



Chichester District Council

Chichester Local Plan: Key Policies
Submission 2014-2029

Habitats Regulations Assessment

May 2014



Prepared for

Chichester District Council



Revision Schedule

Habitats Regulations Assessment May 2014

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	January 2013	Draft Report	Dr Graeme Down Ecologist	Dr James Riley Principal Ecologist	Dr James Riley Principal Ecologist
02	October 2013	Revised Report following Plan Updates	Dr Graeme Down Ecologist	Dr James Riley Principal Ecologist	Dr James Riley Principal Ecologist
03	March 2014	Final revisions following consultation	Dr Graeme Down Ecologist	Dr James Riley Principal Ecologist	Dr James Riley Principal Ecologist

URS
Scott House
Alencon Link
Basingstoke
Hampshire
RG21 7PP

Tel 01256 310200
Fax 01256 310201

www.ursglobal.com

Limitations

URS Infrastructure & Environment UK Limited (“URS”) has prepared this Report for the sole use of **Chichester District Council** (“Client”) in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by URS.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by URS in providing its services are outlined in this Report. The work described in this Report was undertaken in July 2013 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

URS disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to URS’ attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. URS specifically does not guarantee or warrant any estimate or projections contained in this Report.

Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

Copyright

© This Report is the copyright of URS Infrastructure & Environment UK Limited. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

Table of Contents

1	Introduction	6
1.1	Background to the Project	6
1.2	Current Legislation	6
1.3	Scope of the Project	7
1.4	This Report	9
2	Methodology	10
2.1	Introduction	10
2.2	HRA Task 1 - Likely Significant Effects (LSE)	11
2.3	Confirming Other Plans and Projects That May Act In Combination	11
3	Pathways of Impact	14
3.1	Introduction	14
3.2	Urbanisation	14
3.3	Recreational Pressure	15
3.4	Atmospheric Pollution	19
3.5	Water Abstraction	23
3.6	Water Quality	24
3.7	Coastal Squeeze	25
3.8	Loss of Habitats Outside of European Sites	26
4	Chichester & Langstone Harbours SPA and Ramsar site/Solent Maritime SAC	28
4.1	Introduction	28
4.2	Features of European Interest	28
4.3	Historic Trends and Current Conditions	31
4.4	Key Environmental Conditions	32
4.5	Potential Effects of the Plan	32
5	Pagham Harbour SPA and Ramsar	41
5.1	Introduction	41
5.2	Features of European Interest	41
5.3	Historic Trends and Current Pressures	42
5.4	Key Environmental Conditions	42
5.5	Potential Effects of the Plan	43
6	Ebernoe Common SAC	50

6.1	Introduction.....	50
6.2	Features of European Interest.....	50
6.3	Historic Trends and Current Conditions	50
6.4	Key Environmental Conditions	50
6.5	Potential Effects of the Plan	51
7	The Mens SAC	53
7.1	Introduction.....	53
7.2	Features of European Interest.....	53
7.3	Historic Trends and Current Pressures	53
7.4	Key Environmental Conditions	53
7.5	Potential Effects of the Plan	54
8	Duncton to Bignor Escarpment SAC	56
8.1	Introduction.....	56
8.2	Features of European Interest.....	56
8.3	Historic Trends and Current Pressures	56
8.4	Key Environmental Conditions	56
8.5	Potential Effects of the Plan	56
9	Arun Valley SAC/SPA/Ramsar site	58
9.1	Introduction.....	58
9.2	Features of European Interest: SAC	58
9.3	Features of International Interest: Ramsar Criteria	58
9.4	Historic Trends and Current Pressures	60
9.5	Key Environmental Conditions	60
9.6	Potential Effects of the plan.....	61
9.7	Other plans and projects	61
10	Overall Conclusions.....	62
	Appendix 1: ‘Tiering’ in Habitat Regulations Assessment.....	63

1 Introduction

1.1 Background to the Project

1.1.1 URS was appointed by Chichester District Council to assist the Council in undertaking a Habitats Regulations Assessment (HRA) of its emerging Local Plan. The objective of the assessment was to:

- identify any aspects of the Local Plan that would cause an adverse effect on the integrity of Natura 2000 sites, otherwise known as European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites), either in isolation or in combination with other plans and projects; and
- to advise on appropriate policy mechanisms for delivering mitigation where such effects were identified.

1.1.2 An HRA Scoping Report was produced and consulted upon with both the Council and Natural England in spring 2010. This culminated in an email from Natural England accepting the scope of the HRA as set out in that report¹. The Scoping Report was followed by a commentary (circulated internally to the Council) on the housing options being considered at that time for the purposes of identifying to the Council whether any options had fundamental problems regarding European sites that might not be capable of being addressed.

1.1.3 The Council prepared a 'Preferred Approach' document for public consultation in early 2013; that document was subjected to a Habitats Regulations Assessment. The Council have now progressed to their Submission Local Plan and that is the purpose of this current HRA report.

1.2 Legislation

1.2.1 The need for Habitats Regulations Assessment is set out within Article 6 of the EC Habitats Directive 1992, and interpreted into British law by the Conservation of Habitats and Species Regulations 2010. The ultimate aim of the Directive is to "*maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*" (Habitats Directive, Article 2(2)). This aim relates to habitats and species, not the European sites themselves, although the sites have a significant role in delivering favourable conservation status.

1.2.2 The Habitats Directive applies the precautionary principle to European sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Plans and projects with predicted adverse impacts on European sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

1.2.3 In order to ascertain whether or not site integrity will be affected, a Habitats Regulations Assessment should be undertaken of the plan or project in question:

Box 1. The legislative basis for Appropriate Assessment

¹ Email from Marian Ashdown (Natural England) to James Riley (URS Scott Wilson) 08/03/10

Habitats Directive 1992

Article 6 (3) states that:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives.”

Conservation of Habitats and Species Regulations 2010 (as amended)

The Regulations state that:

“A competent authority, before deciding to ... give any consent for a plan or project which is likely to have a significant effect on a European site ... shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives... The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site”.

- 1.2.4 Over the years the phrase ‘Habitats Regulations Assessment’ has come into wide currency to describe the overall process set out in the Conservation of Habitats and Species Regulations from screening through to Imperative Reasons of Overriding Public Interest (IROPI). This has arisen in order to distinguish the process from the individual stage described in the law as an ‘appropriate assessment’. Throughout this report we use the term Habitats Regulations Assessment for the overall process.

1.3 Scope of the Project

- 1.3.1 There is no pre-defined guidance that dictates the physical scope of a HRA of a Local Plan. Therefore, in considering the physical scope of the assessment, we were guided primarily by the identified impact pathways rather than by arbitrary ‘zones’. Current guidance suggests that the following European sites be included in the scope of assessment:

- All sites within the Local Plan area boundary (excluding the South Downs National Park, which has control of its own Local Plan); and
- Other sites shown to be linked to development within the District boundary through a known ‘pathway’, which could include sites within the South Downs National Park (discussed below).

- 1.3.2 Briefly defined, pathways are routes by which a change in activity within the Local Plan area can lead to an effect upon a European site. In terms of the second category of European site listed above, guidance from the former Department of Communities and Local Government states that the HRA should be ‘*proportionate to the geographical scope of the [plan policy]*’ and that ‘*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*’ (CLG, 2006, p.6).

- 1.3.3 There are five European site designations that lie wholly or partly within the Local Plan area, but outside of the South Downs National Park:
- Chichester and Langstone Harbours SPA and Ramsar sites;
 - Pagham Harbour SPA and Ramsar sites; and
 - Solent Maritime SAC.
- 1.3.4 Within Chichester District, but under the planning control of the South Downs National Park Authority, other sites are included within the HRA, as agreed with Natural England in the HRA scoping report (2010)². These are Ebernoe Common SAC, The Mens SAC, Duncton to Bignor Escarpment SAC and Arun Valley SAC, SPA and Ramsar sites.
- 1.3.5 The list of sites outside of the area covered by the Chichester Local Plan, but subject to screening is thus:
- Arun Valley SAC, SPA & Ramsar sites;
 - Duncton to Bignor Escarpment SAC;
 - Ebernoe Common SAC; and
 - The Mens SAC.
- 1.3.6 These European site designations are indicated on Figure 1.
- 1.3.7 The following sites were considered but scoped out of the assessment of the developing Local Plan since (except where mentioned) there was no identified pathway linking development in the Local Plan area to these sites²:
- Kingley Vale SAC;
 - Rook Cliff SAC;
 - Singleton and Cocking Tunnels SAC;
 - Woolmer Forest SAC/Wealden Heaths Phase 2 SPA (screened out in consultation with Natural England³ on the basis that traffic on the A3 will be increased by less than 10% as a consequence of development proposed within the Chichester Local Plan);
 - Butser Hill SAC;
 - East Hampshire Hangers SAC;
 - Shortheath Common SAC;
 - South Wight Maritime SAC;
 - Solent and Isle of Wight Lagoons SAC; and
 - Thursley and Ockley Bogs Ramsar.

² Appropriate Assessment of the LDF Core Strategy: Habitats Regulations Assessment Scoping Report. Scott Wilson (January 2010)

³ Louise Bardsley as communicated to Chichester District Council. Although this was agreed in relation to South East Plan housing figures, the Council has set a housing target in line with the South East Plan and therefore this agreement will still apply.

1.4 This Report

- 1.4.1 Chapter 2 of this report explains the process by which the HRA has been carried out. Chapter 3 explores the relevant pathways of impact. Chapters 4 to 9 cover the screening (likely significant effects) process and are organised on the basis of one chapter per European site (with the exception that contiguous SAC, SPA and Ramsar designations are considered within the same chapter). Each chapter begins with a consideration of the interest features and ecological condition of the site and of the environmental processes essential to maintain site integrity. An assessment of the Local Plan in respect of each European site is then carried out and avoidance and mitigation strategies proposed where necessary. The key findings are summarised in Chapter 10: Overall Conclusions.

2 Methodology

2.1 Introduction

- 2.1.1 The HRA has been carried out in the continuing absence of formal central Government guidance, although general EC guidance on HRA does exist⁴. The former Department for Communities and Local Government released a consultation paper on the Appropriate Assessment of Plans in 2006⁵. As yet, no further formal guidance has emerged. However, Natural England has produced its own internal guidance⁶ as has the RSPB⁷. Both of these have been referred to alongside the guidance outlined in section 1.2.3 in undertaking this HRA.
- 2.1.2 Figure 2 below outlines the stages of HRA according to current draft CLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

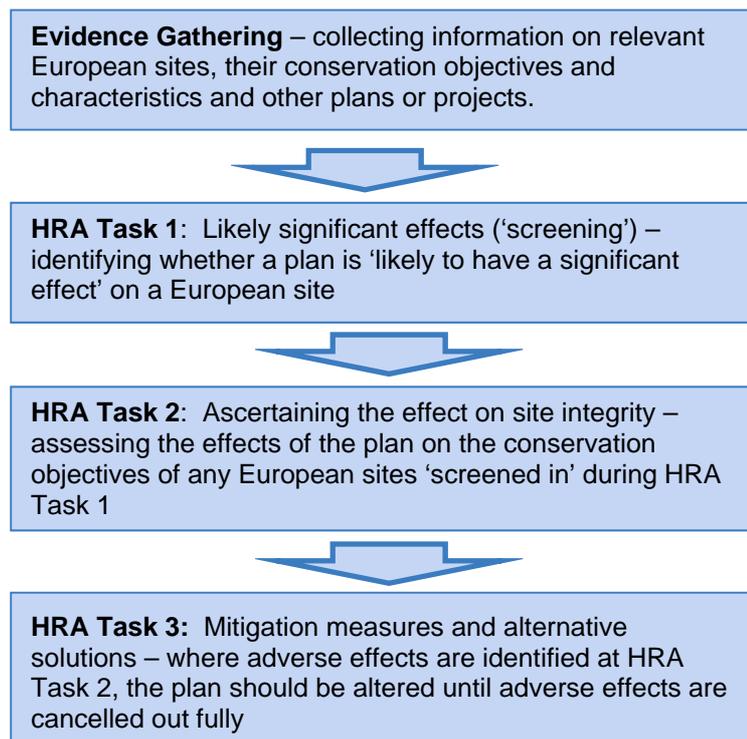


Figure 2 - Four-Stage Approach to Habitats Regulations Assessment

Source: CLG, 2006

⁴ European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.

⁵ CLG (2006) Planning for the Protection of European Sites, Consultation Paper

⁶ http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf

⁷ Dodd A.M., Cleary B.E., Dawkins J.S., Byron H.J., Palframan L.J. and Williams G.M. (2007)

The Appropriate Assessment of Spatial Plans in England: a guide to why, when and how to do it. The RSPB, Sandy.

2.2 HRA Task 1 - Likely Significant Effects (LSE)

2.2.1 Following evidence gathering, the first stage of any Habitats Regulations Assessment is a Likely Significant Effect (LSE) test - essentially a risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

"Is the Plan, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"

2.2.2 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction with European sites. This stage is the subject of Chapter 4 of this report, and goes a step further than the scoping report that was able to scope out sites listed in section 1.3.7. Those particular sites could be scoped out regardless of the nature and scale of any proposed development, whereas screening is needed where there is a potential pathway of impact and the scale, nature and location of development determines whether this actually exists.

2.2.3 In evaluating significance, URS have relied on our professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the European sites listed in 1.3.3 - 1.3.5.

2.2.4 The level of detail in land use plans concerning developments that will be permitted under the plans will never be sufficient to make a detailed quantification of adverse effects. Therefore, we have again taken a precautionary approach (in the absence of more precise data) assuming as the default position that if an adverse effect cannot be confidently ruled out, avoidance or mitigation measures must be provided. This is in line with the former Department of Communities and Local Government guidance that the level of detail of the assessment, whilst meeting the relevant requirements of the Habitats Regulations, should be 'appropriate' to the level of plan or project that it addresses (see Appendix 1 for a summary of this 'tiering' of assessment).

2.3 Confirming Other Plans and Projects That May Act In Combination

2.3.1 It is a requirement of the Regulations that the impacts of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question.

2.3.2 It is neither practical nor necessary to assess the 'in combination' effects of the Local Plan within the context of all other plans and projects within the South-East of England. For the purposes of this assessment, we have determined that, due to the nature of the identified impacts, the key other plans and projects relate to the additional housing, transportation and commercial/industrial allocations proposed for neighbouring authorities over the lifetime of the Local Plan. The South East Plan (May 2009) provides a good introduction to proposals for areas surrounding the Local Plan area. Although now revoked with the exception of Policy NRM6: Thames Basin Heaths Special Protection Area, it provides the best summary of the currently anticipated levels of housing within authorities that are up to 10km from European sites that could potentially be impacted by development within the Local Plan area.

2.3.3 In considering the potential for regional housing development on European sites, the primary consideration for many sites is the impact of visitor numbers – i.e. recreational pressure. Other pathways of impact described in more detail in Chapter 3 include pressure on water and quality. Whilst these are also strongly related to housing provision, the actual geographic impact must also be considered within the context of relevant infrastructure (e.g. sewerage capacity and water supply catchments).

Table 1. Housing levels to be delivered in authorities within 10km of relevant European sites under the South East Plan or adopted Local Plan Core Strategies, other than Chichester itself

Local Authority	Total housing from 2006 to 2026 (South East Plan unless otherwise indicated)
Arun	11,300
Bracknell Forest	11, 139 (adopted CS)
East Hampshire (Whitehill-Bordon EcoTown)	5,200 (5,500)
Eastleigh	7,080
Fareham (former Fareham SDA)	3,729 (adopted CS) (6,500 – 7,500)
Gosport	2,500
Havant	6,300 (adopted CS)
Isle of Wight	8,320 (2011-2027, adopted CS)
New Forest	3,920 (adopted CS)
Portsmouth	7,537 (2012-2027, adopted CS)
Southampton	16,300 (adopted CS)
Test Valley	10,020
Winchester	12,500 (2011-2031, adopted CS)
Worthing	4,000 (adopted CS)

2.3.4 There are other plans and projects that are relevant to the ‘in combination’ assessment, and the following have all been taken into account in this assessment:

Plans

- Core Strategies/Local Plans and DPDs produced by local authorities surrounding the Local Plan area;
- Comments from consultation on appropriate assessment of earlier LDF documents (produced for the previous withdrawn Core Strategy);
- The Inspector’s report from the Examination in Public of the Chichester District Core Strategy;
- The Sustainability Appraisal for the Local Plan and any data collated to inform it;
- Relevant HRA work undertaken for adjacent authorities;
- Relevant HRA work undertaken by the Partnership for Urban South Hampshire (PUSH) authorities;
- Portsmouth Water’s Final Water Resource Management Plan (2011);
- South East Water’s Final Water Resources Management Plan (2010);

- North Solent Shoreline Management Plan – Selsey Bill to Hurst Spit;
- South Downs Shoreline Management Plan – Beachy Head to Selsey Bill;
- Pagham to East Head Coastal Defence Strategy;
- Portchester Castle to Emsworth draft Coastal Flood and Erosion Risk Management Strategy;
- Chichester Harbour AONB Management Plan 2009-2014;
- South Downs Management Plan 2008-2013;
- Pagham Harbour Local Nature Reserve Management Plan (2007);
- Environment Agency Abstraction Management Strategies;
- Environment Agency River Basin Management Plans;
- Environment Agency Water Level Management Plans;
- Environment Agency. Water for People and the Environment: Water Resources Strategy Regional Action Plan for England and Wales (2009);
- Environment Agency, Southern Water and Chichester District Council position statements on waste-water treatment works;
- Stage 3 and (as appropriate) 4 of the Environment Agency's Review of Consents process for the European sites covered in this assessment (where available);
- European Site Management and Access Management Plans where available;
- Chichester District Council Air Quality Management Plan;
- West Sussex Local Transport Plan (2011-2026);
- West Sussex Minerals Local Plan (2003); and
- West Sussex Waste Local Plan (2004).
- Local Biodiversity Action Plan (2011)

Projects

- Graylingwell Park Development (750 homes);
- Rousillon Barracks development (252 homes); and
- Marshalls Mono Ltd., 86 homes at Hambrook.

