Report

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Purbeck Core Strategy, Implications of additional growth scenarios for European Protected Sites

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Summary

The extensive and possibly unique degree of biodiversity and landscape designations in Purbeck, coupled with the occurrence of a large number of rare or protected species, leads to considerable difficulty in providing additional new homes in this sensitive area. In this report we consider the potential impacts of additional levels of housing development, above that already set out in the Core Strategy (preferred options). We consider five housing scenarios provided by Purbeck District Council and the implications of these with respect to designated European sites and the Habitat Regulations. The five scenarios range from 2650 to 4360 total dwellings; there are 2400 in the Core Strategy and therefore the five scenarios range from a minimum of 250 additional dwellings to an additional 960. The five scenarios include a lower growth and a higher level growth scenario (both of which involve increased levels of housing across the District). The three remaining scenarios match the higher level growth scenario with the addition of a) 1000 houses at Wool; b) 500 houses to the west of Wareham; c) 500 houses at Lytchett Minster.

The five scenarios all have additional impacts to European sites above those already identified for the Core Strategy. Such levels of development may not be currently possible within the District without contravening the Habitat Regulations. The main issues are set out below. The

Recreational and 'Urban' Pressure on the Heaths

New housing results in a redistribution of people and potential increase in local residents. Recreational use of the heaths, for dog walking and other activities, has particular impacts. More 'urban' heaths tend to have a range of impacts that include increased incidence of fire. The higher growth scenario plus 500 houses at Wareham will is predicted to result in the highest recreational use of heaths, more than the higher growth scenario plus 1000 houses at Wool or the higher growth with 500 houses at Lytchett Minster. The heaths around Wareham are particularly vulnerable and the options for alternative sites are very limited: we cannot see how alternative space could be secured to successfully divert access here. We cautiously suggest that there could be potential to provide alternative green space to the south of Wool that, with a range of other measures, could be sufficient to provide mitigation for the additional growth and housing at Wool. These mitigation measures will need careful planning and a substantial new area of green space will need to be in place prior to any building works. Development at Lytchett Minster will result in increases in recreational pressure to sites such as Wareham Forest, where options to provide on-site mitigation measures or alternative visitor locations currently seem limited.

Increased Recreational Pressure on Poole Harbour SPA / Ramsar

Recreational use of the shore and water can result in disturbance to waterfowl. A gradual increase in water-based and shore-based activities may interact and in synergy reduce the ability of the site to maintain its internationally important bird populations. Climate change increases the uncertainty. Visitor data for the harbour is limited and it is therefore difficult therefore to fully assess the different scenarios. Lytchett Minster is close to sites such as Rockley and Ham Common, where there are launching facilities for small craft. Development in Wareham may result in increased pressure at Swineham Point/Wareham Channel. At Studland, the area around Bramble Bush Bay is of particular concern as access appears to be increasing and the area is particularly important for birds. Swanage is the closest settlement to this area within the District. Mitigation measures should resolve any potential adverse effects. Such mitigation should include control of parking along Ferry Road and this may be very difficult to secure.

Increased Recreational Pressure to Coastal Sites

The Purbeck coast supports coastal habitats such as limestone grassland and sand dunes which are protected by a number of different SAC designations. Recreation can result in impacts such as dog fouling and trampling.

All of Purbeck is relatively close to the coast; Swanage is the main settlement where housing is particularly close to coastal SAC sites.

Given the existing visitor infrastructure and high levels of visits from tourists, the links between local development and adverse effects are more tenuous than for the heathland sites and for Poole Harbour. The provision of good dog walking facilities (i.e. attractive walks with ample space for dogs to be off the lead safely) on the outskirts of Swanage and other mitigation measures are discussed. Such measures would be necessary within the core strategy and additional capacity would be required for any additional growth at Swanage.

Increased Recreational Pressure on the New Forest

The New Forest draws visitors from a wide radius and residents in the eastern part of Purbeck District may regularly visit the New Forest, and there may be adverse effects on the designated interest features of the New Forest SAC/SPA/Ramsar. Considering the distance to the New Forest and the availability of high quality greenspace within and close to Purbeck, it is unlikely that the housing developments alone will result in significant increases to the number of visitors to the New Forest National Park. Mitigation measures, implemented strategically in conjunction with other local authorities, will eliminate any in-combination effects.

Water Quality

Existing discharges from sewage treatment could already be having an adverse effect on the integrity of the Poole Harbour SPA and RAMSAR site. Any increase in settlement size away from Swanage will increase discharges into Poole Harbour and could add to the nutrient load which is already unacceptably high. Any additional development will require guarantees from Wessex Water that the Wareham sewage treatment works and the Lytchett sewage treatment works will have adequate licensed capacity and that there will be suitable measures put in place that will prevent an increase in the overall nutrient loads entering the Harbour either alone or in combination with other discharges.

Water Abstraction

It seems probable that in the longer term Wessex Water can guarantee water supplies for increased levels of development, but will need to have made improvements to the network, recorded the expected declines in nitrate pollution of groundwaters and achieved water saving measures with their customers before doing so. Any future development in Purbeck will need to be phased in order to be consistent with Wessex Water's timetable for these measures.

Air Quality

There is uncertainty relating to the additional development scenarios and the level of impact on the European sites. Where roads cross European heathland sites, there can be direct deposition of nitrogen onto these sites. Such deposition is damaging and can result in changes in vegetation communities and plant growth. Direct effects will be greatest for developments which are distributed within those settlements with road links which cross or run adjacent to European heathlands. The effects will be magnified where residents commute between home and workplace and use such roads to do so. The main settlements and key service villages where this is likely to cause the greatest impacts are Wareham, Swanage, Upton, Lytchett Minster, Bere Regis, Bovington, Corfe Castle and Sandford. On the information available it seems likely that an additional large allocation of housing at Wool will be less damaging than at Wareham or Lytchett. Some mitigation measures are possible.

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Acknowledgements

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We would also like to acknowledge useful discussion, advice and comment from: Jayne Albery (Forestry Commission), Rob Brunt (Dorset Wildlife Trust), Laurence Degoul (Forestry Commission), David Hodd (National Trust), Dante Munns (RSPB), Andrew Nicholson (Natural England), Phil Sterling (Dorset County Council) and Mark Street (Forestry Commission).

The models predicting visitor rates to the heaths were developed by Footprint Ecology in partnership with Ralph Clarke (then CEH).

1. Introduction

Background to this report

1.1 The Draft Regional Spatial Strategy (SWRA 2006) set a housing requirement of 2,100 dwellings for Purbeck District. Proposed Changes to the RSS were published in July 2008 and increased the housing requirement from 2,100 to 5,150 dwellings by 2026. This figure of 5,150 included 2,750 dwellings at Area of Search 7B (near Lytchett Minster) and 2,400 dwellings in the rest of the District, outside the Strategically Significant City or Town (SSCT).

1.2 The scale of development at Lytchett Minster (the 2,750 dwellings) was such that there are clear potential adverse effects on the integrity of European Protected Sites (see White *et al.* 2008), and there is currently no satisfactory way of avoiding or mitigating against these impacts. Purbeck District Council has therefore continued to progress its Core Strategy, considering only 2,400 dwellings. The core strategy (preferred options) was subject to public consultation in the autumn of 2009. The strategy sets out a preferred option and two alternative options, for the distribution of the 2,400 houses within the District. A Habitat Regulations Assessment (HRA), also produced by Footprint Ecology (Lake *et al.* 2010), accompanied the preferred options and identified a number of adverse effects on Eurpoean Protected Sites arising from the levels of development that were assessed.

1.3 Advice from the Government Office South-west (GOSW) to Purbeck District Council has since queried the appropriateness of the 2,400 dwellings in the core strategy. GOSW has suggested that some of the needs of the Poole and Bournemouth Housing Market Area, that would have been met at Area of Search 7B (the 2,750 houses near Lytchett Minster), should still be sought in Purbeck.

1.4 In taking forward the Preferred Option, it is also necessary for Purbeck District Council to update the housing requirement to reflect the 2008-09 monitoring year and the year 2026-2027 (i.e. the 15 year period from adoption). Further consideration of increased dwelling numbers (above the 2,400) and the implications in terms of the Habitat Regulations are therefore necessary.

1.5 This report has been commissioned by Purbeck District Council to sit alongside the Habitat Regulations Assessment and consider additional levels of development, above the 2,400 dwellings, assessed in the HRA. Purbeck District Council has provided details of five different scenarios which are considered in detail within this report. These scenarios are:

- 2650 dwellings “lower level growth”
- 3360 dwellings “higher level growth”
- 4360 dwellings (as the higher level growth (2), plus a further 1000 dwellings at Wool)
- 3860 dwellings (as the higher level growth (2), plus a further 500 dwellings at Wareham)
- 3860 dwellings (as the higher level growth (2), plus a further 500 dwellings at Lytchett Minster)

1.6 The lower growth and higher level growth scenarios are each taken from the Character Area Development Potential Study undertaken by Purbeck District Council in 2009[1]. This study looked at areas within the main settlements that had the same prevailing character and identified how much new housing had come from each in the last five years and where such circumstances could be repeated. These totals were discounted by 50% (i.e. allowing for land not coming forward) to give the lower level growth scenario.

1.7 Scenarios 3 -5 are based on the higher level growth scenario and in addition consider development at specific locations, to the south of Wool, tothe west of Wareham and at Lytchett Minster. These specific locations are ones which have previously come forward from developers.

Core Strategy HRA

1.8 Purbeck District encompasses one of the most special and heavily protected environments in the country and one which is of exceptional importance for nature conservation. Some 21% of the area of the District is internationally important for nature conservation, including the whole of the Dorset Heaths (Purbeck & Wareham) and Studland Dunes SAC. The largest part by district of the Dorset Heath SAC/Dorset Heathlands SPA and Ramsar site and similarly the largest part of Poole Harbour SPA/Ramsar site, and the majority of the Isle of Portland to Studland Cliffs SAC, fall within the District.

1.9 Given that so much of the District is protected and of such importance there are potential conflicts with the nature conservation interest and the need for future development within the District. The core strategy for Purbeck is currently at the preferred options stage and sets three development options. The preferred option would see development distributed around the main settlements. The two alternative options put forward are to concentrate greenfield growth at Wareham or to focus growth at Swanage.

1.10 The accompanying HRA identified the following potential adverse effects, that without mitigation measures, would be likely to occur as a result of the Core Strategy alone, either as single elements or as a combination of elements within the plan:

- Impacts of new housing and recreational pressure on the Dorset Heaths (the Dorset Heaths SAC, Dorset Heaths (Purbeck & Wareham) and Studland Dunes SAC, Dorset Heathlands SPA, Dorset Heathlands Ramsar).
- Increased recreational pressure on Poole Harbour SPA/Ramsar from shore-based and water based activities likely to increase as a result of new housing.
- Increased recreational pressure to coastal sites as a result of enhanced transport links and housing (Isle of Portland to Studland Cliffs SAC, St Alban's to Durlston Head SAC).
- Increased recreational pressure to the New Forest (New Forest SPA/SAC/Ramsar) as a result of increased population and enhanced transport links within Purbeck.

[1]http://www.purbeck.gov.uk/pdf/PDC%20Character%20Area%20Development%20Potential%20Formatted%20091105.pdf

- Water issues, including abstraction and water quality, affecting Poole Harbour SPA/Ramsar and Dorset Heaths SAC, Dorset Heaths (Purbeck & Wareham) and Studland Dunes SAC, Dorset Heathlands SPA, Dorset Heathlands Ramsar).
- Fragmentation and pressure on heathland sites (Dorset Heaths SAC, Dorset Heathlands SPA/Ramsar) as a result of employment allocation (Holton Heath).
- Air quality issues as a result of increased traffic (Dorset Heaths SAC, Dorset Heaths (Purbeck & Wareham) and Studland Dunes SAC, Dorset Heathlands SPA/Ramsar and Poole Harbour SPA/Ramsar).

Our Approach in this Report

1.11 European sites are protected through the provisions of the Conservation of Natural Habitats and Species Regulations 2010 (SI no. 490), which transpose the requirements both the Habitats Directive (Council Directive 92/43/EEC) and the Wild Birds Directive (Council Directive 79/409/EEC) into UK law. Regulation 61 implements the provisions of Article 6(3) of the Habitats Directive and ensures that competent authorities can only agree to a plan or project which is likely to have a significant effect (alone or in-combination) after having ascertained that it will not adversely affect the integrity of any European site (subject to imperative reasons of over-riding public interest and consideration of alternative solutions). Regulation 61 applies to all European sites and therefore covers both SACs and SPAs (listed Ramsar features are also protected as a matter of government policy).

1.12 When considering impacts associated with a plan, it is necessary to appreciate the difference between impacts that can be associated with the plan (as referred to in Article 6(3) of the Habitats Directive and regulation 61 of the Habitats Regulations), and impacts that cannot reasonably be associated with a plan or project which should be addressed either through 'necessary conservation measures' as required by Article 6(1) or 'appropriate steps' as required by Article 6(2).

1.13 General impacts which cannot be reasonably linked to 'plans or projects' considered under Article 6(3) should be addressed through the provisions of Articles 6(1) and (2) and funded appropriately. It is, however, conceivable, that measures or steps taken under Article 6(1) and / or 6(2) could have the effect of preventing all relevant future deterioration and disturbance, including that potentially and otherwise arising as a result of new plans or projects, and thereby rendering Article 6(3) mitigation measures unnecessary. This scenario, for example where access to part of a site is closed altogether, is likely to be an exception rather than the rule, but needs to be recognised as a possibility.

1.14 In this report we therefore consider the additional levels of development as though it were included within the Purbeck District's Core Strategy, and we consider the higher growth scenarios specifically in relation to European sites. This report is not an HRA and simply highlights the relevant considerations and issues relating to the higher growth scenarios.

1.15 Our approach is to link to the core strategy HRA, which has already set out the issues and potential adverse effects associated with the scale of development proposed. The HRA provides context for this work. We structure this report according to the adverse effects set out in the HRA (i.e. the bullets in paragraph 1.10), which form the main headings within this

report. For each impact we assess the extent to which increasing the number of houses will lead to a greater impact.

1.16 The HRA also identifies potential mitigation measures that might be required; these measures the District Council may need to set in place as the Core Strategy moves towards submission. For each of the adverse impacts we therefore refer back to the mitigation measures set out in the Core Strategy HRA, and we discuss what additional measures (if additional mitigation is possible) may be required as a result of the increased levels of housing.

2. Impact of new housing and recreational pressure on the heaths

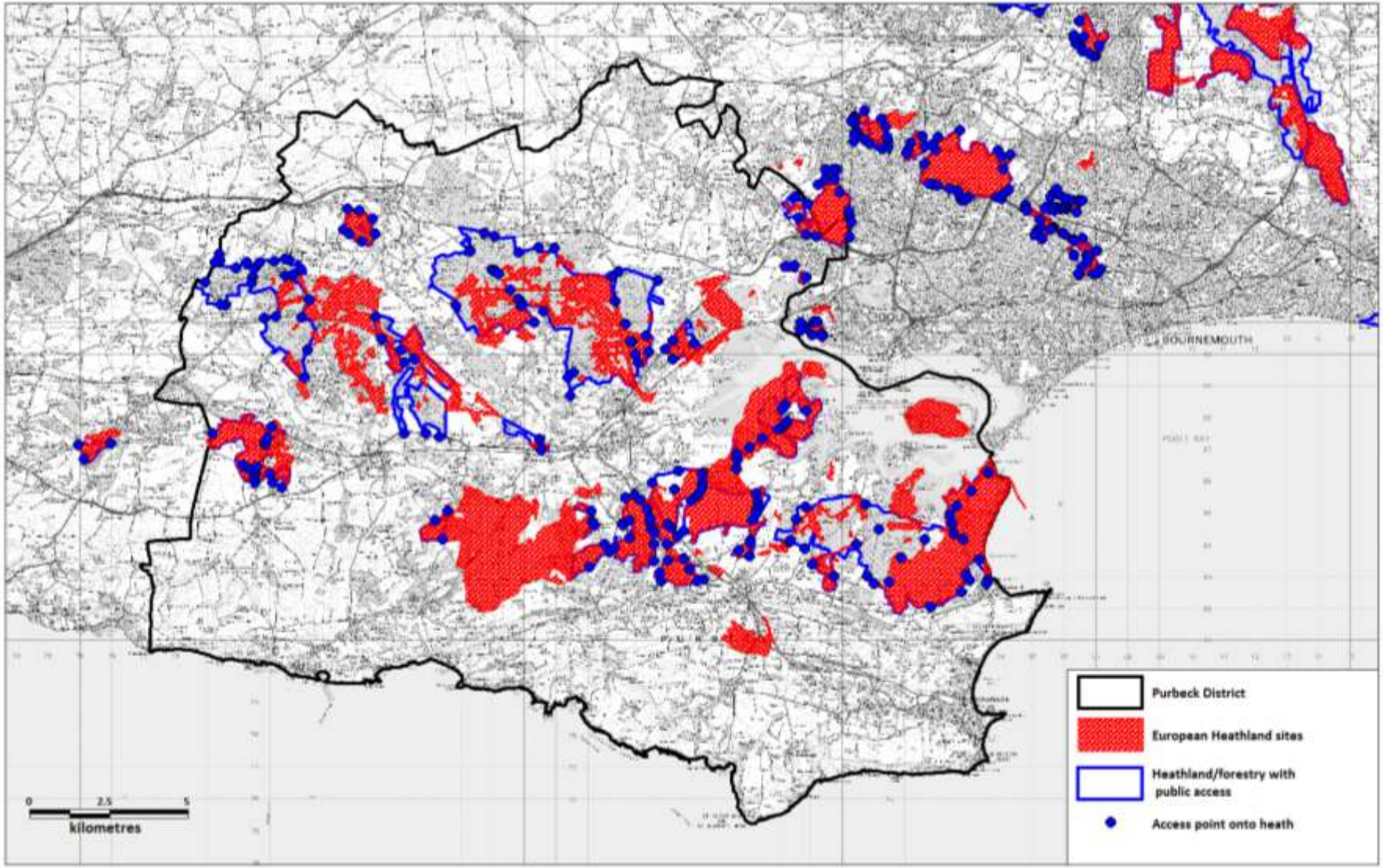
Introduction

2.1 The impacts of development adjacent or close to heaths have been the subject of much research. The wide range of impacts includes disturbance to ground nesting birds, increased fire incidence, fragmentation, dog fouling and trampling. These impacts are reviewed in various general sources (Haskins 2000; Liley *et al.* 2006; Underhill-Day & Liley 2006) and in relation to Purbeck are set out in the HRA (Lake *et al.* 2010) and also by White *et al.* (2008).

