Chattenden Woods and Lodge Hill SSSI
Kent

Supporting Information

A supplement to the notification document

Issued by Natural England's Kent Land Management Team on [**insert notification date**]

Contact points and further information

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Summary

Chattenden Woods and Lodge Hill SSSI is notified under section 28C of the Wildlife and Countryside Act 1981, as inserted by Schedule 9 to the Countryside and Rights of Way Act 2000.

Chattenden Woods and Lodge Hill SSSI comprises a mosaic of habitats, including ancient and other long-established semi-natural woodland, scrub, and neutral grassland. It is a nationally important site specifically by reason of the following biological features of special interest that occur within and are supported by the wider habitat mosaic:

- **Ancient and long-established semi-natural woodland –** The extensive woodland represents one of the best examples of coppice-with-standards woodland on the London Clay. The dominant woodland community is of the National Vegetation Classification (NVC) type W10 pedunculate oak *Quercus robur* – bracken *Pteridium aquilinum* – bramble *Rubus fruticosus* woodland.
- **Unimproved neutral grassland –** Rough Shaw is an area of dense and scattered scrub on a north facing slope with tall-herb neutral grassland along its upper margin. The tall-herb neutral grassland includes stands of the unimproved nationally scarce NVC type MG5 crested dog's-tail *Cynosurus cristatus* – common knapweed *Centaurea nigra* grassland.
- **Breeding nightingale *Luscinia megarhynchos* –** The SSSI supports a nationally important number of nightingales during the breeding season. Nightingales use coppice woodland and scrub throughout the SSSI.

1. Information used to support the selection of Chattenden Woods and Lodge Hill SSSI

Feature	Data Source	Author	Date	Content
General	Botanical Surveys of SSSIs in Kent (including proposed sites). Volume 1: A-K. Nature Conservancy Council Report	Barter, G.	1979	Results of surveys of Chattenden Wood SSSI in the late 1970s
	Guidelines for selection of biological SSSIs. Published by Nature Conservancy Council, Peterborough	Nature Conservancy Council	1989	National selection guidelines for biological Sites of Special Scientific Interest
	The Natural History of Chattenden. Unpublished report	E. Philp, Maidstone Museum	1989	Species lists including plants, invertebrates, birds, amphibians, reptiles and mammals
	British Plant Communities. Volume 1: Woodlands and Scrub. Published by Cambridge University Press, Cambridge	Rodwell, J.S. (ed).	1991	National Vegetation Classification (NVC) for woodlands and scrub communities
	British Plant Communities: Volume 3: Grasslands and Montane Communities. Published by Cambridge University Press, Cambridge	Rodwell, J.S. (ed).	1992	NVC for lowland grassland communities
	The nature conservation value of scrub in Britain. Published by Joint Nature Conservation Committee, Peterborough.	Mortimer, S.R. *et al.*	2000	Report looking at ecology, conservation and management of scrub and its value to wildlife
	Wainscot Training Area Ecological Assessment. Report for Holdfast Limited. http://publicaccess.medway.gov.uk/WAM/doc/Supporting%20Documents-487936.pdf?extension=.pdf&id=487936&appid=1001&location=dtmedwaydc&contentType=application/pdf&pageCount=57	Atkins Limited	2007	Surveys and assessment of habitats and species in the area of a proposed extension to the MOD training facility
	State of the Natural Environment 2008. Published by Natural England, Peterborough.	Natural England	2008	Review of the state of England's natural environment
	Kent and Medway Biological Records Centre search query 1969-2012.	Kent and Medway Biological Records Centre	2012	Data for breeding birds and other species in the SSSI
Woodland	A woodland NVC Survey of Chattenden Woods SSSI. English Nature internal report.	Davis, S.	1995	NVC survey, including list of ancient woodland specialists

Feature	Data Source	Author	Date	Content
	A woodland NVC Survey of Chattenden Woods SSSI and surrounding woodlands. Natural England internal report	Williams, P. & Smith, L.	2012	NVC survey, including list of woodland flora and target notes
	Specialist support for notification of Chattenden Woods and Lodge Hill as a SSSI for woodland	Goldberg, E.	2012	Support for notifying the site from Natural England's woodland specialist
Birds	Criteria for selecting wetlands of international importance. In: *Proceedings of the conference on the conservation of wetlands of international importance as waterfowl habitat. Cagliari, Italy, November 1980,* pp 1017-1042. Supplemento alle Ricerche di Biologia della Selvaggina, 81 (1).	Atkinson-Willes, G.L., Scott, D.A. & Prater, A.J.	1982	Basis for use of 1% thresholds for identifying important aggregations of birds
	Population trends in British Breeding Birds. Published by the British Trust for Ornithology, Tring	Marchant, J.H., Hudson, R., Carter, S.P. & Whittington, P.	1990	Nightingale population trends
	Survival of British sedge warblers *Acrocephalus schoenobaenus* in relation to West African rainfall. *Ibis* **133**: 300-305	Peach, W.J., Baillie, S. & Underhill, L.	1991	Factors affecting British migrant breeding birds on their African wintering grounds
	The Burham, Eccles and New Hythe Nightingales. Kent Bird Report 1991: 137-140.	Woodcock, A.	1992	Migratory habits of nightingales
	The nightingale in England – problems and prospects. *British Wildlife* **10** (4):221-230	Fuller, R.J., Henderson, A.C.B. & Wilson, A.M.	1999	Nightingale habitat requirements
	The Migration Atlas: movements of the birds of Britain and Ireland. Published by BTO, Thetford	Wernham, C., Toms, M., Marchant, J., Clark, J., Siriwardena, G. & Baillie, S.	2002	Migratory habits of nightingales
	Status of the nightingale *Luscinia megarhynchos* in Britain at the end of the 20th Century with particular reference to climate change *Bird Study* **49**: 193-204	Wilson, A.M., Henderson, A.C.B. & Fuller, R.J.	2002	Results of 1999 national nightingale survey
	Birds in Europe: population estimates, trends and conservation status. Published by BirdLife International, Cambridge	BirdLife International	2004	European nightingale population trends