2.3.5 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e. to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis, but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential.

3 Pathways of Impact

3.1 Introduction

3.1.1 In carrying out an HRA it is important to determine the various ways in which land use plans can impact on European sites by following the pathways along which development can be connected with European sites, in some cases many kilometres distant. Briefly defined, pathways are routes by which a change in activity associated with a development can lead to an effect upon a European site.

Other Relevant Supporting Spatial Studies

3.1.2 In determining pathway-receptor potential for impacts of the Chichester Local Plan: Key Policies Submission document on European sites, the following data sources have been interrogated:

- Chichester District Council – Local Housing Requirements Study (2010);
- Chichester District Council: Strategic Growth Study – Wastewater Treatment Options (2010);
- Solent Waders and Brent Goose Strategy (2010);
- Solent Disturbance and Mitigation Project (Final Report, 2013);
- Greenaway, F. (2004) Advice for the management of flightlines and foraging habitats of the barbastelle bat *Barbastellus barbastellus*. *English Nature Research Report*, Number 657.
- Greenaway, F. (2008) *Barbastelle bats in the Sussex West Weald 1997 – 2008*.
- UE Associates. 2009. Visitor Access Patterns on European Sites Surrounding Whitehill and Bordon, East Hampshire. Unpublished report for East Hampshire District Council;
- Surveys undertaken by Footprint Ecology on behalf of the Solent Forum relating to the Solent Disturbance and Mitigation Project
- Arun District Council – visitor surveys for Pagham Harbour SPA;
- Cruickshanks, K. & Liley, D. (2012). Pagham Harbour Visitor Surveys. Unpublished report by Footprint Ecology. Commissioned by Chichester District Council
- The UK Air Pollution Information System (www.apis.ac.uk) and Sussex Air Pollution dataset;
- www.magic.gov.uk and its links to SSSI citations and the JNCC website (www.natureonthemap.org.uk); and

3.2 Urbanisation

3.2.1 This impact is closely related to recreational pressure, in that they both result from increased populations within close proximity to sensitive sites. Urbanisation is considered separately as the detail of the impacts is distinct from the trampling, disturbance and dog-fouling that results specifically from recreational activity. The list of urbanisation impacts can be extensive, but core impacts can be singled out:

- Increased fly-tipping - Rubbish tipping is unsightly but the principle adverse ecological effect of tipping is the introduction of invasive non-native species with garden waste. Non-native species can in some situations, lead to negative interactions with habitats or species for which European sites may be designated. Garden waste results in the introduction of invasive non-native species precisely because it is the 'troublesome and over-exuberant' garden plants that are typically thrown out⁸. Non-native species may also be introduced deliberately or may be bird-sown from local gardens.
 - Cat predation - A survey performed in 1997 indicated that nine million British cats brought home 92 million prey items over a five-month period⁹. A large proportion of domestic cats are found in urban situations, and increasing urbanisation is likely to lead to increased cat predation. SPAs within Waverley Borough are partly designated for populations of Dartford warbler (*Sylvia undata*). A study in Dorset¹⁰ has shown that 16% of fledglings were predated by cats within two to four weeks of leaving the nest. It has been shown that 60% of forays by cats are over a distance of less than 400m¹¹, and that the mean distance of hunting excursions is 371m from home¹².
- 3.2.2 The most detailed consideration of the link between relative proximity of development to European sites and damage to interest features has been carried out with regard to the Thames Basin Heaths SPA.
- 3.2.3 After extensive research, Natural England and its partners produced a 'Delivery Plan' which made recommendations for accommodating development while also protecting the interest features of the European site. This included the recommendation of implementing a series of zones within which varying constraints would be placed upon development. While the zones relating to recreational pressure expanded to 5km (as this was determined from visitor surveys to be the principal recreational catchment for this European site), that concerning other aspects of urbanisation (particularly predation of the chicks of ground-nesting birds by domestic cats) was determined at 400m from the SPA boundary. The delivery plan concluded that the adverse effects of any development located within 400m of the SPA boundary could not be mitigated since this was the range over which cats could be expected to roam as a matter of routine and there was no realistic way of restricting their movements, and as such, no new housing should be located within this zone.

3.3 Recreational Pressure

3.3.1 Recreational use of a European site has the potential to:

- Prevent appropriate management or exacerbate existing management difficulties;
- Cause damage through erosion and fragmentation;
- Cause eutrophication as a result of dog fouling; and

⁸ Gilbert, O. & Bevan, D. 1997. The effect of urbanisation on ancient woodlands. *British Wildlife* 8: 213-218.

⁹ Woods, M. et al. 2003. Predation of wildlife by domestic cats *Felis catus* in Great Britain. *Mammal Review* 33, 2 174-188

¹⁰ Murison, G. (2007). The impact of human disturbance, urbanisation and habitat type on a Dartford warbler *Sylvia undata* population. PhD Thesis, University of East Anglia.

¹¹ Barratt, D.G. (1997). Home range size, habitat utilisation and movement patterns of suburban and farm cats *Felis catus*. *Ecography* 20 271-280.

¹² Turner, D.C. & Meister, O. (1988). Hunting behaviour of the domestic cat. In: *The Domestic Cat: The Biology of Its Behaviour*. Ed. Turner, D.C. and Bateson, P. Cambridge University Press.

- Cause disturbance to sensitive species, particularly ground-nesting birds and wintering wildfowl.
- 3.3.2 Different types of European sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex.

Mechanical/abrasive damage and nutrient enrichment

- 3.3.3 Most types of terrestrial European site can be affected by trampling, which in turn causes soil compaction and erosion. Walkers with dogs contribute to pressure on sites through nutrient enrichment via dog fouling and also have potential to cause greater disturbance to fauna as dogs are less likely to keep to marked footpaths and move more erratically. Motorcycle scrambling and off-road vehicle use can cause serious erosion, as well as disturbance to sensitive species.
- 3.3.4 There have been several papers published that empirically demonstrate that damage to vegetation in woodlands and other habitats can be caused by vehicles, walkers, horses and cyclists:
- Wilson & Seney (1994)¹³ examined the degree of track erosion caused by hikers, motorcycles, horses and cyclists from 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, it was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.
 - Cole et al (1995a, b)¹⁴ conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow and grassland communities (each tramped between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. Cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks, but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.
 - Cole (1995c)¹⁵ conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trampler weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier

¹³ Wilson, J.P. & J.P. Seney. 1994. Erosional impact of hikers, horses, motorcycles and off road bicycles on mountain trails in Montana. *Mountain Research and Development* 14:77-88

¹⁴ Cole, D.N. 1995a. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology* 32: 203-214

Cole, D.N. 1995b. Experimental trampling of vegetation. II. Predictors of resistance and resilience. *Journal of Applied Ecology* 32: 215-224

¹⁵ Cole, D.N. (1995c) Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.

trampers caused a greater reduction in vegetation height than lighter trampers, but there was no difference in effect on cover.

- Cole & Spildie (1998)¹⁶ experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse traffic was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance, but recovered rapidly. Higher trampling intensities caused more disturbance.
- 3.3.5 The total volume of dog faeces deposited on sites can be surprisingly large. For example, at Burnham Beeches National Nature Reserve over one year, Barnard¹⁷ estimated the total amounts of urine and faeces from dogs as 30,000 litres and 60 tonnes respectively. Nutrient-poor habitats such as heathland are particularly sensitive to the fertilising effect of inputs of phosphates, nitrogen and potassium from dog faeces¹⁸.
- 3.3.6 Areas of dune habitat that may be sensitive to trampling and erosion are present within Solent Maritime SAC, and Chichester & Langstone Harbour SPA and Ramsar sites at the entrance to Chichester Harbour. Additionally, visitors from the district may choose to visit European sites outside of the area covered by Chichester's Local Plan that may be sensitive to such impacts. Direct mechanical trampling and nutrient enrichment are both more subtle and reversible effects than disturbance of bird populations.

Disturbance

- 3.3.7 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding¹⁹. Disturbance therefore risks increasing energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately survival of the birds. In addition, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they have to sustain a greater number of birds²⁰.
- 3.3.8 A number of studies have shown that birds are affected more by dogs and people with dogs than by people alone, with birds flushing more readily, more frequently, at greater distances and for longer¹⁰. In addition, dogs, rather than people, tend to be the cause of many management difficulties, notably by worrying grazing animals, and can cause eutrophication near paths. Nutrient-poor habitats such as heathland are particularly sensitive to the fertilising effect of inputs of phosphates, nitrogen and potassium from dog faeces²¹.
- 3.3.9 However the outcomes of many of these studies need to be treated with care. For instance, the effect of disturbance is not necessarily correlated with the impact of disturbance, i.e. the most

¹⁶ Cole, D.N., Spildie, D.R. (1998) Hiker, horse and llama trampling effects on native vegetation in Montana, USA. *Journal of Environmental Management* 53: 61-71

¹⁷ Barnard, A. (2003) Getting the Facts - Dog Walking and Visitor Number Surveys at Burnham Beeches and their Implications for the Management Process. *Countryside Recreation*, 11, 16 - 19

¹⁸ Shaw, P.J.A., K. Lankey and S.A. Hollingham (1995) – Impacts of trampling and dog fouling on vegetation and soil conditions on Headley Heath. *The London Naturalist*, **74**, 77-82.

¹⁹ Riddington, R. *et al.* 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

²⁰ Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72

²¹ Shaw, P.J.A., K. Lankey and S.A. Hollingham (1995) – Impacts of trampling and dog fouling on vegetation and soil conditions on Headley Heath. *The London Naturalist*, **74**, 77-82.

easily disturbed species are not necessarily those that will suffer the greatest impacts. It has been shown that, in some cases, the most easily disturbed birds simply move to other feeding sites, whilst others may remain (possibly due to an absence of alternative sites) and thus suffer greater impacts on their population²². A literature review undertaken for the RSPB²³ also urges caution when extrapolating the results of one disturbance study because responses differ between species and the response of one species may differ according to local environmental conditions. These facts have to be taken into account when attempting to predict the impacts of future recreational pressure on European sites.

- 3.3.10 Disturbing activities are on a continuum. The most disturbing activities are likely to be those that involve irregular, infrequent, unpredictable loud noise events, movement or vibration of long duration. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable, quiet patterns of sound or movement or minimal vibration. The further any activity is from the birds, the less likely it is to result in disturbance.
- 3.3.11 The factors that influence a species response to a disturbance are numerous, but the three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity.
- 3.3.12 It should be emphasised that recreational use is not inevitably a problem. Many European sites are also nature reserves managed for conservation and public appreciation of nature. At such sites, access is encouraged and resources are available to ensure that recreational use is managed appropriately.
- 3.3.13 Where increased recreational use is predicted to cause adverse impacts on a site, avoidance and mitigation should be considered. Avoidance of recreational impacts at European sites involves location of new development away from such sites; Local Development Frameworks (and other strategic plans) provide the mechanism for this. Where avoidance is not possible, mitigation will usually involve a mix of access management, habitat management and provision of alternative recreational space.
- *Access management* – restricting access to some or all of a European site - is not usually within the remit of the District Council and restriction of access may contravene a range of Government policies on access to open space, and Government objectives for increasing exercise, improving health etc. However, active management of access may be possible, for example as practised on nature reserves.
 - *Habitat management* is not within the direct remit of the Council. However the Council can help to set a framework for improved habitat management by promoting cross-authority collaboration and S106 funding of habitat management. In the case of the Chichester, opportunities for this are limited since, according to Natural England, the areas of European designated habitat in the district are already in favourable condition or recovering.
 - *Provision of alternative recreational space* can help to attract recreational users away from sensitive European sites, and reduce pressure on the sites. For example, some species for which European sites have been designated are particularly sensitive to dogs, and many dog walkers may be happy to be diverted to other, less sensitive, sites. However the location and type of alternative space must be attractive for users to be effective.

²² Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation*, **97**, 265-268

²³ Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

- 3.3.14 Chichester & Langstone Harbours SPA and Ramsar, and Pagham Harbour SPA and Ramsar lie within Chichester Local Plan area. There are also several SPA and Ramsar designations beyond the area covered by the Chichester Local Plan that residents may choose to visit. All are sensitive ecologically through disturbance to the species for which the SPAs and Ramsar sites are designated.
- 3.3.15 The Solent Forum undertook a project to examine bird disturbance and possible mitigation in the Solent area. A Phase I report has outlined the existing visitor data for the Solent, canvassed expert opinion on recreational impacts on birds, and assessed current available data on relevant species. Phase II of the Solent Disturbance and Mitigation Project²⁴ identified that survival rates for curlew and a variety of other bird species were predicted to decrease under any increase in visitor rates.
- 3.3.16 Phase III of the Solent Disturbance and Mitigation Project²⁵ has assessed associated mitigation measures on the number of people visiting the Solent, and the associated impact on the survival rates of shorebirds. They consider that appropriate measures could include a delivery officer, wardening team and coastal dog project, followed by work on reviews and codes of conduct. A series of site specific and more local projects could then follow, to be phased with development.

3.4 Atmospheric Pollution

- 3.4.1 The main pollutants of concern for European sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂). NO_x can have a directly toxic effect upon vegetation. In addition, greater NO_x or ammonia concentrations within the atmosphere will lead to greater rates of nitrogen deposition to soils. An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats.

Table 3. Main sources and effects of air pollutants on habitats and species

Pollutant	Source	Effects on habitats and species
Acid deposition	SO ₂ , NO _x and ammonia all contribute to acid deposition. Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased N emissions may cancel out any gains produced by reduced S levels.	Can affect habitats and species through both wet (acid rain) and dry deposition. Some sites will be more at risk than others depending on soil type, bed rock geology, weathering rate and buffering capacity.
Ammonia (NH ₃)	Ammonia is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but levels have increased considerably with expansion in numbers of agricultural livestock. Ammonia reacts with acid pollutants such as the products of SO ₂ and NO _x emissions to produce fine ammonium (NH ₄ ⁺)- containing aerosol which may be transferred much longer distances (can therefore be a significant trans-boundary issue.)	Adverse effects are as a result of nitrogen deposition leading to eutrophication. As emissions mostly occur at ground level in the rural environment and NH ₃ is rapidly deposited, some of the most acute problems of NH ₃ deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides	Nitrogen oxides are mostly produced in	Deposition of nitrogen compounds (nitrates)

²⁴ Stillman, R. A., West, A. D., Clarke, R. T. & Liley, D. (2012) Solent Disturbance and Mitigation Project Phase II: Predicting the impact of human disturbance on overwintering birds in the Solent. Report to the Solent Forum

²⁵ Liley, D. & Tyldesley, D. (2013). Solent Disturbance and Mitigation Project: Phase III. Towards an Avoidance and Mitigation Strategy. Unpublished report. Footprint Ecology/David Tyldesley & Associates

Pollutant	Source	Effects on habitats and species
NO _x	combustion processes. About one quarter of the UK's emissions are from power stations, one-half from motor vehicles, and the rest from other industrial and domestic combustion processes.	(NO ₃), nitrogen dioxide (NO ₂) and nitric acid (HNO ₃) can lead to both soil and freshwater acidification. In addition, NO _x can cause eutrophication of soils and water. This alters the species composition of plant communities and can eliminate sensitive species.
Nitrogen (N) deposition	The pollutants that contribute to nitrogen deposition derive mainly from NO _x and NH ₃ emissions. These pollutants cause acidification (see also acid deposition) as well as eutrophication.	Species-rich plant communities with relatively high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication, due to its promotion of competitive and invasive species which can respond readily to elevated levels of N. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O ₃)	A secondary pollutant generated by photochemical reactions from NO _x and volatile organic compounds (VOCs). These are mainly released by the combustion of fossil fuels. The increase in combustion of fossil fuels in the UK has led to a large increase in background ozone concentration, leading to an increased number of days when levels across the region are above 40ppb. Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O ₃ above 40 ppb can be toxic to humans and wildlife, and can affect buildings. Increased ozone concentrations may lead to a reduction in growth of agricultural crops, decreased forest production and altered species composition in semi-natural plant communities.
Sulphur Dioxide SO ₂	Main sources of SO ₂ emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO ₂ emissions have decreased substantially in the UK since the 1980s.	Wet and dry deposition of SO ₂ acidifies soils and freshwater, and alters the species composition of plant and associated animal communities. The significance of impacts depends on levels of deposition and the buffering capacity of soils.