2.2 The impacts are relevant to the SPA and SAC designations as they relate to a range of species and habitats. In Purbeck many of the heaths are large, managed by nature conservation bodies and have a rural feel. Such sites are particularly vulnerable, compared for example to the heathland sites in the conurbation of Poole and Bournemouth. The rural sites are some of the most important for nature conservation and unlike the more urban sites there is no existing infrastructure to cope with development pressures (such as increased fire risk, increased visitor pressure etc.).

Overview of heathland sites in relation to settlements (with a focus on Wool, Wareham and Lytchett Minster)

2.3 Map 1 provides an overview of the District, showing the European sites that are heathland (SPA/Ramsar/SAC) and where there is access onto the heaths. The access is mapped so as to show all the areas around the heathland sites (yet contiguous) that have public access. It can be seen that much of the District lies within a relatively short distance of the heaths, with very little of the District beyond 5km from a heathland site.



Map 1: Purbeck District, heathland sites and access onto heaths. Crown copyright, All Rights Reserved. Contractor Licence Number: 100046223.

2.4 Wool is surrounded by European Protected Sites (Map 2). Many of these are heathland sites: as the map shows the majority of the heathland blocks lie to the west, north and east, while the land directly to the south is largely farmland and woodland. The blue polygons represent patches of land that are connected to, or are part of the European Protected heathland sites and have public access. It can be seen that there are large blocks of heathland to the north (Bovington) and east (Lulworth Ranges) that are owned and managed by the MOD and that have little or no public access.

2.5 The most significant heathland sites, with public access, in the vicinity of Wool are:

- **Winfrith Heath SSSI** (encompassing Winfrith, Tadnoll and Knighton Heaths). Most of the site has public access and is managed by the Dorset Wildlife Trust. There are numerous access points and informal parking locations along the various roads that cross the heath. The nearest part of the site (with public access) is c.2.3km (as the crow flies) and 3.7km (by road) from the Burton Cross roundabout. The drive by road is around 3 minutes.

- **Stokeford Heaths SSSI**. Lying to the north-east of Wool the SSSI contains a number of fragments including some patches of heathland within Hethfelton Plantation, easily accessed by road from Wool. The main parking location for Hethfelton is 1.3km (as the crow-flies) from the centre of Wool and c.2.3km (by road). The drive takes around 2 minutes.

- **Coombe Heath SSSI**. Also managed by the Dorset Wildlife Trust, this site is accessed by a narrow, dead-end lane with limited parking. The site is not widely promoted and is difficult to find. The edge of the heath lies c.2.7km (as the crow-flies) from the centre of Wool and is c.5.4km by road. The drive takes around 5 minutes.

- **Turners Puddle Heath SSSI**. This SSSI is within the large forestry block (Moreton Plantation) to the north of Wool and the SSSI is largely tucked behind the MOD compound at Bovington and access is difficult. The nearest part of the heath is c.2.7km from the centre of Wool and is about 4.1km by road. The drive time is around 5 minutes.

2.6 The number of access points, amount of parking and number of Annex I birds within different distance bands from Wool are summarised in Table 1. The table highlights the number of different options for access onto heathland sites in the vicinity of Wool and the number of bird territories within the same kind of distance. The key sites for the Annex I birds include Winfrith Heath, Coombe Heath and Hethfelton. Lulworth Ranges and Bovington also hold a large proportion of the breeding bird interest.

2.7 The last national survey for nightjars (conducted in 2004) recorded nightjars in all the large commercial forestry blocks around Wool and on the heathland sites, with, for example 22 territories at Winfrith, 5 at Coombe Heath and 12 within Hethfelton Plantation. The national survey for woodlarks in 2006 recorded woodlarks at Winfrith (1 territory) and Coombe Heaths (2 territories). The national survey for Dartford warblers (also 2006) recorded birds at Winfrith (20 territories) and Coombe Heath (2 territories).

Table 1: Number of access points, parking spaces and Annex I bird territories at different distance bands from Wool. Bands as Map 2. Annex I bird data are taken from the respective national surveys (2004 for nightjar, 2006 for woodlark and Dartford warbler).

	Distance from Wool (m)										Total within 5km
	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Number of access points onto heath	0	0	1	8	9	3	2	3	2	3	31
Number of car-parking spaces (heath access points)	0	0	2	35	16	7	11	19	2	5	92
Number of nightjar territories	0	0	1	6	20	22	24	27	16	23	139
Number of woodlark territories	0	0	0	1	2	2	7	9	5	4	26
Number of Dartford warbler territories	0	0	0	4	15	9	10	9	15	10	72

2.8 Wareham is surrounded by European Protected Sites, and there are extensive tracts of heathland in all directions, especially to the north and east (Map 3). Key sites with public access that are around Wareham include:

- **Wareham Forest:** the forest lies to the north of the town and while it is only the open areas that are actually designated, the entire Forest block supports important numbers of Annex I birds, especially nightjars and woodlark. The Forest contains numerous small car-parks and access points within easy access from Wareham.
- **Worgret Heath:** this small patch of heathland lies directly to the west of Wareham. The site is owned and managed by the Arc Trust. Parking is limited and difficult.
- **Edge of the Lulworth Ranges**: there are three patches of heath with public access that lie along the eastern edge of the large block of heathland that extends across the Lulworth Ranges. None of the sites are well known or promoted. The most significant site is Grange Heath, which is owned and managed by the RSPB.
- **Stoborough and Creech Heaths**: this large block of heathland lies due south of Wareham. Most of the area is owned and managed by the RSPB and there is also a small area owned and managed by the Arc Trust. There is roadside parking and access along the Furzebrook road.
- **Blue Pool:** this site is a tourist attraction and also widely used by local people. Around Blue Pool there is a charge for access and there is a cafe, children's playground and series of walks. There are also areas of heath with free, open access. There is a bridleway that runs east-west towards Norden that is popular with cyclists.
- **Arne/Hartland/Stoborough**: the area to the south-east of Wareham is an extensive tract of heathland that includes a range of heathland habitats. The Arne area is owned and managed by the RSPB. Natural England owns and manages a significant land area (Hartland and Stoborough NNR) and the National Trust also has an extensive land

holding. There is a range of facilities including roadside parking, car-park and a small visitor centre at Arne.

2.9 The number of heath access points and parking availability on the heaths at different distance bands from the west of Wareham are summarised in Table 2. The table also summarises the number of Annex I bird territories within the 5km radius. It can be seen that there are particularly high numbers of all three species: the 169 nightjar territories represents 3.4% of the national survey total in 2004; the 58 woodlark territories represents 1.7% of the national survey total in 2006 and the 152 Dartford warbler territories account for 4.6% of the national survey total in 2006. These bird territories are mostly within areas with public access.

2.10 Map 4 shows the principal heathland sites in relation to drivetime isochrones centred on the roundabout on the Wareham by-pass directly to the west of the town. It can be seen that Stoborough Heath, Hartland/Stoborough NNR and most of Wareham Forest all lie within 10 minutes drivetime of this roundabout.

Table 2: Number of access points, parking spaces and Annex I bird territories at different distance bands from the west of Wareham. Bands as shown in Map 3. Annex I bird data are taken from the respective national surveys (2004 for nightjar, 2006 for woodlark and Dartford warbler).

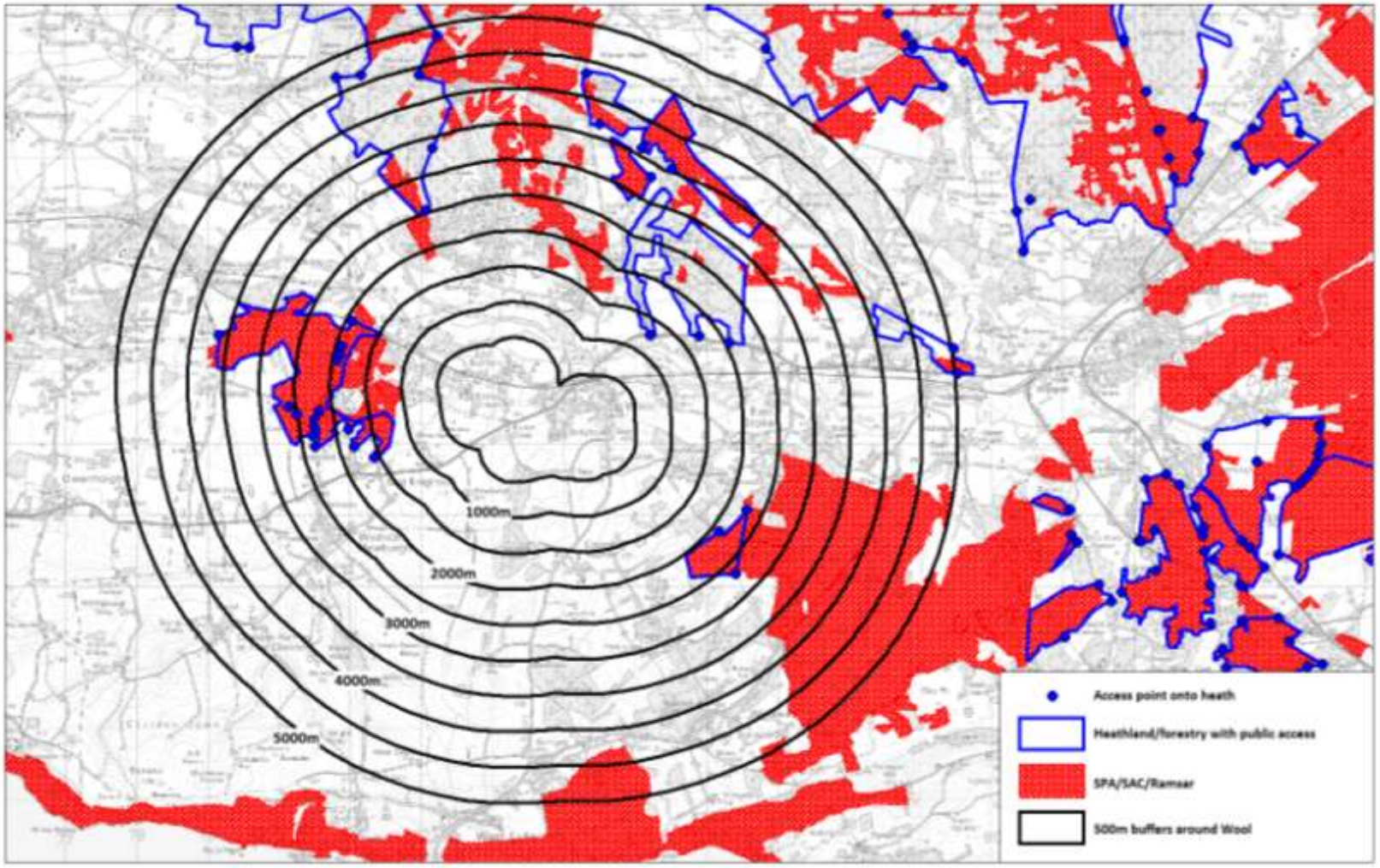
	Distance from Wareham(m)										Total within 5km
	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Number of access points onto heath	0	0	5	5	10	9	20	6	12	11	78
Number of car-parking spaces (heath access points)	0	0	3	4	67	13	20	64	12	25	252
Number of nightjar territories	0	3	2	3	16	28	28	24	25	40	169
Number of woodlark territories	0	0	3	5	6	7	10	11	6	10	58
Number of Dartford warbler territories	0	0	1	6	15	37	35	20	13	25	152

2.11 Lytchett Minster is in the north-east of the District. Heathland sites nearby or close to Lytchett Minster include Upton Heath, Ham Common, Sandford and Wareham Forest. There are extensive areas of heathland to the east, south and west of the village (Map 5). Upton Heath is managed by the Dorset Wildlife Trust. Access to the heath from the western side is not well publicised or easy to find, but there are footpaths and some (albeit limited) parking. At the northern side is Beacon Hill, which is an education centre and the office for Wildlife Trust staff and the Urban Heathlands Project. There is parking and a bridleway onto the heath here. Ham Com is within Poole Borough and there is a large car-park with access onto Poole Harbour shoreline. There is also parking within Rockley Sands and there are circular walks that encompass the common and shoreline.

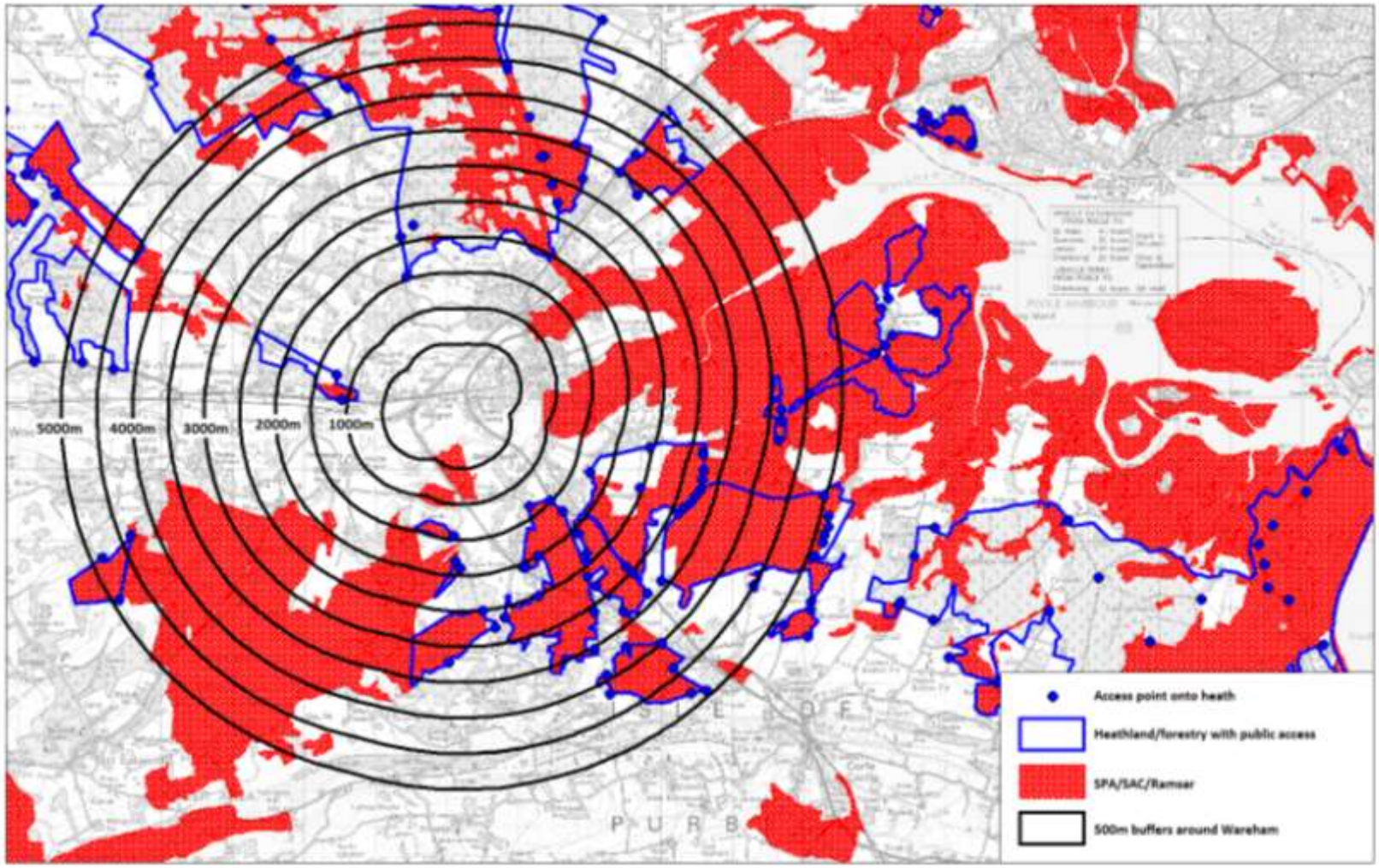
2.12 The number of heath access points and parking availability on the heaths at different distance bands from the west of Wareham are summarised in Table 2. The table also summarises the number of Annex I bird territories within the 5km radius. It can be seen that the numbers of birds present in the surrounding 5km are less than those for Wareham and Wool, but the numbers are still considerable. There is also extensive access onto the adjacent heathland areas – in fact within 5km of Lytchett Minster there are more car-parking spaces (for heath car-parks) than within the same radius of Wool or Wareham.

Table 3: Number of access points, parking spaces and Annex I bird territories at different distance bands from the Lytchett Minster. Bands as shown in Map 5. Annex I bird data are taken from the respective national surveys (2004 for nightjar, 2006 for woodlark and Dartford warbler).

