APPENDIX 2: APPROPRIATE ASSESSMENT

1 Appropriate Assessment

1.1 During this stage, the effect of the housing allocation (alone or in-combination with other plans or projects) on the integrity of the Natura 2000 site is considered with respect to the conservation objectives of the site and to its structure and function. The integrity of a site involves its ecological functions and the decision as to whether it is adversely affected should focus on, and be limited to, the site's conservation objectives (European Commission, 2000, para. 4.6(3)). This process consists of 6 steps:

Step 1. Collect adequate information to complete the assessment – to include a description of the plan and the baseline conditions of the Natura 2000 site.
Step 2. Predict the likely effects of the plan.
Step 3. Assess whether the predicted effects will have adverse effects on the integrity of the site, as defined by the conservation objectives.
Step 4. Propose and assess impact avoidance measures to cancel or minimise the potential adverse effects, including a timescale and mechanisms through which the measures will be secured, implemented and monitored.
Step 5. Consult the relevant nature conservation bodies and the public.

1.2 This Appropriate Assessment focuses on the effects of Bracknell Forest's South East Plan Housing Allocation on the integrity of the Thames Basin Heaths SPA. The assessment does not consider the allocation's effects on other Natura 2000 sites as they were 'screened out' during the Screening Stage (detailed in Section 3).

STEP 1: COLLECTION OF ADEQUATE INFORMATION TO IDENTIFY ADVERSE EFFECTS

2 Characteristics which may affect the site

2.1 The South East Plan housing allocation for Bracknell Forest Borough is higher than that which was subject to assessment as part of the Core Strategy DPD. However, the higher level of housing, if it can be accommodated without adverse impact on the SPA, will come forward in accordance with the Core Strategy policies.

2.2 The Core Strategy sets the overarching local planning framework for the Borough up to 2026. It puts forward a broad approach against which decisions on future development relating to where we live, work, spend our leisure time and how we travel will be considered. The principles and policies in the Core Strategy form the basis for more detailed policies and proposals to be prepared in other documents.

2.2 Previously, the following policies were identified as potentially having an adverse effect on the SPA, in the absence of avoidance and mitigation measures:

CS2 Location Principles Policy – The use of PDL within the urban areas predominantly requires the use of land within 5km of the SPA, therefore without avoidance or mitigation measures this has the potential to have an adverse impact.

Policies CS4 Land at Amen Corner and CS5 Land North of Whitegrove and Quelm Park – These urban extensions include housing provision and fall within 5km of the SPA; therefore without mitigation they have the potential to have an adverse effect.

CS15 Overall Housing Provision Policy – New residential developments within 5km could increase the impact of recreation, including fragmentation, disturbance and vandalism.

2.3 The housing allocation set out in Policy CS15 has been superseded by South East Plan:

South East Plan Policy H1 - This policy increases Bracknell Forest's housing allocation by 2,000 houses, requiring 12,780 dwellings to be delivered by 2026. New residential development within 5km of the SPA could increase the impact of recreation, including fragmentation, disturbance and vandalism. However, the Council is also responsible for delivering the shortfall from the previous plan period. This amounts to 359 dwellings, making the total number requiring assessment under the Habitats Regulations 13,139.

3 In-combination effects arising from plans or projects

3.1 The Appropriate Assessment must be considered both alone and in-combination with other plans or projects because a series of individually modest impacts may in combination result in a significant impact. Article 6(3) of the Habitats Directive addresses this by requiring Appropriate Assessment to take into account the combination of effects from other plans or projects. The intention of this combination provision is to take account of cumulative impacts, and these will often only occur over time.

3.1 Guidance from the EC (European Communities, 2000) is helpful in clarifying the types of plans or projects to be considered during this in combination assessment. Already completed plans and projects are excluded from the assessment; however some account must be taken of these plans and projects if they have continuing effects on the site and point to a pattern of progressive loss of site integrity.

3.2 In accordance with this guidance, completed development proposals and development plans will only be included if their impacts on the site lead to a continuing loss of integrity.

3.3 The screening exercise identified that the relevant policies in the SEP with the potential to affect the SPA are those which provide for additional residential dwellings, which in turn increase the population surrounding the SPA, and

increase recreation on the heathland. Therefore, the proposed plans or projects that are considered likely to affect the SPA are:

- Existing planning permissions granted, without mitigation, within the visitor catchment of the SPA;
- Future housing allocations provided in the South East Plan, which are likely to be built within the visitor catchment of the SPA, and;
- Any shortfall required to be carried forward from previous housing allocations that are not yet completed.

3.4 Over the past decade, the populations of all three Annex I bird species appear to have increased. This is thought to be related to better habitat management practices, although it may be partially due to increased recording effort. The habitat, although classified as unfavourable, is predominantly recovering. Given that historic development appears not to have reduced bird numbers, it has been concluded that completed proposals will not be included within the Appropriate Assessment as their impact on the SPA has not led to an ongoing loss of integrity.

3.5 In addition, guidance[1] suggests that future cumulative impacts should be assessed, but on the grounds of legal certainty it would seem appropriate to restrict the combination provision to plans or projects which have already been proposed.

3.7 The South East Plan underwent an Appropriate Assessment of its impacts on the integrity of Natura 2000 sites, including the Thames Basin Heaths SPA. Originally, the TBH SPA was identified as a European site for which it was not possible to conclude no adverse effect due to increased recreational pressure associated with developments under the SE Plan. However, following the development of a specific Thames Basin Heaths Policy (NRM6) and a biodiversity policy (NRM5) which allows for delivery of less housing where harm to Natura 2000 sites cannot be avoided, the Appropriate Assessment was able to conclude that the integrity of the SPA would not be affected by the South East Plan.

3.8 In the South East Plan (May 2009), Policy NRM6 is included within the Natural Resource Management section to protect the integrity of the SPA, as follows:

POLICY NRM6: THAMES BASIN HEATHS SPECIAL PROTECTION AREA

New residential development which is likely to have a significant effect on the ecological integrity of Thames Basin Heaths Special Protection Area (SPA) will be required to demonstrate that adequate measures are put in place to avoid or mitigate any potential adverse effects. Such measures must be agreed with Natural England.

Priority should be given to directing developments to those areas where potential adverse effects can be avoided without the need for mitigation measures. Where mitigation measures are required, local planning authorities, as Competent Authorities, should work in partnership to set out clearly and deliver a consistent approach to mitigation, based on the following principles:

[1] See Habitats Regulations Guidance Note 4: Alone or in-combination, English Nature 2001.

i. *A zone of influence set at 5km linear distance from the SPA boundary will be established where measures must be taken to ensure that the integrity of the SPA is protected.*
ii. *Within this zone of influence, there will be a 400m "exclusion zone" where mitigation measures are unlikely to be capable of protecting the integrity of the SPA. In exceptional circumstances, this may vary with the provision of evidence that demonstrates the extent of the area within which it is considered that mitigation measures will be capable of protecting the integrity of the SPA. These small locally determined zones will be set out in local development frameworks (LDFs) and SPA avoidance strategies and agreed with Natural England*
iii. *Where development is proposed outside the exclusion zone but within the zone of influence, mitigation measures will be delivered prior to occupation and in perpetuity. Measures will be based on a combination of access management, and the provision of Suitable Accessible Natural Greenspace (SANG).*

Where mitigation takes the form of provision of SANG the following standards and arrangements will apply:

iv. *A minimum of 8 hectares of SANG land (after discounting to account for current access and capacity) should be provided per 1,000 new occupants*
v. *Developments of fewer than 10 dwellings should not be required to be within a specified distance of SANG land provided it is ensured that a sufficient quantity of SANG land is in place to cater for the consequent increase in residents prior to occupation of the dwellings*
vi. *Access management measures will be provided strategically to ensure that adverse impacts on the SPA are avoided and that SANG functions effectively*
vii. *Authorities should co-operate and work jointly to implement mitigation measures. These may include, inter alia, assistance to those authorities with insufficient SANG land within their own boundaries, co-operation on access management and joint development plan documents*
viii. *Relevant parties will co-operate with Natural England and landowners and stakeholders in monitoring the effectiveness of avoidance and mitigation measures and monitoring visitor pressure on the SPA and review/amend the approach set out in this policy, as necessary*
ix. *Local authorities will collect developer contributions towards mitigation measures, including the provision of SANG land and joint contributions towards to the funding of access management and monitoring the effects of mitigation measures across the SPA*
x. *Large developments may be expected to provide bespoke mitigation that provides a combination of benefits including SANG, biodiversity enhancement, green infrastructure and, potentially, new recreational facilities.*

Where further evidence demonstrates that the integrity of the SPA can be protected using different linear thresholds or with alternative mitigation measures (including standards of SANG provision different to those set out in this policy) these must be agreed with Natural England.

The mechanism for this policy is set out in the TBH Delivery Framework by the TBH Joint Strategic Partnership and partners and stakeholders, the principles of which should be incorporated into local authorities' LDFs.