3.4.2 Sulphur dioxide emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil. Ammonia emissions are dominated by agriculture, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO₂ or NH₃ emissions will be associated with Local Development Frameworks. NO_x emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). Within a 'typical' housing development, by far the largest contribution to NO_x (92%) will be made by the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison²⁶. Emissions of NO_x could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the LDF.

3.4.3 According to the World Health Organisation, the critical NO_x concentration (critical threshold) for the protection of vegetation is 30 µgm⁻³; the threshold for sulphur dioxide is 20 µgm⁻³. In addition, ecological studies have determined 'critical loads'²⁷ of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH₃) for key habitats within the European sites considered within this assessment.

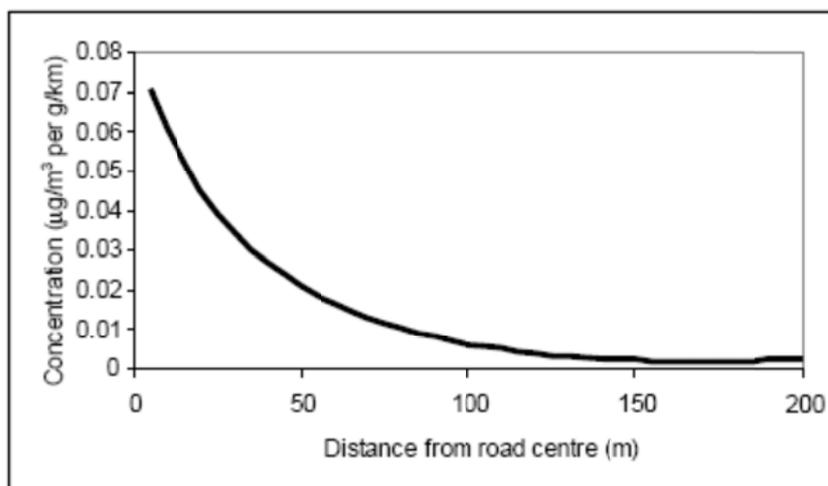
²⁶ Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. <http://www.airquality.co.uk/archive/index.php>

²⁷ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

Local air pollution

3.4.4 According to the Department of Transport’s Transport Analysis Guidance, “Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant”²⁸.

Figure 3. Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT)



3.4.5 This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development under the Local Plan. Given that sites detailed in Table 5 lie within 200m of major roads that may be regularly used by vehicle journeys within the Local Plan area as a result of the increased population, and potentially other development plans, it was concluded that air quality should be included within the scope of this assessment. The location of these roads in relation to the European sites is shown in Figure 1.

Table 5. Major roads within 200m of the European sites considered in detail within this assessment

Site	Proximity to major roads	Comments
Chichester & Langstone Harbours SPA and Ramsar and Solent Maritime SAC	Within 200m of the A259 at Fishbourne	Using the Site Relevant Critical Load function on APIS for the relevant grid references (SU835046, SU797051 and SU776052) deposition is between 13.86 kgN/ha/yr and 16.52 kgN/ha/yr. This is well below the critical load (20 kgN/ha/yr) for the relevant SAC habitat (saltmarsh, according to the habitat maps on www.magic.gov.uk) for these locations.

²⁸ <http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013>; accessed 13/04/12

Site	Proximity to major roads	Comments
Pagham Harbour SPA and Ramsar	The B2145 between Selsey and Chichester passes through the SPA and Ramsar	Deposition rate is 11.76 kgN/ha/yr at the relevant grid reference (SZ856965) which is well below the critical load for low altitude grazing marsh of 20kgN/ha/yr
The Mens SAC	Within 200m of the A272 for a considerable distance	The bats for which the SAC are designated will not be affected by nitrogen deposition. However the site is also designated for its woodland and the deposition rate is 30.1 kgN/ha/yr for TQ022237 which is above the upper critical load of 20 kgN/har/yr and well above the lower critical load of 10 kgN/ha/yr
Ebernoe Common SAC	Within 200m of the A283 for a short distance	The bats for which the SAC are designated will not be affected by nitrogen deposition. However the site is also designated for its woodland and the deposition rate is 27.44 kgN/ha/yr for SU965259 which is above the upper critical load of 20 kgN/har/yr and well above the lower critical load of 10 kgN/ha/yr
Duncton to Bignor Escarpment SAC	Within 200m of the A285 for a short distance	The site is designated for its woodland and the deposition rate is 27.86 kgN/ha/yr for SU958161 which is above the upper critical load of 20 kgN/har/yr and well above the lower critical load of 10 kgN/ha/yr

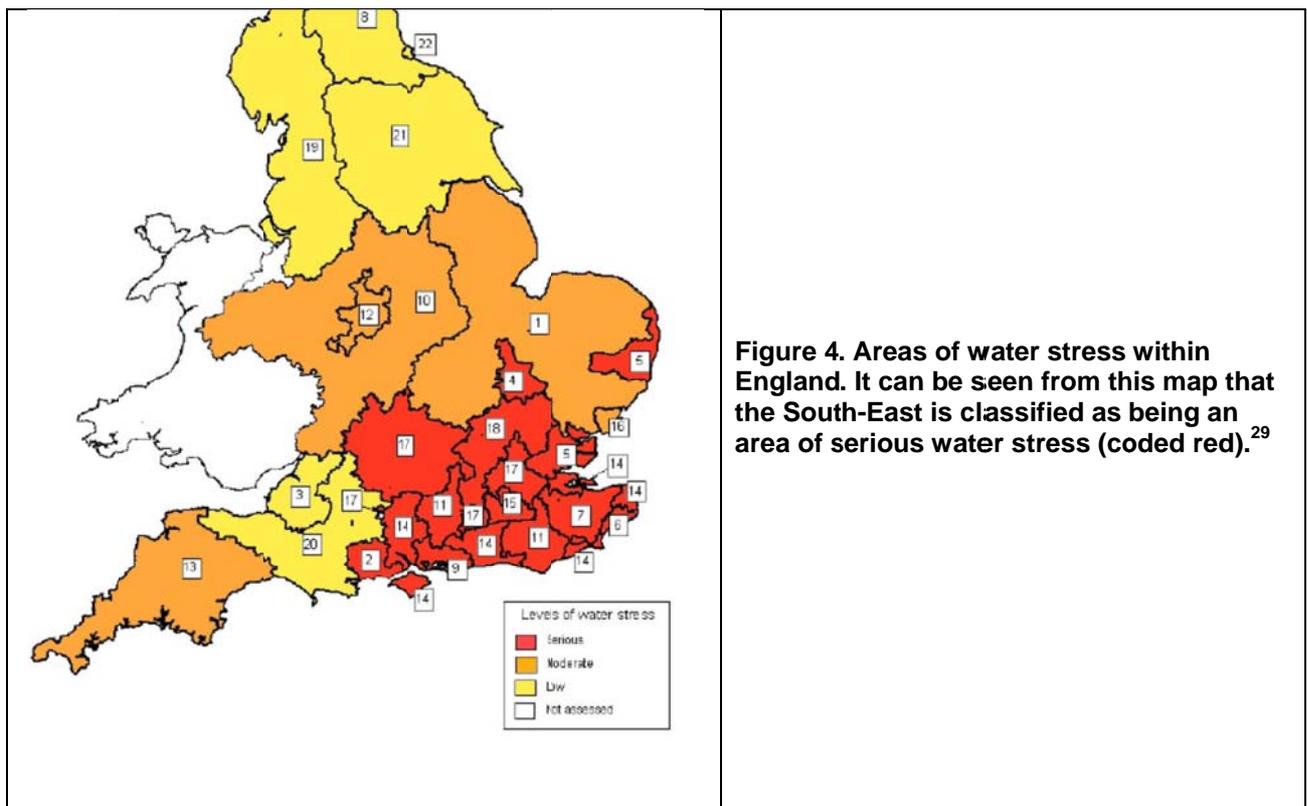
Diffuse air pollution

- 3.4.6 In addition to the contribution to local air quality issues, development can also contribute cumulatively to an overall deterioration in background air quality across an entire region. In July 2006, when this issue was raised by Runnymede Borough Council in the South East, Natural England advised that their Local Plan '*can only be concerned with locally emitted and short range locally acting pollutants*' as this is the only scale which falls within a local authority remit. It is understood that this guidance was not intended to set a precedent, but it inevitably does so since (as far as we are aware) it is the only formal guidance that has been issued to a Local Authority from any Natural England office on this issue.
- 3.4.7 In the light of this and our own knowledge and experience, it is considered reasonable to conclude that it must be the responsibility of higher-tier plans to set a policy framework for addressing the cumulative diffuse pan-authority air quality impacts, partly because such impacts stem from the overall quantum of development within a region (over which individual Councils have little control), and since this issue can only practically be addressed at the highest pan-

authority level. In the light of this, diffuse air quality issues will not therefore be considered further within this HRA.

3.5 Water Abstraction

3.5.1 The South-East has been identified as generally being an area of high water stress (see Figure 4).



3.5.2 However, it should be noted that Portsmouth Water’s area of supply is no longer ‘Seriously Water Stressed’ as defined by the EA. The change reflects the sustainability changes that the Company has made to their licences and the lower demand forecast now being used. Development and population growth are allowed for in the Company’s Water Resource Management Plan but falling per capita consumption and falling commercial demand means that overall demand is not increasing. Abstraction has fallen by 20% since the 1980’s and Portsmouth Water has no intention of applying for additional licences.

3.5.3 The Local Plan area is supplied with water from the Environment Agency Arun and Western Streams catchment, which currently assesses groundwater availability as being ‘restricted’ in terms of supplies from the Chichester chalk. Freshwater flows into Chichester Harbour arise from the Chichester Rifes - the River Lavant, River Ems, Fishbourne Springs, Bosham Stream, Cutmill Creek, Ham Brook, and the springs at Warblington. The Habitats Directive (HD) review of consents investigated the impact of abstraction on freshwater flows to the SPA and the abstraction management strategy noted that any new licence would need to consider impacts on

²⁹ Figure adapted from Environment Agency. 2007. Identifying Areas of Water Stress. <http://publications.environment-agency.gov.uk/pdf/GEHO0107BLUT-e-e.pdf>

this conservation site. The review of consents process identified that no changes to licences were required in order to maintain integrity of the Arun Valley SAC/ SPA/ Ramsar sites. Within the Local Plan area two water companies are operational in terms of supply:

- Portsmouth Water supplies Chichester, East Wittering, Southbourne, Tangmere and Selsey via their Chichester and Bognor Regis resources zone. Portsmouth Water's licences in the Chichester area are now fully compliant with the Habitats Regulations. The only outcome from the WFD investigations in this area is to consider increased augmentation of the River Ems. This scheme is in the EA's National Environment Programme and has been included in the Company's Business Plan.
 - South East Water supplies the north of the district from their RZ5 resources zone. RZ5 remains predominantly in surplus for the whole of the planning period to 2035 with the development of two ground water schemes, Greatham and East Meon at the end of the planning period.
- 3.5.4 Portsmouth Water has confirmed that overall water demand is not increasing despite increased populations and they do not intend to apply for additional licences. Given that South East Water's relevant supply zone will be essentially in surplus for the whole planning period the potential for a water resource/supply effect on European sites can be scoped out of this assessment.
- 3.5.5 Ensuring an adequate future water supply is a matter for the water company in consultation with the Environment Agency and the Regulator. However, local authorities can play an important role through incorporating Local Plan policies that indicate how new development will need to maximise water efficiency measures and minimise demands on water resources. The Chichester Local Plan: Key Policies Submission document addresses this by:
- Policy 12 (Water Resources in the Apuldram WwTW Catchment) states that *'new housing development will be required to meet the Code for Sustainable Homes Level 5 water requirements or equivalent replacement national minimum standard, whichever are higher. Where this cannot be achieved, the minimum acceptable level will be Level 4. Planning permission will be granted where the provision of water infrastructure is not considered detrimental to the water environment, including existing abstractions, river flows, water quality, fisheries, amenity and nature conservation'*³⁰.
 - Policy 40 (Carbon Reduction Policy) requires new development to achieve a minimum of Level 4 from 2013 to 2016; and Level 5 from 2016 in the Code for Sustainable Homes, or equivalent replacement national minimum standard, whichever are higher.

Submission

3.6 Water Quality

- 3.6.1 The quality of the water that feeds European sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts. Sewage and industrial effluent discharges can contribute to increased nutrients on European sites leading to unfavourable conditions. In addition, diffuse pollution, partly from urban run-off has been identified during an Environment Agency Review of Consents process, as being a major factor in causing unfavourable condition of European sites.

³⁰ Chichester District Council is proposing a modification to the text of this policy, but the change will not be made until the planning inspectorate accepts the proposed modification. The text of the policy has not been changed in this assessment therefore.

- 3.6.2 For sewage treatment works close to capacity, further development may increase the risk of effluent escape into aquatic environments. In many urban areas, sewage treatment and surface water drainage systems are combined, and therefore a predicted increase in flood and storm events could increase pollution risk.
- 3.6.3 The Apuldram WwTW discharges to the head of Chichester Harbour. Due to the sensitive nature of the Harbour the current environmental permit limit at Chichester (Apuldram) WwTW is finite. The discharge is already treated to exceptionally tight nitrogen levels, established under the Habitats Directive Review of Consents process. The sewage from homes in Southbourne is treated at Thornham Wastewater Treatment Works, which discharges to the Emsworth Channel that forms part of the Solent Maritime SAC and Chichester Harbour SPA and Ramsar sites.
- 3.6.4 A Wastewater Treatment Study commissioned by Chichester District Council identified that an upgrade to Tangmere WwTW is the preferred solution from the Wastewater Treatment Study to accommodate growth in the constrained parts of the Local Plan area.
- 3.6.5 The solution to upgrade Tangmere WwTW to provide expanded capacity to accommodate an additional 3,000 homes would enable strategic growth in the south of the Local Plan area. The proposed upgrade is subject to Ofwat approval through the Periodic Review in 2014. The Tangmere WwTW upgrade could be operational from 2019. Therefore the delivery of the strategic locations would be constrained until at least 2019 in the Plan period.
- 3.6.6 Studies by the Environment Agency under the Review of Consents process indicated that sewage discharges have not had a significant adverse effect on the integrity of the Pagham Harbour SPA/Ramsar site and that Wastewater Treatment Works have capacity to accommodate new homes without a significant adverse effect on water quality.

3.7 Coastal Squeeze

- 3.7.1 Rising sea levels can be expected to cause intertidal habitats (principally saltmarsh and mudflats) to migrate landwards. However, in built-up areas, such landward retreat is often rendered impossible due the presence of the sea wall and other flood defences.
- 3.7.2 In addition, development frequently takes place immediately behind the sea wall, so that the flood defences cannot be moved landwards to accommodate managed retreat of threatened habitats. The net result of this is that the quantity of saltmarsh and mudflat adjacent to built-up areas will progressively decrease as sea levels rise. This process is known as 'coastal squeeze'. In areas where sediment availability is reduced, the 'squeeze' also includes an increasingly steep beach profile and foreshortening of the seaward zones.
- 3.7.3 The North Solent Shoreline Management Plan units for Chichester and Langstone Harbours indicate that there will be a combination of 'Hold the Line', 'Managed Realignment' and 'Adaptive Management'. An HRA of the draft plan³¹ indicated that 'Hold the Line' will have no effect on habitats behind the defences, whilst Managed Realignment is likely to *"have a significant detrimental effect resulting in loss of designated terrestrial habitats including coastal grazing marsh, saline lagoons and grasslands."* Managed Realignment is proposed in the short term for part of Chichester Harbour. Although Hold the Line is the preferred approach for the majority of the shoreline, the SMP notes that further studies on Chichester and Langstone Harbours *may* lead to revision of this for significant lengths of shoreline in the inner harbours.

³¹ [http://www.northsolentsmp.co.uk/media/adobe/o/2/Appendix_J_-_Appropriate_Assessment_\(draft\).pdf](http://www.northsolentsmp.co.uk/media/adobe/o/2/Appendix_J_-_Appropriate_Assessment_(draft).pdf)

- 3.7.4 The South Downs SMP for areas fronting Pagham Harbour identifies a mix of Hold the Line and Managed Realignment strategies. The SMP states that Managed Realignment approach is being adopted to maintain the integrity of the Harbour with its nature conservation value as a primary consideration.
- 3.7.5 In order to conclude that development in the Local Plan area would not lead to a significant adverse effect as a result of coastal squeeze, it will be necessary to conclude that the Local Plan would not require the SMP (or resulting Coastal Strategy) policies for the frontage to be altered and would not be situated in such a position as to require new defences in currently undefended parts of the coastline or locate development in areas planned for managed realignment in the SMP or the Environment Agency Regional Habitat Creation Programme.