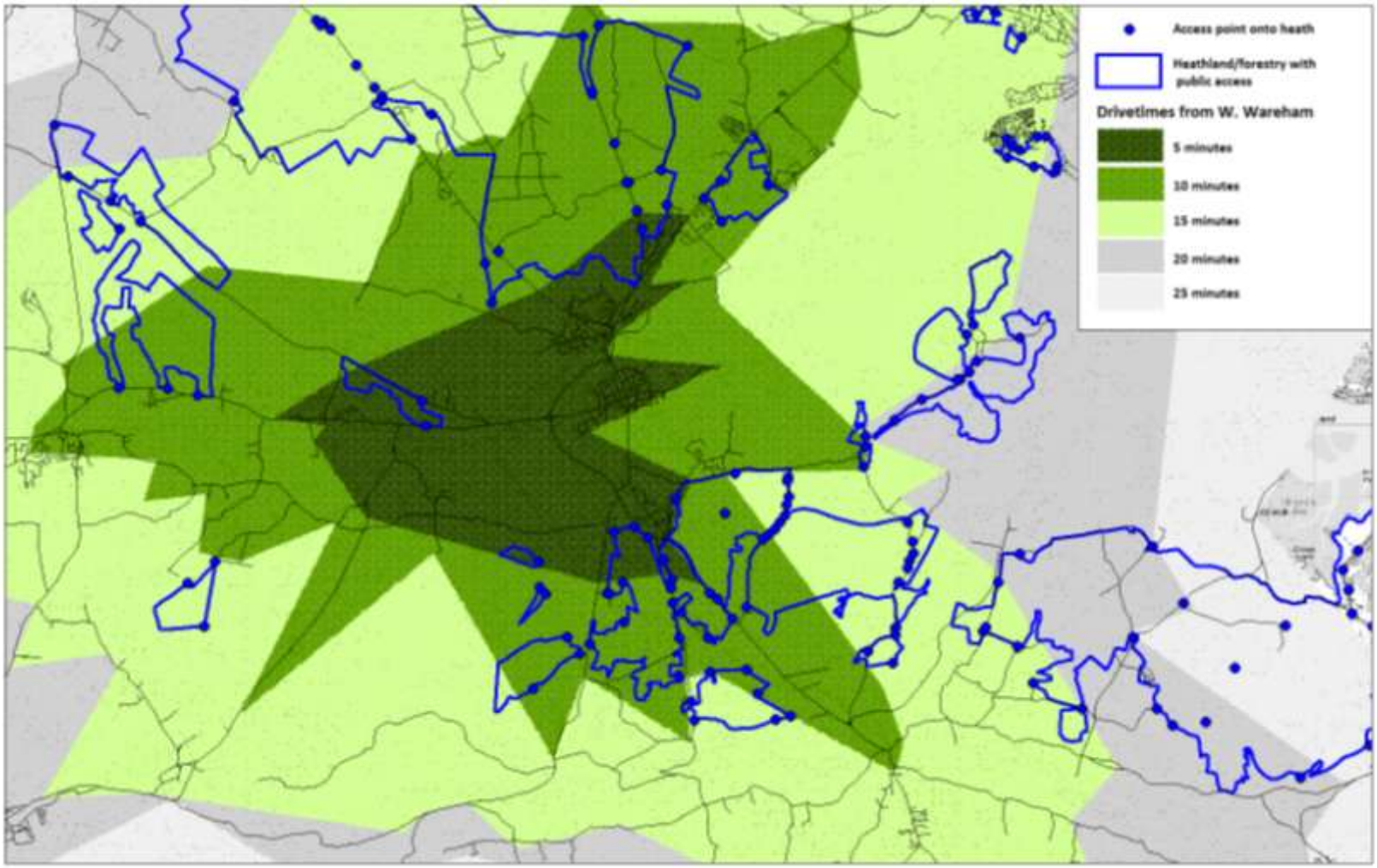
	Distance from Lytchett Minster(m)										Total within 5km
	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Number of access points onto heath	0	0	2	2	3	8	8	11	6	7	47
Number of car-parking spaces (heath access points)	0	0	10	9	7	60	112	41	34	13	286
Number of nightjar territories	0	0	7	8	1	5	8	10	13	9	61
Number of woodlark territories	0	0	3	4	1	3	0	0	1	9	21
Number of Dartford warbler territories	0	0	6	5	3	11	17	8	18	11	79



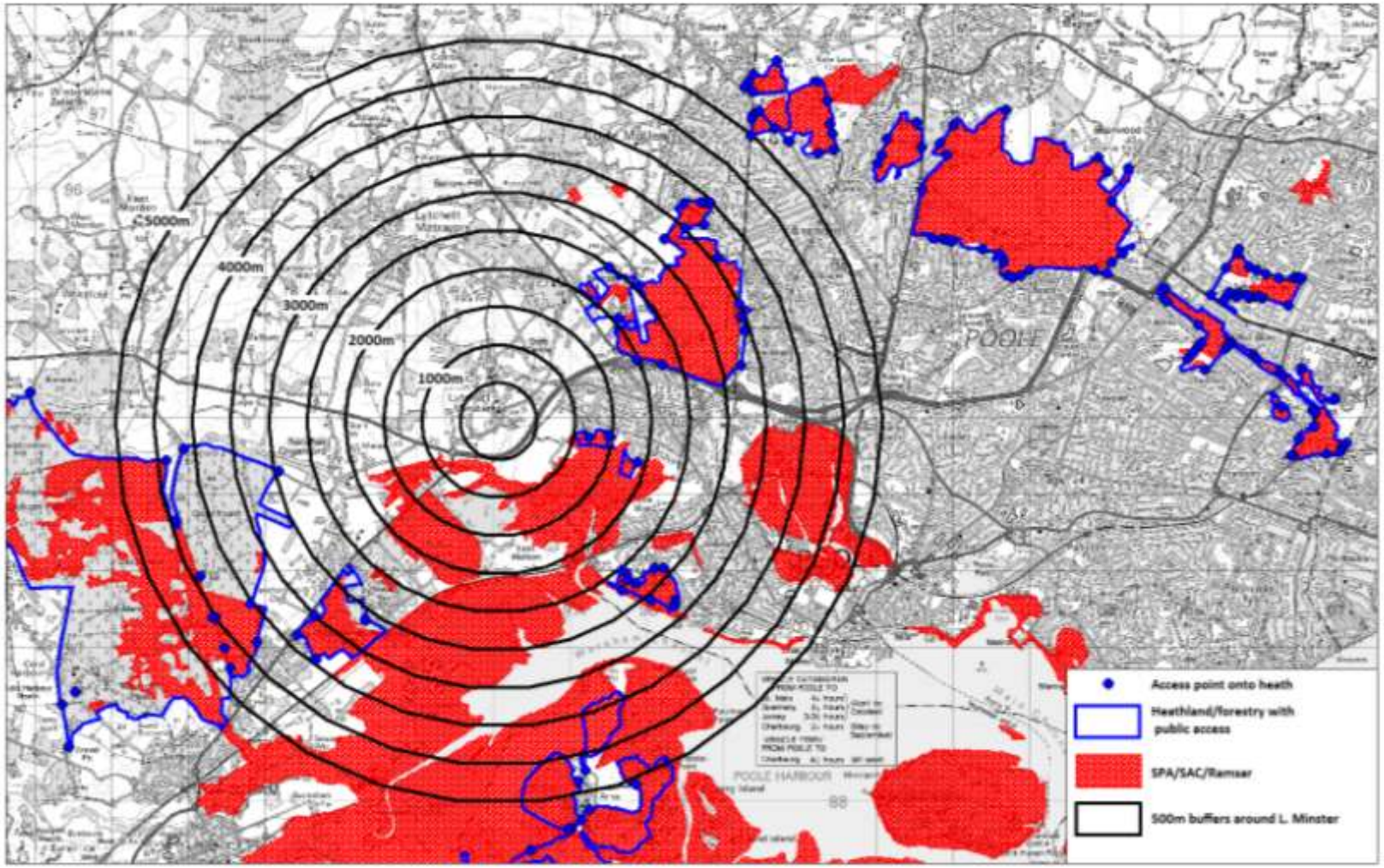
Map 2: Heath access points and patches of heath with public access in relation to Wool. Buffers drawn at 500m intervals around potential development locations in Wool. Crown copyright, All Rights Reserved. Contractor Licence Number: 100046223.



Map 3: Heath access points and heaths with public access in relation to Wareham. Buffers are drawn at 500m intervals from the fields to the west of Wareham. Crown copyright, All Rights Reserved. Contractor Licence Number: 100046223.



Map 4: Five minute drivetime isochrones from the west of Wareham. The scale of the map matches that of Map 2.



Map 5: Heath access points and heaths with public access in relation to Lytchett Minster. Crown copyright, All Rights Reserved. Contractor Licence Number: 100046223.

Predictions of Visitor Rates

2.13 Taking an average occupancy rate of 2.362 people per dwelling, 2,400 new houses could result in an increase of some 5,664 additional residents to the area. The core strategy states that Purbeck District has a population of around 45,000. 2,400 additional houses could therefore equate to c.13% increase in the number of local residents. The lower growth scenario (2650 houses) would equate to c. a 14% increase in residents; the higher growth scenario would equate to an 18% increase; the higher growth plus Wool would be a 23% increase and the higher growth plus 500 houses at Wareham or Lytchett Minster scenario a 20% increase in residents within Purbeck.

2.14 Approximately 20% of households in the UK have at least one dog (Mintel International Group Ltd. 2006), and therefore, with 2,400 houses, approximately 480 households could be expected to have at least one dog. With the additional houses this could rise to an additional 872 dog owning households within Purbeck.

2.15 A household survey of Dorset residents, conducted in 2008, estimated that each household in south-east Dorset tends to make 166 recreational visits to the countryside, parks or other outdoor space per year (Liley, Sharp, & Clarke 2008a). Of these visits, 23% were to heathland sites. Applying these figures to the 2400 new houses proposed in the Core Strategy suggests there would be 398,400 additional visits, per annum, to outdoor space, and 91,632 of these would be to heaths. As the household survey included households within the conurbation (for example central Bournemouth), it might be expected that these figures will be under-estimates given that there is so much heathland and other attractive sites to visit within Purbeck. These figures would rise with the additional housing scenarios such that the lower growth scenario might be expected to be associated with 101,177 additional visits to heaths in the region and the higher growth scenario, plus 1000 houses at Wool might be associated with c. 147,374 additional visits to heaths per annum.

2.16 Predictions of visitor rates to heathland sites have been derived using the models based on the Dorset Heathland Visitor survey undertaken in 2004 (see Liley et al. 2006). For each heathland patch access point we predict visitor numbers according to the number of houses surrounding the access point and, for access points where there are parking facilities, the number of car-park spaces.

2.17 The predictions for each access point should be considered as a guide. The models are based on two equations – one for foot visitors and one for visitors coming by car – and predict visitors to each access point according to the number of houses surrounding the access point and the car-parking capacity.

2.18 The predictions should be interpreted with consideration of site-based factors and the local area. The predictions will be an underestimate where the access point is to a particularly attractive location (for example one with a beach or viewpoint), where the parking is particularly easy or good, where road access or travel time is easy and where access is encouraged. Conversely, locations where parking is perhaps particularly difficult, or where

[2] From the office of national statistics, drawn from the 2001 census: http://www.statistics.gov.uk/census2001/profiles/commentaries/housing.asp

the site is not particularly attractive (near a main road, landfill or similar) may be overestimates. The equations use postcode data, and therefore mobile homes, campsites etc. will not be included; where these are present, the site may receive more visitors than estimated. It is important to highlight that the predictions are also based on housing levels within and to a maximum distance of 10km. High profile sites that attract day visitors and tourists (for example Studland) will receive more visitors than predicted.

2.19 Travel distance is an important factor at sites like Arne that are at the end of a peninsula: The Arne heaths are therefore geographically close to housing at Upton, for example but the travel distance is considerable.

2.20 The estimates are summarised in Table 4, which gives the predicted current number of visitors (per 16 hours) and the predictions for each of the four scenarios considered within this report. In all cases we used postcode data3 to plot the distribution of housing. The distribution of new housing in scenario 1 was provided by Purbeck District Council in the form of transport zones (59 zones within the District), with a total figure for new housing for each zone. For each individual transport zone we calculated the current total amount of housing using the postcode data and then apportioned the potential new housing to each postcode, weighted according to the number of residential delivery points already allocated to each postcode.

2.21 The higher growth scenario was generated in a similar fashion, allocating data to each postcode. The additional 1000 houses in Wool were plotted by generating three new postcodes (each with 333 houses) to the east, south and west of the town. For Wareham the additional 500 houses were allocated to a single new postcode plotted just to the west of the Wareham by-pass. For Lytchett Minster the additional 500 houses were allocated to a single postcode (BH16 6JH).

[3] Royal Mail PostZon data from February 2010

Table 4: Predictions of visitor use for different heathland patches, derived using visitor model "C5" (see Liley et al. 2006 for details). Table shows estimated current use and the increase in the number of visitors predicted under the four different housing scenarios. The predictions are all for a 16 hour period. The red/orange/yellow shading indicates sites where there will be an increase of at least 5% (and the increase involves at least 1 visitor). Red colouring indicates an increase of at least 20%; orange indicates an increase of at least 10% and yellow at least 5%. All the sites listed are ones where an increase in access is predicted by the models.

Site	Site Details			Predicted current use (visitors per 16 hours)	Predicted increase in visitor numbers (visitors per 16 hours) (shading indicates % increase of current visitor levels)				
	Area (ha)	No. Access Points	Total Parking Spaces		Lower level growth	Higher level growth	Higher level growth plus 1000 dwellings, Wool	Higher level growth plus 500 dwellings, Wareham	Higher level growth plus 500 dwellings, Lytchett Minster
Worgret Heath	35	2	2	15	3.7	4.3	4.5	9.3	4.4
nr Dorey's Farm, edge of Lulworth Ranges	8	1	0	6	0.7	0.8	0.8	2.4	0.8
edge of Lulworh Ranges, nr East holme firing range	4	2	0	9	1.1	1.3	1.3	2.9	1.3
Grange Heath	60	3	8	12	1.2	1.5	1.6	2.7	1.5
Hethfelton Plantation	171	3	7	29	4.5	5.5	12.5	5.9	5.5
Combe Heath	41	3	3	9	1.2	1.5	4.3	1.7	1.5
BlackHill, Bere Regis	71	7	2	60	7.2	9.1	9.3	9.1	9.1
Stoborough (RSPB)	221	18	20	183	13.5	16.1	16.3	28.4	16.2
Higher Hyde and Gallows Hill	129	3	14	15	1.2	1.6	3.1	1.8	1.6
Wareham Forest	1808	32	130	315	20.2	29.6	31	38.6	34.1
Stoborough and Hartland	461	21	92	194	11.1	14.6	14.6	22.9	15.4
Blue Pool	73	7	52	35	2	2.5	2.6	3.8	2.6
Stoke Heath	24	1	1	4	0.3	0.4	0.9	0.4	0.4
Arne: Bank Gate	3	2	2	8	0.4	0.5	0.5	0.8	0.6
Arne: Bank Gate Cottages, north of triangle	7	1	0	3	0.1	0.2	0.2	0.3	0.2
Scotland	16	3	4	10	0.5	0.6	0.6	0.8	0.6
Lytchett adjacent to sewage station	7	2	10	238	15.5	18.4	18.4	18.4	24.3
Tadnoll, Winfrith and Knighton	226	15	54	99	6.1	7.4	31.7	7.4	7.4
Moreton Plantation and Bryants Puddle Heath	541	25	81	117	6.6	8	12	8	8
Lytchett	4	1	4	145	6.3	8	8	8	9.8
Sandford Heath	65	4	12	116	3	4.6	4.6	5.4	6.3
Studland and Rempstone	1502	29	1732	983	29.5	37.3	37.3	37.6	37.4

Site	Site Details			Predicted current use (visitors per 16 hours)	Predicted increase in visitor numbers (visitors per 16 hours) (shading indicates % increase of current visitor levels)				
	Area (ha)	No. Access Points	Total Parking Spaces		Lower level growth	Higher level growth	Higher level growth plus 1000 dwellings, Wool	Higher level growth plus 500 dwellings, Wareham	Higher level growth plus 500 dwellings, Lytchett Minster
Arne: Combe, Grip and Shipstal	122	6	75	102	2.3	3.1	3.1	3.9	4.2
Arne: Arne Heath	52	2	0	11	0.2	0.3	0.3	0.3	0.4
Arne: Crichton's Heath	29	1	0	7	0.1	0.2	0.2	0.2	0.2
Upton Heath and Beacon Hill	249	17	61	2098	41.6	52.9	52.9	52.9	60.9
Ham Common	25	9	152	937	11.8	15.2	15.2	15.7	21.9
Warmwell	31	3	8	26	0.1	0.1	0.2	0.1	0.1
Corfe Hills Golf Course	43	7	8	602	1	1.3	1.3	1.3	1.7
Mount Pleasant	13	5	8	456	0.7	0.9	0.9	0.9	1.2
Corfe Hills School	6	5	0	471	0.7	0.9	0.9	0.9	1.1
Dunyeats	31	5	5	405	0.5	0.6	0.6	0.6	0.8
Canford Heath	381	24	22	2857	1.4	1.9	1.9	1.9	2.3
Alder Hills	5	1	24	517	0.1	0.1	0.1	0.1	0.1
Bourne Valley	38	16	33	4053	0.3	0.4	0.4	0.4	0.5
Turbary Common	40	24	16	5358	0.2	0.2	0.2	0.2	0.2
Bourne Valley / Talbot Heath	36	13	21	3276	0.1	0.1	0.1	0.1	0.1
TOTAL				23781	197	252	294.4	296.1	284.7

2.24 The lower and higher growth scenarios show similar patterns of change, with increases at a range of sites within the District. For the higher growth scenario, plus 1000 houses at Wool, the modelling indicates:

- There would be a marked increase in visitor numbers, resulting in an increase of more than 20%, at Worgret Heath, Hethfelton, Coombe Heath and at Winfrith/Tadnoll/Knighton. At the latter site visitor numbers are currently estimated to be 99 people per 16 hours and this is predicted to increase to 131 people per 16 hours.
- Other heathland sites where visitor numbers would show a clear increase include Blackhill Hill (Bere Regis) and Moreton Plantation/Bryants Puddle Heath.