Feature	Data Source	Author	Date	Content
	Population estimates of birds in Great Britain and the United Kingdom. *British Birds* **99**: 25-44	Baker, H., Stroud, D.A., Aebischer, N.J., Cranswick, P.A., Gregory, R.D., McSorley, C.A., Noble, D.G. & Rehfisch, M.M.	2006	National population estimates of breeding birds
	Population trends of widespread woodland birds in Europe. *Ibis* **149** (Suppl. 2): 78-97	Gregory. R.D., Vorisek, P., van Strier, A., Meyling, A.W.G., Jiguet, F., Fornasari, L., Reif, J., Chylarecki, P., & Burfield, I.J.	2007	European nightingale population trends
	Population trends of breeding birds in woodlands over a 32-year period: relationships with food, habitat use and migratory behaviour. *Ibis* **151**: 464-486	Hewson, C.M. & Noble, D.G.	2009	Nightingale population trends
	Berry Court Wood breeding bird survey (2009 and 2010). Unpublished report	RSPB	2009, 2010	Breeding bird records for Berry Court Wood
	Experimental evidence that deer browsing reduces habitat suitability for breeding common nightingales *Luscinia megarhynchos*. *Ibis* **152**: 335-346.	Holt, C.A., Fuller, R.J. & Dolman, P.M.	2010	Nightingale habitat preferences
	The Breeding Bird Survey 2010. BTO Research Report 597. Published by the British Trust for Ornithology, Thetford	Risely, K., Kenwick, A.R., Dadam, D., Eaton, M.A., Johnston, A., Baillie, S.R., Musgrove, A.J. & Noble, D.G.	2011	Nightingale population trends
	Wildlife Reports. *British Wildlife* **23**(5): 349	British Wildlife	2012	Weather report for April 2012
	Wildlife Reports. *British Wildlife* **23**(6): 424	British Wildlife	2012	Weather report for May 2012
	Nightingale survey: preliminary results for Kent. Report to the British Trust for Ornithology	Henderson, A.	2012	Preliminary results for Kent from the BTO national nightingale survey 2012
	The nightingale in Britain: status, ecology and conservation needs. *British Birds* **105**:172-187	Holt, C.A., Hewson, C.M. & Fuller, R.	2012	Nightingale population trends

Feature	Data Source	Author	Date	Content
	Lodge Hill Outline Planning Application on behalf of Defence Infrastructure Organisation: Masterplan for breeding birds. Environmental Statement Addendum	Hyder Consulting UK	2012	Breeding bird records in the SSSI
	BTO Nightingale Survey 2012: Lodge Hill, Kent (TQ77). Unpublished results	British Trust for Ornithology	2012	Map showing location of all validated nightingale territories recorded in the SSSI in 2012
	Specialist support for notification of Chattenden Woods and Lodge Hill as a SSSI for breeding birds	Drewitt, A.	2012	Support for notifying the site from Natural England's senior ornithological specialist
	Factors potentially affecting the viability and success of biodiversity offsetting to compensate for nightingale habitat loss. BTO report	Hewson, C.M. & Fuller, R.J.	2012	Assessment of accuracy and representativeness of population estimates of nightingales in the SSSI
	SSSI notification strategy – birds. Draft Natural England internal report	Drewitt, A.	In prep.	Priorities for SSSI notification for birds
Grassland	Survey of neutral grassland. English Nature survey	Williams, P	1998	Grassland recording card.
	Monitoring the condition of lowland grassland SSSIs: Part 1 – English Nature's rapid assessment method. English Nature Research Reports 315	Robertson, H.J. & Jefferson, R.G.	2000	Rationale behind the rapid assessment methodology, describes practical ways of making rapid assessments
	Guidance on the survey and boundary definition of candidate grassland sites. Unpublished internal guidance note.	Jefferson, R.G. & Robertson, H.J.	2001	Internal Natural England guidance on SSSI boundaries
	National assessment of lowland neutral grassland. Paper to the Council of English Nature	Holmes, P., Pinches, C. & Jefferson, R.J.	2005	Strategic review of the conservation of lowland neutral grassland in England
	UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions – Lowland Meadows. Published online at http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2010.pdf	Biodiversity Reporting and Information Group (ed. A. Maddock)	2008	Describes the lowland meadow habitat as defined by the UK BAP
	Survey of neutral grassland. Natural England survey	Williams, P. & Smith, L.	2012	Grassland recording card.

Feature	Data Source	Author	Date	Content
	National Vegetation Classification survey of neutral grassland at Rough Shaw. Natural England internal report	Williams, P.	2012	NVC survey including assessment of the extent of grassland NVC communities
	Specialist support for notification of Chattenden Woods and Lodge Hill as a SSSI for grassland	Jefferson, R.G.	2012	Support for notifying the site from Natural England's senior grassland specialist
	Biodiversity: Action for Kent's Wildlife. Lowland Meadows – current status. http://www.kentbap.org.uk/habitats-and-species/priority-habitat/lowland-meadow/ Webpage accessed 5 September 2012	Kent Biodiversity Partnership	2012	Description and status of lowland meadows in Kent as defined by the Kent Habitat Survey 2003.
	SSSI notification strategy – lowland grassland. Draft Natural England internal report	Jefferson. R.G.	In prep.	Priorities for lowland grassland SSSI notification

2. Explanation of how Chattenden Woods and Lodge Hill meets the SSSI selection guidelines

This section explains how the information listed in section 1 has informed our decision to notify the SSSI, according to the *Guidelines for selection of biological SSSIs* (Nature Conservancy Council, 1989), hereafter referred to as 'the Guidelines'.

