it may be necessary to undertake further review at regional level when all Habitats Regulations Reviews are complete and Water Resource Plans are available. However water quality and water supply issues are currently be reassessed under a separate piece of work that will consider the new housing scenarios.

4.18 The sites taken forward to Stage 2 lie within or receive water from the following WRZ.

Water Company	Water Resource Zones	European Sites
South Staffordshire Water	South Staffordshire	Cannock Chase SAC River Mease SAC Midlands Meres and Mosses Phase I Ramsar Midlands Meres and Mosses Phase 2 Ramsar
Severn Trent Water	Staffordshire and East Shropshire	Fenn's, Wixhall, Bettisfield, Wem and Cadney Mosses SAC Pasturefields Salt Marsh SAC
	Severn	River Clun SAC, Severn Estuary cSAC, SPA and Ramsar Severn Estuary SPA Severn Estuary Ramsar Midlands Meres and Mosses Phase I Ramsar Midlands Meres and Mosses Phase 2 Ramsar
	Oswestry and Ellesmere	River Dee and Bala Lake SAC
Welsh Water	Hereford Conjunctive Use	River Wye SAC River Usk SAC

**Table 9: Water Resource Zones relevant to each European site; Source of site base data and the relevant water resource zones details in relation to RSS Phase 2 HRA: Ursus Consulting Ltd & Treweek Environmental Consultants (2007) Habitats Regulations Assessment of the Phase II Revision of the Regional Spatial Strategy for the West Midlands**

4.19 The limits in available water resources are evident from the early findings of the RoC work being carried out for the Wye. Changes to control rules likely as a result of this work will affect the volume of water Welsh Water can abstract from the Wye. Welsh Water will need to examine alternative supplies to accommodate growth in Herefordshire and if this has implications for the transfer water to the River Usk to supply South East Wales. However water supply issues are currently be reassessed under a separate piece of work that will consider the new housing scenarios.

4.20 The HRA for the WMRSS Phase 2 Revisions identified that due to the predicted future WRZ deficits, current conditions at each site and the housing and economic growth envisaged in this and adjacent regions' water provision is likely to pose a significant risk to site integrity for a number of

the European Sites. Given the complexity of the water resource system it is not possible to assess which element may impact upon European sites as there is insufficient detail at the RSS stage to identify the specific impacts. Water supply issues are currently be reassessed under a separate piece of work that will consider the new housing scenarios. The scenarios across the region will increase the risk at the following sites that are susceptible to increased demands on water resources:

- River Dee and Bala Lake SAC.
- River Mease SAC.
- River Wye SAC.
- Severn Estuary cSAC.
- River Usk SAC
- Severn Estuary SPA.
- Severn Estuary Ramsar.

- 4.21 Treweek Environmental Consultants are undertaking a review of WRMPs and the latest information in relation to water resources including RoCs and HRAs associated with these. They will consider deficits in headroom for specific water zones associated with the Preferred Option and NLP Scenarios 1, 2, and 3. If risk to site integrity remains, they will draw up a list of possible avoidance/mitigation measures. This HRA needs to be considered jointly with the HRA commissioned in respect of water quality and supply.

## **Disturbance Caused by Recreation/Amenity and Tourism**

### **Effects on site integrity in combination with WMRSS Phase 2 Revisions**

- 4.22 Direct impacts of tourism and recreation are associated with physical damage (trampling, erosion), disturbance (from dog walking, climbing, walking etc) and from pollution (associated with traffic, littering). Typical effects include increased habitat fragmentation and localised erosion through (over-) use of footpaths, wider erosion due to lack of designated footpaths, decline in water quality from eroded soil in runoff and disturbance of species (which can be a significant problem during the breeding season or in harsh weather). Indirect effects occur due to development and economic activity (and the associated land use change) required to support tourism.
- 4.23 It is expected that growth in the region will contribute further to generally increasing pressures on upland sites including the Peak District Dales SAC and the South Pennine Moors Phase 2 SPA and South Pennine Moors SAC. These are affected by damage to designated plant communities, localised air pollution associated with increasing recreational traffic and disturbance to bird communities. Growth is also expected to exacerbate impacts on the integrity of Cannock Chase SAC, which is located in an increasingly urban context and is already heavily used. Although none of the three potential scenarios include additional development in Cannock Chase, Scenarios 2 and 3 include development in Stafford which may, depending on the precise location, be close enough to have an impact on the site.
- 4.24 Increased recreational pressure on the River Wye SAC is also likely. Impacts on other sites for which LSEs were identified can largely be tackled through measures implemented at site level and may not require solutions through the RSS (see section 5.4.4). For example, there is a specific risk to the Cannock Extension Canal SAC through increased use of the canal network which could mean that its populations of Luronium rattans are damaged by excessive disturbance and pollution associated with excessive boat transport. However it should be possible to regulate at a local level the number of boats using the canal.