3.9 Each of the affected Local Authorities have already or are in the process of producing a Core Strategy DPD, which will be accompanied by an Appropriate Assessment identifying potential adverse impacts and, where possible, avoiding or removing these.

3.10 The Habitats Regulations state that an authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site. Therefore, if the South East Plan Appropriate Assessment and subsequently all of these LDF policies and Appropriate Assessments can conclude no adverse effect, each Local Authority has addressed its own effects arising from an increased population.

3.11 Section 5 of the SPAAM SPD proposes avoidance and mitigation measures to remove all adverse effects arising from Bracknell Forest's South East Plan housing allocation. If these measures can be secured and implemented, resulting in nil detriment, then there will be no adverse impact arising from the allocation either alone or in-combination with other plans or projects.

4 Characteristics and description of Thames Basin Heaths SPA

4.1 The Thames Basin Heaths SPA was proposed in October 2000, and full SPA status was approved on 9 March 2005. It is an example of a heathland landscape based within a highly active economy. It consists of a composite site covering an area of some 8,274 hectares (see map in Appendix 9), consisting of 13 Sites of Special Scientific Interest (SSSI) scattered from Hampshire in the west, to Berkshire in the north, through to Surrey.

4.2 The habitat consists of both dry and wet heathland, mire, oak, birch acid woodland, gorse scrub and acid grassland with areas of rotational conifer plantation.

5 Conservation Objectives and qualifying species

5.1 The Directive requires the Appropriate Assessment to be undertaken 'in view of the site's nature conservation objectives' and the European Commission states that the purpose of the Natura 2000 network, which includes the Thames Basin Heaths SPA, is "*to preserve biodiversity by maintaining or restoring natural habitats of Community importance*."

5.2 **Conservation objectives** are a statement of measures which are related to the maintenance or restoration of the individual site, and its contribution towards the favourable conservation status of the natural habitats and/or the populations of species of wild fauna and flora for which the site has been selected.

5.3 The term **favourable conservation status** is used within the Habitats Directive, and is defined within Article 1:

"conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as "favourable" when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis;"

Favourable conservation status is therefore a trend based assessment based on the population or habitat as a whole across Europe and not specifically on the Thames Basin Heaths SPA.

5.4 Condition assessment is a snapshot assessment based on expert judgement and is limited to the SSSI unit in question. Condition assessment can incorporate an assessment of the European features (in this case, the Annex I birds) but it is not designed to determine favourable conservation status: the two concepts are not interchangeable. Condition assessment on the SSSIs which make up the Thames Basin Heaths SPA does not include any measure of recreational pressure.

5.5 This difference is relevant when carrying out an appropriate assessment, which explores the impact of a plan or project on site integrity. For example, where existing pressures do not have a current impact on condition, but the appropriate assessment has identified the risk of such effects becoming manifest in the future, the existing pressure threatens the site's ability to 'achieve or maintain favourable conservation status in the long term and a conclusion of 'no adverse effect on integrity' cannot be recorded. In these cases the condition assessment may currently be recorded as favourable.

5.6 Article 4(4) of the Birds Directive requires that: "*Member states shall take appropriate steps to avoid pollution or deterioration of habitats or* ***any disturbances*** *affecting the birds in so far as these would be significant having regard to the objectives of this article*".

5.7 Conservation objectives are defined by reference to the presence of Annex I habitats and Annex II species. Therefore, to define the objectives for the SPA further information is required on the important populations of birds listed on Annex I of the Birds Directive for which the SPA has been classified.

5.8 The Thames Basin Heaths SPA qualifies for designation under Article 4.1 of the Directive (79/409/EEC) as it is used by 1% or more of the Great Britain population of species of European Importance listed in Annex I of the Directive.

During the breeding season this includes:

- Dartford Warbler (*Sylvia undata*), 445 pairs representing at least 27.8% of the breeding population in Great Britain (Count as at 1999).
- Nightjar (*Caprimulgus europaeus*), 264 pairs representing at least 7.8% of the breeding population in Great Britain (Count mean (1998-99)).
- Woodlark (*Lullula arborea*), 149 pairs representing at least 9.9% of the breeding population in Great Britain (Count as at 1997).

(Reference JNCC, 2001)

The SPA supports the second largest concentration of woodlark in Great Britain, the third largest number of Dartford warbler, and the fourth largest population of breeding nightjars.

5.9 The conservation objectives for a site relate to the important populations of birds listed in Annex I of the Birds Directive and populations of 'regularly occurring migrant birds'. Natural England have confirmed that the conservation objective for the Thames Basin Heaths SPA is ***'subject to natural change, to maintain in favourable condition, the habitats for the populations of Annex 1 bird species of European importance, with particular reference to lowland heathland and rotationally managed plantation'.*** The conservation status of a species is defined as favourable when the population, range and natural habitats of the species are stable or increasing.

5.10 The above conservation objective can be broken down into its separate components to assist with the Appropriate Assessment and impact prediction:

- To maintain, in favourable condition, lowland heathland and forestry plantations to provide habitats for Annex I breeding bird populations of woodlark, nightjar and Dartford Warbler.
- To maintain the geographical extent of the habitat area.
- To sustain and improve population numbers of woodlark, nightjar and Dartford warbler.

6 Non-qualifying species of interest

6.1 Hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), short-eared owl (*Asio flammeus*) and kingfisher (*Alcedo atthis*) (all Annex I species) occur in non-breeding numbers of less than 1% of the GB population.

7 Seasonality

7.1 The breeding season of the protected bird species occurs predominantly in April, May, June and July, but an extended season can occur between February and August, therefore this is when the ground-nesting species are most vulnerable to disturbance. The breeding season for nightjar occurs from mid-May through to August, with a peak in June; woodlark nest from March until July, but commence territorial activity from early February; the Dartford warbler generally breeds between April and August. Territorial activity may begin as early as February and, as yet, there is no indication of how climate change might affect the breeding season.

8 SSSI condition

8.1 Based upon the condition tables for the 13 component SSSIs the condition of the SPA as of August 2008 as a whole is as follows:
Favourable – 9.44%
Unfavourable recovering – 59.48%
Unfavourable no change – 14.12%
Unfavourable declining – 16.96%
Destroyed/part destroyed – 0%

8.2 This represents a general decline from the previous assessment (June 2007) which registered the following condition:
Favourable – 12.19%
Unfavourable recovering – 58.57%
Unfavourable no change – 9.19%
Unfavourable declining – 20.03%
Destroyed / part destroyed – 0.02%

9 Ecology of the qualifying species

9.1 The ecology and current status of the three Annex I birds is detailed in Annex A. This is based on Species Action Plan objectives taken from the UK Biodiversity Action Plan and current factors which contribute to population size.

10 Relationship between the plan area and the SPA

10.1 The Thames Basin Heaths SPA covers 12.2% of the Borough of Bracknell Forest, a total of 1,333 hectares. This is 15.9% of the entire Thames Basin Heaths SPA and is provided in one large block of heathland (1,247 hectares of which lies within Bracknell Forest Borough) and a smaller, unconnected area (86 hectares). Appendix 9 shows the geographical distribution of the designated area across the region and within the Borough.

10.2 As an idea of scale, the table below shows how much land lies various distances from the SPA.

Table 1. Land within various distances from the SPA

Area	Hectares	% of area
Bracknell Forest Borough	10,937	
Designated SPA within Borough	1,333	12.2
Land within 400m of SPA boundary	852	7.8
Between 400m and 5km of SPA boundary	5,332	48.7
Over 5km from SPA boundary	3,420	31.3

STEP 2: PREDICT LIKELY EFFECTS OF THE HOUSING ALLOCATION

11 Site integrity

11.1 Article 6(3) of the Habitats Directive gives the following guidance as to the way conclusions should be drawn from the Appropriate Assessment:

> "*In the light of the conclusions of the [*appropriate*] assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned*."

11.2 A commonly used definition of site integrity is given in DCLG circular 06/2005 (para. 20) and the European guidance on the provisions of Article 6 of the 'Habitats Directive'. This defines site integrity as:

> "*the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified*."

11.3 European guidance goes on to describe the integrity of a site as involving its ecological functions, and the decision as to whether it is adversely affected should focus on, and be limited to, the site's conservation objectives (EC, 2000).

11.4 As discussed in the previous section, the concept of favourable conservation status and the conservation objectives both provide parameters within which an assessment can be made. It is therefore necessary to use this information to predict or forecast what would happen to the SPA habitats and bird populations if SEP Policy H1 - Housing Allocation were delivered.