2.1 Woodlands

The Chattenden Woods and Lodge Hill SSSI supports extensive areas of long-established semi-natural woodland (see photograph 1 in section 6), parts of which are recorded as 'ancient semi-natural woodland' (ASNW). The dominant woodland community in the SSSI most closely resembles the National Vegetation Classification (NVC) type W10 pedunculate oak *Quercus robur* – bracken *Pteridium aquilinum* – bramble *Rubus fruticosus* woodland. Two sub-communities are represented; the W10a typical sub-community and the W10b wood anemone *Anemone nemorosa* sub-community W10b. The Guidelines (Chapter 2, section 4.7, p.80) state that:

> '*Within an AOS [area of search] several examples of most types should be selected to account for the variation in woodland structure, floristic composition of tree and subsidiary layers and animal assemblages, to represent the various ways in which different types may naturally be combined, to give a geographical spread of sites, and to include any special features.*'

The woodland vegetation communities are characteristic of those found on London Clay within the North Kent Plain National Character Area (NCA)[1]. The woodland complex covers 163.5 ha of semi-natural woodland (109.92 ha is within the previously notified Chattenden Woods SSSI), of which 54.71 ha is recorded as ancient semi-natural woodland on the Ancient Woodland Inventory (18.36 ha is within the previously notified Chattenden Woods SSSI), making Chattenden Woods and Lodge Hill the largest woodland complex of this type within the North Kent Plain NCA, outside

[1] National Character Areas (NCAs) divide England into 159 natural areas each defined by a unique combination of landscape, biodiversity, geodiversity and economic and cultural activity. Chattenden Woods and Lodge Hill SSSI lies within the North Kent Plain NCA. NCAs are now used as 'areas of search' for the purposes of SSSI selection (where appropriate) in England. For more information on NCAs, see Natural England's website: http://www.naturalengland.org.uk/publications/nca/default.aspx

of the Blean Complex[2]. Within the woodland complex at Chattenden Woods and Lodge Hill, the largest contiguous block totals over 93 ha. Across the whole of the woodland complex over 100 woodland species have been recorded, 33 of which are woodland specialists, and many of which occur in the long-established semi-natural woodland.

The Guidelines provide the basis for selecting woodland SSSIs in terms of both their floristic composition and their structural form. The Guidelines (Chapter 2, paragraph 1.5, p74) state that:

> '*The total area of ancient semi-natural and other woodland selected as SSSIs in each AOS should be sufficient to protect an adequate extent of, as well as the full range of variation in, native woodland communities and features against future threats, independently of other land-use policies*.'

The proportion of England's woodland resource within SSSIs is much less than for many other habitats (between 10 and 25% depending on whether all woodland or ASNW is considered). In the North Kent Plain there are around 4,584 ha of extant woodland regarded as ancient. Of this nearly 25% comprises 'plantations on ancient woodland sites' (PAWS), woodlands that have usually been planted with non-native conifers, and/or converted to plantation stands with mixes of conifers and broadleaves for mainly commercial forestry.

The most extensive woodlands within the North Kent Plain NCA are the Blean Complex (1,511 ha). The total area of woodland within the Chattenden Woods and Lodge Hill SSSI is 160 ha and is of key significance in the NCA. In addition, there is good continuity with dense scrub habitat and neutral grassland.

In terms of judging the quality of individual woodland stands and sites, the Guidelines recommend a number of specific attributes which are applicable to Chattenden Woods and Lodge Hill. The Guidelines (Chapter 2, section 3.4.1, p.77) state that:

> '*…A basic presumption is that [Natural England] should seek to protect the largest areas available of all the major types in an AOS...*'

At over 160 ha Chattenden Woods and Lodge Hill forms one of the largest remaining blocks or connected stands of long-established and ancient semi-natural woodlands in the NCA. The woodland is important in terms of its total area but also as part of a functioning habitat mosaic. Natural England's emerging SSSI notification strategy for woodland endorses the approach to target the largest ancient and long-established woodland sites as priorities for SSSI selection and also emphasises the enhanced value of woodlands in combination with other adjacent semi-natural habitats. The Guidelines (Chapter 2, section 3.4.2, p.77) further state that:

> '*Whole woods may be judged...in particular by their size, relative naturalness and diversity*.'

The woodland occuring within the Chattenden Woods and Lodge Hill SSSI forms a number of large stands, most notably Great Chattenden Wood, which, in combination with adjoining woods, forms a contiguous block totalling over 93 ha. The woodlands occuring within the SSSI demonstrate a naturalness in species composition, comprising mainly of pedunculate oak standards with ash *Fraxinus excelsior* coppice, which is uncommon within the North Kent Plain NCA and in contrast to the Blean Complex, which is largely dominated by sweet chestnut *Castanea sativa* coppice and, in more natural stands, by hornbeam *Carpinus betulus* coppice.