3.8 Loss of Habitats Outside of European Sites

- 3.8.1 European sites are designated on the basis of key habitats and species. The latter are often mobile beyond the designated site boundary and it is possible that development in the wider area may have an impact on the species populations for which the European sites are designated.
- 3.8.2 Ebernoe Common SAC and The Mens SAC are both designated for populations of barbastelle bats. The barbastelles forage widely outside of these SACs, and studies carried out over the past fifteen years give detailed information on flight lines^{32 33}:
- 3.8.3 These reports have identified that:
- The barbastelles of The Mens SAC forage to the east of the SAC, principally on the floodplain of the River Arun from close to Horsham in the north to Parham in the south. They also cross to the Adur floodplain. In some cases the bats travelled up to 7km to visit foraging areas;
 - The barbastelles at Ebernoe Common SAC had flightlines that followed watercourses, particularly the River Kird, and woodland cover for distances of typically 5km. Flightlines outside the SAC are particularly to the south (the Petworth and Tillington area) but also to the west, north and east;
 - Ebernoe Common SAC is also designated for a population of Bechstein's bat. Those radio-tracking projects which have been implemented for the species have established that the tracked individuals generally remained within approximately 1.5 km of their roosts³⁴. These distances do fit with those identified from radio-tracking of Bechstein's that has been undertaken at Ebernoe Common SAC from 2001, which identified that the maximum distance travelled by a tagged Bechstein's bat to its foraging area was 1,407m, with the average 735.7m³⁵.

³² Greenaway, F. (2004) Advice for the management of flightlines and foraging habitats of the barbastelle bat *Barbastellus barbastellus*. *English Nature Research Report*, Number 657.

³³ Greenaway, F. (2008) *Barbastelle bats in the Sussex West Weald 1997 - 2008*

³⁴ Cited in: Schofield H & Morris C. 2000. 'Ranging Behaviour and Habitat Preferences of Female Bechstein's Bats in Summer'. Vincent Wildlife Trust

³⁵ Fitzsimmons P, Hill D, Greenaway F. 2002. Patterns of habitat use by female Bechstein's bats (*Myotis bechsteinii*) from a maternity colony in a British woodland

-
- 3.8.4 These SACs require inclusion in the screening stage of this HRA since severance of bat flightlines could theoretically occur through new development, and this could have an adverse effect on the SAC designation.
- 3.8.5 Chichester & Langstone Harbours SPA and Ramsar sites And Pagham Harbour SPA & Ramsar sites are notified partly for their over-wintering populations of Brent geese. However, studies³⁶ have identified that many feeding sites for this species around the Solent fall outside of the statutory nature conservation site boundaries. The majority of Brent goose feeding sites are amenity/recreation grasslands with little intrinsic nature conservation interest, and therefore are vulnerable to loss or damage from development. This also applies to some high tide wader roosts in the Solent.

³⁶ Solent Waders and Brent Goose Strategy. Solent Waders and Brent Goose Strategy Steering Group (2010).

4 Chichester & Langstone Harbours SPA and Ramsar site/Solent Maritime SAC

4.1 Introduction

- 4.1.1 Chichester and Langstone Harbours Special Protection Area (SPA) encompasses two large sheltered estuarine basins: Langstone and Chichester Harbours on the Hampshire/Sussex border. The two harbours are separated by Hayling Island and meet at Langstone Bridge. The SPA is comprised of two Sites of Special Scientific Interest (SSSI): Chichester Harbour SSSI and Langstone Harbour SSSI. The site is also designated as a Ramsar site.
- 4.1.2 Chichester Harbour and Langstone Harbour, along with the coastal waters between the two harbours, form part of the Solent Maritime SAC, along with Portsmouth Harbour SPA/Ramsar site and Solent & Southampton Water SPA/Ramsar site.
- 4.1.3 Chichester Harbour SSSI is a large estuarine basin within which extensive mud and sandflats are exposed at low tide. The site is of particular significance for wintering wildfowl and waders and also for breeding birds both within the Harbour and in the surrounding pastures and woodlands. There is also a wide range of habitats which have important plant communities.
- 4.1.4 Chichester Harbour and the adjoining Portsmouth and Langstone Harbours together form a single system which is among the ten most important intertidal areas for waders in Britain.

4.2 Features of European Interest³⁷

- 4.2.1 Chichester & Langstone SPA qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: During the breeding season:

- Little Tern *Sterna albifrons*: 4.2% of the breeding population in Great Britain (5-year mean, 1992-1996);
- Common tern *Sterna hirundo*: 0.3% of the breeding population in Great Britain (5-year mean, 1992-1996);
- Sandwich Tern *Sterna sandvicensis*: 0.2% of the breeding population in Great Britain (5-year mean, 1993-1997).

Over winter:

- Bar-tailed Godwit *Limosa lapponica*: 3.2% of the wintering population in Great Britain (5-year peak mean 1991/92 - 1995/96).

- 4.2.2 This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

Over winter:

³⁷ Features of European Interest are the features for which a European sites is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

- Pintail *Anas acuta*: 1.2% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
 - Shoveler *Anas clypeata*: 1% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
 - Teal *Anas crecca*: 0.5% of the population (5-year peak mean 1991/92-1995/96);
 - Wigeon *Anas penelope*: 0.7% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
 - Turnstone *Arenaria interpres*: 0.7% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
 - Dark-bellied Brent Goose *Branta bernicla bernicla*: 5.7% of the population (5-year peak mean 1991/92 - 1995/96);
 - Sanderling *Calidris alba*: 0.2% of the population (5-year peak mean 1991/92-1995/96);
 - Dunlin *Calidris alpina alpina*: 3.2% of the population (5-year peak mean 1991/92 - 1995/96);
 - Ringed Plover *Charadrius hiaticula*: 3% of the population in Great Britain (5-year peak mean 1991/92 - 1995/96);
 - Red-breasted Merganser *Mergus serrator*: 3% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
 - Curlew *Numenius arquata*: 1.6% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
 - Grey Plover *Pluvialis squatarola*: 2.3% of the population (5-year peak mean 1991/92 - 1995/96);
 - Shelduck *Tadorna tadorna*: 3.3% of the population in Great Britain (5-year peak mean 1991/92-1995/96); and
 - Redshank *Tringa totanus*: 1% of the population (5-year peak mean 1991/92-1995/96).
- 4.2.3 The area also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting an internationally important assemblage of birds. Over winter, the area regularly supports 93,230 individual waterfowl (5-year peak mean 01/04/1998) including: Wigeon, Bar-tailed Godwit *Limosa lapponica*, Dark-bellied Brent Goose, Ringed Plover, Grey Plover, Dunlin, Redshank, Shelduck, Curlew, Teal, Pintail, Shoveler, Red-breasted Merganser, Sanderling and Turnstone.
- 4.2.4 Chichester & Langstone Harbours Ramsar site qualifies under the following Ramsar criteria.

Table 6: Chichester & Langstone Harbours Ramsar site criteria

Ramsar criterion	Description of Criterion	Chichester and Langstone Harbours
1	A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.	Two large estuarine basins linked by the channel which divides Hayling Islands from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.
5	A wetland should be considered internationally important if it regularly supports assemblages of waterbirds of international importance.	76,480 waterfowl (5-year peak mean 1998/99 – 2002/03).
6	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.	<p>Species with peak counts in spring/autumn:</p> <p>Ringed plover <i>Charadrius hiaticula</i>: 853 individuals, representing an average of 1.1% of the population (5-year peak mean 1998/99 – 2002/03).</p> <p>Black-tailed godwit <i>Limosa limosa islandica</i>: 906 individuals, representing an average of 2.5% of the population (5-year peak mean 1998/99 – 2002/03).</p> <p>Common redshank <i>Tringa totanus totanus</i>: 2577 individuals, representing an average of 1% of the population (5-year peak mean 1998/99 – 2002/03).</p> <p>Species with peak counts in winter:</p> <p>Dark-bellied brent goose <i>Branta bernicla bernicla</i>: 12,987 individuals, representing an average of 6% of the populations (5-year peak mean 1998/99 – 2002/03).</p> <p>Common shelduck <i>Tadorna tadorna</i>: 1,468 individuals, representing an average of 1.8% of the GB population (5-year peak mean 1998/99 – 2002/03).</p> <p>Grey plover <i>Pluvialis squatarola</i>: 3,043 individuals, representing an average of 1.2% of the population (5-year peak mean 1998/99 – 2002/03).</p> <p>Dunlin <i>Calidris alpina alpina</i>: 33,436 individuals, representing an average of 2.5% of the population (5-year peak mean 1998/99 – 2002/03).</p> <p>Species regularly supported during the breeding season:</p> <p>Little tern <i>Sterna albifrons albifrons</i>: 130 apparently occupied nests, representing an average of 1.1% of the breeding populations (Seabird 2000 census)³⁸</p>

4.2.5 Solent Maritime qualifies as a SAC for both habitats and species. Firstly, the site contains the following habitats Directive Annex 1 habitats:

³⁸ Species identified subsequent to designation for future possible consideration.

- Estuaries
- Cord-grass swards (*Spartina* swards *Spartinion maritima*)
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
- Subtidal sandbanks (sandbanks which are slightly covered by seawater all the time)
- Intertidal mudflats and sandflats (mudflats and sandflats not covered by seawater at low tide)
- Lagoons (coastal lagoons)
- Annual vegetation of drift lines
- Coastal shingle vegetation outside the reach of waves (perennial vegetation of stony banks)
- Glasswort and other annuals colonising mud and sand (*Salicornia* and other annuals colonising mud and sand)
- Shifting dunes with marram (shifting dunes along the shoreline with *Ammophila arenaria* 'white dunes')

Secondly, the site also qualifies for the following Habitats Directive Annex II species:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).

4.3 Historic Trends and Current Conditions

- 4.3.1 Langstone Harbour is fringed by urban and industrial development, whereas Chichester is surrounded mainly by high grade farmland. The site is subjected to significant recreational pressures, especially during summer months.
- 4.3.2 Both harbours are managed by statutory bodies whose remits include conservation of the natural environment. Conservation bodies have an advisory input to the management of the harbours, and play an active role in the management of numerous Local Authority and RSPB nature reserves around the site. In 2000, a collaborative Solent European Marine Sites project was set up with the aim of developing a strategy for managing the marine and coastal resources of the Solent in a more integrated and sustainable way.
- 4.3.3 The Environment Agency Review of Consents and the HRA of the South East RSS both identified that development within the Chichester area may be constrained by restrictions that will be/have been placed on some Wastewater Treatment Works (WwTW) in order to ensure suitable water quality in the receiving marine/coastal waters of the two harbours. Memoranda of understanding currently exist between both the Environment Agency (EA) and Southern Water Services and Chichester Council which clearly set out which WwTWs are constrained, the quantum of new housing that can be accommodated and the available strategies for delivering housing while avoiding adverse effects on the European sites.
- 4.3.4 Natural England condition assessment of Chichester Harbour SSSI indicated that 22% of the site was in favourable condition with the remaining 78% recovering from an unfavourable status. In the case of Langstone Harbour SSSI the figures were 9 and 91% respectively.

4.4 Key Environmental Conditions

4.4.1 The key environmental conditions that support the features of European interest have been defined as:

- Sufficient space between the site and development to allow for managed retreat of intertidal habitats (to avoid coastal squeeze);
- Avoidance of dredging or land-claim of coastal habitats;
- Maintenance of freshwater inputs;
- Balance of saline and non-saline conditions;
- Unpolluted water;
- Absence of nutrient enrichment;
- Absence of non-native species;
- Maintenance of adjacent grassland (key foraging resource); and
- Absence of disturbance

4.5 Potential Effects of the Plan

4.5.1 Six potential impacts of the Chichester Local Plan: Key Policies Submission document upon the SPA and Ramsar require consideration:

- Urbanisation
- Recreational pressure
- Reduced water quality
- Coastal squeeze
- Loss of off-site feeding and roosting habitats for bird species
- Air quality

Urbanisation

4.5.2 Development described in the Chichester Local Plan; Key Policies Submission document would be focussed on the settlements of Chichester city, Tangmere, Westhampnett, Southbourne, Selsey, and East Wittering/Bracklesham. Tangmere is approximately 6km from the SPA/Ramsar site and therefore will clearly not result in urbanisation. East Wittering/Bracklesham is located 2.5km from the SPA/Ramsar site at its closest but the most likely area for housing at Bracklesham is over 5km from the SPA/Ramsar site at the east of the settlement. Therefore it can be concluded that this strategic allocation will not result in urbanisation. Southbourne, Chichester city, Westhampnett and Selsey are all located adjacent to the SPA/Ramsar site.

4.5.3 An examination of available sites in the Suitable Housing Land Availability Assessment (SHLAA) indicates that development at Southbourne is likely to be directed towards the west or north-east of the settlement and thus away from the SPA/Ramsar site. Development at Selsey could involve placing new housing development within 400m-600m of Pagham Harbour but not Chichester &

Langstone Harbours SPA/Ramsar site. The 'West of Chichester' strategic development area is 700m from the SPA/Ramsar site and thus would not lead to urbanisation. There are no other plans or projects which would operate 'in combination' with the Local Plan.

Recreational Pressure

- 4.5.4 Data on visitor activity in the Solent complex was obtained through the Solent Disturbance and Mitigation Project^{39,40}. Chichester Harbour is expected to see an increase of 15-20% in visitors (Fig. 5.4 of Stillman et al), although the numbers of visitors per hectare of intertidal habitat (i.e. visitor density) is predicted to be a lot lower than most other parts of the Solent frontage (Figure 5.6 of the same report). In most cases, visitor density is predicted to be below 30/ha, the density above which the report identifies birds may have reduced survival due to disturbance (Figure 5.7 of the same report). The exceptions are sectors 67 (Northney to Langstone Bridge) and 78 (Bosham Shipyard to Southwood Farm); in the case of sector 78 visitor densities are predicted to be more than twice this threshold. Although disturbance rates were relatively low within Chichester Harbour as a whole, the low measured abundance of food, implies that birds would also be vulnerable to disturbance in this site. Visitor numbers per day were typically highest on weekends compared to weekdays. Holiday makers accounted for 6% of the total number of visitors recorded. Visitors undertook a wide range of activities, with walking (without a dog) and dog walking the two most frequently recorded activities (44% and 42% of interviews). Across all sites and activities, visits were typically short, with 89% lasting less than two hours. Across all sites (and taking the data for non-holiday makers only) visitors were roughly evenly divided between those who arrived by car and those who arrived on foot. Ninety percent of all visitors arriving on foot lived within 2km, compared to only 20% of visitors arriving by car. Almost eighty percent of all visitors arriving by car (excluding holiday makers) lived within 10km, with 50% living within 4km. The overall median distance from site (across the study area) for non-tourist visitors was 1.7km.
- 4.5.5 From examination of Map 4 in Fearnley et al (2010) the vast majority of South-Hampshire based visitors (irrespective of mode of transport) to Chichester Harbour lived south of the A27 in a band from Emsworth (in Havant district) to south-west Chichester city. Emsworth and South Hayling in Havant district, and Chichester city itself were the most significant sources of local visitors to Chichester Harbour, while East Wittering makes a contribution that is not insignificant. However, visitors did arise from as far afield as Horndean in East Hampshire (approximately 8km to the north-west). The projected increase in visitors cannot therefore be entirely attributed to the Local Plan area any more than it can be stated that the Local Plan area will not be contributing visitor pressure along other sections of frontage. However, it is reasonable to assume that significant new development at Southbourne and south/west Chichester city will make a significant contribution to increased visitor pressure in Chichester Harbour. This will particularly apply to the 'West of Chichester' strategic development area.
- 4.5.6 Phase 3 of the Solent Disturbance and Mitigation Project has identified that a 5.6 km zone of influence should be applied around the European sites and that mitigation for recreational pressure impacts would need to be associated with all new housing within this zone.
- 4.5.7 This is recognised in Policy 15 (West of Chichester Strategic Development Location) which states *'The site layout, land uses and development of the site should be planned with special regard to*

³⁹ Fearnley, H., Clarke, R. T. & Liley, D. (2010). The Solent Disturbance & Mitigation Project. Phase II - On-site visitor survey results from the Solent region. ©Solent Forum /Footprint Ecology

⁴⁰ Stillman, R. A., West, A. D., Clarke, R. T. & Liley, D. (2012) Solent Disturbance and Mitigation Project Phase II: Predicting the impact of human disturbance on overwintering birds in the Solent. Report to the Solent Forum.

the need to mitigate potential impacts of recreational disturbance on the Chichester Harbour SAC/SPA/Ramsar, including contributing to any strategic management issues’, Policy 20 (Southbourne Strategic Development) which states that ‘A comprehensive approach should be taken to the provision and design of open space and green infrastructure, taking account of the needs of the parish, and with special regard to the need to mitigate potential impacts of recreational disturbance on the Chichester Harbour SAC/SPA/Ramsar’ and Policy 24 (East Wittering & Bracklesham Strategic Development) which states that ‘A comprehensive approach should be taken to the provision and design of open space and green infrastructure, taking account of the needs of the parish, and with special regard to the need to mitigate potential impacts of recreational disturbance on the Chichester Harbour SAC/SPA/Ramsar and the Medmerry Realignment’.