2.25 Winfrith Heath would appear to be the site of particular concern, as the site is attractive, well known and currently has a rural, relatively undisturbed character, with little access infrastructure and potential to manage access. The potential increase in visitors of around 25% would clearly have the potential to have an adverse effect on the site.

2.26 For the higher growth scenario, plus 500 houses west of Wareham, the modelling predicts:

- There would be a marked increase in visitor numbers, resulting in an increase of more than 20%, at five sites, particularly notable is the prediction for Worgret Heath (where the increase in visitors would be well over 50%).
- There would also be clear increase (less than 20%) to a range of sites that includes Stoborough (RSPB), Stoborough / Hartland NNR and Wareham Forest.
- The higher level growth plus 500 houses at Wareham would result in more visits to the heaths in total than the higher level growth at Wool plus 1000 houses.

2.27 For the higher growth scenario, plus 500 houses at Lytchett Minster the total number of visits to the heaths is predicted to be less than the higher growth scenario plus the addition of 1000 houses at Wool or 500 houses west of Wareham. The predictions highlight increases (above 5%) for a range of sites that include Wareham Forest and the small heathland patches at Lytchett. An additional 60 people per 16 hours are also predicted for Upton Heath.

2.28 The models do not take into account the attractiveness of sites, ease of access, size of site etc. The results therefore need to be considered carefully in context of the sites themselves. Wareham Forest, Arne, Hartland/Stoborough NNR and Stoborough Heath (RSPB) would be the main sites we would expect to attract people living in the west of Wareham. In particular Wareham Forest and Hartland/Stoborough NNRs provide a range of free parking locations within a short drive and at each there are extensive walks in attractive countryside. All sites are already well used by dog walkers. Worgret Heath, being so close to the west of Wareham sites would potentially also see an increase in visitor pressure, with visitors potentially arriving on foot.

Additional Visitor Data

2.29 Various sources of visitor data are available for Winfrith Heath. The heath was one of the sites surveyed as part of the Dorset Heaths Visitor survey in 2004 (Clarke *et al.* 2006). The Dorset Household Survey (Liley et al. 2008a) involved a postal questionnaire with a random

sample of residents across Purbeck District (including Wool). In 2010 some additional survey work was undertaken to inform this work (a full account of which is provided in Appendix 1).

2.30 We carried out two additional days of visitor surveys spread over four days between 15th and 21st May 2010 following methods used in the Dorset Heath Visitor Survey. 25 groups were interviewed and all home postcodes were geocoded (see Appendix 1). During 16 hours of surveying in 2010, 68 people in 24 groups and 27 dogs entered the site. 96% of people interviewed were visiting the area from home and 68% stated dog walking as their main activity. Three visitors interviewed in 2010 lived in Wool and a similar number of visitors came from Winfrith Newburgh and Crossways. The visitor numbers from Wool were not as high as expected although the reasons for this are not known. However a similar number of visitors came from Dorchester and Weymouth and visit the heath more than once per week. The three groups from Wool, consisting of 5 people, all visit Winfrith Heath more than three times per week (one group visits daily) and have been doing so for between 10 and 20 years. Two groups were walking dogs and the other group was horse riding and cycling. Other local sites often visited by Wool visitors included Cole Wood, Tadnoll, Moreton Forest and Hethfelton Woods. See Appendix 1 for more details.

2.31 Existing visitor data from the surrounding sites provides an indication of the clear links between the use of the heaths from residents of Wareham and are summarised below.

- Arne RSPB reserve receives around 80,000 visitors per annum[4] and numbers of visitors have been steadily increasing for a number of years. Visitor survey work conducted at the site in 2007-2008 (D. Munns, pers. comm.) found that 35% of visitors were local residents, a further 33% were visiting on a day-trip but did not consider themselves to be local and the remaining visitors were holiday-makers.

- Visitor monitoring at Sunnyside Farm (part of Stoborough NNR) conducted by Footprint Ecology in 2009 (Sharp 2010), involved interviews with people using the grassy fields to the north-west of the NNR. These fields are not widely promoted as a visitor destination and the home postcodes of the 60 visitors interviewed reflected very local use, with 74% of visitors coming from within 1km and 84% coming from within 5km. These postcodes are shown in black in Map 6. Most (77%) of visitors were accompanied by a dog.

- A total of 123 interviews were conducted over four days in 2008 at various locations along the B3075 in Wareham Forest (see White et al. 2008 for details). These dots are shown in purple in Map 6 and show clear use of Wareham Forest by Wareham residents. Among the postcodes of those interviewed were a number of people who lived in Northmoor and within Wareham walls.

- The Dorset Heaths Visitor Survey, conducted in 2004, included Hartland Tramway (25 postcodes gained from the survey work), Stoborough New Road (22 postcodes) and two survey locations near Great Ovens, at the edge of Wareham Forest (19 postcodes at each). The home postcodes are shown in Map 6 and highlight the use of these heathland sites by Wareham residents.

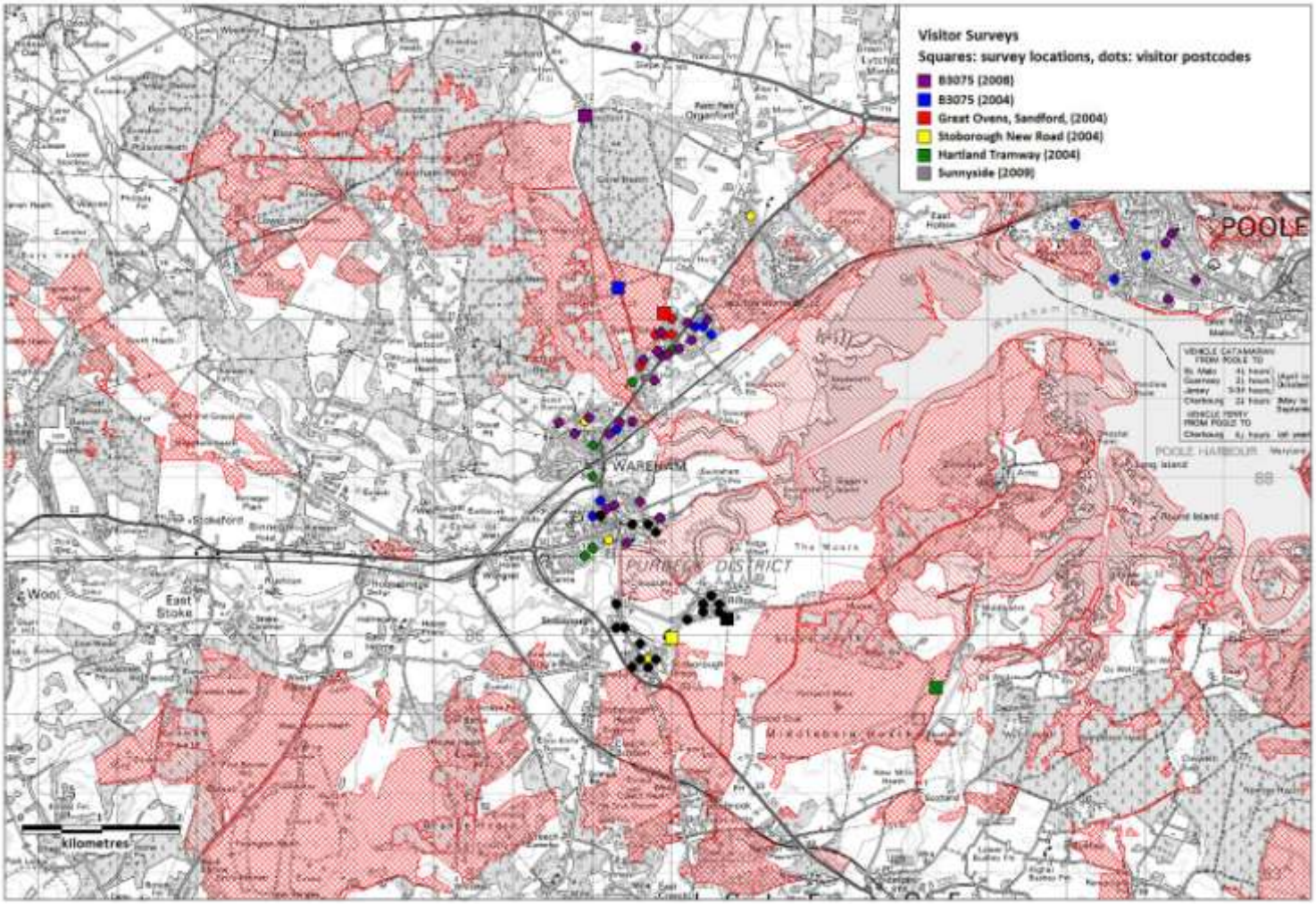
[4] http://217.154.121.34/Planning/Web%20Importer%20Attachments/34086/0000D634.PDF

- In the Dorset Household Survey (Liley *et al.* 2008), 23 responses were received from Wareham residents. Of these 4 were regular visitors to the heath (i.e. just under 1 in 6 residents). Fourteen of these respondents listed Wareham Forest as one of the sites they visited and three of these visited the Forest "most days". Eleven of the respondents cited heaths to the east of Wareham (i.e. Arne / Hartland / Stoborough as sites they visited.

- Visitor numbers to Wareham Forest through the southern access point from Northmoor were monitored for one week between Wednesday 26th May and Wednesday 2nd June 2010. A Trailmaster[5] infra-red beam counter was installed along the path through the golf course and 1318 visitor events were recorded. Assuming that visitors entered and left the forest at the same point, this count equates to 659 groups entering and leaving Wareham Forest through this access point alone in one week.

2.32 The various surveys all involve different amounts of survey effort, different approaches and were conducted at different times of year; some caution is therefore required when interpreting the results. The important information is the spatial distribution of the home postcodes of the visitors interviewed, reflecting the links between where people live and where they go in the countryside.

[5] http://www.trailmaster.com/tm1050.php



Map 6: Home postcodes of visitors to various heathland sites near Wareham. Squares indicate broad locations for the survey and the same colours (circles) indicate visitors' home postcodes. Data from various sources (See text). The red hatching shows SPA/SAC/Ramsar sites. Crown copyright, All Rights Reserved. Contractor Licence Number: 100046223.

2.33 The Core Strategy HRA identified adverse effects from recreation and urban development on the heaths. The additional housing scenarios clearly would result in increased pressure, and many of the sites involved are particularly sensitive. An adverse effect on heathland sites (the Dorset Heaths SAC, Dorset Heathlands SPA, Dorset Heathlands Ramsar) is therefore likely. With the lower level growth scenario and the higher growth scenarios the impacts are spread over numerous sites and will be similar to those set out in the core strategy, only involving higher visitor numbers, especially with the higher growth scenario.

2.34 With the scenario involving additional growth at Wool, a very marked rise in access at Winfrith Heath is likely. This site is a rural heath and has limited access infrastructure (e.g. regular no on-site wardening) or facilities to manage or control visitor impacts. There is therefore particular concern about impacts to this site.

2.35 The scenario involving additional growth at Wareham is likely to result in impacts to the heaths around Wareham, which are also largely rural and have little existing infrastructure to absorb additional visitor pressure. From the west of Wareham the range of sites within a short and relatively fast journey include Wareham Forest, Arne, Hartland / Stoborough NNR and Stoborough RSPB. Worgret Heath is the closest heath to the west of Wareham and is within a short walk of the area to the west of the by-pass.

Mitigation

2.36 A strategic approach to mitigation for increased visitor numbers has been established for the south-east Dorset sub-region through the IPF and the DPD (which is currently in progress), as stated within the Core Strategy (Policy DH) and discussed within the Core Strategy HRA. Mitigation measures would have to be tailored towards specific locations depending on the development option and will need to be directly linked to the development locations. Mitigation measures should ensure no net increase in visitor pressure on the adjacent heathland sites and ensure that access onto the heaths is responsible and impacts are minimised. The Core Strategy HRA set out such measures which would need to be agreed and set out within the Core Strategy or the Heathland DPD prior to development commencing. Some of the measures may be difficult to secure and potentially beyond the control of Purbeck District Council. We discuss the various options suggested in the HRA below, and set out what additional mitigation might be required in light of the assessment of the different additional growth scenarios.

On-Site measures

2.37 Given that most of the sites are already managed for nature conservation, some caution is required in relation to on-site mitigation, such as additional wardening, habitat improvement etc., as such works could be planned or likely to happen anyway, and the impact of the increased recreation pressure therefore needs to be considered in light of current and likely future management.

Winfrith

2.38 In the HRA it was suggested that bollards, ditches or banks could be instigated along the roads crossing the heath to ensure parking is limited to the south-east corner of the site (the main parking location) rather than diffuse parking along the roadsides. In relation to the

scenario relating to 1000 additional houses at Wool this would not be adequate to solve the pressures, given that it would seem that increases in visitor numbers of around 25% could be expected.

2.39 The Dorset Wildlife Trust manages the heath and the Trust does not currently employ site-based wardening staff. Cattle grids have recently been put in on the roads and grazing is currently being established. It is not known how this will affect visitor patterns and access. Some visitors recently interviewed (May 2010) at Winfrith Heath did comment that they were not sure whether they would continue to walk their dogs at the site once the livestock were introduced. They commented that they would not feel comfortable letting their dogs off lead, either because their animals were scared of livestock or concern that the dogs may aggravate the livestock or vice versa. To other visitors, the presence of a grazing scheme would make no difference to their visitor behaviour.

2.40 The particular concern relating to this site would be from residents in Wool using the site as open green space for dog walking, jogging etc, resulting in frequent short visits from people who live locally and have good local knowledge. Such visitors will choose the site for its attractiveness as well as its proximity to their home, ease of access and lack of restrictions on access. It is difficult to control such access or minimise it without alienating local people. Potential additional measures could involve increased wardening presence on the site, with enforcement to keep dogs on leads and for dog-owners to pick-up after their dog. A single car-park could be created and the number of spaces limited, potentially pushing access to other sites. Detailed discussion would be required with the Dorset Wildlife Trust in order to develop mitigation and on-site measures alone would seem unlikely to be adequate to resolve the predicted visitor increases.

Wareham Forest

2.41 Wareham Forest is comprised of conifer plantation, heathland and valley mire habitats. Not all of the Forest is within the Dorset Heaths SAC / SPA / Ramsar, but the areas of forest that are outside the designated sites still support a large number of Annex I birds (nightjar and woodlark particularly) and can therefore be considered as intrinsically linked with the SPA by providing supporting habitat for the Dorset Heaths site interest features adjacent to areas of designated site. Any impacts on supporting habitat may then impact on the Annex 1 birds supported by that habitat, therefore still affecting the designated site interest features.

2.42 The Forest is managed by the Forestry Commission, which leases the land for forestry purposes only. The next Forest Design Plan (which sets out how the Forestry Commission will manage the site) is currently out for consultation (summer 2010). The Forestry Commission has also recently set out its open habitats policy (Driver 2010), which could have long term implications for how Wareham Forest is managed. The Forestry Commission management currently extends to allowing quiet recreation and informal discussion with Forestry Commission indicates that no new infrastructure (for recreation) is likely.

2.43 There are numerous small car-parks and various way-marked routes, including cycle trails, within the Forest. The area is used by local people from Wareham who both access the Forest on foot, by bicycle and by car and the site also has a more regional draw (see the

maps in Liley *et al.* 2008). Horse riding is allowed (by permit) and there are also several camp-sites directly adjacent to the Forest.

2.44 Recent management work within the Forest has been to establish an extensive grazing unit of over 600 ha. The fenced area encompasses areas popular with cyclists and dog walkers and it remains to be seen how the changes in management may affect access.

2.45 Mitigation measures on-site would be difficult to implement. There are already signs promoting responsible access during the times when birds are nesting and signs requesting dogs are kept under close control near livestock and during the bird breeding season. Anecdotal evidence (*pers. obs.*) would indicate that these are currently relatively ineffectual. The area is popular with visitors and diffuse access occurs throughout the Forest. To effectively reduce the visitor pressure and the nature conservation impacts of recreation that would arise from additional development would require considerable resources and effort over a large area. Given that Forestry Commission do not own the site, and that their main permitted activity under their lease is growing trees, the necessary measures may be difficult to achieve.

2.46 Potential measures would need to be discussed in detail with the Forestry Commission and would depend on how the site is managed in the future. Options could involve:

- Limiting and redistributing parking such that parking is focused in a few areas. In particular road-side parking on the B3075 and on the road from Wareham-Bere Regis would need to be controlled and reduced.
- On-site wardening enhanced to promote responsible access through presence of wardens in areas important for wildlife
- Access promoted in areas of mature plantation and therefore away from the areas with Annex I birds

2.47 At present, given the implications of the Forestry Commission's Open Habitats Policy and lack of ownership of the area it is not possible to be confident that on-site mitigation measures will be effective in resolving the problems associated with access levels from new development. It is the higher growth scenario and higher growth scenario in combination with 500 houses in Wareham that are of particular concern.