When considering the species richness of a site the Guidelines (Chapter 2, section 3.4.3, p.77) state that:

> '*The standard recording form covering all woodland contains about 400 species. As a rough guide, sites with 100-200 of these (25-50% of the total possible) can be considered rich in absolute terms.'*

The botanical species richness of the woodlands within Chattenden Woods and Lodge Hill SSSI has been recorded in the 1995 and 2012 NVC surveys, which documented over 100 woodland

[2] Blean Complex is formed of four SSSIs: West Blean and Thornden Woods SSSI, East Blean SSSI, Church Woods SSSI and Ellenden Wood SSSI

species across the site, 33 of which are woodland specialists, and many of which occur in the long-established semi-natural woodland. The Guidelines (Chapter 2, section 3.4.4, p. 78) further state that:

> '*Coppiced woodland which is still worked on a regular rotation with a wide range of standard trees and mixed composition is to be preferred to single-species stands of neglected growth (40-70 years old) with few standards.*'

A large proportion of the woodland is actively managed, in particular Great Chattenden Woods and Berry Court Woods, which contain areas of recently coppiced woodland comprising ash, field maple *Acer campestre*, hazel *Corylus avellana*, and occasional hornbeam (see photograph 2 in section 6). Old boundary oak standards add diversity to the age structure of the woodland (see photograph 3 in section 6).

The importance of the woodlands within a habitat mosaic is recognised within the Guidelines (Chapter 2, section 3.4.5, p.78) which state:

> '*Woods which adjoin or are in a mosaic with other habitats tend to be more valuable than those sharply abutted by arable or improved grassland...Within the wood, clearings (natural glades and managed rides)...variations in drainage and abundance of dead wood increase the importance of the site through greater diversity.*'

The woodland feature adjoins areas of neutral grassland and dense scrub, which collectively form a network of semi-natural habitat that supports a range of species. Great Chattenden Woods, Berry Court Wood and Ash Wood contain an extensive network of wide rides (see photograph 4 in section 6), some of which lie wet and support a range of tall herbs (see photograph 5 in section 6). Berry Court Wood supports a pond on the lower slope adding further diversity to the habitat. Standing deadwood is generally well represented supporting invertebrates such as stag beetle *Lucanus cervus*.

The Guidelines (Chapter 2, section 4.4, p.79) states that the selection procedure within each Area of Search (AOS) should:

> '*Identify the best, usually the largest, candidate stands, but taking account also of relative naturalness and diversity...*'

The woodland is one of the best and largest examples of coppice with standards on London Clay within the North Kent Plain NCA. The woodland complex covers over 160 ha of semi-natural woodland, of which 53.59 ha is recorded as ancient semi-natural woodland on the Ancient Woodland Inventory, making Chattenden Woods and Lodge Hill the largest woodland complex of its type outside the Blean Complex, within the North Kent Plain. The woodlands occuring within the SSSI demonstrate a naturalness in species composition, comprising mainly of pedunculate oak standards with ash coppice, which is in contrast to the Blean Complex, which is largely dominated by sweet chestnut coppice and in more natural stands by hornbeam coppice.

2.2 Neutral grassland

Within Chattenden Woods and Lodge Hill SSSI, the area known as Rough Shaw comprises a mosaic of dense and scattered scrub on a north facing slope with approximately 4 ha of tall-herb neutral grassland along its upper margin. Within this area of grassland is 1 ha of unimproved species-rich neutral grassland characterised by the nationally scarce NVC type MG5 crested dog's-tail *Cynosurus cristatus* – common knapweed *Centaurea nigra* grassland, which conforms mainly to the MG5b lady's bedstraw *Galium verum* sub-community.

In England there is estimated to be around 7,300 ha of lowland meadow, of which <6,000 ha is MG5 (Robertson & Jefferson 2000). The majority is widespread but highly fragmented mainly across the lowlands. This habitat forms part of a semi-natural grassland resource that is collectively well represented in the England SSSI series; the Natural England State of the Natural Environment Report 2008 cites an estimate of 68% of the total resource is currently within the SSSI series.

However, unimproved neutral grassland habitat has undergone a considerable decline in the 20th Century, almost entirely due to changing agricultural practice. It is estimated that by 1984 in lowland England and Wales, semi-natural grassland had declined by 97% over the previous 50 years. Losses continued during the 1980s and 1990s, and have been recorded at 2 -10% per annum in some parts of England. The national decline has continued into the 21st Century; an assessment of the condition of semi-natural grassland types in non-statutory sites in England in 2005 found only 16% of lowland hay meadows outside of the SSSI series were considered to be in a favourable condition largely due to neglect or agricultural improvement.

The direct effects of eutrophication (artificial fertilisers) due to agricultural improvement, which over the past century and more have been one of the major factors in the disappearance and degradation of most types of lowland grassland in the UK, continue to make an impact on surviving stands of these vegetation types where the measure of protection through some sort of designation frame or beneficial influence on management is low. This is of particular importance still with the lowland meadows in the wider countryside of the UK, especially where they occur on more fertile and better-drained soils where the benefits of upgrade are more immediate and economic.

The Kent Habitat Survey 2003 recorded 71 ha of lowland meadows and a further 587 ha of species-rich 'other neutral grassland' of which 69 ha currently fall within SSSIs. There are two other sites in the North Kent Plain NCA notified for MG5 grassland: Thanet Coast SSSI and West Blean and Thornden Woods SSSI. Both are approximately 37 km to the east of Chattenden Woods and Lodge Hill SSSI.

The Guidelines (Chapter 3, section 1.4, p. 92) state that:

> '*In most counties, meadow grasslands with significant botanical interest now occupy less than 3% of the total, and even these remnants continue to dwindle...It is thus imperative to notify as SSSIs as many as possible of the good examples that remain*.'

A national strategic review of lowland neutral grassland conservation in 2005 undertaken by English Nature reaffirmed this principle and also concluded that, given the scarcity and vulnerability of these grassland types and evidence of their ongoing decline, all examples of the community type MG5 which are considered to satisfy the Guidelines should continue to be notified across its English range. This approach is further advocated in Natural England's draft SSSI notification strategy for lowland grassland.