12 Description of potential adverse effects on site integrity

12.1 When screening for likely impacts arising from the Core Strategy, Bracknell Forest Council, in consultation with Natural England, the RSPB and Berks, Bucks and Oxon Wildlife Trust, identified the following potential effects arising from the plans:

- Fragmentation between heathland
- Fragmentation within heathland
- Supporting habitats
- Predation
- Hydrology
- Pollution
- Enrichment
- Disturbance
- Trampling
- Vandalism (including fire)
- Public hostility
- Management costs

12.2 The same potential effects are possible as a result of the increased housing allocation contained within Policy H1 of the South East Plan.

13 Characteristics which could lead to these adverse effects

13.1 Additional residential development within the proximity of the SPA has the potential to increase the population surrounding the site, which could in turn lead to an increase in recreational and urbanisation impacts. Various visitor surveys[2] (of most relevance is Liley, Jackson & Underhill-Day 2005) have indicated people will travel relatively long distances to use such sites for

[2] A summary of visitor studies and their findings can be found in Table 1 of English Nature's draft Mitigation Standards for Residential Development, also known as the draft 'Delivery Plan', version 26 May 2006.

recreational purposes. As a result the impacts from developments up to several kilometres away from the site must also be considered. Natural England's advice based upon the results of visitor surveys on the Thames Basin Heaths SPA is there will be a significant impact arising from new residential development which falls within a 5km straight line distance from the boundary of the SPA.

13.2 The South East Plan proposes a considerable amount of new residential development, in particular policy H1 sets out an allocation of 12,780 new residential dwellings within Bracknell Forest Borough over the period 2006 to 2026. This development will come forward in accordance with the Core Strategy which includes policies CS2, CS3, CS4 and CS5 which propose development within the urban area or as urban extensions. As a large proportion of the area outside the 5km zone is metropolitan green belt, or countryside outside a designated settlement, the majority of new residential development will be located within 5km of the SPA boundary.

13.3 Therefore, the two main potential impacts resulting from the implementation of the plans, in particular policy H1, is:

1) An increase in population;
2) An increase in urbanisation.

14 Quantifying the increased population

14.1 Historically in Bracknell Forest trends show a decreasing average household size (persons per dwelling).

Table 2. Historical household size

Year	1961	*% fall*	1971	*% fall*	1981	*% fall*	1991	*% fall*	2001
Persons / dwelling	3.22	*1.86%*	3.16	*9.49%*	2.86	*9.44%*	2.59	*5.02%*	2.46

Source: Census data

14.2 The (former) ODPM carried out some research on projected future household sizes in the South East and for Bracknell Forest, based upon past demographic trends and using 2003 data. Using these projections of household sizes for England and the Regions to 2026 we can see that for the Bracknell Forest Council a further fall in household size is predicted.

Table 3. Predicted household size

Year	**2001**	**2006**	**2011**	**2016**	**2021**	**2026**	**Average 2001-2026**
Persons / dwelling	**2.46**	**2.39**	**2.33**	**2.28**	**2.24**	**2.21**	**2.31**

Source: HOPS report. 2003 based household projections (Berkshire) ODPM

15 Projected population arising from the South East Plan housing allocation

15.1 Policy H1 within the South East Plan includes a housing allocation of 12,780 new dwellings. The actual number of dwellings which Bracknell Forest Council

must deliver in the period to 2026 includes both the South East Plan allocation and the estimated shortfall from the previous allocation (359 dwellings). The total housing allocation is therefore 13,139 dwellings.

15.2 This approach makes the following assumptions

- That the shortfall in dwellings (359 dwellings) is to be carried over into the new plan and split between the first 2 periods - 2006-2017 (11 years).
- The remaining allocation (639 dwellings per annum) is distributed evenly over the 20 year period. Differences arise due to the different length of each period (i.e. 4, 5 or 6 years).

Table 4. New dwellings proposed between 2006-2026

	2006-12 (*6 years*)	2012-2017 *(5 years)*	2017-2022 *(5 years)*	2022-2026 *(4 years)*	**Total:**2006-2026
Dwellings per annum	672	672	639	639	
Total over period	4,032	3,360	3,195	2,556	13,143 (*differs from 13,139 as a result of rounding figures up*)

16 Impact of empty households

16.1 The average household size does not include empty dwellings; therefore an adjustment should be made to include this impact.

16.2 In 2001 there were 44,482 total dwellings and 43,392 inhabited households (Census data) in Bracknell Forest. Therefore, the vacancy rate in 2001 can be calculated as the difference between the two figures (44,482 – 43,392 = 1,090) as a proportion of the total dwellings. This estimates the vacancy rate in 2001 as 2.45%. This figure is difficult to predict and there is limited confidence in using a figure based on a snapshot in time when in reality this will not be a constant rate. For example, although vacant stock is necessary, an initiative to fill empty homes could drastically reduce this rate, and this is something the planning process has little or no control over. As a result, to accommodate this uncertainty and include an element of precaution, this rate has been reduced by half to 1.2% in accordance with advice from the RSPB and Wildlife Trust.

16.3 All of this information can be used to calculate the population at each interval time period up to 2026.

17 Impact of other factors

17.1 In some cases, it could be argued that other factors may mean that one new dwelling does not inevitably lead to additional resident, for example parents may build a new dwelling for their children within their curtilage or existing Borough residents may move into new affordable housing. However, there is currently insufficient evidence to indicate that any of these other factors will continue over the lifetime of the development. Therefore, this Strategy has not included the impacts of other factors in the calculations; as a result the

predicted population arising from the housing allocation takes a precautionary approach.

18 Residential development not likely to have a significant effect

18.1 Since the beginning of the plan period, some development, not likely to have a significant effect on the SPA (mainly by virtue of its location more than 5km away from the SPA), has been permitted. This includes a number of schemes permitted between SPA designation and the Council's recognition of the likely in combination impacts arising from new residential development. There are also some small schemes located more than 5km from the SPA which have been permitted, having been assessed as not likely to have a significant effect. These permissions total **396 dwellings**. For the avoidance of doubt, this figure does not include permissions which fall to be assessed under Regulation 50 of the Habitats Regulations.

18.2 There are also a number of large sites with permission which have already, or have capacity to, provide a bespoke avoidance and mitigation solution. This includes the following large sites with full permission:

- The Parks at RAF Staff College (606 net dwellings) - outline and reserved matters applications approved, permission falls to be reviewed under Regulation 50 and should mitigation be required the Council will work with the developers to provide a bespoke solution;
- Jennetts Park, also known as Peacock Farm (1,500 net dwellings) - outline approved and a bespoke solution is now approved;
- Bracknell town centre (850 net dwellings, as considered by the Town Centre Appropriate Assessment) - full permission granted as a bespoke solution was provided to remove the adverse effect on the SPA.

Therefore a total of **2,956 dwellings** in the housing trajectory are large sites with permission which have now provided a bespoke solution, or sites which will be reassessed on their own merits at a later date as part of a Regulation 50 review, therefore should not be considered further in this strategy.

18.3 The total South East Plan housing allocation can therefore be broken down into two parts: one which is not likely to have a significant effect (large sites with bespoke solutions and permissions granted which are not likely to have a significant effect [2,956 + 396 = 3,352]) and one part which is likely to have a significant effect.

Table 5. Breakdown of proposed housing

	Dwellings
Total housing allocation in the South East Plan, plus shortfall	**13,139**
Housing allocation not likely to have a significant effect	**3,352**
Housing allocation likely to have a significant effect	**9,787**

18.4 This shows the total number of dwellings in the South East Plan allocation likely to have a significant effect is 9,787. **Therefore, the figure to be used for the purposes of this document is 9,787 dwellings.**

18.5 In March 2007 legal advice was received which led the Council and Natural England to the view that Regulations 48 and 49 of the 1994 Habitats Regulations, should be applied to applications for approval of reserved matters or variations or renewals, where potential effects on the SPA were not fully considered when an existing permission was granted or where information more recently provided would make for a different assessment of effects.

19 Regulation 50

19.1 Regulation 50 of the Habitats Regulations 1994(as amended) requires a review of existing decisions and consents as soon as reasonably practical after the date on which a site becomes a European site. The authority should review their decision and shall affirm, modify or revoke it as necessary. By keeping outstanding permissions in the total review, the Council has started to address whether there are sufficient avoidance and mitigation measures for these permissions.

19.2 This strategy is not sufficient to discharge the duties under Regulation 50, as this does not make an appropriate assessment of the implications for each site, or address permissions from which the effects cannot be avoided or mitigated by the measures proposed in this Strategy.

19.3 Having been previously advised by Natural England to delay conducting the review until the Delivery Framework was agreed, the Council is now in the process of undertaking a Regulation 50 and will carry this out under existing statutory procedures or under directions from the Secretary of State as to the procedure to be followed, in accordance with the Habitats Regulations. As part of this process, advice has been sought from Natural England.

20 Population arising from proposed plans

20.1 The following tables and impact prediction of increasing population and visits to the SPA are based upon best available evidence and estimations. It is vital to note there will be a margin of error in all of these figures, and although precise calculations have been carried out at each stage, the figures have been rounded up to take a precautionary approach and to apply a degree of caution to the results.