Arne / Hartland / Stoborough

2.48 A long term vision for the management of the heaths to the east of Wareham (Arne, Stoborough NNR, Hartland NNR) is for extensive grazing and effective links between the sites. It may also be possible in the long term to link these through Rempstone to Godlingston and Studland. Within the general area and particularly within the Arne/Hartland/Stoborough block it will be important to ensure that increases in traffic and access do not inhibit the implementation of future management, in particular the ability to install cattle grids, fell conifer blocks and change fencing locations. In the long-term access will need to be managed to provide opportunities for quiet enjoyment of the area without compromising the integrity of the sites and their conservation interest.

2.49 The Core Strategy HRA identifies the following potential mitigation measures:

- The use of signs, bollards, banks or ditches alongside the roads (such as the Slepe road that runs across Hartland) to deter roadside parking and remove all diffuse parking.
- Speed restrictions (e.g. 20 mph) and other traffic calming measures along the Arne road through to Nutcrack Lane to increase travel time and potentially reduce visitor numbers.
- Enhanced parking at locations such as the Sunnyside car park at Stoborough NNR, meaning access becomes concentrated at particular locations where it is possible to control the impacts, rather than diffuse over the entire area.
- Enhanced on-site wardening presence at key locations to control off-road parking, use of barbeques, enforce dogs on leads policies etc.
- Provision of additional visitor parking (i.e. a new car-park) at a location set back from the heaths, so that access can be focused away from sensitive locations.

2.50 The HRA recommends that these measures are considered as part of a strategic review of access across the different parties (RSPB, National Trust and Natural England) involved in the management.

2.51 Informal discussions with relevant parties, in order to inform this report, suggest that management measures across this area do need careful consideration and implementation. Arne is the 7th most visited RSPB reserve in the country and is an "active engagement site", meaning it is one of the locations where the RSPB actively promotes interaction with visitors. Parking at the Arne Reserve is free for RSPB members but there is a charge for non-members. When the car-park is full the RSPB sometimes opens the adjacent field. This is now a frequent occurrence, but does have some difficulties as the field is not surfaced and access is difficult. It is not clear how management of parking at Arne impacts the flow of visitors to the area as a whole; it is likely that car-park charges and limited capacity may divert visitors to other nearby sites. Numbers of visitors to Arne has been steadily rising and the parking capacity at the approach to Arne village is clearly a current issue. There are no brown tourist signs to Arne and the RSPB does not actively promote the site to encourage additional visitors.

2.52 Like the RSPB, the National Trust is increasingly promoting itself as a body that encourages access to the countryside and engagement of people with nature. For both organisations, visitors provide important revenue in parking and membership and both organisations strive to provide a particular experience for their members and visitors. Housing development in the local area will potentially increase visitor levels and change the visitor dynamic, increasing the amount of frequent, short visits by local residents. Such people will have local knowledge, will avoid tourist hotspots and potentially avoid sites where there are charges for parking. Currently many people park on roadsides (despite measures by both RSPB and NT to discourage this) and consequently there is diffuse access across the sites to which access is open under the Countryside and Rights of Way Act 2000. This level of visiting is not sustainable in a context of increased levels of local housing. Mitigation measures will be dependent on a review of access across the whole area and will need to be

based on detailed analysis of visitor access patterns, identifying where local people go and how they use the sites and how these differ from tourists. The review needs to consider how changes in management (tree clearance and extensive grazing) will change access. In the absence of such a review it is not possible to be confident that access management on-site can be effective and will mitigate the impact of new development. It is the higher growth scenario and the scenario of the additional housing at Wareham that would have the greatest impacts.

Godlingston and Studland

2.53 The higher growth scenario (on its own and in combination with development at Wool or Wareham) will result in significant levels of development in Swanage. There is relatively little information on the extent to which Swanage residents may visit the heaths, but Godlingston and Studland Heaths are both likely to draw visitors from the town. The National Trust charges for parking at all its car-parks in Studland and at the Ferry. Swanage residents that are not members of the National Trust are therefore likely to park at Godlingston (along the road from Corfe Castle to Swanage) or along Ferry Road.

2.54 Access is particularly difficult to control along Ferry Road and extensive roadside parking leads to diffuse access across a wide area of heathland and to Poole Harbour. Effective management of roadside parking here is highlighted as a mitigation measure in the Core Strategy HRA. The road is however owned and managed by the Bournemouth-Swanage Ferry Company, and mitigation measures will be difficult to secure. The need to ban parking along this road has long been recognised – for example it is set out in the Purbeck Transport Strategy (Buro Happold 2004).

2.55 A further complication along the Studland peninsula is the impacts of the changing coastline, as it is possible that some of the main National Trust car-parks may disappear as the coastline erodes. The National Trust Coastal Adaption Plan is currently in draft and it is not clear at present how the issues may be resolved. The National Trust car-parks provide a particular function in managing and directing visitor flows and of course in funding the work of the National Trust in the area. Changes in parking are likely to result in a deflection of visitors to other locations and are difficult to predict.

2.56 Given the complex issues involved it is not possible at present to be confident that on-site mitigation measures are possible to implement or will be successful in relation to the sites around Swanage. Further information on the potential to control parking along the Ferry Road and the impacts of coastal change on parking and access on the Studland Peninsula are required.

Alternative sites

2.57 The concept of alternative sites is logical but as yet largely untested. Both in the Thames Basin area (Surrey, Berks, N Hants) and in SE Dorset, where in both cases the close proximity of SAC/SPA heathland to high numbers of existing and proposed housing is a characteristic, there will be a heavy reliance on the provision of alternative sites for informal recreation, now widely referred to as Suitable Accessible Natural Greenspace (SANGs), being provided and being effective. Using a number of visitor surveys in both areas to determine the

reasons for visiting outdoor sites, and the characteristics of the existing used locations, Guidelines for SANGs in Thames Basin Heaths area have been produced (Liley, Underhill-Day, & Sharp 2009) These are summarised in Appendix 2 of this report as they provide useful context. Whilst these specifically address the local situation in the Thames Basin Heaths, in particular the nature of the heathland sites currently under heavy pressure, many of the principles are generic and the requirements for SANGs provision should be widely applicable.

2.58 SANGs may potentially be created from existing open space where there is currently little or no public access; from sites with some access but where visit levels could be increased; or from newly established open space. In all cases the SANGs need to be a long-term provision if they are to genuinely offer mitigation for residential developments with a long expected life on internationally designated sites, and satisfy the requirements of the Habitats Regulations.

2.59 If SANGs are to draw visitors away from the designated sites they have to be of sufficient size, character and quality. In other areas (e.g. Thames Basin Heaths), a minimum SANGS provision of 8ha per 1000 people has been chosen by some authorities as a guideline. The characteristics of the heaths and spatial distribution of development in Purbeck, indicate that this needs to be delivered by a small number of well located, large sites, each with a critical mass and characteristics sufficient to compete with the heaths. This may, therefore, mean that this minimum has to be considerably exceeded in Purbeck.

2.60 Areas where SANGS would be required are set out in the Core Strategy HRA. These locations were given as:

- In the north of the district, between Lytchett Matravers and Bere Regis or to the north of Bere Regis.
- Near Wareham, to the west or north-west of the town, drawing new residents away from sensitive locations within Wareham Forest and Hartland/Stoborough/Arne.
- To the north of Swanage. Here a SANG would attract people who would otherwise visit Godlingston, Rempstone and Studland.

2.61 These locations would remain important in any mitigation package for the additional growth scenarios and would need to be capable of absorbing the increased level of recreation. The scenarios involving increased development at Wool mean it is also necessary to consider SANGS in the Wool area.

North of the district

2.62 One potential SANG location in the north of the District is Morden Park, which was included within the Purbeck District Local Plan (Final Edition dated 2004 and never adopted[6]) as a potential location for a large, new area of green space[7]. The site was recommended by the Inspector for the public inquiry into the North East Purbeck Local Plan. The Park is privately

[6] http://www.dorsetforyou.com/396825
[7] See Policy SS17, http://www.dorsetforyou.com/media.jsp?mediaid=148753&filetype=pdf

owned and lies immediately south of the A35 near East Morden and is set out within the local plan as a suitable site for "the development of limited facilities for leisure and recreational purposes."

2.63 The site is adjacent to Wareham Forest and is in many ways similar in character, it might therefore be assumed to potentially attract visitors who would otherwise visit Wareham Forest, which we know draw people from a wide geographic radius (Liley, Sharp and Clarke 2008, White et al. 2008). Morden Park contains mixed woodland, an attractive lake and the area, as defined in the local plan, also includes some areas of farmland.

2.64 The site has good road links and is easily accessible from settlements such as Lytchett Minster, Lytchett Matravers and Upton. Wareham and Bere Regis are both closer to other parts of Wareham Forest and so residents in these settlements might be expected to choose parts of the Forest that are closer.

2.65 While potentially attractive and likely to draw visitors (indeed the lake is already popular with visitors), the site has some major drawbacks as a SANG. The boundary that is mapped in the local plan does include areas of SAC / SPA heathland, holds records of Annex I bird species such as nightjar and woodlark and also directly abuts a large area of internationally important heathland (including Morden Bog NNR). As such it is hardly a viable 'alternative' site, instead the risk is the promotion of access here might result in a net increase in visitors to the general area. The lake would be likely to provide a focal point for many visitors, and unfortunately the heathland blocks are very close to the lake, and therefore would be difficult to isolate from any visitor use.

2.66 A further issue is the road junction at Morden Park corner, where the b3075 joins the A35. This junction is a local accident hotspot and access to Morden Park would need to be away from the junction. The obvious location to provide access to the Park is at Sherford Bridge, where there is existing parking and direct access onto the SPA/SAC. The risk is therefore again that the net result of promoting Morden Park would be an increase in visitors to the European Protected Heathland.

2.67 It may be possible to resolve some of these issues, for example by creating a dedicated car-park within the site, and a series of marked routes that ensure visitor flows are away from the heaths. The site is large enough to have routes that encompassed only the eastern shore of the lake. Such infrastructure would require a relatively large amount of work to the site, and would of course be dependent on successful negotiation with the landowner and would need to fit with future anticipated use and management of the site by the landowner.

2.68 Detailed consideration of the area immediately around Wareham would seem to indicate there is little potential for an effective SANG. The attractiveness of the local heaths (large sites with a range of trails and views of both Corfe Castle and Poole Harbour) means that any SANG would need to be very large, carefully designed and attractive, with a rural and 'wilderness' feel, in order to draw visitors. Given that so much of the area is already designated, potentially the only opportunities lie to the west of the town, towards East Stoke. Plans produced by Ashvilla Estates Ltd. (dated 2006) set out potential development outside the Wareham settlement boundary to the west of the Wareham by-pass. These

plans include 36ha of informal open space and provide an indication of the type and size of SANG in this area which might come forward.

2.69 Our interpretation of these plans and knowledge of the area would indicate that such an area of green space would be ineffective at diverting visitor pressure away from the heaths. There are two busy roads (the Wareham by-pass and the A352) which abut or lie close to the green space proposed by Ashvilla Estates and the green space is split into three small patches by the railway. Some of the land is low-lying (and therefore waterlogged and difficult for access) and is currently relatively unattractive arable land. Any promotion of access in this area could also result in increased access levels on Worgret Heath. Further west there are issues with mineral rights and existing mineral extraction. The green space proposed by Ashvilla Estates is shown in relation to the surrounding European Sites in Map 7.

2.70 Looking towards Wool we believe there are locations where alternative green space may have the potential to divert access, and might draw residents in Wool away from Winfrith Heath and Hethfelton. Savills in 2005 set out a vision for a sustainable community at Wool that includes a proposed country park to the south of Wool, encompassing Coombe Wood and fields to the east of the wood. This land area encompasses in the region of 100ha. The wood is currently managed by the Forestry Commission which leases the wood from the Lulworth Estate. The wood is crossed by a single public bridleway but otherwise existing levels of access appear to be low, though the Lulworth Estate do have a system of permissive permits for horse riding that includes the wood. There are no railway lines, busy roads or other elements which would detract from the visitor experience. The potential for the site to draw visitors lies in its location, close to Wool (closer than Winfrith Heath) with easy safe access from Wool by foot or car. The site is attractive, it is relatively open, contains a range of different habitats, an attractive woodland flora and there are good views across the surrounding countryside. The position of the wood in relation to the European Protected Sites surrounding Wool is shown in Map 7.

2.71 In order to be effective as a SANG the wood would need some enhancements such as improvement to the path network and provision of safe, off-road parking (free of charge). There may be complications with the current lease to the Forestry Commission. The wood would need to be managed for access, with the access targeted at local residents and in particular to dog walkers and other users who visit the heath. The inclusion of adjacent fields would provide open grassland and woodland routes and the potential for a car-park from which dog walkers could directly access the path network without having to put their dogs on leads or cross a road.

2.72 Given the scale of the third scenario, with 1000 additional houses at Wool (above the higher growth scenario) such a green space would need to provide a high quality experience and the management (for access) be secured for the long term. Assuming dog ownership levels of 20% of households, 1000 houses alone would potentially mean 200 dog owning households. A proportion of these would wish to visit sites such as heaths where they can undertake long walks in semi-natural habitats, and provide their dogs with considerable off-lead exercise. The visitor predictions set out above suggest a 25% increase in access levels

to Winfrith Heath. New green space would be needed to accommodate these levels of access.

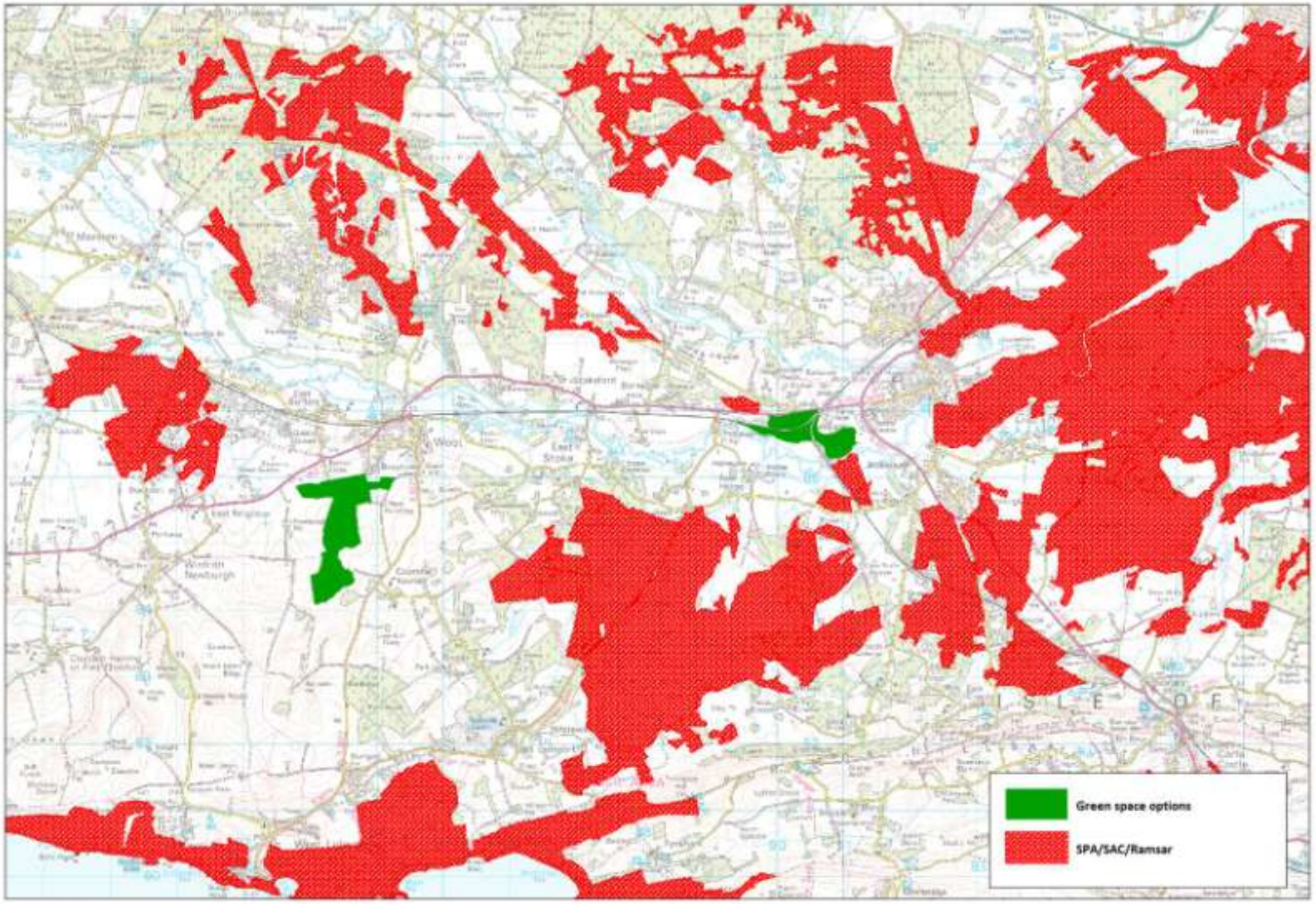
2.73 Several dog walking visitors (interviewed in May 2010) to Winfrith Heath specifically use Winfrith Heath because of the large open area which enables them to keep an eye on dog while it is off the lead. Additionally the size of Winfrith Heath makes it particularly attractive to owners of larger dogs who prefer to provide their pet with a considerable area to run and recreational spaces available locally are limited. The inclusion of adjacent fields (large and open areas) to Coombe Wood would meet the pre-requisites of visitors with large dogs wishing to exercise their animal off lead. The adjacent fields should be viewed as an integral and important part of the SANG to provide suitable recreational space for visitors with larger dogs. A further anecdotal comment from the visitor work in 2010 was that some visitors with dogs used Winfrith Heath more in the tourist season than other times of the year as the main tourist locations along the coast were 'too busy' to enjoy. With this in mind the promotion of Coombe Wood as a SANG should be aimed at local residents rather than tourists or visitors from other regions.