### **Initial avoidance and mitigation measures suggested**

- 4.25 A number of the measures identified within the HRA of the Phase 2 Revisions of the WMRSS are set out below and in Table 11:

- 4.26 Visitor management strategies should encourage use of more robust sites, as per the Cannock Chase AONB Management Plan and control access to more sensitive areas, for example by designating mandatory 'dogs on leads' areas where ground-nesting birds may be disturbed or creating buffer areas with limited access.
- 4.27 Districts within the Region should be encouraged to ensure that Countryside Access Strategies and associated Action Plans make specific reference to pressures on European Sites and review the possible implications of proposed measures to increase access. In some parts of the region, improvement of the Rights of Way network could take pressure off European Sites by increasing general town-to-country access. Surfacing or re-surfacing paths on upland habitats has proved successful in some cases in confining walkers to designated rights of way and reducing the extent to which they roam over sensitive areas (Pearce-Higgins and Yalden 1997, Finney et al. 2005). In the Pennines this has allowed species such as Golden Plover to successfully exploit areas where previously they would have been disturbed.
- 4.28 Development Plans need to ensure that opportunities for recreation and tourism are balanced with environmental sensitivities. This is likely to be a growing concern in Herefordshire for the River Wye, due to new housing proposals. Implications for facilities required to support future tourism and recreation centred on the River Wye need to be subject to Appropriate Assessment. The Herefordshire Unitary Development Plan, published in March 2007 introduces a proposed "More Places" strategy, which will include an assessment of local needs and a series of options and priorities, developed through an analysis of key issues. This may need to be reviewed against possible impacts on the integrity of the River Wye.
- 4.29 For many sites local or site-based management solutions may be considered appropriate. However, for sites such as the South Pennine Moors SAC, the Peak District Dales SAC, the River Wye SAC and Cannock Chase SAC, integrated and sustainable transport should be considered as a key issue to ensure that increased visitor numbers do not result in increased traffic disturbance and emissions.
- 4.30 In the addition, there is a potential that the scenarios being considered may trigger the need to consider the provision of Suitable Alternative Natural Green Space (SANGS) similar to that which has been implemented for the Thames Basin and Heaths SPA/SAC. This may be an appropriate mechanism to ensure that, for example, additional housing in Stafford (potential scenarios 2 and 3) do not increase the visitor pressure on Cannock Chase SAC.

**Table 11: Effects and possible mitigation for disturbance caused by tourism or recreation**

Source of site base data and the avoidance/mitigation in relation to RSS Phase 2 HRA: Ursus Consulting Ltd & Trewick Environmental Consultants (2007) Habitats Regulations Assessment of the Phase II Revision of the Regional Spatial Strategy for the West Midlands