Table 6. Increased population arising from proposed plans

Years	2006-12	2012-17	2017-22	2022-26	Total
New dwellings likely to have significant effect	680 [3] *(4,032 dwellings within the plan, although 3,352are not likely to have a significant*	3,360	3,195	2,556	**9,791** *(due to rounding)*

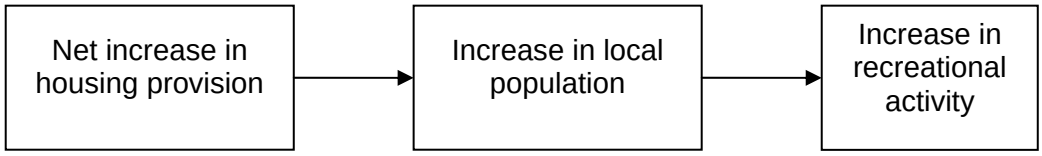
[3] This figure within this timeframe has excluded any developments not likely to have a significant effect as the permissions with mitigation measures are likely to be implemented prior to 2011.

	effect)				
New inhabited households (1.2% adjustment)	672	3,320	3,157	2,526	**9,675**
Average household size	2.39	2.33	2.28	2.24	***Average 2.31***
Population (rounded up)	1,610	7,740	7,200	5,660	**22,350**

20.2 From the above information it can be concluded that the likely population resulting from the implementation of the South East Plan housing allocation will be an estimated **22,350 additional residents**. It is important to stress here that, although these calculations are made on best available information, they are an estimation of the additional visitors arising from the plans, and consequently the figures must be considered with this in mind. This report, and specifically these calculations, will be subject to review and monitoring over the plan period to ensure the predictions are sound.

21 Calculation of additional visitors resulting from this increased population

21.1 As a general rule, the number of walkers, riders, cyclists and motor cyclists using a heathland will increase with an increase in local population, which would indicate a relationship between housing development and recreational disturbance.



21.2 In reality this is not likely to be a linear relationship due to the effect of other complex factors, such as the accessibility of the SPA, education, information available and access to other areas of open space. Whilst being mindful of this limitation, it is necessary to be able to quantify the impact arising from the additional residents; therefore a linear correlation has been assumed for the purposes of this assessment.

21.3 An estimated scale of use of the Thames Basin Heaths SPA has been calculated at 5.3655 million visits per annum (Liley, Jackson & Underhill-Day, 2005). These visitors are predominantly believed to come from within 5 kilometres from the SPA boundary, within 15 Local Authority areas. Liley, Jackson & Underhill-Day (2005) state there are, at the present time, an estimated 288,000 residential properties within 5km of the SPA boundary. Using GIS data[4], it has been calculated that within the Bracknell Forest Borough there are 45,966 residential dwellings within the 5km boundary. A proportional approach can be taken, using the assumption that number of dwellings relates to amount of recreation. Bracknell Forest Borough contains 15.96% of the total number of residential dwellings within 5km of the SPA,

[4] Source: Bracknell Forest Borough Council GIS Property Gazetteer, July 2006

therefore can be assumed to contribute towards 15.96% of the total visits. This would calculate the Borough's impact as 856,356 SPA visits per annum on the basis of the 2005/2006 figures.

21.4 The most recent established population figures come from the Census (2001) which recorded the Borough's population at 109,617. In order to be robust and ensure a precautionary approach is taken, this has not been extrapolated into an estimated current population. This figure can be used to calculate the number of SPA visits per annum arising per head of population which shows that, on average, each resident currently visits the SPA: **7.81 times a year**.

21.5 If this is extrapolated forward, and it is assumed this rate of visits will remain the same or decline because no plans or projects are currently being approved which would increase this level, the number of visits arising from the new population can be calculated. This amount of new visits per annum works out to an estimated 174,555 visits. To give a degree of scale to this number, this impact is 3.3% of the total number of current visits.

Table 7. Summary of calculations to reach the predicted impact

	Calculation / reference	Result
Total number visits per annum	Liley, Jackson & Underhill-Day, 2005	5,365,500
Total residential properties within 5km of the SPA	Liley, Jackson & Underhill-Day, 2005	288,000
Bracknell Forest Borough residential properties within 5km of the SPA	Bracknell Forest Borough Council GIS Property Gazeteer, July 2006	45,966
Proportion of properties and therefore visits arising from Bracknell Forest Borough	(45,966 ÷ 288,000) x 100%	15.96%
Total visits arising from Bracknell Forest Borough population	5,365,500 x 15.96%	856,334
Borough population	Census 2001	109,617
Visits per annum per head population	856,334 ÷ 109,617	7.81 (rounded up to 2 d.p.)
New population arising from implementing the plans	See Table 7	22,790
Visits per annum arising from new population (new pop x visits per head pop)	**22,350 x 7.81 (rounded up)**	**174,555**
% of new visits relating to current total visitors	174,555 ÷ 5,365,500	3.3%

22 Location of impact

22.1 Although the Appropriate Assessment must consider the integrity of the SPA as a whole, the actual sphere of influence of the South East Plan housing

allocation is likely to be concentrated in a localised area. Only 4 Bracknell Forest residents in Natural England's visitor survey used other access points to recreate on the SPA. It can therefore be suggested that, in order to avoid impacts on the integrity of the whole of the SPA, it is most important to avoid impacts on these two component SSSIs arising from Bracknell Forest's housing allocation.

23 Extent of impact

23.1.1 The calculations in the previous sections have been based upon Natural England's research and evidence base, which focuses upon the zone of 5 kilometres being the area of significant impact. This is because,

"*5 kilometres appears to provide a suitable outer boundary for determining a zone within which recreation disturbance related mitigation is required – this captures the majority of potential visitors. This has therefore been set as the outer boundary of Zone C*."[5]

23.1.2 Research (Liley, Jackson & Underhill-Day, 2005) established that although 100% of visitors on foot arrived from within 5km, only 93% of people arriving by bicycle and 70% of people arriving by car came from within the 5km zone. The study also indicates that 83% of all SPA visitors arrive by car or van.

23.1.3 Therefore, of the estimated 5.36 million visitors per annum to the SPA, 4.45 million arrive by car. In view of that, 30% of this figure, which equates to 1.33 million people, travel for over 5 kilometres to the SPA. This shows that nearly one quarter of all visitors arrive from outside the 5km radius. The report also states that "the majority of people travelling by car came from within a radius of 15km" (page 18, Liley, Jackson & Underhill-Day, 2005). In light of this fact, both the South East Plan text and Delivery Framework recognise that larger schemes outside of 5km may still require assessment for effect under the Habitats Regulations and, should a likely significant effect be identified, appropriate avoidance and mitigation measures prior to grant of planning permission.

23.1.4 Consultation responses to this document and previous correspondence with Natural England indicates that there is a strong correlation of visitor figures up to the 5 kilometre point using a straight-line distance from the SPA boundary. A straight-line distance from the SPA boundary is used, instead of travelling distance, because this is the premise used in Natural England's original visitor research data. This method was chosen as access points around the SPA and travelling routes to the SPA, for recreational visitors, are subject to change and new access points/routes may be created, including official, permissive and informal entrances. Both the South East Plan and the Delivery Framework confirm that straight-line distance is the correct approach when assessing potential impact.

23.2 Bracknell Forest Borough Council visitor research

23.2.1 Research carried out at various points within the Broadmoor to Bagshot Heaths SSSI in August 2005 (see Table 9, Bracknell Forest Council, 2006a)

[5] Excerpt from 'Frequently Asked Questions on the Thames Basin Heaths Delivery Plan'. Letter from English Nature, 28 September 2005

looked in more depth at the travel distances of different user groups and indicated that those who use the heaths for different purposes have significantly different travel patterns.

Table 8. Distances travelled by user group

Use	% of all users (actual no.)	Distance travelled to reach the site (km)		
		Mean	Median (range min. – max.)	Mode
Dog walking	21.9% (56)	5.2	3.2 (1.6–32)	3.2
Walking	30.9% (79)	27.8	8 (0.48–640)	3.2
Cycling	25% (64)	26.2	16.8 (0.8–192)	16
Jogging	5.5% (14)	5.85	4 (1.6–16)	3.2
Nature Watching	2.7% (7)	14.6	12.8 (3.2–25.6)	22.4
Other main reason (e.g. picnic)	14.1% (36)			
TOTAL – all users	**100% (256)**	**21.9**	**8 (0–640)**	**3.2**

23.2.2 This research indicated that the number of visitors travelling to the SPA does not decrease in a linear pattern in relation to distance from the site. The actual pattern is complex with some visitors travelling long distances to use the heathlands as a recreational resource. Peaks may be a result of the location of adjacent settlements and the distribution of population density within the region at the time of the survey. This table also shows the variation in types of use in relation to distance. It clearly indicates that dog walkers travel shorter distances, whereas walkers and cyclists are randomly spread over the distances.