4.5.8 The precise details of mitigation measures, including the nature and scale of provision necessary to meet the demands for recreational space arising from each development, will be the ultimate product of the Solent Disturbance and Mitigation Project and cannot be prejudged in this HRA or the Local Plan. The approach being taken in the South Hampshire authorities (in agreement with Natural England) in relation to the fact that the SDMP outputs will follow on from Core Strategy/Local Plan adoption is to include a policy commitment to the overall strategy that will be an end product of the SDMP (rather than attempting to prejudge the SDMP and present full details in the plan), and it is sensible for that to also be the approach taken in Chichester district (as described in various policies, particularly Policy 50: Development and Disturbance of Birds in Chichester and Langstone Harbours Special Protection Area).

4.5.9 Further protective policies included in the Local Plan are:

- Policy 30 (Built Tourist and Leisure Development) states that tourist facilities should be ‘... located so as to minimise impact on the natural and historic environment, including that of visitors or users of the facility, particularly avoiding increasing recreational pressures on Chichester Harbour AONB and Pagham Harbour and other designated sites.’
- Policy 50 (Development and Disturbance of Birds in Chichester and Langstone Harbours Special Protection Area) states that ‘It is Natural England’s advice that all net increases in residential development within the 5.6km ‘Zone of Influence’ is likely to have a significant effect on the Chichester and Langstone Harbours SPA and will need to be subject to the provisions of regulation 61 of the Conservation of Habitats and Species Regulations 2010. In the absence of appropriate avoidance and/or mitigation measures that will enable the planning authority to ascertain that the development would not adversely affect the integrity of the SPA, planning permission will not be granted because the tests for derogations in regulation 62 are unlikely to be met. Furthermore, such development would not have the benefit of the presumption in favour of sustainable development in the National Planning Policy Framework. Appropriate avoidance/mitigation measures will comprise:
 - a) a contribution in accordance with the joint mitigation strategy outlined in Phase III of the Solent Disturbance and Mitigation Project; or
 - b) a developer provided package of measures associated with the proposed development designed to avoid any significant effect on the SPA; or
 - c) a combination of measures in (a) and (b) above.

Furthermore, the policy states that appropriate mitigation must be agreed with Natural England and also be in place prior to the proposed development taking place; and

- The supporting text for Policy 50 states that *'For Chichester and Langstone Harbours SPA Natural England advise that a likely significant effect from all new housing around the Solent in combination cannot be ruled out and therefore new housing developments will need to provide for a package of avoidance and mitigation measures. In the medium to long term this is likely to be provided through a Solent-wide joint project to which developments will contribute through S106 agreements and /or CIL.*

Until such time as that joint project is able to accept payment, the Council will not accept financial payments for avoidance and mitigation measures unless they are based on specific identified measures as set out in an S106 agreement and can demonstrate that it is going to be both effective and deliverable. Nor will it commit itself to providing or managing avoidance or mitigation proposals, although this may occur once a co-ordinated package of measures arising from the Solent Disturbance and Mitigation Project is agreed. For all net increases in residential development within the zones of influence, avoidance measures will be required. This may include access management of the harbour for example, increased wardening and the creation/enhancement of green infrastructure to improve local access in less sensitive areas and provide a similar quality experience to that found at Chichester Harbour'.

- 4.5.10 It is considered that the policy mechanisms set out above would be adequate at the Local Plan level to ensure the delivery of measures that would enable any adverse effect to be avoided or adequately mitigated. It is therefore considered that the Local Plan can be screened out as not leading to likely significant effects. This assessment and the work undertaken as part of the Solent Disturbance and Mitigation Project inherently consider development throughout the Solent area 'in combination'. No separate 'in combination' assessment is therefore required. In the absence of the detail of what may be delivered by each development, further HRA work will be needed later in the planning process.

Water Quality

- 4.5.11 The potential for adverse water quality effects on the SPA/Ramsar site and the need for a wastewater treatment solution for new development that would otherwise rely on Apuldram WwTW are already recognised. The preferred solution is an increase in the capacity of Tangmere WwTW which has been confirmed to be feasible (see section 3.6 of this report). The Chichester Local Plan: Key Policies Submission document acknowledges the constraint posed by the limited capacity of Apuldram WwTW and specifically references this issue and its solution in plan terms as follows:

- that *'Wastewater capacity is constrained at several treatment works due to lack of physical capacity and/or requirements to meet water quality standards. There are particular restrictions affecting the Apuldram Wastewater Treatment Works (WwTW), which serves Chichester city and discharges into Chichester Harbour'.* The Chichester Local Plan: Key Policies Submission document also states that *'the Tangmere WwTW upgrade would be operational from 2019'.*
- Paragraph 4.12 states that *'For this reason, the proposed strategic allocations in the Chichester / Tangmere area are not expected to be deliverable until after 2019. To compensate for this, the Plan strategy seeks the early release of housing land in areas where wastewater capacity is available, in particular at the settlement hubs of Southbourne, Selsey and East Wittering/ Bracklesham'.*

- 4.5.12 Given this, it is considered that the Chichester Local Plan: Key Policies Submission document has sufficient precautions in place to ensure that the Plan can be delivered without an adverse effect on the SPA/Ramsar site. Water quality considerations in this assessment inherently include other projects and plans that will result in treated sewage effluent being discharged and no separate assessment 'in combination' is therefore required.

Coastal Squeeze

- 4.5.13 Loss of estuarine habitats could be an issue where greenfield sites are developed but could also be an issue where intensification of existing residential areas through brownfield development might be an argument for maintaining or strengthening existing defences ('hold the line' or 'advance the line'). No new development areas identified in the Local Plan are sufficiently close to the SPA/Ramsar site to constrain any managed retreat that may be required in the future to allow the SPA/Ramsar site to respond to sea level rise and none would require the coastal defence policies identified in the Shoreline Management Plan to be altered (indeed, Policy 22 Integrated Coastal Zone Management for the Manhood Peninsula specifically states that the approach will be compatible with the SMP and Coastal Strategies). Although the development of Thorney Island set out in Policy 21 could theoretically lead to development that constrained the natural processes of the SPA/Ramsar site if care was not taken, the supporting text for that policy specifically states that '*Development would need to be compatible with the Chichester Harbour AONB and avoid or mitigate any impact on the adjoining SPA/SAC/Ramsar designations*'. This is further reflected in the policy text itself which states that '*Future land use and development proposals will be planned with special regard to the environmental sensitivity of the location within the Chichester Harbour AONB and the proximity of the Chichester Harbour SAC/SPA/Ramsar*' and states that aviation or noisy sports are unlikely to be considered acceptable. Given the explicit statement in policy that any redevelopment must be compatible with the SPA/Ramsar site it is considered that there would be no likely significant effect as a result of this policy. There are no other plans or projects which would operate 'in combination' with the Local Plan.

Loss of Supporting Habitats Outside of European Sites

- 4.5.14 Chichester & Langstone Harbours SPA and Ramsar sites are notified partly for their over-wintering populations of Brent geese and wading bird species. However, studies⁴¹ have identified that many feeding and roosting sites around the Solent fall outside of the statutory nature conservation site boundaries. The majority of Brent Goose feeding sites are amenity/recreation grasslands with little intrinsic nature conservation interest, and therefore are vulnerable to loss or damage from development. This also applies to some high tide wader roosts in the Solent.
- 4.5.15 The main settlements at which development would be situated around Chichester Harbour are Chichester city, Southbourne and East Wittering/Bracklesham. The area identified for housing at East Wittering/Bracklesham is over 5km from the SPA/Ramsar site at the east of the settlement and the nearest land parcels identified as being of value for waders and Brent geese are over 1.5km away on the western side of the settlement. Examination of the SHLAA also indicates that the most probable development sites at Southbourne are all over 1km north of the nearest fields identified as being of potential importance for waders and Brent geese. The 'west of Chichester' strategic development location is over 500m north of the nearest fields identified as being of potential importance for waders and Brent geese and is separated from those fields by a significant portion of Fishbourne.

⁴¹ King, D. (2010) Solent Waders and Brent Goose Strategy 2010. Hampshire and Isle of Wight Wildlife Trust.

- 4.5.16 The Council has indicated in discussions over this HRA that policy recommendations to protect locations outside of the SPA/ Ramsar site of value to Brent geese and waders would be addressed within the Site Allocations DPD and Neighbourhood Plans. Joint working with the Solent Disturbance and Mitigation Project will be employed to address issues of recreational disturbance and engagement with neighbouring authorities on green infrastructure strategies would address further concerns. The Council has added the Solent Waders and Brent Goose Strategy to the evidence base for both the Green Infrastructure Policy and for the Biodiversity policy and individual Neighbourhood Plans will consider potential impacts on high-tide foraging/roosting habitat and set requirements for individual planning applications that seek to deliver their housing requirements once those sites are determined.
- 4.5.17 It is therefore possible to conclude that none of the planned or probable major areas for development identified in the Chichester Local Plan: Key Policies Submission document would conflict with significant areas of supporting habitat for the Brent geese and waders associated with the SPA/Ramsar site. Since no likely significant effect will arise from the Chichester Local Plan there is no mechanism for a likely significant effect to arise 'in combination' with other projects or plans.

Air quality

- 4.5.18 It has already been established in Section 3.4 that the relevant part of the Solent Maritime SAC actually within Chichester (Chichester Harbour), while it does lie within 200m of the A259 in the vicinity of Fishbourne, has a nitrogen deposition rate of between 13.86 kgN/ha/yr and 16.52 kgN/ha/yr and thus well below the critical load (20 kgN/ha/yr) for the relevant SAC habitat (saltmarsh, according to the habitat maps on www.magic.gov.uk) for these locations. Moreover, this background deposition rate is likely to decrease as improvements in background air quality are achieved in line with central government initiatives and improvements in emission technology. It is highly unlikely that increased traffic flows as a result of development in the Local Plan area would result in a sufficiently large increase to push it over the critical load.
- 4.5.19 However, development must be considered not only in isolation but also 'in combination' with other projects and plans.
- 4.5.20 The Partnership for Urban South Hampshire initiated a sub-region wide transport and air quality study, the first stage of which reported in 2010⁴². This study identified that the growth in traffic associated with the 80,000 new dwellings to be delivered in PUSH and surrounding authorities up until 2026 would have relatively little impact on the following designated sites:
- Botley Wood and Everetts and Muses Copses SSSI;
 - The New Forest SSSI;
 - Chichester Harbour SSSI;
 - River Test SSSI;
 - Sinah Common SSSI;
 - Southampton Common SSSI; and
 - Upper Hamble Estuary and Woods SSSI.

⁴² AEA Technology. 2010. Road transport emissions impacts on Nature Conservation Sites. Report to the Partnership for Urban South Hampshire

- 4.5.21 The analysis indicated that the growth in traffic associated with PUSH would have the greatest impact on the following sites:
- Moorgreen Meadows SSSI;
 - Langstone Harbour SSSI;
 - Portsdown SSSI;
 - Downend Chalk Pit SSSI;
 - Lower Test Valley SSSI; and
 - River Itchen SSSI.
- 4.5.22 Two of these six sites, Langstone Harbour SSSI and Lower Test Valley SSSI, are part of the Solent complex of European sites – specifically Solent & Southampton Water SPA/Ramsar site and Chichester & Langstone Harbours SPA/Ramsar site. In both instances the modelling predicted that nitrogen deposition would exceed the critical load for the habitats and that development in the PUSH region would collectively contribute over 1kg N/ha/yr in additional nitrogen to these sites; a considerable additional amount. Traffic generated in the Local Plan area that travels westwards along the A27 may make a small additional contribution and operate in combination with that deriving from Havant and Portsmouth,. That contribution will be small however since the nearest part of Langstone Harbour that lies within 200m of a major road is 14km west of Chichester city, the main population centre of the district. At such distances traffic generated in Chichester will represent a very small proportion of overall flows. Clearly, development in Havant and Portsmouth will play a considerably greater role than that in Chichester but policies to reduce the need for private car travel out of the district towards Havant and Portsmouth will assist in minimising the Local Plan area’s contribution to any impact.
- 4.5.23 This is a pan-authority issue that is recognised by the Partnership for Urban South Hampshire. PUSH is committed to on-going studies to further explore the matter. Overall measures to address strategic air quality in the PUSH region will follow on from these studies and will have to be applied at a sub-regional level, primarily by the PUSH authorities themselves. Chichester district’s contribution must be proportionate to the overall small contribution they are likely to make to overall flows on the A27 westbound from Chichester.
- 4.5.24 Given that this is a collective pan-authority issue it is considered that severe control of nitrogen deposition due to additional traffic arising specifically from Chichester would be disproportionate and that policy should instead focus on maximising opportunities for sustainable transport and reducing reliance on private vehicles.
- 4.5.25 In consultation on Core Strategies for PUSH local authorities, Natural England have referred to the following document for mitigation measures that could be included in Local Plans: <http://www.westlondonairquality.org.uk/uploads/documents/Best%20Practice%20Guide/WLA%20Best%20Practice%20Air%20Quality%20and%20Transport%20Guide%2020051.pdf>. The South Hampshire authorities will be making the principal contribution to any air quality in combination effect at the Solent European sites and it is therefore appropriate and logical for the Chichester Local Plan to take a similar policy approach to the South Hampshire authorities.
- 4.5.26 The report identifies four broad types of mitigation measure:
- Behavioural measures and modal shift - reducing the amount of traffic overall;

- Traffic management - modifying traffic behaviour to control where emissions are generated;
- Emissions reduction at source - reducing the emissions level per vehicle; and
- Roadside barriers - reducing the impact on the public of emissions.

4.5.27 The measures identified in Chichester Local Plan: Key Policies Submission document cover all of these categories, except for the fourth (roadside barriers) which is not within the remit of local planning policy. The Chichester Local Plan: Key Policies Submission document does contain positive measures that should aim to mitigate or avoid the likelihood of significant adverse effects from reduced air quality:

- Policy 8 (Transport and Accessibility) provides a range of measures that will reduce private car use including:
 - *‘Ensuring that new development is well located and designed to minimise the need for travel, encourages the use of sustainable modes of travel as an alternative to the private car, and provides or contributes towards necessary transport infrastructure, including through travel plans;*
 - *Working with relevant providers to improve accessibility to key services and facilities and to ensure that new facilities are readily accessible by sustainable modes of travel;*
 - *Planning to achieve timely delivery of transport infrastructure needed to support new housing, employment and other development identified in this Plan.*

Integrated transport measures will be developed to mitigate the impact of planned development on the highways network, promote more sustainable travel patterns and encourage increased use of sustainable modes of travel, such as public transport, cycling and walking. This will include:

- *A coordinated package of improvements to junctions on the A27 Chichester Bypass, that will increase road capacity, reduce traffic congestion [reduced congestion leads to increased traffic flow and improved air quality], improve safety, and improve access to Chichester city from surrounding areas;*
- *Targeted investment to improve local transport infrastructure, focusing on delivery of improved and better integrated bus and train services, and improved pedestrian and cycling networks; and*
- *Measures to promote behavioural change in travel choices, such as easy-to-use journey planning tools, skills training and promotional activities. Travel plans will be developed as a means of coordinating these measures’.*
- Policy 10 (Chichester City Development Principles) includes *‘Support and promote improved access to the city and sustainable modes of travel in accordance with the transport strategy for the city’*
- Policy 13 (Chichester City Transport Strategy) includes a range of measures such as:
 - *‘Initiatives to promote behavioural change in travel choices, including travel plans, easy-to-use journey planning tools, skills training and promotional activities;*
 - *Reviewing car parking provision, including encouraging use of peripheral car parks to reduce traffic in city centre and giving consideration to the introduction of parking restrictions along some arterial routes to improve traffic circulation (particularly for buses);*

- *Introducing bus lanes and bus priority measures along key routes (including the A259 Bognor Road approaching its junction with the A27);*
- *Reviewing and expanding the use of Variable Message Systems (VMS);*
- *Providing Real Time Passenger Information (RTPI) screens at key locations;*
- *Exploring potential options to provide an improved bus / rail interchange;*
- *Delivering strategic cycle routes linking the city centre, residential areas and key facilities, including proposed areas of new housing, employment and greenspace within and close to the city;*
- *Improvements to the pedestrian network within and around the city, including proposed areas of new development and greenspace; and*
- *Exploring potential options for reducing traffic congestion and improving safety at key junctions in the city, including the Northgate Gyratory, Southgate Gyratory and the junctions on Westhampnett Road'.*
- Policy 14 (Development at Chichester City North) requires '*Transport proposals that fully consider the movement and access implications of development locally and across the city*'
- Policy 15 (West of Chichester Strategic Development Location) requires '*Provision should be made for regular bus services linking the site with Chichester city centre, and new and improved cycle and pedestrian routes linking the site with the city, Fishbourne and the South Downs National Park*'. Policies for other housing locations contain similar requirements;
- Policy 39 (Transport, Accessibility and Parking) includes the requirements for development to be '*located and designed to minimise additional traffic generation and movement, and should not create or add to problems of safety, congestion, air pollution, or other damage to the environment [and] ... encourages development that can be accessed by sustainable modes of transport, in part, through the creation of links between new development and existing pedestrian, cycle and public transport networks*'.

5 Pagham Harbour SPA and Ramsar

5.1 Introduction

5.1.1 Pagham Harbour comprises an extensive central area of saltmarsh and tidal mudflats, with surrounding habitats including lagoons, shingle, open water, reed swamp and wet permanent grassland. The intertidal mudflats are rich in invertebrates and algae and provide important feeding areas for birds.