Site Name	Effect on integrity	Avoidance/Mitigation following RSS Phase 2 HRA	Additional mitigation/avoidance from 3 scenarios
<p>Cannock Chase, SAC</p>	<p>Recreational pressure is currently affecting the site. Approximately 58% of the AONB is open access and some of the well used habitats are already noted to be fragile. More than 1 million visitors a year. Levels of recreational use are expected to increase with implications for levels of disturbance and associated vegetation damage.</p> <p>The additional housing under the RSS Phase 2 and the may increase the number of people using the site for recreational purposes.</p>	<p>Consolidation of the site and an increase in its area would help to reduce overall pressure from increasing use.</p> <p>Visitor management strategies should encourage use of more robust sites and control access to more sensitive areas through the Cannock Chase AONB Management Plan. For example by designating mandatory 'dogs on leads' areas where ground-nesting birds may be disturbed or creating buffer areas with limited access.</p> <p>Natural England to work with Cannock Chase /Staffordshire Moorlands and</p> <p>Herefordshire to identify extent of pressures and to inform Regional</p> <p>Implementation Plan.</p> <p>It is proposed that the following</p> <p>text should be added in Phase Two:</p> <p>Local planning authorities and tourism bodies should work together (where</p> <p>appropriate) and in consultation with Natural England to identify whether increased tourist numbers and recreational pressure could adversely affect the integrity of Natura 2000 and Ramsar sites, and appropriate mitigation should be identified in LDDs including the potential for urban based attractions'.</p> <p>With respect to <b>CF3 policy</b> an additional site specific sub-clause should possibly be added, e.g. to cover the following:</p>	<p>Additional mitigation strategy:</p> <p>Currently the suggested text has not been included within the Preferred Option. The exact text needs to be agreed for the PO.</p> <p>All three scenarios will need to include the text which is agreed for the PO.</p> <p>No additional mitigation over and above this is considered necessary for the three scenarios.</p>

Site Name	Effect on integrity	Avoidance/Mitigation following RSS Phase 2 HRA	Additional mitigation/avoidance from 3 scenarios
		<p>'Due to existing pressures on the integrity of Cannock Chase SAC development should provide mitigation to ensure additional housing doesn't increase recreational pressure and have an adverse effect on the integrity of the site. The local authority must ensure that appropriate mitigation is provided to ensure increases in visitor numbers can be accommodated before housing numbers are agreed. Cannock Chase District Council should work closely with Natural England to identify appropriate mitigation requirements'.</p> <p>Consolidation of Cannock Chase would help to reduce ground pressure and allow better access management as well as provide scope for future provision of supporting infrastructure.</p>	
Cannock Extension Canal SAC	<p>An increase in boat traffic would have implications for the qualifying features by impacting on the clarity of the water, possibly affecting chemical water quality and increasing levels of.</p> <p>Increased levels of disturbance may cause a decline in the population of open-water plants as well as reducing water quality.</p>	<p>Impacts should be controllable at a local level.</p> <p>Numbers of boats need to be regulated.</p>	<p>No further mitigation is deemed necessary if the number of boats using the site is regulated using a site and visitor management plan.</p>
Fenn's Wixhall, Bettisfield, Wern and Cadney Mosses SAC	<p>Integrity depends on maintaining active raised bogs therefore trampling and erosion of vegetation should be kept to a minimum. An additional 1,900 houses in the vicinity on top of the proposed houses could cause recreational levels to increase. The Shropshire Economic Development Strategy's intention to open up access to small lakes and meres within the Whitchurch to Ellesmere corridor may increase recreational pressure and disturbance.</p>	<p>Avoidance is controllable at site level as it is permit access only, problems can be tackled through access management.</p> <p>Appropriate vegetation management needs to be incorporated into management plan.</p> <p>As the restoration management on the site continues the site will get wetter, further limiting access away from designated routes. If there were features that were being affected then it would be relatively easy to rearrange access to control impacts.</p>	<p>No further mitigation is deemed necessary.</p>