23.2.3 It should be recognised that the wider SPA visitors' surveys have identified the Look Out as an anomalous site when compared to the SPA as a whole. This is because many visitors to the Look Out do not access the SPA, visiting solely to enjoy the Discovery Centre or Go Ape course. However, this is one of the major access points and therefore the impact of the development within Bracknell Forest Council is likely to be significant.

23.2.4 Accessibility analysis of the SPA within Bracknell Forest Borough (Integrated Transport Planning, 2006) shows that most of the Borough, with the exception of a small area to the very north east, is within 10 minutes drive of the SPA.

23.2.5 The above information has lead the Council to conclude that, in order to remove the adverse impact arising from development within the Borough, avoidance and mitigation measures are required from within a 5 kilometre straight-line distance from the SPA boundary. Outside of 5 kilometres of the SPA, large schemes will be subject to Habitats Regulations Assessment and may require avoidance and mitigation measures.

24 Impacts of urbanisation

24.1 Liley & Clark (2002) carried out research looking at 'urban development' (as opposed to specifically recreational effects) and its impacts on the Annex I bird species.

24.2 They found a clear relationship between the proportion of urban development within 750 metres of a heathland site and the population of nightjars it could support. Sites with more than 45% urban development within 500m of a heathland site were no longer able to support nightjar populations.

24.3 Impacts resulting specifically from urbanisation, and not relating to the increase in population, can arise if the increase in urban area leads to:

- Changes in hydrology.
- Pollution.
- Fragmentation between heathlands.
- Loss of supporting habitats, i.e. woodland surrounding the heaths.

STEP 3: ASSESSMENT OF SITE INTEGRITY

25 Impacts arising from allocation

25.1 Once the effects of the housing allocation have been identified and predicted, it is necessary to assess whether any of these will lead to adverse effects on the integrity of the site as defined by the conservation objectives.

25.2 As discussed previously, the conservation objectives for a site relate to the important populations of birds listed in Annex I of the Bird's Directive and populations of 'regularly occurring migrant birds': The conservation objective for the Thames Basin Heaths SPA is *"subject to natural change, to maintain, in, favourable condition, the habitats for the populations of Annex 1 bird species of European importance, with particular reference to lowland heathland and rotationally managed plantation."*

25.3 Therefore the impacts arising from the housing allocation, shown in Table 9 have been viewed in the context of their impacts on the conservation objective of the site, as described above. A precautionary approach has been taken, and adverse effects must be assumed where it cannot be objectively demonstrated, with supporting evidence, that the integrity of the site would not be compromised.

Table 9 Impacts arising from housing allocation

Adverse effects	Impact on conservation objectives
ALLOCATION CHARACTERISTIC: Increased population in close proximity to the SPA (not including recreational impacts)	
Vandalism (including fire) – this could potentially increase if population increases in close proximity to the SPA boundary. It is understood that most vandalism occurs by young people who have foot access to the heaths from their homes (English Nature, 26 May 2006).	Nesting birds can be killed by fires, but also heathland fire can damage the habitat of nesting birds such as Dartford warbler. Conversely fire can have a positive effect by encouraging suitable habitat for the other Annex I species, woodlark and nightjar.
Enrichment – dumping of household garden waste from houses abutting the heaths can lead to localised nutrient enrichment.	Enrichment can cause nutrient-loving plant species to out-compete heathland species, and fly-tipping of garden waste can introduce non-native species.
Public hostility – an increase in the number of local residents who feel a sense of 'ownership' of the SPA may increase hostility between users. In addition, nearby residents or users may resist management on the site. Where this has a direct effect on the ability of site managers to maintain or restore favourable condition, this may have an adverse effect on the integrity of the SPA.	The allocation does not propose habitat management measures; therefore will not have an effect on public hostility.
Predation – the RSPB (2002) state that cat predation can be a problem where housing is next to scarce habitats such as heathland, and could potentially be most damaging to vulnerable species, such as the Dartford warbler, which is dependant on a fragmented habitat. Cats will catch prey even if they are not hungry. Cats from developments as far as 1 kilometre from the SPA could travel to the SPA, albeit with diminishing levels with distance from the source. Natural England considers that developments within 400 metres from the SPA lead to a significant level of cat predation whereas the level of cats travelling from over 400 metres is a minority. Dogs may also predate eggs or chicks if they come across nests on the SPA (Underhill-Day 2005).	Predation of chicks or eggs by domestic dogs and cats resulting in a reduction in species density, which can be as a result of reduced breeding success and reduced nest/territory density.

Adverse effects	Impact on conservation objectives
ALLOCATION CHARACTERISTIC: Increased recreational activity	
Fragmentation within heathland – the proliferation of footpaths and widening of existing tracks may cause isolation of plants and animals.	The paths within the areas of the SPA most visited by residents of the Borough are wide and well-defined and the surrounding habitat is dense and, in many places, contains gorse. Research by Clarke *et al* (2005) in Dorset found that the majority of people (82%) visiting the SPA stayed on the paths. Therefore fragmentation within the heathland is not likely to have a significant impact which affects the favourable conservation status of the habitat or impact on the populations of protected birds.
Predation – dogs walked off their leash could potentially have an effect on predation. There may be a direct effect arising from dogs predating the birds, but more significantly there may be an indirect effect as the dogs temporarily scare ground nesting birds from their nest, leaving the chicks vulnerable to other types of predation.	Predation of chicks or eggs either by domestic dogs and cats or other wild animals as a result of the nests being temporarily abandoned can result in a reduction in species density.
Enrichment – dogs walked on the SPA could potentially contribute to enrichment of the soil.	Enrichment can cause nutrient-loving plant species to out-compete heathland species, changing the bird's habitat.
Disturbance – car-borne walkers, dog walkers and cyclists are willing to travel to visit the site. These activities have been shown to cause disturbance of the protected bird species, for example, dogs off the paths can scare birds off the nest which leaves the eggs or chicks vulnerable to chilling or predation from other sources.	• Increased nest predation by natural predators when adults are flushed from the nest or deterred from returning to it by the presence of people or dogs resulting in reduction in species density. • Chicks or eggs dying of exposure because adults are kept away from the nest resulting in reduction in species density. • Reduced nest/territory density, delayed territory establishment and/or delayed egg laying (i.e. fewer broods in a season). • Increasing stress levels in adult birds resulting in a decreased ability to flee predators and an associated reduction in breeding success and therefore population density. These factors can all lead to adverse effect on population and less resilience of population to natural factors.

Adverse effects	Impact on conservation objectives
ALLOCATION CHARACTERISTIC: Increased recreational activity	
Trampling – an increase in track use and proliferation of the number of tracks could potentially cause habitat erosion and trampling of eggs. The tracks at the particular part of the SPA most used by residents of Bracknell Forest (the two relevant SSSI components) are very well defined and maintained, with clear way-marking. Also, research has shown (Clarke *et al*, 2005) that visitors stick mainly to the defined routes, so erosion off track is unlikely. However, research at Bourley and Long Valley SSSI (part of the SPA) indicated that 42% of visitors left the main tracks.	Accidental trampling of eggs by people, given that the woodlark and nightjar are ground nesting, will affect bird populations. This is not likely to affect the site to a great degree of significance, but does not have a *de minimus* impact. Some parts of the SPA may be more sensitive and prone to trampling; this will be addressed through access management.
ALLOCATION CHARACTERISTIC: Increased urban area	
Fragmentation between heathland – development on areas which are already considered to be fragmenting the SPA could potentially compound the impacts of fragmentation and diminish the heathlands as a single area of functional heathland.	Although territory size depends upon the quality of habitats, as a general rule Dartford warblers have an average territory size of 2.5 hectares although a larger contiguous area of heathland can support higher densities; the minimum territory size required by woodlarks in forestry clearfells in Suffolk is 5ha, although in optimum habitats, territories may be only 1.5 –2ha. Therefore loss of habitat outside SPA but within these territories could lead to a reduction in species number. In addition, grazing is crucial to maintain the SPA habitat in favourable condition. The existence of 'lay-back' land provides accessible areas of grazing livestock, which is required to facilitate grazing persistence when the presence of livestock on the SPA is likely to cause damage.