2.74 The Vision for a Sustainable Community sets the proposed country park alongside tourist 'park and ride' facilities and an enhanced southern tourist route heading south. Such proposals are unlikely to be compatible with management of the site as green space for local people. If the country park was to be taken forward as a SANG, this issue would need to be resolved to enable the SANG to adequately provide the local greenspace need.

2.75 Another potential green space option near Wool is linked to Dorset Green Technology Park[8]. The vision map for the site proposes a "SANGS wetland" directly to the south of the Technology Park. The area is currently farmland, with limited public access apart from a bridleway that crosses the area east-west and links to Winfrith Heath. Initial plans indicate access to the SANG from the A352 and show a visitor route commencing at a proposed 'wildlife visitor centre' running through land that is currently pasture and a busy farmyard to then link with the existing footpath. The current land use, couple with the likely terrain and suggested promotion of a wildlife visitor centre imply that the proposal is unlikely to function effectively as a SANG. People living in Wool would have to drive to the site, and it is only a short distance to drive further to visit Winfrith Heath. Once in a car people are unlikely to stop in a location where no circular routes are possible and where the landuse is farmland and a small area of wetland. The site is unlikely to offer the attractive range of walks and views that a visitor would experience at either Coombe Wood or at Winfrith Heath.

2.76 Any development of Alternative Green Space near Wool would need to be linked to on-site management (set out above) on the heaths to ensure that particular access (such as dogs off leads during the breeding season) is diverted from the heaths to the alternative sites.

[8] http://www.dorsetgreen.co.uk/



Map 7: **Green space options, taken from developer proposals: "Wool – a vision for a sustainable community" and plans produced by Ashvilla Estates in 2006. Crown copyright, All Rights Reserved. Contractor Licence Number: 100046223.**

Promoting responsible access, education and awareness

2.77 The Urban Heaths Partnership funded through the IPF is already providing on-site wardening, awareness and education programmes that include many Purbeck sites. As set out in the Core Strategy HRA, such measures are important, and in particular should:

- Promote locations, for different activities, where there are no nature conservation implications
- Promote responsible access (such dogs on leads, no litter, no barbeques) through education programmes, promotional material, on site presence etc.
- Provide clear information as to why the heaths are important and the need for conservation management
- Provide face-to-face contact with local residents and visitors

2.78 The need for such measures would be exacerbated by the additional growth scenarios. Key sites where such measures will be needed are:

- Arne & Stoborough RSPB reserves
- Hartland & Stoborough NNRs
- Sandford Heath
- Blackhill Bere Regis
- Winfrith Heath
- Godlingston & Studland Heaths
- Worgret Heath

Summary

2.79 The HRA for the Core Strategy (preferred options), assessing the preferred option and two alternative options (all for 2,400 houses) identified adverse effects on integrity from increased recreation pressure on the heathlands. The HRA also sets out and mitigation measures which are likely to be difficult to secure. Here we consider additional levels of development that involved increased levels of housing in the vicinity of European Protected heathland sites. For the five development scenarios we consider here, increased recreational pressure will occur and adverse effects on the integrity of the heathland SPA / SACs / Ramsar sites cannot be ruled out.

2.80 Mitigation measures are potentially possible but become increasingly complex with the increased levels of development. With respect to Swanage the concern relates to Godlingston Heath and Ferry Road, and the necessary mitigation measures relating to these locations will need to be secured, although initial analysis suggests that on-site measures will be very difficult to implement due to the complexity of issues at the heathland sites. In the vicinity of Wareham the heaths to the east are very sensitive and levels of access are

currently such that there is no additional capacity. We cannot see how alternative space could be secured to successfully divert access here. At Wool, considering the scenario of higher growth and an additional 1000 houses, Winfrith Heath and Hethfelton would be likely to see a marked increase in access, especially at Winfrith, which is a rural heath with no infrastructure to support the additional visitor pressure. We cautiously suggest that there could be potential to provide alternative green space to the south of Wool that, with a range of other measures, could be sufficient to provide mitigation. The alternative green space required would need to be considerable and further work is necessary to ensure its effectiveness.

3. Increased Recreational Pressure on Poole Harbour SPA / Ramsar

Introduction

3.1 The Harbour is designated for breeding, passage and wintering birds. Human disturbance, whether through shore-based activities (such as walking, dog-walking, fishing etc.) and water-based activities (kayaks, windsurfing, kite-surfing, fishing etc) is a real issue for waterbirds.

3.2 Reviews of disturbance effects to waterfowl can be found in various sources (Hockin *et al.* 1992; Hill *et al.* 1997; Carney & Sydeman 1999; Nisbet 2000; Kirby *et al.* 2004; Woodfield & Langston 2004; Lowen et al. 2008) and the issues are also discussed in relation to Poole Harbour by a number of authors (Underhill-Day 2006; Hoskin *et al.* 2008; Liley *et al.* 2008; Lake *et al.* 2010).

3.3 All the options within the Core Strategy include housing allocations at Wareham and Swanage. New residents in both towns are likely to visit the Harbour shore to walk and to participate in water-based activities within the Harbour. It is currently not possible to predict the extent to which this will happen, as there is no existing visitor data available. However, given the attractiveness of the sites, their proximity and the lack of alternative sites with equivalent attractiveness, it would seem likely that recreational pressure on Poole Harbour will increase as a consequence of new homes in Purbeck. Considered alone, the Core Strategy HRA concluded that the impacts of this potential increase may not be significant; however, in combination with increases in housing in other adjacent areas, significant impacts cannot be ruled out. The key issue is the potential for a gradual increase in all the water-based and shore-based activities to interact and in synergy reduce the ability of the site to maintain its internationally important bird populations.

3.4 Climate change increases the uncertainty surrounding the extent and nature of the impacts, as this may change the distribution of the birds and the species present within Poole Harbour, the distribution and availability of soft sediments (birds may be pushed closer to the shoreline by coastal squeeze) and the timing and levels of recreational access.

Impact of Additional Development

3.5 Without existing visitor data it is difficult to predict how access to Poole Harbour might change. We do not have information on how far kite surfers, windsurfers, canoeists and others travel and therefore the extent to which such water-based activities might increase is particularly difficult to estimate. All five scenarios of additional growth include development at Swanage, Wareham, Lytchett Matravers and Upton, which are all locations where (in particular) it might be expected that residents could visit Poole Harbour.

3.6 The northern shore of Poole Harbour offers the most opportunities for access, with Holes Bay, Hamworthy Park, Rockley, Baiter and Whitley Lake providing opportunities for shore based activities and various launch points for small craft, windsurfing and kite surfing. Such locations are most easily accessible from Upton and the eastern parts of Purbeck District.

Development at Lytchett may in particular result in increased levels of use on the northern shore.

3.7 On the southern shore access to the Harbour is difficult. The key locations for access are at Wareham Quay and Swineham Point, where a range of paths around the gravel pits and along the river wall is used by Wareham residents, including dog walkers. There is informal access onto the saltmarsh and onto the mudflats/Wareham Channel. Development to the north-west or west of Wareham may result in additional visitor numbers at Swineham, but given the extra walking distance involved, numbers may be quite low.

3.8 At Studland there is a stretch of easily accessible shoreline where anecdotal evidence suggests access is increasing (*pers. obs.*). As described in the Core Strategy HRA the area known as Bramble Bush Bay and Jerry's Point is easily accessed from Ferry Road. The National Trust now charges for parking all year round at its main car-parks. In contrast, along Ferry Road there is unlimited parking along the roadside that is free and provides direct access (across the heath) to the shore. While the main beach (to the south-east of Ferry Road) will always attract the most visitors, the Poole Harbour shore offers opportunities for walking, birdwatching and fishing and it seems that the area is becoming increasingly popular.

3.9 This area is very sensitive as it is adjacent to one of the main wader roosts in the area and is particularly important for wintering waterfowl. There are no visitor data available for this area, but it would be expected that the area is likely to be used by residents in Swanage and possibly further afield. This highlights an area where further research would be beneficial.

Mitigation

3.10 Mitigation measures are set out in the Core Strategy HRA. These mitigation measures are considered likely to resolve any potential adverse effects, even with the additional growth, if the suite of measures is implemented in full and their effectiveness checked through a programme of monitoring levels of visitor use. These (taken from the Core Strategy HRA) would involve:

- Control of parking along Ferry Road
- Measures (such as wardening and signs) to help ensure dogs are kept on leads along the shoreline around Jerry's Point
- Working with the National Trust to instigate sensitive management of access along the Harbour shoreline at Studland, for example developing a way-marked route set back from the shoreline. This will of course potentially increase access on the heath.
- Provision of viewpoints over the Harbour at Swineham whilst ensuring access across the saltmarsh and onto the shore is limited.
- Measures (such as signs, information and wardening) to help prevent dogs from roaming on the mudflats and salt marsh at Upton County Park, Holes Bay, Ham Common, and Poole Park.
- Along the northern shoreline, footpaths should be relocated back from the shore at the most sensitive locations, such as at Baiter. Screening should be used to

separate walkers from the shore and provide quiet feeding areas at Baiter and in parts along the shoreline path round to Sandbanks and around Holes Bay. Dog walking zones and a 'dogs on leads' policy for selected sensitive path lengths where dog walking is still allowed should be implemented. Sensitive locations should be identified as part of a monitoring package.

3.11 The following measures should reduce the impacts of water-based activities:

- Close-working with landowners along the southern shore to allow measures to be put in place to promote responsible access, working with the different groups camping and using the southern shore for canoeing etc. Leaflets and other suitable promotional material should be developed with codes of conduct and to direct people away from key areas for birds.
- Reviews of the measures in the Aquatic Management Plan and further implementation of zoning as necessary.
- Landing/launching of small craft (windsurfers, canoes etc.) should be limited to specific locations only. Where the nature or location of activities is outside the jurisdiction of Purbeck's Local Development Framework or other Council functions, the Council should continue to work with relevant partners to improve regulation of such activities, including the police.

3.12 The increases in access to the Harbour will be gradual and there remains uncertainty about the levels of use and the exact impacts. A programme of monitoring, recording water-based and shore-based activities should therefore put in place. A suitable programme of monitoring has already been set out for the Harbour (Liley & Underhill-Day 2009).

4. Increased Recreational Pressure to Coastal Sites

Introduction

4.1 The Purbeck coast supports a range of important habitats, including limestone grassland and sand dunes. These habitats are vulnerable to a range of impacts from recreation, for example through trampling and dog fouling. Increased development, in the absence of mitigation, potentially will result in increases in the level of visitors and an adverse effect upon the integrity of the Dorset Heaths (Purbeck & Wareham) and Studland Dunes SAC, the Isle of Portland to Studland Cliffs SAC and the St Alban's Head to Durlston Head SAC. Within the Core Strategy HRA it was Option B, with the focus of development in Swanage, that was recognised as likely to have the greatest impact.

4.2 The issues are fully set out in the Core Strategy HRA (Lake *et al.* 2010), which highlights that the impacts from increased housing are potentially 'diluted' in that the coastal sites are heavily visited by tourists, and receive many more visitors than, for example, the heaths. Although some of the threats (such as trampling and eutrophication) are similar for both coastal and heathland habitats, the impact of new housing on coastal sites is potentially less than that on the heaths where habitats are more sensitive to such effects. The coastal sites also lack the ground nesting bird interest of the heathlands, and therefore disturbance to birds is not so much of an issue on the coastal sites as it is on the heaths.

Impact of Additional Development

4.3 Within the five additional growth scenarios, additional growth at Swanage is around 230 dwellings in the lower growth scenario and 459 dwellings in the other four scenarios. This level of development will place additional pressure on the coastal sites around Swanage. Principal locations where development could occur in Swanage include the old Grammar School site and Washpond Lane.

4.4 One of the key sites likely to attract people from Swanage is Durlston Country Park. Works are currently taking place at the Country Park to establish the castle as a 'Visitor Gateway' to the Jurassic Coast World Heritage Site. The additional visitor facilities may act as an additional draw to visitors and the additional infrastructure may help to reduce visitor pressure on the grassland. Until the work is completed the implications for visitor flows on coastal sites will be an unknown.

4.5 The higher growth scenario with the additional development at Wool is also likely to result in additional visitor use of the coast. Of the three visitors from Wool interviewed at Winfrith Heath in 2010 one listed the coast (Studland and Durlston) as an alternative area visited. Of the other two visitors one was horse riding and only used sites within the vicinity of the stables and the other visitor did not visit the coastal areas for dog walking. Data from the 2004 visitor survey did not capture alternative sites visited and the 2008 household survey showed that the 13 Wool respondents also visited on average more than 4 coastal sites. Arne, Durdle Door, Lulworth Cove, Studland Beach and Weymouth Seafront were the most popular coastal sites visited by Wool residents.

Mitigation

4.6 The mitigation set out in the Core Strategy HRA are adapted below and the nature of the mitigation proposals is such that they should be sufficient to absorb the additional growth. The mitigation includes monitoring targeted to pick up impacts before long term damage is incurred. A number of potential measures are then possible to respond to these impacts. The additional growth would mean that the measures may well be more likely to be required and will need to be implemented earlier.

4.7 Specific targeted monitoring of the condition of limestone grassland, including the presence of indicators of decline in quality due to trampling and/or enrichment will be required, and this should focus on vulnerable locations such as steep slopes or desire lines leading out from main access points. Though the main additional impacts from trampling and increased nutrient input are felt to be on the coastal grassland SACs, they cannot be ruled out as impacts on the Studland dune communities. A similar suite of mitigation measures should apply here to watch for adverse impacts and deal with them if they start to be apparent.

4.8 The features to be monitored need to be agreed with Natural England and to be sufficiently sensitive that early warning of adverse effect can be recognised. If signs of deterioration start to appear then actions will need to follow to contain or divert such pressure before long-term damage is sustained. This could include amongst other initiatives:

- path diversions, accompanied by on-site interpretation and rationale to explain the reasons
- further patrolling by rangers/wardens, again with explanation for actions
- enforcement of the need to pick up dog mess, accompanied perhaps by the provision of sacrificial areas not within the SAC where such a policy need not apply
- the provision of alternative sites (SANGs) to attract some pressures away from the SACs

4.9 In order to draw people away from coastal sites the alternatives will need to be large and offer equivalent attractive features. The higher growth scenarios would need to be linked to a requirement for high quality SANGS at both Swanage and Wool.

4.10 In reality it would be unrealistic to attempt to provide SANGs that offered a genuine replacement for the extensive coastal cliff and limestone grasslands at Durlston, or the Studland dunes and beach, or the coast around Lulworth, but there will be some more routine or very frequent activities for which the special features, landscapes and habitats of those locations are not essential. Thus one or more convenient and suitable dog walking areas, with easy access and parking (free), and where additionally it was not a requirement to pick up mess and where dogs could be let off the lead, could be expected to draw some elements of the current and future pressures away from the SACs. There is the potential for such sites to be created around Swanage. The objective would be to reduce overall impact on the SACs so that no net increase follows the Core Strategy proposals. The difficulty of providing alternative sites to those on the coast highlights the need for the other on-site measures to play a significant part in the overall mitigation package.

4.11 Such alternative sites will also need to be monitored, by use of visitor surveys, counts of numbers visiting and purpose of visit, to test to what degree the SANGs are successful; and correspondingly the SACs need to be monitored to check that adequate diversions to SANGs are functioning with the desired reduction in pressure on the SACs.

4.12 The cost of the mitigation measures, including the essential elements of monitoring and long-term management, need to be calculated, secured and phased to coincide with the development. If this mitigation is adopted and put in place ahead of or at least at the same time as new development, the potential for adverse impacts in relation to the coastal SACs arising from the additional growth should be avoided.

5. Increased Recreational Pressure on the New Forest (SPA/SAC/Ramsar)

5.1 The New Forest National Park is a nationally promoted visitor attraction that draws day visitors and holiday-makers from a wide radius. Considering the distance to the New Forest and the availability of high quality greenspace within and close to Purbeck, it is unlikely that the housing developments alone will result in significant increases to the number of visitors to the New Forest National Park. However, the in-combination effects of the housing development and tourism policies within the core strategies of all other districts surrounding and close to the New Forest National Park may result in significant increases in the number of visits made to the Forest, especially where new development is within 20km of the National Park (Sharp, Lowen, & Liley 2008). Such an increase is likely to have an adverse effect on the integrity of the New Forest SPA/SAC/Ramsar site. The issues relate to impacts from recreation, through disturbance to Annex I birds, trampling, dog fouling etc.

5.2 Development within Upton does fall within the 20km radius and it is therefore not possible to conclude, in the absence of mitigation measures, no adverse effect on the integrity of the New Forest European sites, in combination with all other developments in other Districts proceeding without mitigation. Mitigation measures, implemented strategically in conjunction with other local authorities, will eliminate any of the impacts. HRA work for the New Forest is currently ongoing to assess impacts and develop a suitable mitigation strategy. However, such mitigation measures could involve new green infrastructure, changes to the transport links to the New Forest and on-site access management/education etc. These measures need to be established through joint working across multiple local authorities. Purbeck's contribution to such stratagic mitigation will always need to be small and will be similar for all the housing scenarios in the core strategy (preferred options) and the additional scenarios considered in this report. No further consideration of the New Forest is therefore necessary within this report.

6. Water Issues

Water quality

Introduction

6.1 There are twenty-one sewage treatment works discharging in to rivers which enter Poole Harbour or discharge directly into the Harbour itself. The largest sewage treatment works are currently at Dorchester, Wool and Blackheath. A general quality Assessment, published in 2005 found elevated levels of phosphates in the Corfe, Sherford and Frome Rivers and elevated nitrate levels in the Rivers Sherford, Piddle and Tadnoll Brook. Phosphate reduction schemes have been approved to sewage treatment works at Bradford Peveril, Wool and Dorchester.