5.1.2 Most of the site is a Local Nature Reserve managed by West Sussex County Council.

5.2 Features of European Interest⁴³

5.2.1 Pagham Harbour SPA qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive. During the breeding season:

- Little Tern *Sterna albifrons*: 0.3% of the breeding population in Great Britain (5-year mean, 1992-1996);
- Common Tern *Sterna hirundo*: 0.5% of the breeding population in Great Britain (1996).

Over winter:

- Ruff *Philomachus pugnax*: 1.4% of the population in Great Britain (5-year peak mean 1995 - 1999);
- Little Egret *Egretta garzetta*: 100 individuals, representing up to 20.0% of the wintering population in Great Britain (1998).

5.2.2 This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species. Over winter:

- Dark-bellied Brent Goose *Branta bernicla bernicla*: 0.6% of the population (5-year peak mean 1991/2 - 1995/6).

5.2.3 Pagham Harbour Ramsar site qualifies under one of the nine Ramsar criteria.

⁴³ Features of European Interest are the features for which a European sites is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Table 7: Pagham Harbour Ramsar site criteria

Ramsar criterion	Description of Criterion	Pagham Harbour
6	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.	<p>Dark-bellied brent goose <i>Branta bernicla bernicla</i>: 2512 individuals, representing an average of 1.1% of the populations (5-year peak mean 1998/99-2002-03)</p> <p>Black-tailed godwit <i>Limosa limosa islandica</i>: 377 individuals, representing an average of 1% of the population (5-year peak mean 1998/99 – 2002/03).⁴⁴</p>

5.2.4 It is important to note that this area also includes include the Medmerry Realignment Scheme which was created in order to provide compensatory habitat for future effects on the Solent European sites as a result of coastal defence work.

5.3 Historic Trends and Current Pressures

5.3.1 The majority of the site is managed as a nature reserve by West Sussex County Council. Historical land drainage for agricultural purposes is being addressed through the Local Nature Reserve Management Plan and Management Agreements, while pollution from inadequate treatment of sewage discharges is reviewed by the Environmental Agency.

5.3.2 Studies by the Environment Agency indicate that existing sewage discharges are not having a significant adverse effect on the integrity of the Pagham Harbour SPA/Ramsar site.

5.3.3 The latest Natural England condition assessment of Pagham Harbour SSSI indicated that 93% of the site was in favourable condition.

5.4 Key Environmental Conditions

5.4.1 The following key environmental conditions have been identified for the site:

- Sufficient space between the European site and development to allow for managed retreat of intertidal habitats (to avoid coastal squeeze)
- Maintenance of appropriate hydrological regime
- Unpolluted water
- Absence of nutrient enrichment of water
- Absence of non-native species
- Absence of disturbance

⁴⁴ This population was identified subsequent to designation, for possible future consideration.

5.5 Potential Effects of the Plan

5.5.1 Four potential impacts of the Chichester Local Plan: Key Policies Submission document upon the SPA and Ramsar have been identified at the screening stage of this HRA:

- Urbanisation
- Recreational pressure
- Coastal squeeze
- Loss of off-site feeding and roosting areas for bird species

Urbanisation

5.5.2 Development at Selsey could involve placing new housing development within 300m-600m of Pagham Harbour SPA/Ramsar site. However, there are already residential dwellings closer to Pagham Harbour than this and the small scale of development at Selsey identified in Policy 23 (150 dwellings or an approximately 4% increase in the existing stock) cannot be described as 'urbanisation'. There are no other plans or projects which would operate 'in combination' with the Local Plan.

Recreational Pressure

5.5.3 Work was completed in 2010 by Arun District Council regarding visitor surveys for Pagham Harbour SPA. In summary, this work has identified that 8.7% of the visitors to the Arun sections of the SPA/Ramsar site come from within 500m, 49.7% come from within 5km, 52.9% come from within 6km and 57.4 % come from within 10km. Beyond 10km the visitors origins are very dispersed. This indicates that the largest single contribution to visits to the SPA comes from the 5-6km zone. The study focused on visitors from Arun District.

5.5.4 Chichester District Council commissioned Footprint Ecology to undertake a similar visitor survey on those parts of the SPA/Ramsar site that fell within The Local Plan area. According to Table 14 on page 26 of that report⁴⁵ approximately 53% of winter visitors and 76% of summer visitors to the western (Chichester district) parts of Pagham Harbour come from within the District (Selsey, Chichester City, Sidlesham, Lodsworth, Bosham, Mundham, Hunston, Emsworth/Southbourne and Midhurst). Three settlements (Selsey, Chichester and Sidlesham) make by far the greatest contribution to visitors to Pagham Harbour, contributing 48% of all winter visitors and 66% of all summer visitors. Of these three settlements, Selsey is responsible for the majority. Moreover, approximately 96% of 'visitors with dogs' (who are likely to have the greatest potential disturbance effect on SPA birds) live 'south of Chichester', emphasising the local catchment of the site.

5.5.5 Other settlements (including the other settlements mentioned above and relatively large nearby settlements in adjacent districts such as Bognor Regis) make a very small contribution in comparison e.g. 1-3% of visitors each to the parts of Pagham Harbour within Chichester District.

5.5.6 Clearly therefore, large amounts of new development at Selsey (in particular), Chichester city or Sidlesham would potentially have the greatest effect on visitor pressure within Pagham Harbour. The Chichester Local Plan: Key Policies Submission document currently plans the following

⁴⁵ Cruickshanks, K. & Liley, D. (2012). Pagham Harbour Visitor Surveys. Unpublished report by Footprint Ecology. Commissioned by Chichester District Council

development in settlements identified in the Pagham Harbour visitor study as contributing visitors to the Harbour:

- Chichester city (if one is cautious and includes Shopwyke and Westhampnett) = 2600 new dwellings (including the 600 anticipated west of Chichester after the end of the plan period)
- Southbourne = 300 new dwellings
- Selsey = 150 new dwellings
- Bosham = 50 new dwellings
- North Mundham = 25 new dwellings

5.5.7 If one applies a residents per dwelling multiplier of 2.4 to each of these allocations and then divides that by the existing population of each settlement one would get a worst-case scenario population increase for each settlement⁴⁶:

- Chichester city = 2600 new dwellings x 2.4 = 6240/25,000 x 100 = 25% increase
- Southbourne = 300 new dwellings x 2.4 = 720/6000 x 100 = 12% increase
- Selsey = 150 new dwellings x 2.4 = 360/10,000 x 100 = 3.6% increase
- Bosham = 50 new dwellings x 2.4 = 120/3,000 x 100 = 4% increase
- North Mundham = 25 new dwellings x 2.4 = 60/2,000 x 100 = 3% increase

5.5.8 If 100% of visitors to Pagham Harbour came from Selsey, for example, then we could crudely conclude that a 3.6% worst-case increase in the population of that settlement might lead to a similar increase in visitors to Pagham Harbour. However, we know that in actuality 38% of winter visitors and 50% of summer visitors come from Selsey. As such, it is possible to weight the population increase attributable to each settlement by the percentage of visitors to Pagham Harbour that arise from that settlement as follows:

- Chichester city – there would be a 25% worst case population increase as a result of development set out in the Local Plan. Approximately 6% of winter visitors and 10% of summer visitors to Pagham Harbour derive from Chichester City. Therefore a 27% population increase could lead to a 1.5% (in winter) or 2.5% (in summer) increase in visitors to Pagham Harbour (25% x 0.06 = 1.5%; 25% x 0.1 = 2.5%)
- Southbourne – there would be a 12% worst case population increase as a result of development set out in the Local Plan. Approximately 3% of winter visitors and 1% of summer visitors to Pagham Harbour derive from Southbourne. Therefore a 12% population increase could lead to a 0.4% (in winter) or 0.1% (in summer) increase in visitors to Pagham Harbour (12% x 0.03 = 0.4%; 12% x 0.01 = 0.1%)
- Selsey – there would be a 3.6% worst case population increase as a result of development set out in the Local Plan. Approximately 38% of winter visitors and 50% of summer visitors to Pagham Harbour derive from Selsey. Therefore a 3.6% population increase could lead to a 1.4% (in winter) or 1.8% (in summer) increase in visitors to Pagham Harbour (3.6% x 0.38 = 1.4%; 3.6% x 0.5 = 1.8%)

⁴⁶ This is highly precautionary since it assumes that a) these are all net new dwellings rather than replacements for existing stock, b) all net new dwellings will be occupied by new residents rather than existing residents of these settlements and c) household sizes will remain similar to current sizes

- Bosham - there would be a 4% worst case population increase as a result of development set out in the Local Plan. Approximately 1% of winter visitors and 0% of summer visitors to Pagham Harbour derive from Bosham. Therefore a 4% population increase could lead to a 0.04% (in winter) or 0% (in summer) increase in visitors to Pagham Harbour ($4\% \times 0.01 = 0.04\%$)
- North Mundham – there would be a 3% worst case population increase as a result of development set out in the Local Plan. Approximately 1% of winter visitors and 2% of summer visitors to Pagham Harbour derive from Mundham. Therefore a 3% population increase could lead to a 0.03% (in winter) or 0.06% (in summer) increase in visitors to Pagham Harbour ($3\% \times 0.01 = 0.03\%$; $3\% \times 0.02 = 0.06\%$)

5.5.9 Summing these percentages gives us the following:

- Percentage increase in visitors to Pagham Harbour in winter, due to planned development in the Local Plan area = c. 3%
- Percentage increase in visitors to Pagham Harbour in summer, due to planned development in the Local Plan area = c. 4%

5.5.10 There will of course be additional visitors due to development in surrounding authorities 'in combination' with that in the Local Plan area. However, the Footprint Ecology survey indicates that beyond the Local Plan area points of visitor origin to the Chichester parts of Pagham Harbour become highly dispersed and even larger settlements contribute a relatively small percentage of current visitors to the SPA/Ramsar site. The settlements outside the Local Plan area that were identified as making the highest contribution to current visitor activity within the Chichester parts of the SPA/Ramsar site were:

- Bognor Regis – 3% of winter visitors and 4% of summer visitors;
- Southampton, Hayling Island, Richmond-upon-Thames, Epsom & Ewell and Westergate/Barnham/Yapton– each of these settlements contributed 2% of winter visitors according to the survey and were dispersed across the south-east including London; no summer visitors covered by the survey came from these settlements. It can reasonably be concluded that most if not all of the visitors from these settlements were birders rather than conventional recreational visitors;
- Reigate/Redhill and Merton - each of these settlements contributed 2% of summer visitors according to the survey and were dispersed across the south-east including London; no winter visitors covered by the survey came from these settlements. It can reasonably be concluded that the visitors from these settlements were holidaymakers, birdwatchers or similar.

5.5.11 All other settlements contributed 1% or less to visitor activity within the SPA/Ramsar site. At first glance it seems unusual that Bognor Regis in Arun district contributed so few visitors to the SPA/Ramsar site according to this survey, since it is by far the largest settlement near the site. However, the survey was specifically designed to target people coming from the Chichester district side and there were no survey locations on the Arun district side which explains the apparently low visitor contribution of Bognor Regis. The aforementioned visitor surveys commissioned by Arun Council have already demonstrated that Bognor Regis is the main contributory settlement to recreational activity on the eastern (Arun district) side of the SPA/Ramsar site.

- 5.5.12 According to the Arun Local Plan there will be considerable new housing development at Bognor Regis from the combination of a 2,500 dwelling sustainable urban extension which has already been consented and 300 currently unallocated dwellings. This will clearly operate 'in combination' with development at Selsey in particular.
- 5.5.13 The Local Nature Reserve Management Plan states that 150,000 visits are made to Pagham Harbour each year. Provided that visitors adhere to designated access routes, there was not perceived to be an issue with disturbance (as of 2007). However, the Management Plan notes that any further increased numbers of visitors could create damaging levels of disturbance. Car parking arrangements (numbers and locations) help to limit the potential for excessive visitor presence. Nonetheless, the Management Plan does note that there are issues such as four-wheel drive and motorbike usage, and factors such as dog-fouling that do present threats to reserve integrity.
- 5.5.14 The implications of the survey results in terms of whether a likely significant effect would result in the absence of mitigation need to be considered alongside the survey undertaken for Arun district. Given the current uncertainties over this issue therefore, the Council have taken a precautionary approach for the Local Plan and assumed that the same type of strategy devised for Chichester Harbour would also have to be extended to Pagham Harbour, principally with regard to development at Selsey (which has been identified in the survey as being the source of almost half of all winter visitors to the Chichester part of the SPA/Ramsar site and over half of all summer visitors).
- 5.5.15 Medmerry is due for completion in autumn 2013 and at time of writing it is not publically accessible. One of the specific objectives of the scheme is to create a new extensive network of public and permissive rights of way, which will be managed in the long term. Given that it is located within 3.5km zone which has been identified as being appropriate for Pagham Harbour itself and the creation of an extensive network of footpaths it is likely to form a recreational draw and the same principles regarding an adverse effect at Pagham Harbour should therefore apply to Medmerry. The main settlements within 3.5km of Medmerry at which the Local Plan proposes new housing are Selsey and East Wittering/Bracklesham.
- 5.5.16 This is reflected in Policy 23 (Selsey Strategic Development) which states that '*A comprehensive approach should be taken to the provision and design of open space and green infrastructure, taking account of the needs of the parish, and with special regard to the need to mitigate potential impacts of recreational disturbance on the Pagham Harbour SPA/Ramsar and the Medmerry Realignment*' and Policy 24 (East Wittering & Bracklesham Strategic Development) which states that '*A comprehensive approach should be taken to the provision and design of open space and green infrastructure, taking account of the needs of the parish, and with special regard to the need to mitigate potential impacts of recreational disturbance on the Chichester Harbour SAC/SPA/Ramsar and the Medmerry Realignment*'.
- 5.5.17 Arun Council has developed the following series of mitigation and avoidance proposals relating to housing within Arun district, as expressed in their Local Plan:
- Wardening - increasing the number of wardens at the site to ensure that people do not stray into sensitive areas.
 - Access management and site protection - improving or closing paths, erecting fencing or establishing other barriers, in order to prevent or reduce access to sensitive areas

- Habitat improvements - mitigating against any disturbance to birds, including their nesting, roosting or feeding habitats which could instead be enhanced or created.
- Interpretation, education and signage - improving visitor facilities and informing visitors of the requirement to protect the wildlife of the site and outlining how best to achieve this;
- Monitoring of wildlife and visitor numbers and the effect that disturbance has on wildlife, so that access management can be modified as appropriate.

5.5.18 Policy DM35 of the Arun Local Plan goes on to describe a series of distance bands, and the mitigation or other measures which development within those zones may trigger and which broadly fit with the core catchment of the SPA/Ramsar site as identified in the Footprint Ecology visitor survey:

- Within Zone A (<400m) as identified on the Proposals Map, development will only be permitted in exceptional circumstances which shall be demonstrated by the developer. These circumstances shall relate to the impact, type and the effects of any proposed development on Pagham Harbour, including on non-native species.
- Within Zone B (400m – 5km) all new residential development will be required to:
 - (a) contribute financially towards improved access management at Pagham Harbour. Access management measures shall be undertaken and shall include wardening, access management and site protection, habitat improvements, provision for interpretation, education and signage and monitoring of wildlife and visitor numbers; and
 - (b) create easily accessible new green spaces for recreation within or adjacent to the development site, or to make developer contributions towards the provision of such green spaces to serve the area. New spaces shall be capable of accommodating the predicted increases in demand for local walking and dog walking. Good pedestrian links shall be provided between housing areas and new and existing green space in order to discourage car use.
- Large scale developments taking place outside Zone B and close to its boundary will be considered on a case by case basis for potential effects on Pagham Harbour, and the need for avoidance or mitigation measures.
- A tariff will be set to ensure sufficient funds are available to secure the required access management measures and the provision of alternative green space of a suitable size, design and location, where necessary, in advance of the occupation of new development and to ensure it is appropriately managed in perpetuity.

5.5.19 The Chichester Local Plan: Key Policies Submission document broadly reflects the Arun Local Plan approach by including a protective policy (analogous to that produced for Chichester and Langstone Harbours SPA/Ramsar sites). Policy 51 (Development and Disturbance of Birds in Pagham Harbour Special Protection Area) states that 'Net increases in residential development within the 3.5km 'Zone of Influence' is likely to have a significant effect on Pagham Harbour SPA and will need to be subject to the provisions of Regulation 61 of the Conservation of Habitats and Species Regulations 2010. In the absence of appropriate avoidance and/or mitigation measures that will enable the planning authority to ascertain that the development would not adversely affect the integrity of the SPA, planning permission will not be granted because the tests for derogations in regulation 62 are unlikely to be met. Furthermore, such development would not

have the benefit of the presumption in favour of sustainable development in the National Planning Policy Framework. Appropriate avoidance/mitigation measures will comprise:

- a) a contribution towards the appropriate management of the Pagham Harbour Local Nature Reserve in accordance with the LNR Management Plan;
- b) a developer provided package of measures associated with the proposed development designed to avoid any significant effect on the SPA; or
- c) a combination of measures in (a) and (b) above.