The Guidelines (Chapter 3, section 3.3, p.93) state that:

> '*…those areas containing good examples of the NVC lowland grassland communities in Table 9 will qualify for SSSI selection on floristic merits.*'

The Guidelines (Chapter 3, section 3.5, p.94) further state that:

> '*Examples of grassland with any of the communities listed in Table 9, either singly or in mixtures, should be at least 0.5ha in area to qualify for selection.*'

Chattenden Woods and Lodge Hill SSSI supports an example of the NVC type MG5 crested dog's-tail *Cynosurus cristatus* – common knapweed *Centaurea nigra* grassland, which conforms mainly to the MG5b lady's bedstraw *Galium verum* sub-community. This type of grassland is now nationally scarce and is identified as being a lowland grassland community of high botanical interest in Table 9 on p.96 of the Guidelines. With 1 ha of MG5 grassland, the Chattenden Woods and Lodge Hill SSSI exceeds the minimum threshold area of 0.5 ha recommended by the Guidelines for grassland communities with high botanical interest.

Other lowland grassland types in the SSSI include stands of communities of generally lower botanical interest, namely MG1e false oat-grass *Arrhenatherum elatius* grassland, common knapweed *Centaurea nigra* sub-community.

The Guidelines (Chapter 3, section 3.1, p.93) state that:

> '*The NVC communities MG1, 6, 7, 9 and 10 are considerably modified types with generally low botanical interest...They can, however, be included within an SSSI where they form a mosaic with more important communities or a peripheral zone between higher-quality habitat and a clearly defined boundary*.'

The semi-improved grasslands of MG1 occur in a mosaic with scrub and the stands of MG5 grassland.

2.3 Nightingales *Luscinia megarhynchos*

Natural England's draft SSSI notification strategy for birds has identified breeding nightingales as a species not previously listed as a notified feature in its own right at any SSSI (although they are potentially included as a contributing species in woodland and scrub breeding bird assemblages). It is recommended that all known aggregations reaching or exceeding 1% of the GB population are notified. Improving coverage for nightingales, along with four other relatively scarce breeding woodland birds of conservation concern, is considered a priority.

2.3.1 Numbers of nightingales in Chattenden Woods and Lodge Hill SSSI

Chattenden Woods and Lodge Hill SSSI is used by nationally important numbers of Nightingales *Luscinia megarhynchos* during the breeding season, with 84 territorial males representing 1.3% of the GB breeding population. The map (see section 7) of nightingale territories recorded across Chattenden Woods and Lodge Hill SSSI during the 2012 national nightingale survey, which has been checked and verified by the British Trust for Ornithology (BTO), indicates that nightingales use both woodland coppice and scrub habitats, with the greater number using scrub. Twenty-seven of the 84 territories located in 2012 were within the previously notified SSSI.

In 1999, the nightingale population was concentrated within five counties in south-east England (Wilson *et al.* 2002). These five counties held 77% of the total population: Kent (26%), Suffolk (19%), Sussex (15%), Essex (9%) and Norfolk (7%). Available information indicates that the site is currently the most important location in Kent for nightingales, both in terms of numbers and density (Henderson 2012). Kent's position as the most important county for nightingales in Great Britain (as revealed by national surveys in 1980 and 1999) suggests that this, apparently the most important site in Kent, should receive highest priority for notification.

The Guidelines (Chapter 14, section 3.1, p.244) state that:

> '*Localities which normally contain 1% or more of the total British breeding population of any native species…are eligible for selection*.'

The basic principle of identifying important bird features based on numbers of individuals or pairs remains valid and continues to be the most widely applied approach to recognising and designating nationally and internationally important bird features. The use of 1% of a national or international population as a measure of the importance of a bird aggregation has a long history. It was first established as part of the criteria for selecting wetlands of international importance (Atkinson-Willes *et al.* 1982) and has been adopted by both the 1971 Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the 'Ramsar Convention) and the UK selection guidelines for Special Protection Areas under the EC Wild Birds Directive. It is therefore internationally accepted and, in the UK, is widely applied by the statutory nature conservation agencies and others, including the Royal Society for the Protection of Birds (RSPB) and the BTO.

There are four data sources for the numbers of breeding nightingales in the SSSI, the results of which are presented in table 1 (below):

- 1999 National nightingale survey (Results summarised in Henderson, 2012)
- 2009 Thomson Ecology Survey (Lodge Hill Environmental Statement addendum)
- 2010 Kent Ornithological Society (Lodge Hill Environmental Statement addendum)
- 2012 Validated results of the national nightingale survey (BTO)

The 1999 national nightingale survey was undertaken by volunteers using standardised survey techniques devised by the British Trust for Ornithology (BTO). Volunteer surveyors were asked to visit all known nightingale sites at least three times between mid-April and early June with at least two visits in May (Wilson *et al.* 2002). Observers were also asked to visit between nightfall and 08:00 hours when singing birds are most active. Data were collated, verified and analysed by BTO and were used to estimate the British population.

The 2009 Thomson Ecology survey was a general breeding bird survey of all habitats within the SSSI. This employed the BTO's Common Bird Census (CBC) method and the area was visited on five occasions from early March to mid July, with an additional evening survey of the Lodge Hill Training Area (Hyder Consulting UK 2012). Although the CBC method is rigorous and designed to identify individual territories of all breeding species, a survey limited to five visits (rather than the recommended ten) plus one evening visit is likely to underestimate territory numbers. Also, as the CBC method is not specifically targeted at the time of year and day when migratory nightingales are present and most active, it is likely to underestimate numbers in comparison to the results of a dedicated nightingale survey. The 2010 Kent Ornithological Society survey was specifically for nightingales and was similar in methodology to that of the Thomson Ecology survey (Hyder Consulting UK 2012).