Site Name	Effect on integrity	Avoidance/Mitigation following RSS Phase 2 HRA	Additional mitigation/avoidance from 3 scenarios
<p>Peak District Dales SAC; South Pennine Moors SAC</p>	<p>Well used popular destination. Trampling and erosion of sensitive vegetation. The proposed housing in north Staffordshire could lead to increased recreational use of the Peak District Dales. The increase in population associated with the RSS Phase 2 (17,100) and Scenarios 2 and 3 (6,000) in north Staffordshire area and the 6000 houses in Staffordshire Moorlands under Phase 2 may lead to a small increase in recreational pressure in the Peak District. The Peak District National Park as a whole attracts 22 million visits a year. The largest proportions of day respondents came from postcodes that cover the Park (Sheffield, Stockport and Derby) followed by Nottingham and Oldham There is a pattern in the home postcodes of Day respondents visiting the National Park in that the nearer the postcode area to the Park, the larger the proportion of day respondents. However, there is a slight skew towards the East Midlands with more visitors originating from the South East of the Park than other directions (Peak District Visitor Survey 2005). 1-5% of the day visitors to the Peak District come from the Staffordshire area, including Staffordshire Moorlands, Stoke on Trent, Newcastle, Stafford. Between 0.01 and 5% of the visitors came from the West Midlands area. Therefore the increase in housing in the Staffordshire Moorlands and North Staffordshire could lead to an increase in recreational activity, particularly as the site is located partly in the Staffordshire Moorlands District.</p>	<p>Access management may be required to avoid localised soil erosion and damage. Inter-regional solutions may be required.</p> <p>Policy T1 provides the overarching framework for the RSS with respect to improving the accessibility and performance of the transport system whilst not perpetuating past trends in car traffic and trip length growth. Access to remote sites for recreation and amenity requires close attention to integrated transport options. A new policy may be required specifically to tackle this issue and to ensure better integration between transport policies and priorities and strategies promoting access to the countryside.</p> <p>Local authorities may need to work jointly to assess the implications of their proposals for these sites in order to identify coordinated solutions at strategic level.</p> <p>Coordinated approaches and inter-regional efforts may be required to support required habitat and access management measures in upland sites which straddle regional boundaries which include these sites and to develop sustainable transport options.</p> <p>As these sites are exposed to increased trampling and erosion the Rights of</p> <p>Way Network could help to reduce pressure on popular areas.</p>	<p>No further mitigation is deemed necessary if the number of boats using the site is regulated using a site and visitor management plan.</p>
<p>River Wye SAC</p>	<p>Integrity depends on maintaining the river as suitable habitat for floating formations of water crowfoot (<i>Ranunculus</i>) of plain and sub-mountainous rivers. Also as suitable habitat for populations of Atlantic salmon, allis shad, twaite shad, bullhead, brook lamprey, river lamprey, sea lamprey and white-clawed crayfish. Integrity also depends on maintaining the river and adjoining land</p>	<p>Strategies to increase recreation and access should be reviewed to ensure that they will not damage the integrity of the system and riparian habitat.</p> <p>The Herefordshire Unitary Development Plan, published in March 2007 introduces a proposed "More Places" strategy, which will include an assessment of local needs and a series of options and priorities, developed through an</p>	<p>No further mitigation is deemed necessary.</p>

Site Name	Effect on integrity	Avoidance/Mitigation following RSS Phase 2 HRA	Additional mitigation/avoidance from 3 scenarios
	<p>as habitat for populations of otter.</p> <p>Damage to water crowfoot plant communities is possible due to increasing water sports based on the river. Physical disturbance of otter is also possible. CCW consider recreational activities could have an adverse effect on migratory fish and their breeding areas within the river.</p> <p>The motorway network makes the Wye easily accessible to people from the Midlands.</p> <p>The Phase 2 HRA identified that in combination with other plans and projects (see below) there was the potential for increased recreational pressure to have an adverse affect upon the integrity of the site. All three new housing scenarios will add to the in combination impacts.</p> <p>All 3 housing Scenarios involve a small increase of 1200 units in Herefordshire. There is the potential the housing would increase visitor pressure on the River Wye however the scenarios alone this impact is likely to be marginal and would not affect the integrity of the site.</p>	<p>analysis of key issues. This may need to be reviewed against possible impacts on the integrity of the River Wye.</p> <p>Local authorities in both England and Wales may need to work jointly to assess the implications of their proposals for these sites in order to identify coordinated solutions at strategic level.</p> <p>Coordinated approaches and inter-regional efforts (and crosses the England and Wales boundary) may be required to support required habitat and access management measures which straddle regional boundaries like the River Wye SAC.</p>	
<p>Peak District Moors (South Pennine Moors Phase I) SPA; South Pennine Moors Phase 2 SPA</p>	<p>Potential disturbance to breeding bird populations from an increase in visitor pressure. Damage to habitats through trampling and erosion will reduce breeding success and the extent of available habitat, potentially causing reduction in population sizes. Site is very close to large population centres, and significant numbers of people use it for recreation.</p>	<p>Policy T1 provides the overarching framework for the RSS with respect to improving the accessibility and performance of the transport system whilst not perpetuating past trends in car traffic and trip length growth. Access to remote sites for recreation and amenity requires close attention to integrated transport options. A new policy may be required specifically to tackle this issue and to ensure better integration between transport policies and priorities and strategies promoting access to the countryside.</p> <p>Local authorities may need to work jointly to assess the implications of their proposals for these sites in order to identify coordinated solutions at strategic level.</p>	<p>No further mitigation is deemed necessary</p>