6.2 In June 2002 Poole Harbour was designated as a Sensitive Area (Eutrophic) under the Urban Waste Water Treatment Directive and a Polluted Water (Eutrophic) under the Nitrates Directive, and raised nitrogen levels have contributed to the presence of algal mats developing each summer. In a recent survey, seven of 80 mudflat sites surveyed had over 70% cover of macro-algal growth (Herbert *et al.* 2010). These algal mats could impact the SPA interest by affecting passage and wintering birds feeding in the Harbour.

6.3 Apart from Swanage, where treated water from the sewage treatment works discharges to the sea, all the sewage treatment works in Purbeck discharge into rivers which enter the Harbour or into the Harbour itself and therefore any developments in settlements other than Swanage could add to the nutrient burden.

6.4 The HRA of the Purbeck Core Strategy (Lake *et al.* 2010), concluded that existing discharges from sewage treatment works (which make up approximately 30% of the total annual Nitrogen load) could already be having an adverse effect on the integrity of the Poole Harbour SPA and RAMSAR site.

6.5 A recent report (Acornley, Jonas, & Witt 2008) by the Environment Agency, using a variety of data (some of which was over ten years old or based on estimates), noted that:

- The highest theoretical BOD loads from direct discharges into the Harbour were from the sewage treatment works at Poole, Wareham, Lytchett Minster, Studland, Brownsea and Holton Heath in that order
- The highest theoretical ammonia loads from direct discharges into the Harbour were from the sewage treatment works at Poole, Wareham, Lytchett Minster, Brownsea, Studland and Holton heath in that order
- The main contribution to ammonia loads for direct discharges and freshwater inputs is from Poole sewage treatment works (66.5%), followed by Lytchett Minster sewage treatment works (14.3%) the River Frome (6.2%) and Wareham sewage treatment works (5.6%)

- Of the annual dissolved available inorganic nitrogen (DAIN) loads into the Harbour from freshwater inputs and direct discharges, some 77.3% comes from inputs from the Frome, Piddle, Sherford and Corfe Rivers, 20.3% from the Poole sewage treatment works, 1.2 from Wareham sewage treatment works and 0.7 from Lytchett minster sewage treatment works. Other sources contribute about 0.5% combined.

- Ranking the annual percentage contribution of Dain load estimated discharges in to the Harbour for the seven largest sewage treatment works, gives Poole sewage treatment works (20.3%), Dorchester sewage treatment works (2.76), Wareham sewage treatment works (1.16), Lytchett Minster sewage treatment works (0.66), Blackheath sewage treatment works (0.49), Bradford Peverell sewage treatment works (0.44) and Wool sewage treatment works (0.39).

6.6 Most of the nitrogen inputs from the Frome and Piddle are due to agricultural sources with only some 6% of the discharges from the Frome and 2% from the Piddle due to point sources. There are also marine and atmospheric inputs of nitrogen to the Harbour which contribute some 20% of the annual inorganic nitrogen

6.7 The report concluded that Poole sewage treatment works is the only significant discharge alone or in combination, and that Dorchester sewage treatment works, Wareham sewage treatment works, Lytchett Minster sewage treatment works, Blackheath sewage treatment works and Bradford Peverell sewage treatment works are potentially significant in combination. The remaining discharges are not considered significant.

6.8 A conclusion from the report was that it cannot be concluded that Poole sewage treatment works is not having an adverse effect alone and in combination and that Dorchester sewage treatment works, Wareham sewage treatment works, Lytchett Minster sewage treatment works, Blackheath sewage treatment works and Bradford Peverell sewage treatment works are not having an adverse effect in combination

6.9 In a later Report (Environment Agency 2010), the Agency reviewed the direct and indirect discharges into the Harbour. The report found that no discharges are having an adverse effect on the integrity of the SPA site with respect to dissolved oxygen or ammonia either alone or in combination. However, they concluded that the Poole sewage treatment works is the major source of inorganic nitrogen, but that discharges from Dorchester sewage treatment works, Wareham sewage treatment works, Lytchett Minster sewage treatment works, Blackheath sewage treatment works, Bradford Peverell sewage treatment works and Wool sewage treatment works are potentially significant. They could not conclude that Poole sewage treatment works is not having an adverse effect alone and in combination and that the other six sewage treatment works above, are not having an adverse effect in combination.

6.10 It was noted that the sewage treatment works at Wareham and Blackheath would require planned improvement works to accommodate new developments, and that the remaining sewage treatment works had sufficient capacity to serve proposed developments. It was also noted that investigations into N & P discharges into Poole Harbour were planned by

Wessex Water, and that the Environment Agency were completing a further study of nutrient issues in the Harbour but that this was not yet available.

6.11 It was recommended that Purbeck District Council sought guarantees that sewer capacity was adequate or would be made so to accommodate the new developments included in the three options without bursts; that the capacities of Blackheath and Wareham sewage treatment works be increased before new developments which they are to serve be occupied; and that measures be put in place to remove nutrient from new or existing sources such that any new developments were nutrient neutral. It was also recommended that a timetable of actions be agreed with Wessex Water and the Environment Agency for these measures.

Additional growth: Scenarios 1 & 2, lower and higher growth

6.12 The distribution of the lower and higher growth scenarios puts additional development in existing settlements with the largest concentrations in Upton, Wareham, Bere Regis, Wool and Swanage. All these settlements discharge sewage through their respective sewage treatment works directly or indirectly into Poole Harbour, except Swanage. It is not known whether any discharges into the sea from Swanage find their way into Poole Harbour via offshore currents or drift, and although this is possible, it seems unlikely that it is a significant factor.

6.13 Any increase in settlement size away from Swanage will therefore increase discharges into Poole Harbour and could add to the nutrient load which is already unacceptably high. Sewer discharges also enter the Harbour from sewage treatment works in adjoining Authorities (e.g. Dorchester in West Dorset and Poole) and therefore Purbeck District Council has to rely on Wessex Water and the Environment Agency to take a holistic view of the issues and solutions.

Additional development at Wool

6.14 The development at Wool will place an additional burden on the sewage treatment works and Purbeck District Council will need to obtain guarantees from Wessex Water that this will not lead to increased nutrient discharge into the Harbour either alone or in combination or any risk of exceeding the licensed capacity of the works.

Additional development at Wareham and Lytchett Minster

6.15 The largest contribution from sewage treatment works to the annual DAIN load into Poole Harbour comes from the Poole sewage treatment works (direct), followed by Dorchester (indirect), (both outside PDC area) and then Wareham (direct) and Lytchett Minster (direct). Purbeck District Council will need to seek guarantees from Wessex Water that the Wareham sewage treatment works and Lytchett sewage treatment works will have adequate licensed capacity and that there will be suitable measures put in place that will prevent an increase in the overall nutrient loads entering the Harbour either alone or in combination with other discharges.

6.16 Given the respective inputs from the three potentially largest development areas in Purbeck (excluding Swanage where the discharges are all into the sea) and considering only the

effects on the nutrient status of Poole Harbour, any developments which increase discharges will need to be appropriately assessed in combination both with other changes to the direct and indirect discharges and in the light of the predicted future increase in agricultural inputs which have been rising steadily, at least in the Frome, for the last 40 years (Acornley et al 2008).

Water abstraction

6.17 The Core Strategy HRA (Lake *et al.* 2010) noted that 75% of the water supplied by Wessex Water comes from groundwater supplies and that the Southern Resource Zone, which includes Purbeck has a surplus of resources to meet foreseeable demand. Despite this, there are concerns about the effects of water extraction on the chalk rivers in Purbeck, and one of these, the Tadnoll Brook has had to be supplemented from groundwater sources to the extent that at times, this additional input constitutes the entire flow. A statement of intent formalised between Wessex Water, the Environment Agency, OFWAT and Natural England in 2002, comes to an end in 2010.

6.18 In the longer term, Wessex Water has plans to integrate their water supplies across the entire region so that water can be moved from one area to another to balance deficits and surpluses. However this depends on the installation of additional infrastructure, and is intended to meet the likely demands until 2034.

6.19 A further issue is the quality of groundwater which can be affected by nitrates applied in the past for agriculture which has percolated down into groundwater supplies. Four extraction points are at risk in Purbeck and if the water from these exceeds the legal limits for nitrate concentrations then they must be withdrawn from the public water supply. The concentration of nitrates in groundwater is forecast to rise between 2010 and 2015, and then will start to fall.

6.20 The Catchment Management Strategies for the main rivers in Purbeck produced by the Environment Agency and last reviewed in 2007 have assessed the River Frome as water available, but the lower Frome groundwater unit, together with the River Piddle (surface and groundwater) and surface water from the Corfe River have all been assessed as no water available. The River Sherford surface and groundwater has been assessed as water available, but the chalk aquifer under Corfe has not been assessed.

6.21 There is uncertainty about the precise relationship between river flows and abstraction from chalk aquifers and existing abstraction licences are due to be reviewed by the Environment Agency in 2017.

6.22 Current uncertainties about the quantity and quality of supplies and the need to install further infrastructure to move supplies across the region, mean that in the short term there could be water supply shortages locally in times of drought and these could affect the European sites if either surface or ground water abstraction results in effects of the bogs and mires on the European heathland sites.

6.23 In view of the uncertainties, the Core Strategy HRA recommended that Purbeck District Council consider introducing environmentally positive initiatives such as the introduction of

water saving measures in new developments together with retro-fitting of existing housing stock. The HRA noted however, that until these measures were implemented and proven to be effective there was no certainty that European sites would not be adversely affected by additional development.

6.24 Increased numbers of houses will place additional demands on Wessex Water to provide increased supplies of water. In the short term a number of uncertainties as to the quality and quantity of water supplies exists and with a possibility of effects on European sites, the higher level growth scenario poses a higher risk than the lower level growth scenario

6.25 In the longer term, if Wessex Water put in place their regional water supply network, the location of new development will be of less relevance than the size. The scenario of a higher growth level plus 1,000 additional dwelling at Wool will place the greatest pressure on the network

6.26 Additional dwellings at Wareham or Lytchett Minster, when combined with the higher growth level, poses an intermediate risk to water supplies if concerns about quantity and quality of supplies are realized.

Mitigation

Water Quality

6.27 There seems no doubt that Poole Harbour is suffering from high levels of nutrient enrichment leading to changes in the ecology of the Harbour and putting at risk the habitats and wildlife for which it is notified as an SPA and RAMSAR site (Acornley et al 2008). As far as we are aware there is no agreed target for the nutrient levels in the Harbour, nor are there statutory standards for nutrient loadings in estuarine or marine designated sites (Underhill-Day 2006), however we do know that the trend for nitrogen is increasing. Given these uncertainties, a precautionary approach is justified, and it cannot be concluded that new developments adding to discharges into the Harbour will have no significant adverse effect as noted by Acornley (2008) in their conclusions relating to a number of sewage treatment works including Wareham and Lytchett Minster.

6.28 For both lower and higher level scenarios PDC will need to seek guarantees from Wessex Water and the Environment Agency that:

- All the relevant SWTs will have sufficient capacity to deal with the higher discharge levels resulting from new developments
- That existing sewer pipes are capable of taking the increased discharges without bursts, particularly during periods of heavy rain
- Steps will be taken to nutrient strip additional N and P from discharges before they enter rivers or the Harbour, such that the levels of nutrients entering the Harbour from all new developments (both from Purbeck and adjoining authority areas) are no higher than before

- That the proposed developments will not, in combination, have adverse effects of the Harbour in relation to direct and indirect discharges

6.29 For additional developments at Wool Lytchett Minster and Wareham, PDC should ask Wessex Water to investigate the possibility of additional nutrient stripping via reedbed creation for these specific developments; and if this will bring about significant reductions in nutrient discharges then this may be effective as mitigation. All the relevant measures should be in place and the mitigation effective before new development to which they apply is occupied

Water Abstraction

6.30 The maintenance of public water supplies in Purbeck depends to a greater or lesser extent on:

- No additional low flow restrictions
- The construction of additional pipelines, pumping stations and reservoirs to create a supply network across the region
- An increase in the proportion of metered customers
- Continued efforts to reduce leaks
- Continued efforts to save water by customers
- No major withdrawals of abstraction sources due to nitrate levels
- Adequate licensing by the Environment Agency

6.31 Purbeck District Council should make a contribution through planning conditions to enforce water saving measures on new developments and should encourage retro-fitting existing developments. Although, as stated above, these measures cannot provide guaranteed mitigation measures for European sites, but if effective, they can make a difference to the environmental baseline.

6.32 However in view of the uncertainties of supply and the expiry of the agreement between Wessex Water, OFWAT, the Environment Agency and Natural England, PDC will need to seek assurances from Wessex Water that water supplies are secure for their preferred option before incorporating this in their final plans. It seems probable that in the longer term Wessex Water can guarantee supplies, but will need to have made improvements to the network and recorded the expected declines in nitrate pollution of groundwaters as well as achieving water saving measures with their customers before doing so. PDC may need to phase their proposed allocations to be consistent with Wessex Water's timetable for these measures.

7. Fragmentation and pressure on heathland sites as a result of employment allocation

7.1 Within the Core Strategy HRA (Lake *et al.* 2010) there was a specific section addressing the impacts of fragmentation and other pressure on heathland sites as a result of employment allocation. These potential impacts are not relevant to this report as we solely consider housing, and therefore no further discussion of these issues are relevant here.

8. Air Quality

8.1 The Core Strategy HRA (Lake *et al.* 2010) noted that the critical load for nitrogen in dry heathland given by the Air Pollution Information Service (APIS) is 10-20kg/ha/yr and in wet heath and 10-25 kg/ha/yr with the lower end of this range applied to sites with low intensity management. These levels were taken from recommendations by Bobbink *et al.* (2002), who reviewed the evidence available at that time.

8.2 In the Dorset heaths area, current estimates suggest a level of nitrogen deposition of 13.2kg/ha/yr which is below the maximum critical level suggested by the Bobbink *et al* study but above the minimum. Levels of acid deposition were also higher than the critical load (which for heathland is 0.1 keq/ha/yr) at 1.12 keq/ha/yr.

8.3 Based on the sites identified in this report which are close to existing main roads likely to be used by new residents from Swanage, Wareham, and Wool, estimates of emissions for 2003 and predictions for 2010 are given in Table 5. These are lower than those given for the Purbeck area and suggest a reduction in predicted levels, with no sites being above the maximum critical levels but most sites exceeding the minimum critical levels of 10-20kg/ha/yr for dry heath and 10-25kg/ha/yr for wet heath.

Table 5: Nitrogen levels as Kilograms per hectare per year for dry and wet heath in 2003 and for 2010 (predicted) for a number of Purbeck Heaths

Heathland Site	Map Ref	Habitat	Year	N Deposition kg/ha/yr
Winfrith	SY805870	Dry Heath	2003	10.9
		Wet heath	2003	12.0
		Dry Heath	2010	9.8
		Wet heath	2010	10.9
Wareham Forest		Dry Heath	2003	11.9
		Wet heath	2003	10.8
		Dry Heath	2010	11.9
		Wet heath	2010	10.8
Stoborough		Dry Heath	2003	11.5
		Wet heath	2003	12.0
		Dry Heath	2010	10.4
		Wet heath	2010	10.9
Worgret heath		Dry Heath	2003	11.5
		Wet heath	2003	11.5
		Dry Heath	2010	10.4
		Wet heath	2010	10.4
Blue Pool		Dry Heath	2003	11.5
		Wet heath	2003	11.5
		Dry Heath	2010	10.4
		Wet heath	2010	10.4

8.4 Dioxides of nitrogen are produced by internal combustion engines through the oxidisation of nitrogen gas and although industry and agriculture also produce nitrogen oxides (NO x) an important producer of these nitrogen inputs is road traffic and any further developments will generate additional traffic and therefore increase nitrogen emissions. The National Atmospheric Emissions Inventory suggests that road transport is responsible for about 10% of nitrogen emissions.

8.5 A transport infrastructure strategy for Purbeck has still to be formalised, and further detailed transport modelling is necessary to ascertain the scale of the impacts in terms of intensity and spatial distribution on the European heathland sites. No new information on local air quality issues has become available since the HRA of the Core Strategy was prepared.

8.6 Additional windfall development within the envelope of existing settlements under the lower, and particularly the higher level growth options will have two consequences.

- Additional development generates additional traffic which adds to the general NOx levels in the atmosphere and contributes to the atmospheric nitrogen depositions onto local heathland, although there is currently no way of assessing how this deposition will be distributed.
- Where roads cross, or are directly adjacent to European designated heathland sites, then there can be direct deposition of nitrogen onto these sites, and based on a single study, this is usually taken to extend out to a distance of 200m from the road (Angold 1997). Angold showed that edge effects were dependent on traffic volumes but found some effects from volumes as low as 1,000 per twelve hours

8.7 It is not possible to assess the additional impacts of further traffic on the heathlands generally until a new traffic model is available (and even then it may not be possible to make a fully informed assessment), but clearly the higher the level of new developments, the greater the effect is likely to be.

8.8 Direct effects will be greatest for developments which are distributed within those settlements with road links which cross or run adjacent to European heathlands, with the effects magnified where residents commute between home and workplace and use such roads to do so. The main settlements and key service villages where this is likely to cause the greatest impacts are Wareham, Swanage, Upton, Lytchett Minster, Bere Regis, Bovington, Corfe Castle and Sandford. In addition, some residents will drive to heathland areas for recreation and air and exercise and add to the existing traffic on both major and minor roads within the Purbeck area.

8.9 A further 1,000 houses at Wool will generate considerable additional traffic and contribute to the general levels of atmospheric NOx locally.