- 5.5.20 Furthermore, the policy states that appropriate mitigation must be agreed with Natural England and also be in place prior to the proposed development taking place.
- 5.5.21 The Council has also just adopted a revised Interim Policy Statement on Development and Disturbance of Birds in Special Protection Areas and identified Compensatory Habitats, which explicitly includes the Medmerry Compensatory Habitat within the area to be protected from adverse effects on integrity.
- 5.5.22 The different distances used in the Chichester Local Plan: Key Policies Submission document (3.5km compared to 5km for Arun District) reflect the visitor survey results for the Chichester District part of Pagham Harbour.
- 5.5.23 Given the application of a dedicated policy to protect Pagham Harbour and Medmerry and ensure the delivery of improved access management of the Harbour in line with any increase in population within the core catchment it is considered that there will be no adverse effect on the integrity of the Harbour as a result of the Chichester Local Plan: Key Policies Submission document. The assessment already factors in development within Arun District and therefore no separate assessment 'in combination' is necessary.

Coastal Squeeze

- 5.5.24 No new development areas identified in the SHLAA in relation to Selsey or Sidlesham would constrain any managed retreat that may be required in the future to allow the SPA/Ramsar site to respond to sea level rise, as they are either over 400m from the SPA/Ramsar site or lie landwards of existing housing. Moreover, none would require the coastal defence policies identified in the Shoreline Management Plan to be altered. There are no other plans or projects which would operate 'in combination' with the Chichester Local Plan: Key Policies Submission document.

Loss of supporting habitats Outside of European Sites

- 5.5.25 Pagham Harbour SPA and Ramsar sites are notified partly for their over-wintering populations of brent geese and wading bird species. Studies⁴⁷ have identified that many feeding and roosting sites around the Solent fall outside of the statutory nature conservation site boundaries. This survey effort has not been applied to Pagham Harbour. The Pagham Harbour Management Plan notes that farmland areas occur within the designated site boundary and that these are managed to attract Brent geese away from surrounding winter cereal crops. It may therefore be the case that relatively little of the farmland/grassland outside the SPA/Ramsar site boundary is used by significant numbers of Brent geese or waders. There are no other identified plans or projects which would operate 'in combination' with the Local Plan.

⁴⁷ Solent Waders and Brent Goose Strategy. Solent Waders and Brent Goose Strategy Steering Group (2010).

- 5.5.26 The Council has indicated that policy recommendations to protect locations outside of the SPA/Ramsar site of value to Brent geese and waders would be addressed within the Site Allocation DPD and Neighbourhood Plans. Joint working with the Solent Disturbance and Mitigation Project will be employed to address issues of recreational disturbance and engagement with neighbouring authorities on green infrastructure strategies would address further concerns.

Recommended Actions

- 5.5.27 It is recommended that in development of the Site Allocation DPD or Neighbourhood Plan for Selsey and Sidlesham Parishes, the relevant council should consider whether potential sites conflict with any areas that constitute supporting habitat for the SPA/Ramsar site and identify requirements for subsequent planning applications to undertake supporting studies where necessary. If supporting habitat were to be lost to any development, then it would be necessary to determine (a) how significant it was (i.e. whether it was regularly used by more than 1% of the population of qualifying bird species and (b) to provide alternative habitat to replace it in a location that was reasonably close to the SPA/Ramsar site.

6 Ebernoe Common SAC

6.1 Introduction

6.1.1 Ebernoe Common is of international importance as an example of ancient woodland. It contains a wide range of structural and vegetation community types which have been influenced in their development by differences in the underlying soils and past management. The native trees, particularly those with old growth characteristics, support rich lichen and fungal communities, and a diverse woodland breeding bird assemblage. Nationally important maternity roosts for barbastelle bat *Barbastella barbastellus* and Bechstein's bat *Myotis bechsteinii* occur within the woodland.

6.1.2 At its closest point the SAC lies adjacent to part of the Local Plan area to which the Chichester Local Plan: Key Policies Submission document applies.

6.2 Features of European Interest⁴⁸

6.2.1 Ebernoe Common SAC qualifies as a SAC for both habitats and species. Firstly, the site contains the Habitats Directive Annex I habitats of:

- Beech forests on acid soils

6.2.2 Secondly, the site contains the Habitats Directive Annex II species:

- Barbastelle bat; and
- Bechstein's bat

6.3 Historic Trends and Current Conditions

6.3.1 Ebernoe Common SAC is owned and managed by Sussex Wildlife Trust (SWT). There is evidence that the Common has contained a mixture of open pasture and high forest for centuries. Ebernoe Nature Reserve is an Open Access site and is fairly well used (SWT estimate up to 3,000 visitors per annum)⁴⁹.

6.3.2 In the most recent Natural England condition assessment process, 93% of Ebernoe Common SSSI was considered to be in favourable condition with the remainder recovering from unfavourable status.

6.4 Key Environmental Conditions

6.4.1 The key environmental conditions that support the features of European interest have been defined as:

- Appropriate management;

⁴⁸ Features of European Interest are the features for which a European sites is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

⁴⁹ Monk-Terry, M and Lyons, G. Sussex Wildlife Trust Ebernoe Nature Reserve Management Plan 2010-2015.

- Minimal atmospheric pollution - may increase the susceptibility of beech trees to disease and alter epiphytic communities;
- Absence of disturbance;
- In a wider context, bats require good connectivity of landscape features to allow foraging and commuting;
- Both bat species have close association with woodland. Areas of undesignated woodland adjacent to SAC may be of most importance to population; and
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.

6.5 Potential Effects of the Plan

6.5.1 Two theoretical potential impacts of Chichester Local Plan: Key Policies Submission document upon the SAC has been identified at the screening stage of this HRA:

- Disturbance of bat flight lines through development within the north of the Local Plan area; and
- Potential air quality impacts associated with traffic.

Disturbance of Bat Flight Lines

6.5.2 Ebernoe Common is an exceptional site for both barbastelle and Bechstein bats. Most of what is known about the foraging behaviour of barbastelle bats has been derived by studies carried out over the past ten years, and the studies are able to give detailed information on flight lines surrounding Ebernoe Common of the barbastelle bat:

- Greenaway, F. (2004) Advice for the management of flightlines and foraging habitats of the barbastelle bat *Barbastellus barbastellus*. *English Nature Research Report*, Number 657.
- Greenaway, F. (2008) Barbastelle bats in the Sussex West Weald 1997 - 2008

6.5.3 The barbastelles at Ebernoe Common SAC had flightlines that followed watercourses, particularly the River Kird, and woodland cover for distances of typically 5km. Flightlines outside the SAC are particularly to the south (the Petworth and Tillington area) but also to the west, north and east. There has been less study of the Bechstein bat populations. However, those radio-tracking projects which have been implemented for the species have established that the tracked individuals generally remained within approximately 1.5 km of their roosts⁵⁰. These distances do fit with those identified from radio-tracking of Bechstein's that has been undertaken at Ebernoe Common SAC from 2001, which identified that the maximum distance travelled by a tagged Bechstein's bat to its foraging area was 1,407m, with the average 735.7m⁵¹.

6.5.4 Studies have indicated that barbastelle bat flightlines from Ebernoe Common SAC cross the northern part of the District. Most of this area now lies within the South Downs National Park for strategic planning purposes. However, the Chichester Local Plan: Key Policies Submission document does allow for a small amount of housing development in the north of the plan area

⁵⁰ Cited in: Schofield H & Morris C. 2000. 'Ranging Behaviour and Habitat Preferences of Female Bechstein's Bats in Summer'. Vincent Wildlife Trust

⁵¹ Fitzsimmons P, Hill D, Greenaway F. 2002. Patterns of habitat use by female Bechstein's bats (*Myotis bechsteinii*) from a maternity colony in a British woodland

(Policy 25). Policy 5 (Parish Housing Sites) lists the following settlements that will be allocated small numbers of new dwellings and which all lie within 5km of Ebernoe Common SAC:

- Kirdford will be allocated up to 60 dwellings and is located 2.5km east of the SAC;
- Plaistow & Ifold will be allocated up to 10 dwellings and is located 3km north of the SAC.

6.5.5 It is therefore possible that delivery of this development could, depending upon the sites allocated, lead to disturbance or other impacts (e.g. direct landtake) on flightlines used by the barbastelle bat colony.

Recommended Actions

6.5.6 It is therefore recommended that in development of the Site Allocation DPD or Neighbourhood Plan any development proposals at these two settlements (Kirdford and Plaistow & Ifold) will have to ensure that hedgerows, tree-belts and other linear habitats are retained, or that a bat survey is undertaken to determine their use by bats associated with Ebernoe Common SAC before they are removed or broken.

Air quality

6.5.7 As identified in section 3.4 the SAC lies within 200m of the A283 for a short distance. The site deposition rate is 28.56 kgN/ha/yr for SU965259 which is above the upper critical load of 20 kgN/ha/yr and well above the lower critical load of 10 kgN/ha/yr.

6.5.8 A total of 339 dwellings are planned within the entire north of the plan area and all are associated with villages that have many roads connecting them to the wider landscape other than the A283. It is therefore considered that development planned within the Local Plan area will not result in traffic flows on the A283 so far north of the main development centres increasing by over 1,000 AADT. Design Manual for Roads and Bridges guidance is clear that changes in vehicle flows of less than 1,000 AADT can be considered effectively neutral in air quality terms.

6.5.9 Moreover, the Local Plan contains a number of measures to reduce reliance on the private car and therefore improve air quality. These are already listed in paragraph 4.5.33. These would be in line with measures being introduced by other local authorities to address air quality issues and given the distance of the SAC from the main areas of new development in the Local Plan area would ensure no likely significant effect.

6.5.10 There are no other plans or projects identified that would result in a significant increase in vehicle flows on the A283 within the Local Plan area and therefore there will be no effect 'in combination' with other projects and plans.

7 The Mens SAC

7.1 Introduction

7.1.1 The Mens remains as one of the most extensive examples of Wealden Woodland in West Sussex. It is important for its size, structural diversity and the extremely rich fungal and lichen floras which occur here. The wood supports a diverse community of breeding birds, and is the locality of a nationally endangered species of fly.

7.1.2 At its closest point the SAC lies adjacent to part of the Local Plan area to which the Chichester Local Plan: Key Policies Submission document applies.

7.2 Features of European Interest⁵²

7.2.1 The Mens SAC qualifies as a SAC for both habitats and species. Firstly, the site contains the Habitats Directive Annex I habitats of:

- Beech forests on acid soils

7.2.2 Secondly the site contains the Annex II species:

- Barbastelle bat

7.3 Historic Trends and Current Pressures

7.3.1 The Mens SAC is owned and managed by Sussex Wildlife Trust.

7.3.2 In the most recent Natural England condition assessment process, 97% of The Mens SSSI was considered to be in favourable condition.

7.4 Key Environmental Conditions

7.4.1 The key environmental conditions that support the features of European interest have been defined as:

- Appropriate woodland management;
- Low recreational pressure (because management is minimum intervention and Bridleway degradation by horse riding is a recurring threat);
- Minimal air pollution - may increase the susceptibility of beech trees to disease and alter epiphytic communities; and
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.

⁵² Features of European Interest are the features for which a European sites is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

7.5 Potential Effects of the Plan

7.5.1 Two potential impacts of the Chichester Local Plan upon the SAC has been identified at the screening stage of this HRA:

- Disturbance of bat flight lines through development within the Local Plan area; and
- Potential air quality impact on the woodland.

Disturbance of Bat Flight Lines

7.5.2 The Mens SAC is important for its barbastelle populations and radio-tracking studies have been undertaken to identify core foraging areas. These reports have identified that the barbastelles of The Mens SAC forage to the east of the SAC, principally on the floodplain of the river Arun from close to Horsham in the north to Parham in the south. They also cross to the Adur floodplain. In some cases the bats travelled up to 7km to visit foraging areas. As such, there are few settlements in the Local Plan area in which development is likely to affect barbastelle flightlines or foraging areas.

7.5.3 Policy 5 (Parish Housing Sites) lists the following settlements that will be allocated small numbers of new dwellings and which all lie within 7km of The Mens SAC:

- Kirdford will be allocated up to 60 dwellings and is located 2km north of the SAC;
- Loxwood will be allocated up to 60 dwellings and is located 5km north of the SAC;
- Wisborough Green will be allocated up to 60 dwellings and is located 1km north of the SAC; and
- Plaistow & Ifold will be allocated up to 10 dwellings and is located 5km north of the SAC.

7.5.4 However, radio-tracking studies undertaken to date indicate that the key foraging areas for the colonies at The Mens SAC are generally to the east. As such, it is unlikely that development at these villages would lead to a likely significant effect on The Mens SAC even if well-developed hedgerows and woodland features were affected.

Air quality

7.5.5 As identified in section 3.4 the SAC lies within 200m of the A272 for a short distance. The deposition rate is 31 kgN/ha/yr for TQ022237 which is above the upper critical load of 20 kgN/ha/yr and well above the lower critical load of 10 kgN/ha/yr.

7.5.6 A total of 339 dwellings are planned within the entire north of the plan area and all are associated with villages that have many roads connecting them to the wider landscape other than the A283. It is therefore considered that development planned within the Local Plan area will not result in traffic flows on the A272 so far north of the main development centres increasing by over 1,000 AADT. Design Manual for Roads and Bridges guidance is clear that changes in vehicle flows of less than 1,000 AADT can be considered effectively neutral in air quality terms.

7.5.7 Moreover, the Local Plan contains a number of measures to reduce reliance on the private car and therefore improve air quality. These are already listed in paragraph 4.5.33. These would be in line with measures being introduced by other local authorities to address air quality issues and given the distance of the SAC from the main areas of new development in the Local Plan area would ensure no likely significant effect.

- 7.5.8 There are no other plans or projects identified that would result in a significant increase in vehicle flows on the A272 within the Local Plan area and therefore there will be no effect 'in combination' with other projects and plans.

8 Duncton to Bignor Escarpment SAC

8.1 Introduction

8.1.1 Within the SAC Asperulo-Fagetum beech forests occur on steep scarp slopes and on more gently-sloping hillsides in mosaic with ash *Fraxinus excelsior* woodland, scrub and grassland. Much of the beech woodland is high forest but with some old pollards. Rare plants present include the white helleborine *Cephalanthera damasonium*, yellow bird's nest *Monotropa hypopitys* and green hellebore *Helleborus viridis*. The woods also have a rich mollusc fauna.

8.2 Features of European Interest⁵³

8.2.1 Duncton to Bignor Escarpment SAC qualifies as a SAC for the Habitats Directive Annex I habitat of:

- Beech forests on acid soils

8.3 Historic Trends and Current Pressures

8.3.1 Historically this site has relatively few threats. The JNCC Natura 2000 data sheet documents '*The escarpment woodland hosts a number of pheasant shoots which, in general, pose no threat to the woodland. Expansion of these shoots from current levels is undesirable. Plantations of non-native conifers are targeted for complete or partial removal in the next five years. A large resident deer population is controlled by deer stalkers*'.

8.3.2 In the most recent Natural England condition assessment process, 100% of the component SSSI of the SAC was considered to be in favourable condition.

8.4 Key Environmental Conditions

8.4.1 The key environmental conditions that support the features of European interest have been defined as:

- Appropriate woodland management;
- Minimal air pollution - may increase the susceptibility of beech trees to disease and alter epiphytic communities.

8.5 Potential Effects of the Plan

8.5.1 One potential impact of the Chichester Local Plan: Key Policies Submission document upon the SAC has been identified at the screening stage of this HRA:

- Potential air quality impacts associated with traffic on the A285

⁵³ Features of European Interest are the features for which a European sites is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

Air quality

- 8.5.2 As identified in section 3.4 the SAC lies within 200m of the A285 for a short distance. The site is designated for its woodland and the deposition rate is 28.56 kgN/ha/yr for SU958161 which is above the upper critical load of 20 kgN/ha/yr and well above the lower critical load of 10 kgN/ha/yr.
- 8.5.3 A total of 339 dwellings are planned within the entire north of the plan area and all are associated with villages that have many roads connecting them to the wider landscape other than the A285. It is therefore considered that development planned within the Local Plan area will not result in traffic flows on the A283 so far north of the main development centres increasing by over 1,000 AADT. Design Manual for Roads and Bridges guidance is clear that changes in vehicle flows of less than 1,000 AADT can be considered effectively neutral in air quality terms.
- 8.5.4 Moreover, the Local Plan contains a number of measures to reduce reliance on the private car and therefore improve air quality. These are already listed in paragraph 4.5.33. These would be in line with measures being introduced by other local authorities to address air quality issues and given the distance of the SAC from the main areas of new development in the Local Plan area would ensure no likely significant effect.
- 8.5.5 There are no other plans or projects identified that would result in a significant increase in vehicle flows on the A285 within the Local Plan area and therefore there will be no effect 'in combination' with other projects and plans.