The 2012 national nightingale survey was similar to the 1999 survey with the exception that a minimum of two early morning visits were requested between 21 April and 20 May and nocturnal visits were optional. Data are preliminary and subject to some limitations, particularly: not all results have been received; validation of territorial clusters is still required; and numbers have not been corrected to allow for under-recording (Henderson 2012). These limitations do not apply to the data for the SSSI, however, as these have been fully validated by the BTO.

Table 1 Nightingale surveys of Chattenden Woods and Lodge Hill

Survey	Date	Nightingale territories
National nightingale survey	1999	46*
Thomson Ecology Survey	2009	28
Kent Ornithological Society	2010	44
National nightingale survey	2012	84

*Chattenden Woods-Upnor Area

All surveys are considered to have been reliably undertaken and reported but it is probable that earlier surveys underestimate nightingale numbers because of methodological differences (see below). Only the 2012 survey results have been used to support the inclusion of nightingales as a feature of the SSSI.

The regular use of a site by a sufficiently high number of birds to merit SSSI notification is normally established by data collected over several consecutive years. Although this is frequently possible in the case of non-breeding waterbirds, which are monitored annually at many locations, it is rarely achievable for breeding species. For example, some scarce breeding species (e.g. breeding nightjars *Caprimulgus europaeus*, woodlarks *Lullula arborea* and Dartford warblers *Sylvia undata*, which are features of many SSSIs and Special Protection Areas) are subject to comprehensive monitoring only once every twelve years. Consequently, some SSSIs and SPAs have been designated for breeding species on the basis of one year's data only. In such cases regular use over a number of years can be established by reference to other data which, although not based on comprehensive surveys, can at least be used to indicate the presence and broad abundance of breeding birds over a number of years. This is a well established and accepted technique applied to cases where species are infrequently monitored.

This approach has been adopted for nightingales due to the lack of comprehensive, dedicated surveys preceding 2012. The data from preceding years, although not covering all parts of the site, or not employing surveys specifically designed to record nightingales, are still of value in that they provide firm evidence that breeding birds have been present in considerable numbers since at least 1999.

Sole use of the 2012 data to provide an estimate of nightingale numbers in the SSSI is justified because they are the most recent data, they cover the entire site, they are based on a methodology specifically devised to most accurately survey nightingales and they were collected by an expert surveyor (Hewson & Fuller 2012). The differences between numbers recorded in earlier years and those recorded in 2012 are thus due to varying methodology and coverage. Although it is possible that habitat improvements have occurred since the previous survey in 2010, it is extremely unlikely that scrub and woodland habitats could have changed to such an extent to account for such a dramatic increase over such a short time span (Hewson & Fuller 2012).

The estimate of numbers of birds present on the site in 2012 is considered to represent numbers present annually rather than an exceptional peak. Although above-average numbers of nightingales often occur in Britain in years with warm, dry weather in spring (Marchant *et al.* 1990) this is unlikely to be the case in 2012. The peak arrival time for nightingales in Britain is late April to early May which, in 2012, coincided with exceptionally cold and wet conditions. April was the coldest since 1989 and one of the wettest on record, with many regions recording twice the normal rainfall (British Wildlife 2012a). The cool, unsettled conditions persisted into May, with warmer conditions arriving only in the last week (British Wildlife 2012b). It is therefore highly unlikely that numbers of nightingales recorded in the SSSI in 2012 were unusually high. In conclusion, it is considered that the 2012 estimate most accurately represents the numbers of nightingales using the site in recent years and that it is a reliable basis for SSSI notification.

The 2012 national survey will not be published until early 2013 so we do not yet have a revised national population estimate. Comparison of the 2012 estimate for Chattenden Woods and Lodge Hill SSSI with the 1999 national population is precautionary because it is highly likely to <u>underestimate</u> the importance of the site, as indicated by the national population trends summarised below (section 2.3.2). The 2012 data for the SSSI assessed against the GB population of 6,700 territorial male nightingales estimated in 1999 (Wilson *et al.* 2002) are sufficient to identify the presence of a nationally important population of breeding nightingales at Chattenden Woods and Lodge Hill. Given the evidence of a significant national decline since 1999 it is likely that the SSSI population represents an even greater proportion of the current national nightingale population.

Nightingales at Chattenden Woods and Lodge Hill depend on a dense cover of shrubs in the form of coppiced woodland and scrub habitats. A wide range of structural diversity of scrub is required in a mosaic with open grassy areas. Nightingales have been recorded using other habitats at some locations, such as bare ground beneath mature trees, open scrub with dense nettle beds and open rides, and such habitats may also be important at Chattenden Woods and Lodge Hill. While nightingale territories tend to be centred on scrub of intermediate growth, it is probably normal for birds to use a home range encompassing a wider range of habitats while breeding (Holt *et al.* 2010). It is therefore important to maintain the extent, quality and diversity of all these habitats as each are likely to support different aspects of nightingale ecology.

Nightingales depend on a range of habitats in Britain, including scrub, woodland (including coppice), woodland edge, glades and rides, carr, new and young plantations and thick hedgerows. There has been a recent shift in habitat distribution of nightingales in Britain, with a greater proportion now occurring in scrub compared to woodland and coppice (Wilson *et al.* 2002). The proportion of British nightingales in coppice decreased from 13.6% to 8.6% between 1976 and 1999, and increased in scrub from 28.4% to 46.7% during the same period. This is not simply because of a reduction in availability of coppice (as much apparently suitable coppice is unoccupied) and it appears that scrub offers a more suitable habitat.