Adverse effects	Impact on conservation objectives
ALLOCATION CHARACTERISTIC: Increased urban area	
Supporting habitats - a loss of foraging habitat, particularly woodland, outside the breeding area for nightjars (i.e. the SPA), has been shown to have a negative effect on nightjar densities. Liley & Clarke (2002) found that the amount of woodland (the preferred foraging habitat) surrounding each patch was a significant predictor of nightjar numbers. Further research from radio tracking studies of birds on the Dorset heaths has shown that nightjars can range up to 6km from their nest territory, with an average range distance of 3.1km from the nesting territory (Alexander and Cresswell, 1990). This is to feed on insect rich, semi-natural habitats.	Development on semi-natural areas up to 6km from the SPA boundary, which are found to be rich in invertebrates, may lead to a loss of foraging habitat. A loss of foraging habitat has been shown to have a negative effect on nightjar population densities. Following consultation with the RSPB and Wildlife Trust it was felt that a zone of 400 metres, consistent with the zone to protect against recreational users and cats, would have a significant effect on the protection of foraging habitat, whilst giving more clarity in the planning process.
Hydrology – run-off from the urban area could be an issue if sites are within close proximity to the boundary. Due to the strategic level of the allocation further analysis is not possible, but hydrological assessments may be required for project level development to determine whether it would result in an alteration of the hydrological regime to the wet areas of the SPA. Development within the catchment area of a water course which enters the SPA could lead to flooding or pollution. In addition, groundwater may be impacted upon by development.	Changes to any water supply entering the SPA, by watercourse or groundwater, may affect the bird species. Nightjars require well drained soils which have the ability to absorb and release solar warmth.
Pollution – see comments above. In addition fly tipping, in particular of garden rubbish is predominantly restricted to housing on the perimeter of the SPA boundary.	
Roads - traffic noise and streetlights.	Breeding birds can be deterred by traffic noise and streetlights can have an adverse effect on the nocturnal feeding of nightjar.

25.4 The outcome of this stage of the Appropriate Assessment was to identify where a likely effect on the SPA is confirmed or uncertain. This will therefore be carried forward to the next stage of the assessment process to determine whether the effects can be avoided by avoidance and mitigation measures provided for by Core Strategy and South East Plan policies, or by the use of additional conditional requirements governing the way in which the policy is implemented.

STEP 4: PROPOSE AND ASSESS AVOIDANCE AND MITIGATION MEASURES

26 Avoidance and Mitigation Strategy

26.1 Table 9 identifies ways in which the South East Plan housing allocation could have an adverse effect on the integrity of the SPA. Therefore it is necessary to devise measures to avoid and mitigate, where possible, the identified adverse effects. Avoidance measures need to specifically relate to the adverse effects the plan is likely to cause. It is for the Competent Authority to determine what level of avoidance measures are required, taking into account suggestions from the relevant nature conservation bodies.

26.2 A case-by-case approach to avoiding the impacts does not easily lend itself to the assessment of combined and longer-term effects; therefore this Appropriate Assessment aims to address avoidance on a strategic level for all of the predicted impacts.

26.3 It is widely recognised that avoidance and mitigation measures are required to safeguard the SPA from recreational impacts arising from new housing development. In the Delivery Framework (Joint Strategic Partnership Board, 2009, para 3.1 bullet point 3) a three part approach to avoiding and mitigating recreational impacts is recommended:

- On-site habitat management to bring the SPA into favourable condition ensuring the habitat across the site is suitable for the Annex I species.
- On-site access management to avoid the impacts of current and predicted future users of the SPA.
- Off-site avoidance measures, for example in the form of alternative greenspace for recreation.

27 Habitat Management

27.1 Habitat management of lowland heathland and young plantations is an effective measure benefiting the populations of the protected bird species (UK Biodiversity Action Plan). Appropriate habitat management will be secured by Natural England working with the landowners across the SPA to improve any areas of unfavourable or declining condition. This is action which is required under the Habitats Regulations and the Countryside and Rights of Way Act.

27.2 Natural England notes that whilst habitat management is essential to ensure the robustness of the SPA and maximise its ability to support the Annex I birds, habitat management alone cannot avoid negative impacts from recreation. Natural England advises that in the short term habitat management cannot be considered an avoidance measure. This is because the legal duty for SPA landowners and managers to manage the SPA such that it achieves favourable conservation status is a separate duty to those required for plans and projects (Article 3(1) and 6(2) of the Habitats Directive as opposed to Article 6(3) and 6(4)).

27.3 The Council owns and manages a small proportion of the SPA, therefore, in the long-term; there may be some potential for additional management measures to be a relevant avoidance and mitigation measure.

28 On-site access management

28.1 Natural England has made an access management assessment for each component SSSI. These have identified issues and opportunities for access management on the component sites of the SPA. An Access Management Partnership has been initiated involving landowners and managers of the SPA, supported by NE and Hampshire County Council. Using NE's information and an identified need for enhanced education and wardening provision on the SPA, the Access Management Partnership has developed a strategic access management plan (Strategic Access Management and Monitoring Project, known as SAMM). This will be jointly funded by developers' contributions across the 11 affected local authorities and instigated across the SPA in order to ensure effective on-site access management as mitigation for new residential development within 5km.

28.2 The SAMM project is the most comprehensive approach to the implementation of access management measures across the SPA. Bracknell Forest Council is a contributing member of the Access Management Partnership and, as an SPA owner and manager is partly responsible for the implementation of the strategic measures.

28.3 The SAMM project also includes a monitoring programme. This will provide the baseline assessment and ongoing data ensuring that visitor numbers on the SPA do not adversely affect the bird populations. It will also measure the effectiveness of SANGs and the education work undertaken as part of the access management work.

29 Off-site avoidance measures

29.1 This can be a range of measures, which will include the provision of new or enhanced recreational open space (Suitable Alternative Natural Greenspace, or SANGs), policies to prevent inappropriate development in the most sensitive areas and conditions/restrictions on new dwellings, for example restricting pet ownership.

29.2 Where SANGs are provided, this must be at a minimum of at least 8ha per 1000 new residents, as set out in SEP Policy NRM6. This standard of SANGs provision is necessary, in addition to normal open space requirements, in order that the Council can have certainty that the Avoidance and Mitigation Strategy will prevent an adverse impact on the integrity of the SPA.

30 Inter-relationship between measures

30.1 The Council believes that a package of measures is needed which, not only provides attractive alternative opportunities for recreation, but also encourages residents to use these spaces by educating them about the sensitivities of the SPA, thereby making it a less attractive destination during the breeding bird season.

30.2 Evidence from visitor surveys has shown that people will often travel considerable distances, and past other sites, to visit the SPA because of its unique features. Not least of which, in the case of Bracknell Forest, is that it provides a contiguous area of open space 1,800 hectares in size. In addition, the SPA is already heavily used for recreation, despite the current level of green space provision in the area. The sites passed en route to the SPA are often very attractive, semi-natural sites of a type identified as SANGs[6] in Natural England's research (Liley, Mallord & Lobley, 2005). This shows that a more holistic approach to the provision of open space is required, because the provision of additional or enhanced open space in isolation is not likely to reverse the trends shown in visitor surveys.

31.3 Therefore, to be effective, an impact avoidance package will be produced which combines both on-site and off-site measures to make people aware of the sensitivities of the SPA, in addition to making other areas more attractive.

31 Conclusions

31.1 This Habitats Regulations Assessment sets out the impacts likely to arise from the delivery of the South East Plan housing allocation within Bracknell Forest. The necessary avoidance and mitigation measures to avoid each adverse effect are introduced above. Further detail of these measures can be found in the following Table and in Section 5 of the Thames Basin Heaths SPA Avoidance and Mitigation SPD. The level, location and cost of the avoidance and mitigation measures needed to ensure that the SEP housing allocation does not have an adverse impact on Thames Basin Heaths SPA are set out in Section 6 of the SPD.

Table 10. Measures to avoid adverse effects

Effects	Proposed measure
Increased population in close proximity to the SPA (not recreational impacts)	
Vandalism (including fire)	• The Core Strategy policy CS14 was amended to require any development within 400 metres to be assessed on its own merits with regard to the Habitats Directive. There will therefore be a general presumption against new net residential development in this zone, which will ensure no harmful development is permitted within close proximity to the SPA. This may reduce the potential for opportunistic vandalism to the SPA from new local residents, and will help avoid vandalism specifically arising from proximity to the SPA, e.g. fly tipping over back garden fences. In addition, the SAMM project will contain an education strategy, informing people of the sensitive nature of the SPA. The project will also provide wardens who can help reduce the level of illegal activity on the heathland. This measure is in conformity with the Delivery Framework and policy NRM6 of the South East Plan, and no additional measures are necessary as a result of the SEP housing allocation.
Predation	• The Core Strategy policy CS14 was amended to require any development within 400 metres to be assessed on its own merits with regard to the

[6] Suitable Alternative Natural Greenspace (SANGs)