Site Name	Effect on integrity	Avoidance/Mitigation following RSS Phase 2 HRA	Additional mitigation/avoidance from 3 scenarios
		<p>Contributions (section 106 or equivalent sub regional programmes) towards</p> <p>improved visitor management may be another possible mechanism to help</p> <p>accommodate additional pressures. For example investment in the Rights of</p> <p>Way Network could help to reduce pressure on European Sites or more locally</p> <p>on sensitive areas within European Sites.</p>	
Midlands Meres and Mosses Phase 1 Ramsar site and Phase 2 Ramsar site	Possible damage to sensitive vegetation if visitor numbers increase significantly. An increase in housing allocation across Shropshire and Staffordshire where the majority of these mosses and meres are may cause an adverse effect on site integrity through increase recreation pressures.	Impacts from recreational use of these sites should be possible to manage at a site level by controlling access, numbers of anglers and so on.	No further mitigation is deemed necessary.
Severn Estuary SPA/Ramsar	Potential for disturbance of birds by walkers and boats with increased visitor numbers. An increase in housing in the southern area of West Midlands in combination with the Visitor Economy Strategy identifying the site as a visitor destination could have an effect on site integrity.	The distance of the site from key growth areas in the region may lessen the likelihood that there will be a significant impact on disturbance of birds.	No further mitigation is deemed necessary.

Source of site base data and the assessment of significance of effects of RSS Phase 2: *Ursus Consulting Ltd & TrewEEK Environmental Consultants (2007) Habitats Regulations Assessment of the Phase II Revision of the Regional Spatial Strategy for the West Midlands*

## Land Use Change and Fragmentation –Impacts on Protected Species outside the designated site

### Effects on site integrity in combination with WMRSS Phase 2 Revisions

- 4.31 The level of development proposed in Phase Two and the nine housing options means that widespread land use change is likely throughout the region, particularly as a result of housing. Associated increases in traffic are likely to contribute to fragmentation effects and further restrict the mobility of species such as otter within the landscape. Watercourses constrained by development do not have sufficient space for the natural processes of erosion, deposition and flooding. Development may also remove buffers between development and the water environment, increasing risks of pollution.
- 4.32 Effects on the integrity of the River Wye SAC (and potentially on the Wye Valley Woodlands SAC and the Wye Valley and Forest of Dean Bat Sites) are possible as a result of housing proposals in Herefordshire (Phase 2 and all potential scenarios) and the wider catchment of the River, and on Cannock Chase SAC as a result of housing proposals in Stafford. Development in this region (both housing and economic) is also likely to exacerbate existing pressures on the River Mease SAC (effects of urbanisation on availability of habitat for otter)... Effects on integrity of Fens Pool SAC are possible. While the site itself would not be used for development, it is possible that land-use around the site could change. Increases in housing numbers in the Black Country may result in further pressure on land take.
- 4.33 The scale of development proposed for the region will exacerbate existing trends in land use change and fragmentation of habitat for wildlife, all of which contribute to general loss of biodiversity at a landscape scale and also affect the resilience of European sites.
- 4.34 The Biodiversity Enhancement Areas could play a part in consolidating wildlife habitat and buffering impacts of land use change on European sites.