2.3.2 Analysis of nightingale population trends and implications for the SSSI

Nightingales at Chattenden Woods and Lodge Hill SSSI depend on a dense cover of shrubs in the form of coppiced woodland and scrub habitats. Maintaining the current numbers of nightingales in the SSSI will require detailed management planning and long-term habitat interventions. The key management principles are set out in the statement of Natural England's views about the management of the SSSI, which forms an annex to the notification document.

Annual monitoring shows that nightingales in the UK declined by 60% between 1995 and 2009 and by more than 90% since the 1960s (Risely *et al.* 2011; Holt *et al.* 2012), with the majority of the decline recorded since 1999. This reduction has been accompanied by a contraction in range towards south-east England. Nightingales in mainland Europe showed a steep initial decline in the 1980s followed by stability, although more recent declines have been reported in the north-west of the species' range (BirdLife International 2004; Gregory *et al.* 2007). This broader trend suggests that the population in Britain, on the edge of the species' range, may be particularly affected by large-scale population changes, perhaps due to lower productivity or reduced overwinter survival (Holt *et al.* 2012).

Had the magnitude of the decline in the UK nightingale population been apparent at the time of the last 'Birds of Conservation Concern' assessment, the species would have been placed on the red list rather than its current amber status. Whilst the rate of decline was greatest prior to 1978 (17% per annum), the species is still declining at a rate of approximately 3% per annum (Hewson & Fuller, 2012). These population declines have gone hand in hand with a range contraction towards the south-east of the country; thus populations in Kent, Sussex and other south-eastern counties are becoming more important for the national status of the species. Preliminary results from the latest BTO Atlas, with breeding season fieldwork conducted between 2008 and 2011, show that the species is being lost from some areas within even these core counties (Hewson & Fuller, 2012).

Preliminary data from the 2012 survey indicates that numbers in Kent have mirrored the national trend, declining by 26% since 1999 (Henderson 2012). Between 1999 and 2012 only three survey hectads have shown an increase in numbers, including the hectad TQ77 covering Chattenden Woods and Lodge Hill SSSI.

It is likely that a range of factors are responsible for the decline in nightingales in Britain. Habitat loss and deterioration due to rapid infrastructure and housing development, and reduced woodland management and increased deer populations are likely to be significant causes (Holt *et al.* 2012). It is also likely that increasing pressures in migratory and wintering areas due to low rainfall in the Sahel and perhaps agricultural intensification in West Africa have reduced adult survival, in common with other migratory species (Peach *et al.* 1991; Hewson & Noble 2009). The role of other potential effects such as increased predation and reductions in food quality and abundance are as yet unknown.

The SSSI provides an extensive area of scrub, woodland and associated habitats of established value to breeding nightingales. It is also situated in the core of the nightingale's range in Britain and its location in south-east England is optimal for attracting migrating birds arriving from northern France. Nightingales show strong site-fidelity in the breeding season with 40% of males returning to the same locations in Kent in subsequent years (Woodcock 1992; Wernham *et al.* 2002). Social behaviour is also an important factor in settlement at breeding locations, with the presence of a cluster of singing males more likely to stimulate other birds to settle (Holt *et al.* 2012). Given the substantial population at the site, it is likely that social attraction provides a strong stimulus for further settlement following the return of site-faithful males.

In conclusion, although maintaining habitat extent and quality should help to maintain numbers of nightingales, without a full understanding or control of all factors which may affect the species, both in Britain and abroad, it is not possible to predict future population trends. This is no less true for many other migratory bird species and does not imply that any less importance should be attached to protecting and securing appropriate management of nightingale habitat in Britain. Given that habitat loss and deterioration have at least contributed to the species' decline it is important to halt and reverse this effect whilst continuing to research and address other potential pressures. The favourable site attributes of Chattenden Woods and Lodge Hill SSSI indicate that it is highly likely to persist as a major breeding location for nightingales, subject to maintenance of current habitat extent and quality and wider population changes. The longer term future of any breeding bird population is unknown although the location of the site in the species' core area in Britain means that it is likely to persist longer than it would in a more peripheral location.

3. Assessment of the current condition of the Chattenden Woods and Lodge Hill SSSI

Site units*	Interest features	Reported condition**	Date of last assessment
1	Woodland, breeding nightingale	Favourable	3 August 2012
2	Woodland, breeding nightingale	Favourable	14 June 2012
3	Neutral grassland, breeding nightingale	Unfavourable – no change	22 August 2012
4	Woodland, breeding nightingale	Favourable	14 June 2012
5	Woodland, breeding nightingale	Favourable	14 June 2012
6	Woodland, breeding nightingale	Favourable	3 August 2012
7	Woodland, breeding nightingale	Favourable	3 August 2012
8	Breeding nightingale	Favourable	6 September 2012

*** Site units** are divisions used by Natural England for administrative purposes only.

**** Reported condition**
SSSIs are notified because of special biological or geological features. When these features are being managed so that their special nature conservation interest is being maintained they are said to be in favourable condition. This is a United Kingdom standard and the terminology and definitions are more fully described in 'A Statement on Common Standards Monitoring', produced by the Joint Nature Conservation Committee in 1998.

3.1 Reasons for adverse condition

The unimproved neutral grassland in unit 3 has been assessed as 'unfavourable – no change' due to the low frequency of positive indicator species, excessive cover of coarse grasses and the sward height being above the recommended level. Altering the grazing regime to increase the grazing pressure will address these issues.