Effects	Proposed measure
	Habitats Directive. This will ensure no development is permitted which has the potential to increase the number of pets in the vicinity, in particular cats, which could predate eggs and chicks. There will be a general presumption against new residential development in this zone. This measure is in conformity with the Delivery Framework and policy NRM6 of the South East Plan. • No sites will be allocated within 400 metres of the SPA boundary; unless it can be proven they will not contribute to an increase in pets or other potential SPA visitors. • No further adjustments are necessary as a result of the SEP housing allocation.
Increased recreational pressure	
Predation	• On-site visitor access management can avoid impacts arising from predation from dogs belonging to current and future dog-walkers. This may include requesting that dogs are kept on leads or under close control during the breeding season and using wardens to disseminate this message. This will be delivered by the SAMM project, in conjunction with existing SPA staff. • Education will encourage visitors to act in a more responsible and less harmful way. This will be delivered by the SAMM project, in conjunction with existing education initiatives. • Restrictions on pet ownership in new developments, where this can be enforced, will play a part in reducing the levels of dogs and, as a result, dog walkers. This will be delivered via legal agreements on planning permissions, where appropriate. • No further measures are necessary to mitigate for the SEP housing allocation.
Enrichment	• On-site visitor access management measures, such as more wardens and the provision of litter bins, can reduce enrichment by encouraging responsible dog ownership. This will be delivered by the SAMM project, in conjunction with existing SPA staff. • Education can encourage visitors to act in a more responsible and less harmful way. This will be delivered by the SAMM project, in conjunction with existing education initiatives. • No adjustments are considered necessary as a result of the increased housing allocation in the SEP.
Disturbance	• Natural England believes that the provision of a significant quantity of new or enhanced semi-natural alternative green space, for new residents to visit for recreational purposes, will keep the levels of visitors to the SPA at the current baseline level. • 400m is a very easy walking distance and it is highly unlikely additional residents within this distance from the SPA would be diverted to any alternative open space. The Core Strategy policy CS14 was amended to require any development within 400 metres to be assessed on its own merits with regard to the Habitats Directive. This measure is in conformity with the Delivery Framework and policy NRM6 of the South East Plan. • As the SEP sets out a minimum requirement of 8ha of SANGs per 1000 new residents, Bracknell Forest Council will require this standard in addition to normal open space requirements (4.3ha per 1000) for the Borough. This is considered the minimum provision necessary to provide

Effects	Proposed measure
	certainty of avoiding adverse impact on the Thames Basin Heaths SPA.
Trampling	• The provision of clear way-marked routes will encourage users to keep to the paths. This will be delivered by the SAMM project. No further adjustments are necessary as a result of the SEP housing allocation.
Management costs	• The provision of alternative open space for recreational purposes should stabilise the level of visitors using the SPA, therefore habitat management costs should not need to be increased from current levels as a result of additional recreational use. Additional access management will be necessary however; this will be delivered by the SAMM project and no further measures are considered necessary as a result of the SEP housing allocation.
Increased urban area	
Fragmentation between heathland	• Any development within 400 metres of the SPA boundary will require a project-level Appropriate Assessment. Therefore, the area between the two SSSI components of the SPA within the Borough (Sandhurst to Owlsmoor Bogs and Heaths and Broadmoor to Bagshot Woods and Heaths SSSI) can be protected from fragmentation. • Any land within a 400 metre buffer zone, which is deemed to be of ecological importance in maintaining the bird populations will not be developed (see policy below). This will maintain the functionality of the SPA by ensuring the loss of additional green field sites does not lead to further fragmentation. • No further policy adjustments are necessary as a result of the increased SEP housing allocation.
Supporting habitats	• The Core Strategy policy CS14 on the Thames Basin Heaths requires any development proposed within 400 metres of the SPA boundary to undergo Appropriate Assessment; this may require an ecological assessment to determine whether the site contains suitable feeding habitats for the designated bird species or provide 'lay-back' land for cattle. • No further measures are necessary as a result of the SEP housing allocation.
Hydrology / Pollution	• The effects on site hydrology and pollution are localised and policy CS14 states all development within 400 metres will be assessed on its own merits with regards to the Habitats Directive. • The project-level Appropriate Assessment may therefore require a hydrological assessment for each development within 400 metres to determine whether it would result in an alteration of the hydrological regime to the wet areas of the SPA. No proposal which has a risk of affecting the integrity of the site by either pollution or hydrological impacts will be approved. • No further considerations are necessary as a result of the SEP housing allocation.
Roads - traffic noise and streetlights.	• Neither the SEP, nor the Core Strategy proposes the construction of new roads near the SPA. The Local Transport Plan 2006-2011 has been subject to a Habitats Regulations Screening which concluded no significant effect.

31.2 Integrity checklist

Natural England has produced guidance on determining site integrity[7]. This includes 'A simple, pragmatic checklist for assessing likely effect on integrity', which asks the competent authority to pose a series of five questions as follows:

Has the Appropriate Assessment shown:

1. That the area of Annex I habitats (or composite features) will not be reduced?
2. That there will be no direct effect on the population of the species for which the site was designated or classified?
3. That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?
4. That there will be no changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?
5. That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?

The guidance suggests that if the answer to all of these questions is 'Yes' then it is reasonable to conclude that there is not an adverse effect on integrity. If the answer is 'No' to one or more of the questions then further site-specific factors need to be considered in order to reach a decision.

These site-specific factors are listed as follows:-

- Scale of impact
- Long term effects and sustainability
- Duration of impact and recovery/reversibility
- Dynamic systems
- Conflicting feature requirements
- Off-site impacts
- Uncertainty in cause and effect relationships and a precautionary approach.

This process has been used to assess the impact types listed in Table 9 implemented alongside the avoidance and mitigation measures in Table 10.

Has the appropriate assessment shown that:-	
1) The area of Annex I habitats (or composite features) will not be reduced?	Yes
2) There will be no direct effect on the population of the species for which the site was designated or classified?	Yes
3) There will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	Yes
4) There will be no changes to the composition of the	Yes

[7] English Nature European Sites Guidance. February 2004. Internal Guidance to decisions on 'site integrity': A framework for provision of advice to competent authorities

habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?	
5) That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?	Yes

An analysis of the effectiveness of the proposed mitigation measures presented in the SPA Avoidance and Mitigation SPD has lead to the conclusion that the South East Plan housing allocation, implemented using policies within the Core Strategy, will not result in harm to the integrity of the SPA. Therefore, further analysis of site-specific factors is not necessary.

31.3 The Appropriate Assessment confirmed that the South East Plan housing allocation could have a significant adverse effect on the SPA. However, after taking into account the:

- South East Plan and Core Strategy policy wording, and
- The avoidance and mitigation measures detailed within Section 5 of the SPD:

it can be concluded that all potentially significant adverse effects on the SPA arising from the South East Plan housing allocation have been eliminated.

Therefore, compliance with conditions and restrictions can enable it to be ascertained that the proposal would not adversely affect the integrity of the SPA. As a result the housing allocation can be delivered, subject to the conditions or restrictions. Section 5 of this SPD sets out the relevant avoidance and mitigation measures, whilst Section 6 details how each measure will be implemented and secured to meet these requirements.

Consequently, there is no need to proceed to Regulation 49 of the Habitats Regulations, which requires consideration of alternatives or imperative reasons of overriding public interest.

31.4 It is concluded that in the absence of the proposed measures, there is the potential for the South East Plan housing allocation to have an in-combination effect, with the other proposed housing allocations presented in the Plan.

However, by implementing the modifications, conditions and restrictions highlighted within this Appropriate Assessment, there are likely to be no residual effects. Natural England have previously stated that if a proposal (or in this case a plan) is likely to have **no effect** on the SPA, it cannot have a significant effect either alone or in combination.

31.5 Any cost involved in meeting each of the avoidance measures will be covered by financial contributions made by individual developers. A contribution which is relevant to the impact of the proposal will ensure the effects of that specific proposal are not significant, therefore a screening exercise would be able to conclude no likely significant effect and a subsequent Appropriate Assessment at the project level is unnecessary.

The implementation mechanisms identified within Section 6 of the SPD do not preclude applicants coming forward with their own, alternative avoidance measures. The Council will continue to address applications on a case-by-

case basis if a development proposal comes in with its own SANGs or other specific avoidance measures. If the proposal is assessed, in consultation with Natural England, that the development fully avoids all potential effects upon the SPA, the Council can conclude no adverse effect.

Annex A – Ecological Status of the Annex I Species

The following outlines the current status of the three Annex I birds, Species Action Plan objectives taken from the UK Biodiversity Action Plan and current factors which contribute to population size.

NIGHTJAR

Ecology

The nightjar is a summer migrant, arriving in Britain in late April to mid-May and returning in August or September to sub-Saharan Africa.

Source: RSPB

The bird is nocturnal and roosts in the day either on the ground or in the low branches of shrubs and trees.

Nightjars feed on seasonally available suitable prey consisting of flying insects (such as moths, beetles and flies). They hunt mainly at dawn and dusk and in some circumstances well into the night, across a wide range of habitats/land use types. Preferred feeding habitats are heathland, deciduous or mixed woodland, orchards, riparian habitats, freshwater wetlands and gardens, though plantations are used where there is structural diversity within the woodland. The birds will travel an average 3 km from the nest site to locate suitable feeding areas, although can range further.