### Initial avoidance and mitigation measures suggested

- 4.35 A number of the measures identified within the HRA of the Phase 2 Revisions of the WMRSS are set out in Table 12:
- 4.36 The scale of development proposed for the region will exacerbate existing trends in land use change and fragmentation of habitat for wildlife, all of which contribute to general loss of biodiversity at a landscape scale and also affect the resilience of some sites.
- 4.37 General mitigation for all sites-
- New policy wording to SR2 Sustainable Communities to require consolidation of biodiversity and link to European sites.
  - New text added to 2.13 which refer to Habitat Regulation Assessment to set out that HRA has been integrated across the RSS revision and to require authorities to work across boundaries to consider the implications on European sites.
  - The scale of development proposed for the region will exacerbate existing trends in land use change and fragmentation of habitat for wildlife, all of which may contribute to general loss of biodiversity at a landscape scale and may also affect the resilience of some sites.

**Table 12: Effects and possible mitigation for Land Use Change and Fragmentation –Impacts on Protected Species outside the designated site**

Source of site base data and the avoidance/mitigation in relation to RSS Phase 2 HRA: Ursus Consulting Ltd & Treweek Environmental Consultants (2007) Habitats Regulations Assessment of the Phase II Revision of the Regional Spatial Strategy for the West Midlands

Site	Effect on integrity	Mitigation for RSS Phase 2	Additional mitigation for scenarios
River Wye SAC	<p>The HRA of the Phase 2 RSS identified land use change that could lead to secondary impact upon water quality.</p> <p>Given the level of development expected for Herefordshire and in some of the towns on the River Wye (e.g. Hereford, which will take an additional 8,300 houses under CF3 and a further 1,200 under each scenario), it is likely that land use and habitats near the site may change as a result of the RSS and the housing scenarios.</p> <p>Levels of sediment are important to crayfish, freshwater pearl mussel, salmon and otter so gross land use changes affecting sediment loading, quality of sediment and oxygen levels would be detrimental to these species. Impacts of pesticides on crayfish, fish fry and <i>Ranunculus</i> bed is detrimental, often even at low concentrations.</p> <p>Increased urbanisation close to the River Wye could lead to an increase in artificial lighting which may impact on features of interest such as otters who principally move during the night</p> <p>General levels of traffic are expected to go up in the region and barrier effects could increase for species like otter.</p>	<p><b>Policy to be added:</b></p> <p>'Where Natura 2000 sites cross local authority boundaries, or where development in one district could have impacts in another authority's area, when carrying out Appropriate Assessments of LDD options, authorities must work jointly to assess the implications of development on such designated sites''</p>	No further mitigation is deemed necessary.
Wye Valley Woodlands SAC and the Wye Valley and Forest	There is the potential that, depending upon the precise location of the housing units that there could be an adverse impact on foraging sites outside the site. Research suggests that most	A specific requirement for Wye Valley Woodlands and Forest of Dean Bat Sites needs to be included in the sub regional text:	No further mitigation is deemed necessary.

Site	Effect on integrity	Mitigation for RSS Phase 2	Additional mitigation for scenarios
of Dean Bat Sites	<p>lesser horseshoe bats forage within 2.5 km of their nursery roost (Bontandina F. and Schofield H. and Beat Naef-Daenzer 2002). Female greater horseshoe bats may travel up to 10km in winter in search for roosts with the correct temperature and feeding sites (Ransome, 1991a). However Duvergé and Jones (1994) suggest that key habitats within 4km of a greater horseshoe roost site should be maintained or improved</p>	<p>Establishment of a 10km buffer surrounding the sites within which HRA would be required for proposals likely to cause land use change and implications would have to be reviewed in terms of site integrity. Implications of agricultural land use change may need to be considered.</p>	
Cannock Chase SAC	<p>Development in Stafford and Cannock Chase districts under CF3 is expected to result in land around Cannock Chase being used for development, as development is likely to be focused in Cannock town, Stafford town and Rugeley. Development in neighbouring towns may change land use in the surrounding areas, but these are not expected to have implications for land use or habitat change within the site itself.</p>	<p>Areas for Concentrated Biodiversity Enhancement' could play a part in consolidating wildlife habitat and buffering impacts of land use change on European sites, especially in Cannock Chase SAC. Given the scale of development proposed in the region and its implications for the future viability of species populations for which European sites are designated, a policy strengthening the role of BEAs should be considered. Support is required to strengthen implementation of the Biodiversity Enhancement Areas in practice. Policies <b>QE4</b> (Greenspace in the built environment) and <b>QE6</b> could be amended so that they make specific reference to the role of Areas for Concentrated Biodiversity Enhancement in expanding and linking isolated habitat units, particularly where this will play a part in consolidating European Sites or buffering them against the effects of disturbance and land use change.</p> <p>Developers should contribute to the establishment and management of these areas in any case where their proposals will cause significant land use change with implications for a European site. There are possible links with the 'Landscapes for Living project'.</p> <p>For Cannock Chase SAC, implementation of the Pilot 'Biodiversity Enhancement Area' is a potential mitigation measure to offset several in- combination pressures on the site.</p>	<p>No further mitigation is deemed necessary.</p>