4. Selection of 'operations requiring Natural England's consent'

Natural England selects operations from a master list when determining the list of operations requiring consent for individual SSSIs. The selection is based on the likelihood that the operations may cause damage to the special features that are the reasons for notification of the SSSI. As well as selecting operations from the master list, the precise wording of each operation may be tailored to suit the particular circumstances at the site.

It is not possible to predict every possible eventuality that may arise on a site but the aim is to identify all operations where it is reasonably foreseeable that, if carried out at certain times or in a particular manner somewhere within the SSSI, they are likely to damage the special interest features. The table below records at least one reason justifying the inclusion of each operation in the list for Chattenden Woods and Lodge Hill SSSI. It is not intended to be exhaustive and in most cases there will be other ways in which the specified operation is likely to cause damage.

Standard reference number	Type of operation	At least one reason for listing
1.	Cultivation, including ploughing, rotovating, harrowing and re-seeding.	Important habitats could be destroyed.
2.	Grazing and alterations to the grazing regime (including type of stock, intensity or seasonal pattern of grazing).	Important habitats sensitive to over or under grazing.
3.	Stock feeding and alterations to stock feeding practice.	Could lead to localised nutrient enrichment or poaching which would damage important habitats.
4.	Mowing or cutting vegetation and alterations to the mowing or cutting regime (such as from haymaking to silage).	Inappropriate mowing can damage or destroy the structural diversity of important habitats.
5.	Application of manure, slurry, silage liquor, fertilisers and lime.	Important habitats sensitive to nutrient enrichment.
6.	Application of pesticides, including herbicides (weedkillers) whether terrestrial or aquatic, and veterinary products.	Important habitats and associated flora/fauna all sensitive to these.
7.	Dumping, spreading or discharging of any materials.	Risk of obscuring/smothering important habitats.
8.	Burning and alterations to the pattern or frequency of burning.	Burning could damage or destroy grassland, scrub and woodland features, and disturb breeding birds.
9.	Release into the site of any wild, feral, captive-bred or domestic animal, plant, seed or micro-organism (including genetically modified organisms).	Could lead to unforeseen changes in community composition.
10.	Killing, injuring, taking or removal of any wild animal (including dead animals or parts thereof), or their eggs and nests, including pest control and disturbing them in their places of shelter.	Could lead to unforeseen changes in community composition.
11.	Destruction, displacement, removal or cutting of any plant, fungus or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungal fruiting body, leaf-mould or turf.	Damage to important habitats and direct loss of features.

Standard reference number	Type of operation	At least one reason for listing
12.	Tree and/or woodland management and alterations to tree and/or woodland management (including, planting, felling, pruning and tree surgery, thinning, coppicing, changes in species composition, and removal of fallen timber).	Woodland, dead wood features could be damaged or destroyed. All features vulnerable to incidental damage from unsympathetic tree and woodland management.
13a.	Draining (including the use of mole, tile, tunnel or other artificial drains).	Installation of drains could directly damage or destroy important habitats.
13b.	Modification to the structure of water courses (streams, springs, ditches and drains), including their banks and beds, as by re-alignment, regrading, damming or dredging.	Modification of structure of water courses could directly damage or destroy important habitats.
13c.	Management of aquatic and bank vegetation for drainage purposes.	Risk of direct and incidental damage to adjacent habitats.
14.	Alterations to water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes). Also the modification of current drainage operations (such as through the installation of new pumps).	Alterations to water levels and tables and water utilisation could directly damage or destroy important habitats.
15.	Infilling or digging of ditches, dykes, drains, ponds, pools, marshes or pits.	Could directly damage or destroy important habitats.
20.	Extraction of minerals including sand and gravel, topsoil, subsoil and spoil.	Direct loss of interest features and indirect negative impact on hydrology.
21.	Destruction, construction, removal, rerouting, or regrading of roads, tracks, walls, fences, hard-standing, banks, ditches or other earthworks, including soil and soft rock exposures or the laying, maintenance or removal of pipelines and cables, above or below ground.	Direct loss of or incidental damage to important habitats and associated flora/fauna.
22.	Storage of materials.	Risk of obscuring/smothering important habitats and associated flora/fauna.
23.	Erection of permanent or temporary structures or the undertaking of engineering works, including drilling.	Direct loss of or incidental damage to important habitats and associated flora/fauna.
26.	Use of vehicles or craft.	Vehicles can erode and compact soils and vegetation.
27.	Recreational or other activities likely to damage or disturb the features of special interest or their habitats.	Could have a negative impact on the site's habitats, and there is a risk of disturbance to breeding birds.
28a.	Game and waterfowl management and hunting practices and alterations to game and waterfowl management and hunting practice.	Inappropriate location and types could damage important habitats, lead to unforeseen changes in community composition and disturb breeding birds.

5. Site unit maps

The maps on the following pages show the provisional boundaries of the site units, which are divisions used by Natural England for administrative purposes only.

Insert site unit map here – A3 landscape format in colour

6. Photographs

Insert aerial photo here – A3 landscape format in colour

Photograph 2: View across area of recent coppice within Great Chattenden Woods.

Photograph 3: Oak standard within recent coppice in Great Chattenden Woods.

Photograph 4: View south across Ash Wood.

Photograph 5: Wet ride in Ash Wood.

7. Nightingale territory map

The map on the following page shows the distribution of nightingale territories at Chattenden Woods and Lodge Hill recorded by the BTO National Nightingale Survey 2012. Note that the 'site boundary' identified on the map refers to the land proposed to be allocated for development in Medway Council's draft Core Strategy, not to the SSSI. All territories shown on the map fall within the SSSI boundary.

Insert nightingale territory map here – A4 portrait format in colour