8.10 However, if the residents commute west to Dorchester or beyond or to Wareham in the east, there will be little direct effect on heathlands compared to traffic in and out of Wareham and Swanage as no European sites are adjacent to the B352 (with the exception of a very small parcel to the north of the road at Worgret). If commuters travel east or north through Wareham, they will add to the direct effects already noted.

8.11 Whichever route traffic takes to arrive or leave Wareham it will use roads which cross or run adjacent to European heathland sites except on the road west to Dorchester where there is only a small parcel of designated heathland at Worgret. In terms of direct air pollution effects on European heathland, Wareham is probably the worst place in Purbeck to site new housing development. Any further developments at Wareham will add to the general level of atmospheric nitrogen through the generation of additional traffic and will also have direct effects on heathland adjoining the A351, A35, B3075 and the unclassified roads to Stroud Bridge and Higher Hyde and beyond. Further development at Lytchett Minster will also add to traffic on the A35, A351 and B3075. Any additional developments will also add to the general level of deposition as already noted.

Mitigation

8.12 The Core Strategy HRA gives a detailed description of the effects of nitrogen deposition on heathland habitats and communities and this will not be repeated here. Similarly, a list of mitigation measures were suggested which included:

- Park and ride systems.
- Bus priority routes.
- Green transport plans for companies.
- Encourage use of 'greener' vehicles.
- Information and education activities.
- Vehicle emission testing.
- Encourage more home/remote working initiatives.
- Encourage companies to reduce their environmental impact.
- Reduce the council's own environmental impact.
- Low emission zones for use with greener vehicles.
- Encouraging people to use more public transport.
- Improvements to public transport.
- Considering air quality impacts from major developments

8.13 The HRA for the Purbeck Core Strategy took the relevant critical load levels from the work of Bobbink *et al*, but there is a high level of uncertainty on the effects of nitrogen particularly on lichens and bryophytes. Lowland heath is rich in lichens and in a further review of the effects of nitrogen deposition, Krupa (2003) concluded that " current information suggests a critical load of 5-10 kg/ha/yr of total N deposition (both dry and wet deposition combined of all atmospheric N species) would protect the most vulnerable terrestrial ecosystems (heaths, bogs, cryptograms)".

8.14 In a more recent report by the Centre for Hydrology and Ecology (Emmett 2007), it stated that: "A key highlight regarding revision of critical loads has followed the results from the Whim experiment, which were central to the setting of a new critical load for ammonia of 1µg m^3 (previous value 8µg m^3) for ecosystems containing lichens and bryophytes". This conclusion was based on long term studies, indicating that critical levels previously considered safe may need to be reduced.

8.15 Lowland heaths in Dorset are rich in lichen species particularly *Cladonia* ssp. and therefore, using the precautionary principle, not only are existing levels too high but any increase in N deposition rates from traffic generated by new developments could possibly increase the potential threat to a greater extent than previously realised.

8.16 This does not change the conclusions of the Core Strategy HRA, but does underline the recommendation that further studies need to establish clearly the absence of significant adverse effects and if necessary effective mitigation, from increased traffic levels generated by further housing developments.

8.17 In addition to mitigation measures noted in the Core Strategy HRA, further mitigation for additional housing should include:

- The provision of adequate employment opportunities within or close to the settlements chosen for the larger expansion plans including Swanage, Wareham, Upton, Bere Regis and Wool.
- Provision of adequate open space within or close to settlements to encourage residents to walk to open air recreation areas.
- A general policy in Purbeck of encouraging the rationalisation of rural car parking to reduce the use of private cars and to encourage the use of public transport with additional routes and stops.
- A transport policy that discourages the use of roads crossing European heathlands by commuters and tourist traffic, particularly unclassified and B roads.
- Encouragement of tourist attractions within towns and on public transport routes
- Support for initiatives that help visitors and residents walk or cycle rather than drive

8.18 It was not possible to conclude that the increased traffic levels in the Core Strategy would not have an adverse effect on the integrity of the Dorset Heaths SAC, and increasing the number of houses makes this uncertainty more acute. However, on the information available it seems likely that an additional large allocation of housing at Wool will be less damaging than at Wareham or Lytchett, although the additional mitigation measures listed above should be put in place to take account of both the additional windfalls and allocations.

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Appendix 1: Results of visitor Surveys at Winfrith

Introduction

Data on visitors to Winfrith Heath are available from previous work undertaken by Footprint Ecology:

- The Dorset Heath Visitor Survey (Clarke *et al.* 2006), involving two days of visitor survey work carried out between 16th and 19th September 2004
- The Dorset Household Survey (Clarke, Sharp, & Liley 2008; Liley, Sharp, & Clarke 2008b).

In order to capture more up to date information on visitor patterns at Winfrith Heath we repeated the visitor survey and asked more detailed questions about the provision of additional sites in the area. The survey data collected in 2010 can be used to look at changes in visitor patterns in response to the development at Purbeck Gate in Wool and also gives a benchmark against which the changes in visitor numbers to Winfrith Heath can be measured in the future.

Methods

We carried out two days of visitor surveys spread over four days between 15th and 21st May 2010 following methods used in the Dorset Heath Visitor Survey. In both surveys (2004 and 2010) the interviews were carried out over four sessions each lasting two hours, once during a weekend day and once during a weekday. The only differences between the two surveys were the timings of the sessions and the questions asked. In the follow up survey in 2010, the sessions ran from 07:30-09:30, 10:00-12:00, 12:30-14:30 and 15:00-17:00 whereas in the Dorset Heath Visitor Survey the four sessions ran from 07:00-09:00, 10:00-12:00, 13:00-15:00 and 15:00-19:00.

Results

During 16 hours of surveying in 2010, 25 groups were interviewed and all home postcodes were geocoded, 68 people in 24 groups and 27 dogs entered the site. In the first visitor survey in 2004, 20 people were interviewed and only 11 full postcodes were obtained and geocoded (Map 8). 96% of people interviewed were visiting the area from home and 68% stated dog walking as their main activity. Other activities recorded were walking, bird watching, horse riding and cycling. Three visitors interviewed in 2010 lived in Wool and a similar number of visitors came from Winfrith Newburgh and Crossways. The visitor numbers from Wool were not as high as expected although the reasons for this are not known. However a similar number of visitors came from Dorchester and Weymouth and visit the heath more than once per week. The three groups from Wool, consisting of 5 people, all stated that they visit Winfrith Heath more than three times per week (one group visits daily) and have been doing so for between 10 and 20 years. Two groups were walking dogs and the other group was horse riding and cycling. Other local sites often visited by Wool visitors included Cole Wood, Tadnoll, Moreton Forest and Hethfelton Woods. .

Longer travelling distances were recorded in 2010 compared to 2004 (Figure 1) which could be explained by the difference in the time of year that the surveys were conducted (September in 2004 versus May in 2010).

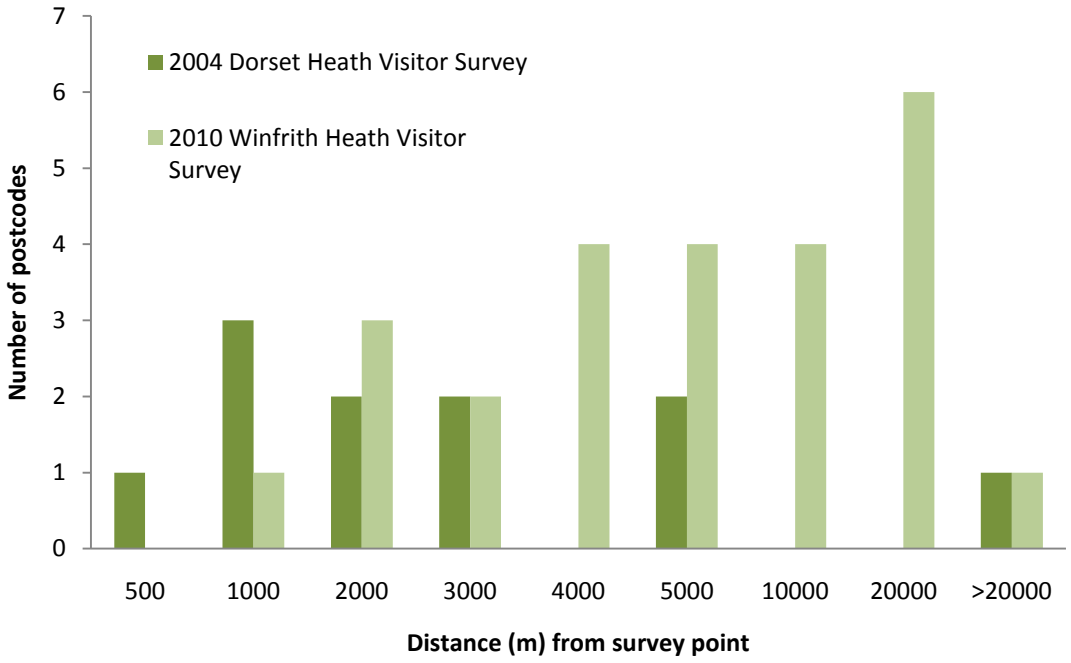
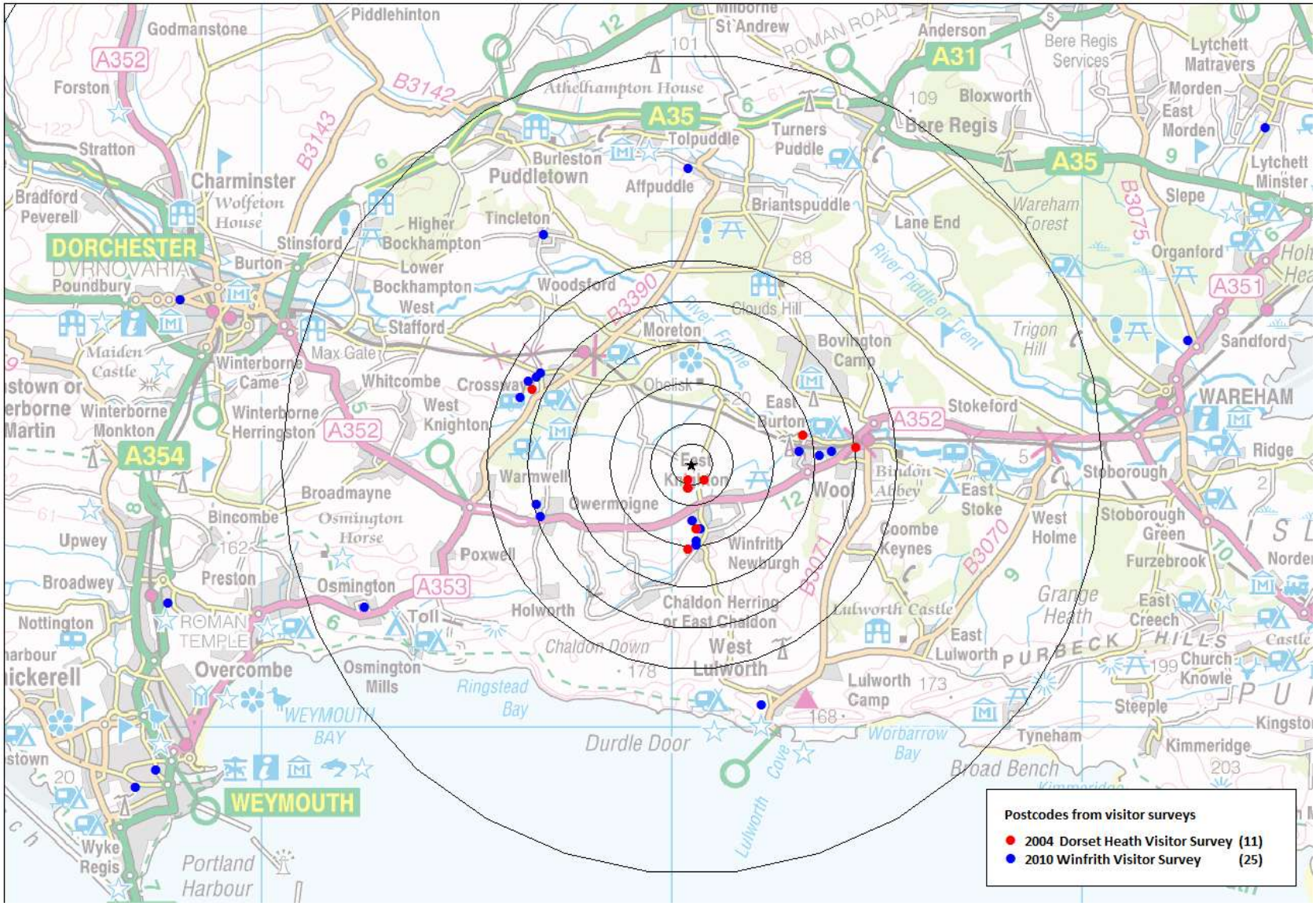


Figure 1: Visitor numbers to Winfrith Heath during the 2004 Dorset Heath Visitor Survey and the targeted survey in 2010 displayed by distance bands from the survey location.

9.1 Looking back to the Household survey in 2008, 1632 household responded and 200 (12.3%) stated that they were regular visitors to heathland (Map 9). Only two households that were regular visitors to heath also listed Winfrith as one of the sites that they visited. A further 10 households that do not consider themselves regular visitors to heaths also listed Winfrith as a site they visited (Map 9). Of the visitors to Winfrith, only three were residents of Wool and the remainder were from the nearby villages of Winfrith Newburgh, Blacknoll and East Knighton.



Map 8: Home postcodes of visitors to Winfrith Heath during the Dorset Heath visitor survey 2004 and a follow up survey in 2010. The outer circle shows a 10km radius. The smaller circles are at 500m, 1000m, 2000m, 3000m, 4000m and 5000m.

Map 9: Postcode of respondents to the Household survey of south east Dorset showing non heath visitors, regular heath visitors and households that listed Winfrith as a site they visit

Appendix 2: SANGS guidelines

The following guidelines for the appearance and suitability of SANGs are drawn from Natural England guidance relating to the Thames Basin Heaths. The guidelines are copied here as they provide useful context. It is important however to recognise that the attractiveness of the Purbeck Heaths for recreation means that any SANG will also have to be attractive and the criteria need to be considered in relation to the local heaths.

SANGs Guidelines

The attributes that follow as `must haves` should be provided for all SANGS. Some features are also given which should be desirable on an individual SANGS. However, Local Authorities will also need to propose a suite of SANGS which will, taken together, mitigate the potential effects on the SPA from the proposed new residential development in their area. Although not all SANGS can provide all the desirable features, a suite of SANGS should seek to provide the following:

- Some walks of over 5km
- Routes for cyclists and horse riders of over 5km
- Some routes suitable for wheelchair users
- Some sites where users such as dog walkers and horse riders are separated on marked routes
- Water features
- Viewpoints
- Walks within deciduous woodland
- Areas free from traffic noise

The wording in the list below is precise and has the following meaning:

- Requirements referred to as “must” haves” are essential. If any one is missing, the site will be unlikely to qualify as a SANG.
- Each SANG should have at least one of the “desirable” features.

Must haves

- SANGs should be able to offer the features described below without their functionality being compromised by unsuitable size, shape, location, topography or other inherent characteristics.
- For all sites there must be adequate parking for visitors, unless the site is intended for local pedestrian use only, i.e. within easy walking distance (400m) of the developments linked to it. The

amount of car parking space should be determined by the anticipated numbers using the site and arriving by car.

- If the site is intended for local pedestrian use only then there must be excellent access for people arriving by foot, with a range of access points directly linking housing and the SANG.

- All SANGs with car parks must have a circular walk which starts and finishes at the car park.

- It should be possible to complete a circular walk of 2.3-2.5km around the SANGs, and for larger SANGs a variety of circular walks.

- Car parks must be easily and safely accessible by car and should be clearly sign posted.

- The accessibility of the site must include access points appropriate for the particular visitor use the SANGs is intended to cater for.

- Access points should have signage outlining the layout of the SANGs and the routes available to visitors

- The SANGs must have a safe route of access on foot from the nearest car park and/or footpath/s.

- SANGs must be designed so that they are perceived to be safe by users; they must not have tree and scrub covering parts of the walking routes.

- Paths must be easily used and well maintained but most should remain unsurfaced to avoid the site becoming to urban in feel. A majority of paths should be suitable for use in all weathers

- SANGs must be perceived as semi-natural spaces without intrusive artificial structures, except in the immediate vicinity of car parks. Visually-sensitive way-markers and some benches are acceptable.

- All SANGs larger than 12 ha must aim to provide a variety of habitats for users to experience (e.g. some areas of woodland, scrub, grassland, heathland, wetland, open water).

- Access within the SANGs must be largely unrestricted with plenty of space provided where it is possible for dogs to exercise freely and safely off lead.

- SANGs must be free from unpleasant visual, auditory or olfactory intrusions (e.g. derelict buildings, intrusive adjoining buildings, dumped materials, loud intermittent or continuous noise from traffic, industry, sports grounds, sewage treatment works, waste disposal facilities,).

- SANGs should be clearly sign-posted or advertised in some way.

- SANGs should have leaflets and/or websites advertising their location to potential users. It would be desirable for leaflets to be distributed to new homes in the area and be made available at entrance points and car parks.

Desirable

- It would be desirable for an owner to be able to take dogs from the car park to the SANG safely off the lead.
- Where possible it is desirable to choose sites with a gently undulating topography for SANGs
- It is desirable that SANGs provide a naturalistic space with areas of open (non-wooded) countryside and areas of deciduous woodland and water features
- Where possible it is desirable to have a focal point such as a view point, monument etc within the SANG
- It is desirable that smaller SANGs do not have grazing stock and that on larger SANGs there are always areas free from grazing stock.