Site	Effect on integrity	Mitigation for RSS Phase 2	Additional mitigation for scenarios
Fens Pool SAC	<p>While the site itself would not be used for development, it is possible that land-use around the site could change.</p> <p>Increases in housing numbers in the Black Country may result in further pressure on land take.</p> <p>The Phase 2 RSS HRA identified that if development were to affect areas outside the site which were used by Great Crested Newts then there would be an adverse impact upon the integrity of the site. While the housing Scenarios present no additional pressure on the site the when combined with the RSS Phase 2 and adverse impact on integrity remains.</p>	<p>This has been tackled through changes to the RSS in Phase One. This includes a policy stating that "The Brierley Hill and Dudley Area Action Plan will define a Northern Limit to development and land use at Brierley Hill which lies south of the SSSI surrounding the SAC Fens Pools". The Phase One AA Report also recommends that subsequent AAs undertaken for LDDs or for specific developments in the area take into account the importance of supporting terrestrial habitat to the integrity of the site.</p>	<p>No further mitigation is deemed necessary.</p>
River Dee and Bala Lake SAC	<p>There may be a possible cumulative adverse effect on integrity through an increase in traffic levels having a knock on effect on otter deaths from road traffic accidents. The RSS Phase 2 housing allocation for Shropshire is 25,700 houses. Allocations and development in the North West and West Midlands likely to result in increased road traffic near the site (A494 main road)</p>	<p>There is a specific requirement for a policy in relation to otter populations of the River Dee and Bala Lake SAC, the River Wye SAC and the River Mease SAC as follows:</p> <ul style="list-style-type: none"> <li>- Allocations and development in the North West and West Midlands likely to result in increased road traffic near the site will need to fund road improvements to ensure otter movements are sustainable and levels of mortality do not go up.</li> </ul>	<p>No further mitigation is deemed necessary.</p>
River Mease SAC	<p>General levels of traffic are expected to go up and barrier effects could increase for species like otter. Increased development through Phase 2 means the success of the river's otter population could be affected. Although the otter is a qualifying feature and not a primary reason for selection for the site an adverse impact on the population would constitute an adverse effect on the site's integrity.</p>	<p>There is also a specific requirement for River Mease SAC as follows:</p> <ul style="list-style-type: none"> <li>- Allocations and development in the East Staffordshire and Stafford under the RSS Phase 2 and Scenarios 2 and 3 are likely to result in increased road traffic near the site will need to fund road improvements to ensure otter movements are sustainable and levels of mortality do not go up</li> </ul>	

Source of site base data and the proposed mitigation for RSS Phase 2: Ursus Consulting Ltd & Treweek Environmental Consultants (2007) Habitats Regulations Assessment of the Phase II Revision of the Regional Spatial Strategy for the West Midlands

## Conclusion

- 4.38 The issues which have been identified which may have a significant influence on the integrity of European sites in the region are varied; changes in air quality; changes in water quality; changes in water supply; disturbance caused by recreation/amenity and tourism; and land use change and fragmentation all warrant different initial avoidance and mitigation measures. Detailed mitigation for the RSS Phase 2 level and the scenarios has been considered.
- 4.39 Although the three scenarios do seem to have appropriate mitigation available (subject to the results from the further separate piece of work that is reassessing the water supply and water quality issues in consideration with the new housing scenarios), the level of mitigation that will be required at the next tier down and the ease of implementation is different between the scenarios. Scenario 1 having the least impact to Scenario 3 having the greatest impact due to the geographical distribution and amount of housing proposed within the region.