9 Arun Valley SAC/SPA/Ramsar site

9.1 Introduction

- 9.1.1 Arun Valley SPA covers 528.62ha of West Sussex, with 95% of the site comprising of mesophile grassland, 2% inland water bodies, 2% Bog, marshes, water fringed vegetation, fens and 1% broad leaved deciduous woodland. The site comprises of low-lying grazing marsh, largely on alluvial soils, but with an area of peat derived from a relict raised bog. Southern parts of the Arun Valley are fed by calcareous springs, while to the north, where the underlying geology is Greensand, where the water is more acidic. These water bodies support internationally important numbers of Bewick's Swan.
- 9.1.2 Arun Valley SPA consists of three Site of Special Scientific Importance; Amberley Wild Brooks SSSI, Pulborough Brooks SSSI and Waltham Brooks SSSI. Together these sites comprise an area of wet meadows on the floodplain of the River Arun between Pulborough and Amberley.
- 9.1.3 The site was designated as being of European importance for the following interest feature:
- Bewick's Swan *Cygnus columbianus bewickii*, 115 individuals representing at least 1.6% of the wintering population in Great Britain (5 year peak mean for 1992/93 to 1996/7)
- 9.1.4 The birds that winter on many Special Protected Areas (the Arun Valley being no exception) are not confined to the boundaries of the SPA, but in fact utilise areas of 'supporting habits' located outside of the boundaries and sometimes many kilometres distant.

9.2 Features of European Interest: SAC

- 9.2.1 The site was designated as being of European importance for the following interest feature:
- Ramshorn snail (*Anisus vorticulus*), once a species covering over 15 sites in the south east of England, now only remains in a few select locations as a result a massive decline has occurred. Arun Valley is one of the few remaining site in the UK to support this particular species.

9.3 Features of International Interest: Ramsar Criteria

- 9.3.1 The Arun Valley Ramsar site qualifies on threes of the nine Ramsar criteria (Table 8)

Table 8: Arun Valley Ramsar site criteria

Ramsar criterion	Description of Criterion	River Arun and marshes
2	A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.	The site supports seven wetland invertebrate species listed in the British Red Book and the endangered <i>Pseudamnicola confuse</i> (swollen spire snail). As well as four nationally rare and four nationally scarce plant species.
3	A wetland should be considered	Within the ditches intersecting the site there

Ramsar criterion	Description of Criterion	River Arun and marshes
	internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region	are all five British duckweed <i>Lemna</i> species, all five water-cress <i>Rorippa</i> species, and all three British water milfoils (<i>Myriophyllum</i> species), all but one of the seven British water dropworts (<i>Oenanthe</i> species), and two-thirds of the British pondweeds (<i>Potamogeton</i> species).
5	A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.	<p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • 13774 waterfowl (5 year peak mean 1998/99-2002/2003) <p>Species identified subsequent to designation for possible future consideration:</p> <ul style="list-style-type: none"> • Northern pintail , <i>Anas acuta</i>, NW Europe 641 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3) <p>Species currently occurring at levels of national importance:</p> <ul style="list-style-type: none"> • Eurasian wigeon , <i>Anas penelope</i>, NW Europe 4742 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3) • Eurasian teal , <i>Anas crecca</i>, NW Europe 2931 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3) • Northern shoveler , <i>Anas clypeata</i>, NW & C Europe 222 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9- 2002/3) • Ruff , <i>Philomachus pugnax</i>, Europe/W Africa 27 individuals, representing an average of 3.8% of the GB population (5 year peak mean 1998/9-2002/3).

9.3.2 The Arun Valley SPA and Ramsar and SAC site comprises of three SSSIs. The closest to Local Plan area is the Amberley Wild Brooks SSSI.

9.4 Historic Trends and Current Pressures

Amberley Wild Brooks SSSI

- 9.4.1 The Amberley Wild Brooks SSSI lies within the greensand natural area and covers approximately 322.6ha. The site supports an extensive area of alluvial grazing marsh which is dissected by draining ditches supporting over 156 flowering plants. This part of the Arun valley floods each year making it a haven for breeding birds. This site is managed by the RSPB but unlike many other RSPB reserves, recreational visitors are not encouraged because of the sensitivity of the site, and the site is not designed or promoted to attract visitors. Access within the site is severely restricted specifically in order to ensure that disturbance is not possible. Access is therefore restricted to the Wey South Path.
- 9.4.2 Over-wintering birds are of international importance, with a rich community of breeding birds and several uncommon invertebrate assemblages. These ditches support a range of rich flora which includes one nationally rare plant the cut grass *Leersia oryzoides* which is currently restricted to only ten UK locations. The marsh fern *Thelypteris thelypteroides* an uncommon plant is found within the fen. Where this fen is situated two rare snails (molluscs): *Anisus vorticulatus* and *Pseudamnicola confusa* can be found.

Pulborough Brooks SSSI

- 9.4.3 A large part of the site is now managed as an area of wet grassland principally for the benefit of breeding waders and internationally important assemblages of wintering wildfowl. Controlled flooding of this part of the valley during the winter attracts large flocks of nationally and internationally important numbers of Bewick's swan, wigeon, teal, pintail, shoveler and ruff. Other wintering species of note include white-fronted goose, golden plover, snipe and large flocks of lapwing.

Waltham Brook SSSI

- 9.4.4 Waltham Brook SSSI is situated the other side of the river to that of Amberley Wild Brooks SSSI. Like Amberley Wild Brooks the site lies within the greensand natural area and covers approximately 47.39ha. The site is comprised of alluvial grazing marsh which is dissected by draining ditches supporting species-rich community of aquatic plants.
- 9.4.5 This part of the Arun Valley floods almost every winter, resulting in the site becoming a giant lake. This site is particularly important for wildfowl such as teal, shoveler, wigeon and pintail then take advantage of the sanctuary and feeding opportunities offered.

Condition Assessment

- 9.4.6 During the most recent condition assessment process, 100% of Amberley Wild Brooks SSSI, and Pulborough Brooks SSSI were judged to be meeting PSA targets. Waltham Brook SSSI was assessed as being 100% unfavourable condition but recovering. The Arun Valley SPA, Ramsar and SAC were judged to be in favourable condition.

9.5 Key Environmental Conditions

- 9.5.1 The following key environmental conditions were identified for this site:

- Sympathetic management
- Managed grazing regimes
- Control of fertilizers
- Hydrology management
- Unpolluted water
- Absence of nutrient enrichment
- Controlled recreational activity

9.6 Potential Effects of the plan

Recreation

- 9.6.1 All types of terrestrial European sites, including hay meadows can be affected by trampling, which in turn causes erosion. The SPA, SAC and Ramsar lie approximately 16km from the nearest concentration of planned future development in Chichester city itself. This is well beyond the core catchment distance of c.5km identified most frequently in visitor surveys of European sites of different types of situation and habitat in the South East. Even allowing for the fact that the actual core catchment of Arun Valley may be larger than 5km, the development areas within the Local Plan area are situated sufficiently far from the SAC/SPA/Ramsar site (16km) that there is a high level of certainty that key areas proposed for regeneration and housing in the Local Plan area will lie well outside the core recreational catchment for this site and that a likely significant effect would not occur.

9.7 Other plans and projects

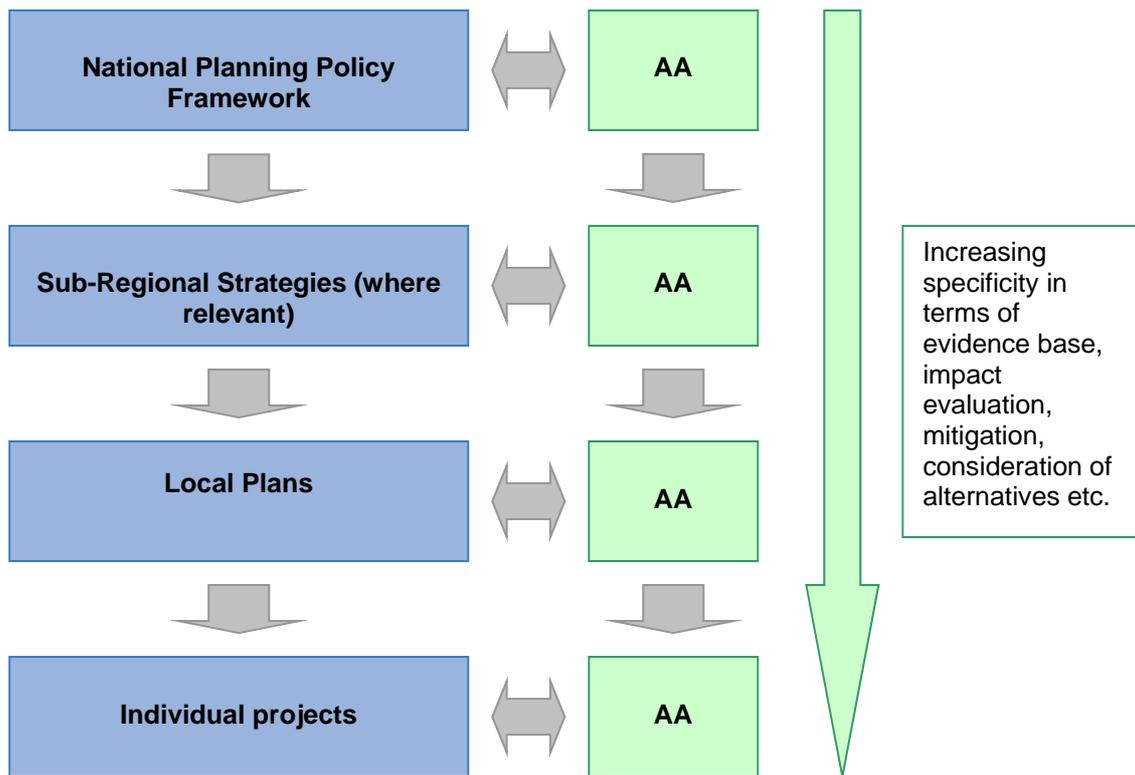
- 9.7.1 The principal other plans and projects of relevance to development around the Arun Valley SAC/SPA/Ramsar site are the Local Plans for Horsham and to a lesser extent Arun and Adur districts, which between them intend to deliver approximately 25,000 dwellings over the Local Plan period. However, the HRA for the Arun and Adur Core Strategies concluded that no significant recreational impact on the SAC/SPA/Ramsar site would occur, and the Horsham Core Strategy HRA scoped out recreational pressure as an impact pathway. In any case, since no pathway connecting development in the Local Plan area to this European site has been identified there will be no 'in combination' effect.

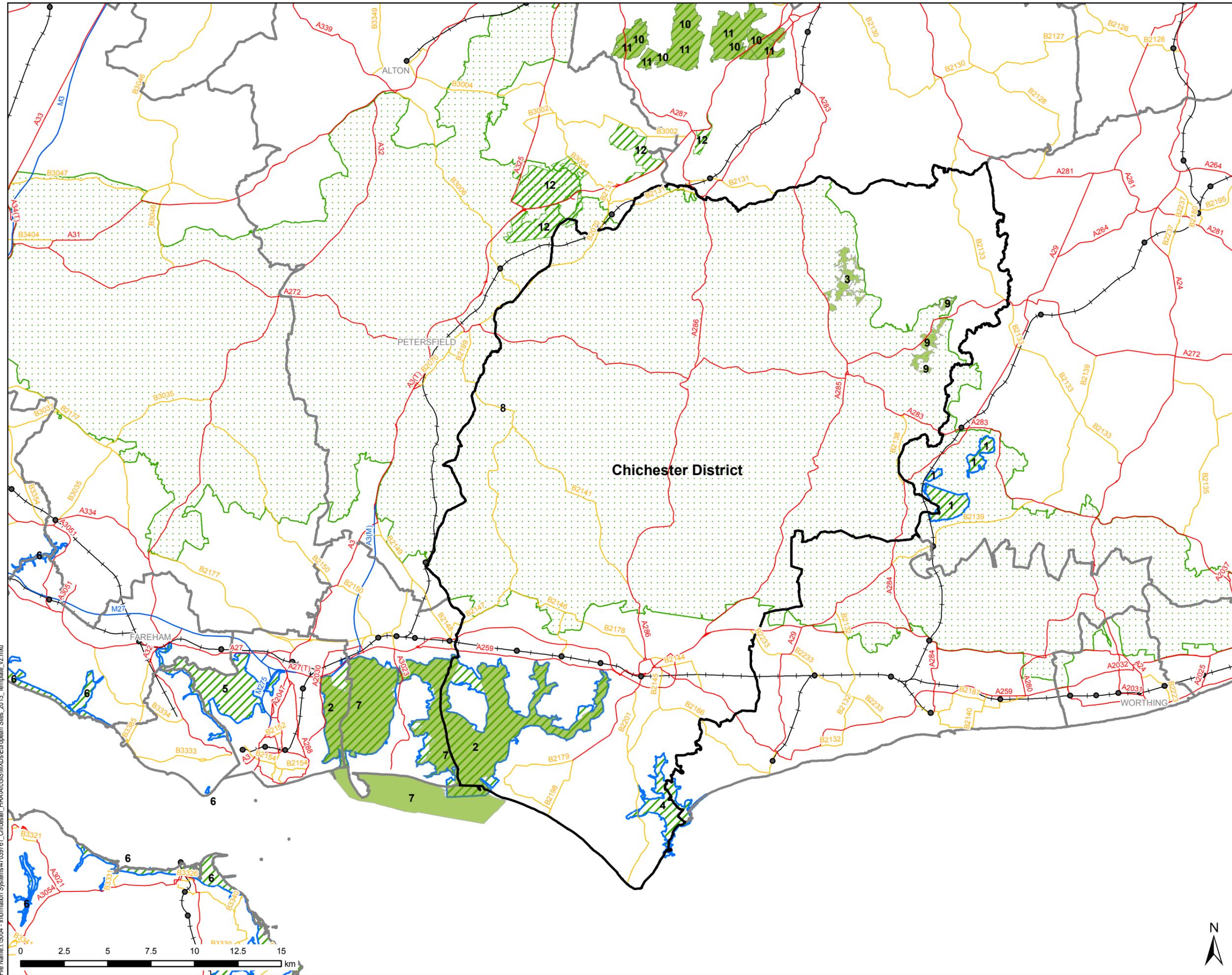
10 Overall Conclusions

10.1.1 As a result of this HRA of the Chichester Local Plan: Key Policies Submission document we have been able to conclude that likely significant effects will not occur on any European sites as a result of most potential impact pathways. However, a small number of amendments, or recommendations for further consideration are advised:

-
- It is recommended that in development of the Site Allocation DPD or Neighbourhood Plan for Selsey and Sidlesham Parishes, the relevant council should consider whether potential sites conflict with any areas that constitute supporting habitat for the SPA/Ramsar site and identify requirements for subsequent planning applications to undertake supporting studies where necessary. If supporting habitat were to be lost to any development, then it would be necessary to determine (a) how significant it was (i.e. whether it was regularly used by more than 1% of the population of qualifying bird species and (b) to provide alternative habitat to replace it in an location that was reasonably close to the SPA/Ramsar site.
-
- It is recommended that in development of the Site Allocation DPD or Neighbourhood Plan any development proposals at these two settlements (Kirdford and Plaistow & Ifold) will have to ensure that hedgerows, tree-belts and other linear habitats are retained, or that a bat survey is undertaken to determine their use by bats associated with Ebernoe Common SAC before they are removed or broken.

Appendix 1: 'Tiering' in Habitat Regulations Assessment





LEGEND

- Chichester District
 - Special Areas of Conversation
 - Ramsar
 - Special Protection Areas
 - National Park
 - Stations
 - Motorway
 - A Road
 - B Road
 - Railway
- 1 Arun Valley SPA, Ramsar
 - 2 Chichester & Langstone Harbours SPA and Ramsar
 - 3 Ebernoe Common SAC
 - 4 Pagham Harbour SPA and Ramsar
 - 5 Portsmouth Harbour SPA and Ramsar
 - 6 Solent and Southampton Water SPA and Ramsar
 - 7 Solent Maritime SAC
 - 8 South Downs National Park
 - 9 The Mens SAC
 - 10 Thursley, Ash, Pirbright and Chobham SAC
 - 11 Thursley, Hankley and Frensham Commons SPA
 - 12 Wealden Heaths Phase 2 SPA

Copyright
 Contains Ordnance Survey Data
 © Crown Copyright and database right 2013
 © Natural England material is reproduced with the permission of Natural England 2013.

Revision Details	By	Check	Date	Suffix

Purpose of Issue: **FINAL**

Client: **CHICHESTER DISTRICT COUNCIL**

Project Title: **CHICHESTER HRA**

Drawing Title: **EUROPEAN SITES MAP**

Drawn JM	Checked JR	Approved JR	Date 24/10/2013
URS Internal Project No. 47039761		Scale @ A3 1:200,000	

This document has been prepared in accordance with the scope of URS' appointment with its client and is subject to the terms of that appointment. URS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided. Only written dimensions shall be used.
 © URS Infrastructure & Environment UK Limited

URS Infrastructure & Environment UK Limited
 South House
 Alençon Link, Basingstoke
 Hampshire, RG21 7FP
 Telephone (01256) 310200
 Fax (01256) 310201
 www.ursglobal.com

Drawing Number FIGURE 1	Rev
-----------------------------------	-----

File Name: I:\5004 - Information Systems\47039761 - Chichester - HRA\ArcGIS\MXD\European Sites_2013_Template_v2.mxd