Their nests are usually located in patches of bare or sparsely vegetated ground, mainly on free-draining sandy soils within areas of mature dry heathland, young forestry plantations, or in woodland clearings of over 1.5 hectares. Nightjars often rear two broods a season. Normally two eggs are laid from mid May to mid July. Chicks hatch after about 19 days and fly at about 17 days old, then are reliant on the parents for about four weeks.

Current Status

This species has been declining in numbers and range for much of this century, reaching a low point of 2,100 males in 1981, with a decline in range of 52% between 1968-72 and 1992. There has since been a partial recovery in the size of the population which had reached 3,400 males in 1992. The species now breeds mainly in southern England, but there are scattered populations as far north as central Scotland. Lowland heathland and young forestry plantations are now the most important habitats. An increase in forestry clear-fells as a result of major storms and forest management have assisted recent increases, with over 50% of the total population found in this habitat in the 1992 survey.

Results of 2004 Nightjar survey (British Trust for Ornithology)

Broadmoor to Bagshot Woods and Heaths SSSI

Year	No. of churring males	Count comparison with 1992
2004	37	Up
1999	16	Up

The British Trust for Ornithology state on their website:

"The Berkshire results, compared with the last survey of 1992, were remarkable….. Very few sites have reduced their Nightjar count since 1992 and only one seems to have lost them totally, which is excellent news. To put this in perspective, part of this apparent increase may have been due to less complete site coverage during the previous survey but there have undoubtedly been substantial increases in many places particularly in the southeast of the county, where the Berkshire BTO region overlaps parts of Surrey and Hampshire. The heathlands between Crowthorne, Bracknell and Camberley and those around Pamber Heath, Padworth and Wokefield Common now hold good numbers of breeding pairs. Nationally, a total of 4,132 individual males were detected in 2004, which constitutes a 34% increase since 1992 (3,093 males). It would appear from the foregoing that Berkshire has done even better but, given the relatively small sample size and the aforementioned difference in surveyor effort, this may not necessarily be true. However it is probably safe to say that Berkshire numbers have increased by at least a third since 1992."

Action Plan Objectives and Targets

- Maintain a population of at least 3400 churring males.
- Halt the decline in range of the nightjar (there were 268 occupied ten km squares in 1992).
- In the long term (next 20 years), restore nightjar to parts of its former range in, for example, south-west England, west Midlands, north-west England, south-west Scotland and Northern Ireland

Conditions required to achieve a favourable condition

Abundance of night flying insects; open ground with predominantly low vegetation, bare patches and sparse woodland/scrub cover; reduction or displacement of birds; extent and distribution of habitat area.

Current Adverse Factors

The area of heathland in the UK has undergone a dramatic reduction during the course of this century due to agricultural land claim, afforestation and built development. For example, it is estimated that 40% of England`s lowland heathland has been lost since the 1950s. Threats continue from housing and infra-structure developments and where heathland lacks appropriate management, it will become unsuitable as nesting habitat due to invasion by bushes and trees. Nightjars require extensive areas of suitable feeding habitat, especially uncultivated land, therefore the loss of such habitats within a few kilometres of the nesting area may result in a decline in the number of birds. It is possible that a decline in the availability of large insects caused by changes in agriculture (such as the indirect effects of pesticides) and/or climatic change, may have affected nightjar populations. In commercial forests, nightjars nest in the young stages of plantations, while there is still bare ground between the trees. If no other suitable habitat becomes available in other new or young stands, local population declines could occur as the recently planted blocks mature.

Source: UK Biodiversity Action Plan

WOODLARK

Ecology

The woodlark is a bird primarily of lowland heathland, acidic grassland and recently clear-felled plantations on sandy soils that support pioneer heathland vegetation. They are found breeding mainly in eastern and southern England, the New Forest, Surrey and Berkshire heaths, Breckland and some Suffolk heaths. The southern populations tend to be more sedentary, whilst the populations in East Anglia are generally summer migrants.

Source: RSPB

Woodlarks feed in areas with a high proportion of short vegetation and/or bare ground on well-drained (usually acid) soils with sparse tree cover. They feed on invertebrates during the summer and switch to seeds in the winter. Despite their name, they do not require large wooded areas, but do need some trees (for singing) and some longer vegetation (for nesting). Woodlarks utilise areas that are subject to regular ground disturbance (e.g. firebreaks), but avoid stony ground as they are unable to dig shallow nest scrapes.

They nest in areas of grazed heathland, recently cleared forestry plantations and open woodland, where areas of bare ground or short vegetation are mixed with patches of longer grass or heather.

Little is known of the woodlark's winter requirements and distribution, although there appears to be some movement southwards within England and to the continent.

Current Status

The woodlark was formerly found across Britain, south from Yorkshire, and in Northern Ireland, but is now largely restricted to five core areas. The number of ten km squares occupied in the breeding season decreased by 62% (from 198 to 73 ten km squares) between 1968-72 and 1988-91. However, since 1986 (when the population was estimated to be around 250 pairs) the population has increased with up to 620 pairs breeding in 1993, and the 1997 survey has recorded around 1,500 pairs. Results from the 1997 survey suggest that around 50% of breeding pairs across the country are now nesting on set-aside and other weedy fields.

The population increase is believed to have resulted from a succession of milder winters and storm damage which felled trees, creating additional suitable habitat areas. This is in addition to the provision of new plantation habitats within the current core areas.

In Europe the woodlark is declining in both numbers and range.

Action Plan Objectives and Targets

- Maintain a population of at least 1,500 breeding pairs of woodlark.
- Maintain the existing range of at least 90 ten km squares.
- Increase the range of the woodlark from 90 to 120 ten km squares, including the recolonisation of Wales and south-west England, by 2008.
- Increase the population size by 2008.

Conditions required to achieve a favourable condition

Abundance of ground surface invertebrates; mix of shrub/ tree cover, short-medium vegetation and bare ground; reduction or displacement of birds; extent and distribution of habitat area.

Current Adverse Factors

An estimated 40% of England`s lowland heathland has been lost since the 1950s. This has led to a loss of feeding and nesting habitats for woodlarks. Whilst losses to afforestation and agriculture have declined, threats from roads and housing developments continue. Woodlarks require a mosaic of bare ground or short vegetation for feeding, and tussocks of vegetation with disturbed ground for nest sites.

Lack of appropriate management can lead to sites becoming unsuitable for the species. Rabbits play a key role in creating bare ground and short grass at many sites, and their decline following myxomatosis in the 1950s may have played a significant part in the decline of the woodlark. In addition severe winter weather and, in particular, snow cover has had an adverse impact on winter survival. The hard winters of 1962/63 and 1981/82 had considerable impact on woodlark populations on the southern heathlands.

DARTFORD WARBLER

Ecology

The Dartford warbler is resident on the lowland heathlands of southern Britain, where it favours mature heather dominated dry heathland with dense bushes of gorse where it feeds on invertebrates. Gorse provides the predominant feeding habitat for Dartford warbler, as it is richer in invertebrate food than heather, therefore management is primarily aimed at maintaining gorse of various age and structure amongst a mainly heathland habitat. Invasive scrub and bracken need to be controlled.

Source: RSPB

Dartford warblers hold territories of between 2 - 6 ha in size (depending on habitat quality) and nests are located in either dense gorse or deep heather. Scattered European and/or Western gorse (*Ulex europaeus* and *Ulex gallii*) cover of 5% is optimal, and should be of a range of ages to provide a continuum of suitable bushes, i.e. dense (6-12 years old) and up to 1.5 m high. Larger blocks of dense gorse have been shown to be especially important during periods of snow, when the birds retreat to them.

Current Status

In Bracknell Forest, the Dartford warbler is rare – but increasing after a run of mild winters; a few pairs now breed in East Anglia for instance.

The last Dartford warbler survey, undertaken in 1994, recorded a national population of 1,800 pairs.

Action Plan Objectives and Targets

The Berkshire Heathland and the Bracknell Forest Biodiversity Action Plans include the following objectives and targets for this species in the County:

- Continue to manage currently known breeding sites, paying particular attention to the long-term provision of suitable stands of gorse.
- Integrate Dartford Warbler management into the management of forestry and MOD areas south of Bracknell town with a view to encouraging further breeding sites.
- Establish the current extent of Dartford Warbler in the area south of Bracknell town.

Conditions required to achieve a favourable condition

Large unbroken dwarf-shrub layer of heather with scattered gorse; abundance of shrub layer invertebrates; mix of heather, trees and gorse amongst heathland vegetation; reduction or displacement of birds; extent and distribution of habitat area.

Current Adverse Factors

The species is on the edge of its European range in England, and in particular in Berkshire as it is marginally cooler than coastal populations in the New Forest and Dorset. Warm winters may therefore be a contributing factor in the increase in their population in the Thames Basin Heaths SPA. Conversely it can be severely affected by hard winters unless adequate cover is available. However, although it is vulnerable to severe winters which can result in local extinctions of the species, populations can recover rapidly and are capable of doubling every two years.